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by
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Law versus Economics?

How should insurance intermediaries influence the insurance demand decision

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How should intermediaries influence the insurance demand decision? The answer must refer to the interdependence of economic determinants and legal duties. Intermediaries potentially guide demand decisions by delivering objective information and by considering individuals' situation and economic circumstances. The economic theory provides determinants that are essential for the insurance demand decision. Undoubtedly, consumers lack information about certain variables, and therefore misjudge their demand for insurances. In response to the consumer, an intermediaries' task is to discover possible misjudgments and to provide the correct information. Since the information in the insurance market is asymmetrically distributed, an insurance agent has an incentive to behave opportunistically, a tendency that is reinforced by the remuneration scheme in Germany. In 2007/2008, insurance intermediaries became regulated by law. That law states, among other things, the four basic obligations of insurance intermediaries and a liability rule to sanction violations. In order to interpret and substantiate the legal terms, those have to match the relevant economic determinants to state the ideal behavior of an intermediary.

Keywords: insurance, insurance intermediation, advice, liability, Insurance Contract Act

JEL-Classification: G22, D83, D89, K29, K40

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1 Introduction

Insurances are considered to be complex experience and credence good. Therefore, consumers tend to have difficulties in making informed buying decisions, which might explain the preference concerning the distribution channels. In Germany insurance policies are predominantly sold by insurance intermediaries (Insurance Europe, 2010). The role intermediaries occupy in the insurance market is highlighted by the amount of the pre-tax premiums which added about 7.16% to the German GDP in 2011 (Gesamtverband der Deutschen Versicherungswirtschaft e. V, 2011, p.56).

The insurance market is characterized by imperfections and limited information which results in sub-optimal contracting between the insurer and the consumer. The economic task of any intermediary is to partially overcome the resulting market failure. For that reason, an insurance agent is supposed to match the consumers' preferences with the supply of policies by guiding individual insurance demand decisions. Hence, the relevant economic determinants display possibilities for the intermediary to intervene and to improve the individual choice, ideally. Nevertheless, the economic environment allows for opportunistic behavior by the insurance agent since his knowledge of market conditions is superior and the existing remuneration scheme supports that tendency. For that reason, laws have regulated insurance intermediaries since the implementation of the EU directive. Legal regulations state obligations an intermediary must fulfill in order to be exempted from liability. From a law and economics perspective, the legal requirements have to be such that the agent chooses not to behave opportunistically. This can only be achieved if economic determinants are reflected in legal obligations. Furthermore, since the liability rule refers to a default, the jurisdiction needs diligence levels as a reference in order to benchmark the intermediaries' behavior and counseling advices.

Recently, the jurisdiction had to deal with complaints about the counseling activities of intermediaries. Following is a brief look at three cases and the final court decisions:

1. Automobile Insurance - Reference OLG Hamm 20 U 131/09¹:

The consumer (plaintiff) purchased a used RV (recreational vehicle), which was partially financed by way of credit during a four-year time frame. He demanded a automobile insurance policy from the insurance agent and ended up with a part insurance cover (sum insured: 21.000 EUR) and the mandatory auto liability insurance. Shortly after the policy was taken out, the RV was destroyed in an accident. It is questionable if the intermediaries' counseling was faultless since he did not give advice that would have resulted in a comprehensive insurance cover in order to secure the credit to a similar level. The court decided that the intermediary did not neglect any legal obligations, inter alia, because automobile insurances are not considered complex products. Additionally, the consumer had taken out that kind of insurance before. Thus, the consumer is conversant with the differences between comprehensive, full coverage insurance and the liability partial coverage insurance. Also, the fact that the RV was partially financed did not trigger a duty to mention the option of comprehensive coverage from the courts

¹OLG Hamm (Higher Regional Court), court decision 12/04/2009 - 20 U 131/09.

point of view. Therefore, the case was dismissed.

2. Residential Building Insurance - Reference LG Ingolstadt 33 O 136/10²:
In order to update the insurance coverage on her residential building policy, the consumer (plaintiff) switched to a more current tariff. During the counseling interview, the consumer stated her desired for information about the coverage of all water pipes because of the swimming pool in the backyard. Eventually, one of the water pipes in the backyard broke and the water caused 17.000 EUR worth of damage, which was not covered by the insurance company. It is questionable if the insurance agent has to compensate the damage since he stated that all water pipes were covered, which obviously was not the case. As in the previous example, the court decided that the intermediary did not neglect any of his duties, even though his statement concerning the coverage was wrong. However, it cannot be expected that an insurance agent extends the coverage beyond the policy conditions which are assumed to be known by the insurance customer. Additionally, consumers should know that gutters cannot be covered by insurance because they tend to clog if not maintained regularly. Thus, the case was dismissed.
3. Private Health Insurance - Reference OLG Munich 25 U 3343/11³:
As a result of a counseling interview with an insurance intermediary, the consumer (plaintiff) canceled his health insurance policy after 25 years in order to update the insurance conditions. Later, the consumer realized that the new contract changed certain conditions to the worse. Additionally, it was not possible to transfer the old-age reserves, which were to reduce the premium once the insured turned 65 years old. Thus, additional costs resulted from the worsened conditions and the loss of reserves to compensate an increase in premiums. It is questionable if the intermediary obeyed his counseling duties. In this case, the court decided in favor of the plaintiff since the initial contact was established by the intermediary. Additionally, the insurance agent did not correct wrong assumptions about the relevant policy changes and he did not discuss the problem of the non-transferability of old-age reserves or the resulting disadvantages.

These three examples have the same question in common: was the counseling interview and the resulting advice at fault for damages or not? The aim of this paper is to state possibilities for an intermediary to influence the insurance-demand decision as the economic theory suggests, and to discuss how those economic determinants might be useful in order to interpret legal duties and to evaluate the faultlessness of counseling advice. As well, the identification and discussion of the influence of economic determinants and their possible legal counterparts build Sections 2 and 3. Section 4 states specific theoretical examples to examine the interaction of law and economics. Finally, Section 5 concludes and refers back to the stated court decisions.

²LG Ingolstadt (Regional Court), court decision 12/29/2010 - 33 O 136/10.

³OLG Munich (Higher Regional Court), court decision 06/22/2012 - 25 U 3343/11.

2 Insurance Demand

The first step towards an answer to the question “How do intermediaries influence the demand for insurance?” has to be a consideration of the economic theory on insurance and uncertainty. Research in this field is ongoing since the early 1960s when researchers started to relate insurance issues to the economic theory (Loubergé, 2000, p.4). Since then the expected utility approach remained predominant even though other approaches emerged. In this section the basic model of insurance demand theory is introduced and will be extended by background risks in order to examine the insurance decisions of consumers in the presence of multiple risks.

2.1 The Basics: Insurance Demand Theory

The possibility to buy an insurance policy enables households to reduce or even to prevent risks (Zweifel and Eisen, 2012, p.101). In fact, the aversion against risks constitutes the crux of the insurance demand theory which basically is an application of the expected utility approach by von Neumann and Morgenstern.

In the simplest version of insurance demand theory, supply of insurance is exogenous. This assumption might be crucial if the insurant is a firm instead of a consumer. Whereas large firms have the possibility to negotiate customized insurance solutions, the consumers must choose from a variety of generally standardized products. Therefore, it seems feasible to stay with the assumption of exogenous supply, for the purpose of this paper. Considering uncertainty, a household has to form expectations about future wealth⁴. A loss (L) might occur with a likelihood (ρ) and yield a reduction of the initial wealth (W_0). Assuming only two possible states of the world [$W_1 = W_0 - L, W_2 = W_0$], the consumer expects a final wealth level (W_E).

$$W_E = \rho(W_1) + (1 - \rho)W_2 \quad (1)$$

At this point, the individual attitude towards risk has to be discussed. Only a risk averse consumer prefers a certain to an uncertain payment, i.e. the utility of the expected value of the lottery or gamble is greater than the expected utility of the lottery ($EU(W_E)$) itself.

$$EU(W_E) = \rho v[W_1] + (1 - \rho)v[W_2] \quad (2)$$

From equation (1) and (2) follows that, if the expected value of the lottery remains unchanged, the consumer maximizes the expected utility if the marginal utility of risky wealth is equal in each state.

$$\begin{aligned} -\frac{(1 - \rho)}{\rho} &= -\frac{(1 - \rho)}{\rho} \frac{v'[W_2]}{v'[W_1]} \\ v'[W_1] &= v'[W_2] \end{aligned} \quad (3)$$

⁴The whole section refers to Zweifel and Eisen (2012, pp.71-110). The notation differs slightly.

This optimality condition can only be satisfied by equalizing the wealth levels in the two states. Graphically, the optimality condition (3) is shown in Figure 1. The indifference curve through endowment point A is characterized by a lower level of expected utility than the indifference curve through point C even though the expected wealth (W_E) is identical. Moreover, it becomes obvious that a risk-averse individual is willing

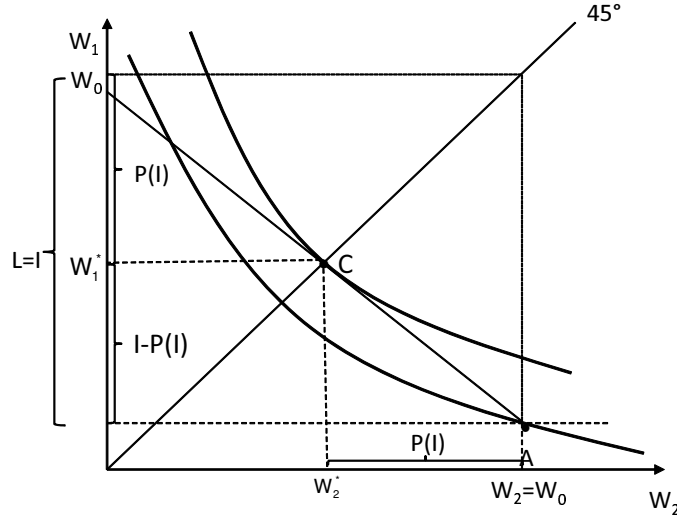


Figure 1: max. expected utility

to give up a certain amount of money in both states in order to transform a risky situation into a certain situation. By paying a premium ($P(I)$) the consumer actually buys the promise that the insurer will provide an indemnification payment $I = \alpha L$ in the case of a loss. Obviously, the variable (α) specifies the degree of coverage: $\alpha = 1$ indicates full coverage, whereas $\alpha < 1$ refers to partial cover. The possibility to buy an insurance policy changes the final wealth levels as stated in equation (4).

$$\begin{aligned} W_1 &= W_0 - L - P(I) + I \\ W_2 &= W_0 - P(I) \end{aligned} \quad (4)$$

Even though the loss L might not occur, the consumer still has to pay the premium. Therefore, the wealth level in the “no loss” state W_2 reduces, too. Despite the insurance, neither state of the world is certain and, therefore, the consumers’ aim is to maximize expected utility, given certain probabilities and premiums.

$$EU = \rho v[W_0 - L - P(\alpha L) + \alpha L] + (1 - \rho)v[W_0 - P(\alpha L)] \quad (5)$$

In equation (5) the premium depends on the indemnification payment. Those premiums can be further specified in order to distinguish “fair” and “unfair” premiums. While fair premiums are equal to the expected losses, unfair premiums exceed them. In order to demonstrate both cases, the premiums can be stated as $P = (1 + \lambda)\rho\alpha L$. Whenever the premium equals the expected losses, the proportional loading (λ) has to be zero.

Inserting the stated premium function into equation (5) and optimizing with respect to α yields the optimality condition and implicitly the optimal degree of insurance coverage.

$$\begin{aligned} \max_{\alpha} EU &= \rho v[W_0 - L - (1 + \lambda)\rho\alpha L + \alpha L] + (1 - \rho)v[W_0 - (1 + \lambda)\rho\alpha L] \\ \frac{v'[W_2]}{v'[W_1]} &= \frac{1 - \rho - \rho\lambda}{1 - \rho + \lambda - \rho\lambda} \end{aligned} \quad (6)$$

First, assume a “fair” premium that does not induce any changes to the level of expected wealth and yields expected profits of zero to the insurance company. As stated, in this case the loading λ equals zero. The optimal condition can be derived from Equation (6) and again states that it is optimal to equalize the marginal utilities of risky wealth, $v'[W_1] = v'[W_2]$. The only way to accomplish that condition is to fully cover the loss, implying $\alpha = 1$. After considering the optimal insurance demand assuming a premium equal to expected losses, the case of unfair premiums shall be discussed next. In this case, the proportional loading λ has to be positive. From Equation (6), it follows that in this case the marginal utility of risky wealth in the loss state has to be greater than the marginal utility in the state without a loss. Because of the shape of the utility function of a risk averse individual, it has to be the case that the level of wealth without a loss exceeds the final wealth level in the loss state, $W_2 > W_1$. Therefore, it is not optimal to buy comprehensive full coverage but to insure partially which forces α to be less than 1.

2.2 Multiple Risks

In the previous section, insurance demand was analyzed while focusing only on one risk a consumer is confronted with. Furthermore, the basic model solely accounts for insurable risks under complete market conditions. Undoubtedly, consumers face several risks at the same time - which might as well be interdependent. Doherty and Schlesinger (1983) state that for an optimal insurance demand, the correlation between insurable and uninsurable risks matters. They introduce an uninsurable background risk to account for some incompleteness in the insurance market. Considering this additional risk, the consumer is confronted with four possible states of the world: 1. the initial wealth levels remains unchanged; 2. the insurable loss (L) occurs and reduces the wealth level accordingly; 3. only the uninsurable loss (N) happens, or 4. both incidents take place. A single loss arises with either probability ρ_L or ρ_N . Considering ρ_L and ρ_N , it is possible to assign a probability of occurrence ($\rho_1 - \rho_4$) to each state. Comparing this model to the insurance demand theory stated in the previous section, it is obvious that the expected utility function has to be adjusted for the additional states. Furthermore, the

premium function has to be adapted slightly by comparison with the previous section and becomes $P = (1 + \lambda)\rho_L\alpha L$.

$$\begin{aligned}
EU &= \rho_1 v[W_0 - (1 + \lambda)\rho\alpha L] \\
&+ \rho_2 v[W_0 - (1 + \lambda)\rho\alpha L - (1 - \alpha)L] \\
&+ \rho_3 v[W_0 - (1 + \lambda)\rho\alpha L - N] \\
&+ \rho_4 v[W_0 - (1 + \lambda)\rho\alpha L - (1 - \alpha)L - N]
\end{aligned} \tag{7}$$

The evaluation of Equation (7) at $\alpha = 1$ yields Equation (8).

$$\frac{dEU}{d\alpha}\Big|_{\alpha=1} = \rho_L L[\rho_N(1 + \lambda) - \rho_{N|L}] \cdot [v'[W_1] - v'[W_3] - v'[1]\lambda] \tag{8}$$

At this point, it is possible to determine the optimal degree of coverage while considering different cases. Assuming a fair premium ($\lambda = 1$) and independence of the losses, i.e. $\rho_N = \rho_{N|L}$, Doherty and Schlesinger (1983) state that it is optimal to opt for full coverage. Whenever the losses are correlated, either positively ($\rho_N < \rho_{N|L}$) or negatively ($\rho_N > \rho_{N|L}$), it is optimal to demand more than full coverage, or even only partial coverage respectively. To demand more than full coverage in the event of a positive correlation between L and N , becomes plausible if one considers a compensation of the background risk N . In the case of an unfair premium ($\lambda > 1$) partial coverage is optimal if there is no correlation or a negative correlation. Whereas in the event of positive correlation, the optimal degree of coverage is indeterminate and depends on magnitude of the loading λ (Doherty and Schlesinger, 1983), or on the size of the loss N (Zweifel and Eisen, 2012, p. 99). Fei and Schlesinger (2008) extend the outlined model on multiple risks by state dependency. They show that if N is larger in a state of the world with an insurable loss, the consumer demands more than full coverage, even if the premium is fair. On the contrary, if N is larger in a state of the world when no insurable loss occurs, the consumer demands only partial coverage. A precautionary motive serves as an explanation for that behavior in each case. In the first case, the precautionary motive yields a compensation of the uninsurable loss by over-insuring the other loss. In the second case, the consumers' precaution results in partial coverage in order to reduce the premium and, thus, to be able to fund the background risk.

2.3 Discussion - Determinants of Insurance Demand

The previous section outlined the insurance demand theory by simply assuming that all relevant information is known. As a result, the determinants of insurance demand can be derived. There is: 1. the degree of risk aversion, 2. the premium, 3. the wealth level, and 4. the correlation with uninsurable background risks. Considering the degree of risk aversion, the dislike of risks leads to the demand of insurances in the first place. It is plausible that a higher risk aversion affects the degree of coverage whenever this differs from a comprehensive payment. Moreover, even if the premium is loaded, the insurance demand increases whenever the degree of risk aversion rises. Additionally,

Mossin (1968) found that in cases of constant and decreasing absolute risk aversion, the consumers tend to reduce the insurance demand as a reaction of a loaded premium. Since insurers have to cope with administrative costs, anticipate moral hazard, and to have some liquidity reserves, it is quite feasible that the premium always differs from a fair premium. Thus, the theory predicts that partial coverage would be optimal. The coverage reduction can be established by either a deductible, or alternatively a coinsurance. But, the previous section also states that one might not be able to generalize those findings since the correlation with an uninsurable background risk is possibly contradicting. In addition to the stated determinants, the consumer also has to have a good idea about possible states of the world and the set of potential actions, the probability of the occurrence of a loss, and financial consequences in each state in order to solve the decision-making problem (Zweifel and Eisen, 2012, p.75).

Consumers sometimes behave other than the classical theory predicts and for example buy too much insurance or, stated differently, buy insurances with low or no deductibles even if the premium is loaded (Shapira and Venezia, 2008). Such anomalies might arise because the consumers make mistakes (Schwarcz, 2010). Among mistakes are an overestimate of the probability of a damage, or even uncertainties about the effect of a loss event on the final wealth level (Mossin, 1968). Schwarcz (2010) offers an alternative explanation whereupon consumers value an insurance more than the expected utility function is able to prognosticate, so their behavior is not a result of limited information or knowledge. If the latter hypotheses is true, it should be impossible for an insurance agent to influence the insurance demand at all. But, Schwarcz (2010) analyzes different demand anomalies such as insurance demand for small financial risks, or preferences for insurances with small deductibles, and he finds that people simply make mistakes while taking out insurance policies. Additionally, consumers can hardly cope with the multitude of competing insurance companies and their differentiated products. Both aspects, the tendency to estimate probabilities of biased occurrences, and the fact that people cannot overlook the insurance market and therefore use heuristics to determine their demand for insurance, cause sub-optimal decisions (Hofer, 2008; Jaspersen and Aseervatham, 2012; Schwarcz, 2010). Since it seems plausible to assume that the demand for insurance reflects an uninformed choice that might additionally be driven by cognitive limitations, it has to be possible for an expert to intervene and, thus, to enable a better choice.

3 Intermediary: Duties and Responsibilities

Whereas the last section dealt with the basic insurance demand theory, outlined the knowledge and the information a consumer ideally needs to solve the decision-making problem and discovered the existence of demand anomalies, this section focuses on the tasks an intermediary has to cope with.

3.1 Influence upon Economic Determinants

Consumers might make mistakes while taking out insurance policies. This fact leads directly to the tasks an insurance agent should perform from an economic point of view. As pointed out, a consumer has to have a good idea of the probability of the loss occurrence. If this estimation is biased, the insurance demand decision concerning the coverage will be sub-optimal. Let the objective probability of a loss be ρ , but the subjective estimation of the loss be q with $q > \rho$, i.e. an overestimation of the loss probability. Additionally, assume a loaded premium so that a partial coverage becomes optimal. In a case with both, a loaded premium and an overestimation, the approach to maximize the expected utility changes from equation (6) to equation (9).

$$\max_{\alpha} EU = qv[W_0 - L - (1 + \lambda)\rho\alpha L + \alpha L] + (1 - q)v[W_0 - (1 + \lambda)\rho\alpha L] \quad (9)$$

Equation (9) states that the overestimation of the loss occurrence does not affect the premium calculation by the insurer, because the mistake is assumed to happen on the part of the consumer. Figure (2) illustrates the effect of the overestimation. First,

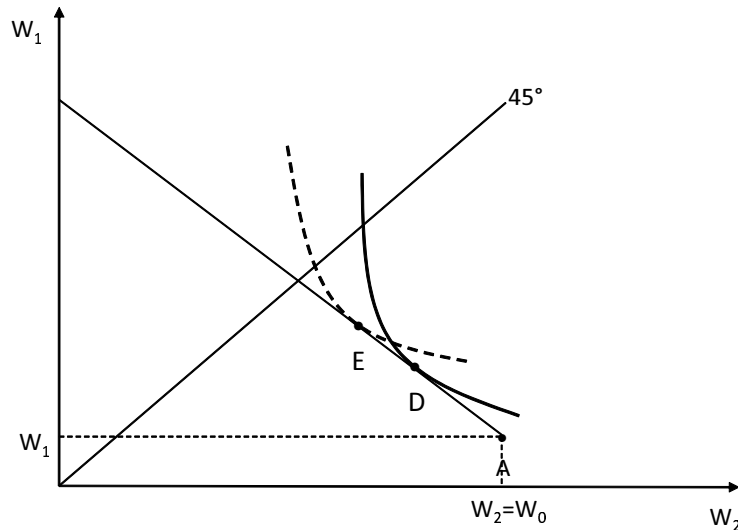


Figure 2: Optimal coverage with a loaded premium and overestimation of the loss probabilities

Figure (2) shows that it is optimal to choose D whenever the premium is loaded and the probability of loss occurrence is still estimated correctly. But, as soon as the consumer overestimates the loss occurrence, the expected utility indifference curve becomes flatter, which results in E as the optimal choice. Nevertheless, the dashed indifference curve is the result of a mistake. Hence, by choosing E instead of D the consumers' expected utility level decreases because the insurance coverage is too high.

Equation (10) states the same result formally. Compared with a situation in which the premium is loaded, but the estimation of the loss probability is correct, the fraction on the right hand side of the equation increases because $\rho < q$. The increase of the fraction

is equivalent to a convergence of wealth levels in the different states which can only be accomplished by a rise in α .

$$\frac{v'[W_2]}{v'[W_1]} = \frac{q - q\rho - q\rho\lambda}{\rho - q\rho + \lambda\rho - q\rho\lambda} \quad (10)$$

Since any divergence from the optimal α results in a loss of expected utility, the intermediaries' task in this case should be to discover the objective loss probabilities under consideration of the individuals' situation.

The stated example shows quite obviously, that an intermediary might be able to fix the mistakes since he is an expert, and therefore his choices should be superior to the consumers' considerations. The insurance demand is driven by several determinants as pointed out in Section 2. From an economic perspective almost all those determinants might be the cause of mistakes, and thus establish opportunities to act for an insurance agent. Consumers might misjudge the amount of a loss, or they do, or do not consider the existence of uninsurable background risks. Additionally, consumers might not even be aware of some risks, and therefore they do not take all relevant states of the world into consideration during the decision-making process. Undoubtedly, since consumers can hardly cope with the multitude of insurance products, they might not take all possible actions into account. Importantly, preventive effort can reduce or avoid losses and should be considered as an alternative to insurance products or even as a complementary action.

From an economic point of view, the question of how insurance intermediaries should influence the insurance demand decision can be answered when focusing on the determinants of insurance decisions and possible mistakes. Nevertheless, the degree of risk aversion represents a factor that is neither known by the intermediary, nor can it be influenced. This insight leads to the statement that an intermediary can deliver information and can even correct mistakes, but the final evaluation of the product alternatives and the final choice can only be performed by the consumer himself. Thus, the intermediary can only provide support by counseling and delivering information, but he cannot entirely solve the decision-making problem on the consumers' behalf.

3.2 Legal Obligations

In contrast to the previous part, this subsection will focus on the legal instead of on the economic point of view because the working conditions of intermediaries changed as a result of market interventions by the European Union. Initially, the supply of insurance products increased in the 90's as a result of the deregulation of the European market in 1994. Moreover, the products themselves became more heterogeneous since the preventive control of the general insurance conditions by the regulation authorities was abolished in the cause of the deregulation process (Ihle, 2006, p.52). Even though the deregulation stimulated the competition in the field of insurances, the consumer protection suffered losses (Hofer, 2008, p.93). In order to re-strengthen the consumer protection, the European Union issued a directive in 2001 that regulates the insurance intermediaries and their counseling activities by law rather strictly.

The German Insurance Contract Act (VVG)⁵ lists several duties, which an insurance intermediary must fulfill. First, the intermediary has to base his advice upon a sufficient number of products that are suitable for the individual situation of a consumer with regard to objective criteria, § 60 VVG. For the number of evaluated policies to be “sufficient”, a broker has to refer to the entire market, whereas other agents - tied agents in exclusivity or agents that cooperate only with a couple of insurers - have to solely consider products of their co-contractors (Dörner, 2010, § 60 recitals 3,14,15). If the advice is based upon selected companies or products only, the consumer has to be notified (Michaelis, 2010, p.67). Also, the Insurance Contract Act states that the insurance agent has to ask the consumer about his wishes and needs, § 61 VVG, in order to obtain all relevant information. Whereas the wishes are of a rather subjective nature, the intermediary is supposed to focus on the objective needs of a person, and if necessary, to bring both aspects in line (Michaelis, 2010, p.86). Additionally, if obviously wrong assumptions about the needs or the details of an insurance policy becomes known, an intermediary has to fix those mistakes (Dörner, 2010, §61 recitals 25,26). Furthermore, § 61 VVG states an obligation to give advice. The intermediary has to discuss how and why he selected the products, and also, which of the alternatives constitutes the best choice given the circumstances of the single consumer. To sum up, the Insurance Contract Act assigns basically four duties an intermediary has to meet: 1. provide information based upon a sufficient number of alternatives; 2. self-dependently inquire relevant factors; 3. provide advice and the reasons for the choice, and 4. the duty to keep records. In contrast to § 347 para. 1 HGB⁶ which states the due care and diligence of a prudent businessman referring to commercial transactions, the VVG further specifies the criterion for diligence. Additionally, the Insurance Contract Act refers to the individual situation of a consumer. Therefore, the applicable diligence level is dependent on the particular case (Zinnert, 2010, p.53), but the intermediary still has to obey the diligence of a prudent businessman. Furthermore, the Insurance Contract Act states a liability rule in § 63 VVG: the intermediary is liable for any damages, whenever he neglects his duties. Of course, the breach of duty and the resulting damages have to be causally determined in order to trigger the liability, and thus, yield a compensation.

3.3 Discussion: Law and Economics

First, intermediaries can influence the insurance demand decision of consumers by modifying the economic determinants, or by simply adding relevant information. Second, the Insurance Contract Act assigns four legal duties that an intermediary has to meet; however, the liability rule which is supposed to ensure that the insurance agent performs his task properly, refers to the legal duties instead of the economic variables. Since the

⁵Insurance Contract Act (Versicherungsvertragsgesetz (VVG)) November 23, 2007 (Federal Law Gazette Part I, page 2631), becoming effective on 01/01/2008; last changes 07/27/2011 (Federal Law Gazette Part I, page 1600) with effect from 08/04/2011.

⁶German Commercial Code (Handelsgesetzbuch (HGB)) May 10, 1897 (Federal Law Gazette Part III, No. 4100-1), becoming effective on 01/01/1900; last changes 12/20/2012 (Federal Law Gazette Part I, page 2751).

economic determinants are more specific than the legal duties, the variables can be used to substantiate those obligations. Hence, it should be possible to match each economic variable to a legal duty in order to combine law with economics.

Legal Duties	Economic Determinants
Provide information about alternatives	possible actions, i.e. possible policies premium
Inquiry of relevant factors	objective possibility of loss occurrence potential amount of the loss possible states of the world
Advice	correlation with uninsurable background risks preventive effort to reduce losses situational: selection of alternatives
Documentation	—
—	degree of risk aversion

Table 1: Economic Determinants / Legal Duties

Table 1 shows that the economically relevant variables have legal counterparts. For example, the duty to base the advice upon a sufficient number of potential alternatives matches the need of knowing the whole set of possible actions in order to solve the economic decision-making problem. The necessity to evaluate the monetary consequence in each relevant state of the world, finds its counterpart in the duty to inquire the relevant factors. Of course, those stated duties are preconditions to the duty to give advice, but since the advice should be well founded, this duty is more far-reaching. Thus, the correlation with uninsurable background risks, as well as the supplementary consideration of preventive effort and precaution, are part of the duty to give advice. However, the degree of risk aversion as an economic determinant can hardly be allocated to one of the legal duties because it is subjective and unquantifiable. Also, there is no economic need for any documentation even though that legal duty helps to provide evidence for any counseling or miscounseling.

As far as the liability is concerned, § 63 VVG states that whenever an insurance agent neglects any of his duties, he has to compensate the resulting losses. From an economic point of view, it is the utility level that matters for compensation (Cooter and Ulen, 2004, p.312). In the case of uncertainty, it should be the level of expected utility. Consider the previously introduced example in which the consumer overestimated the probability of a loss and ended up with too much insurance. In this case the intermediaries' duty is to inquire all relevant factors objectively and to re-estimate the loss probability. Figure 3 represents the indifference curves that correspond to the objective loss probabilities ρ . Those indifference curves imply the expected utility levels that arise from the wealth levels in points D and E . A consumer who overestimates the loss occurrence will choose E , and is therefore worse off than in the optimal point D . Thus, an insurance agent who does not correct the initial estimation has to pay a compensation that enables the

consumer to obtain the same expected utility level which he would have had by choosing D . In the depicted case, the consumer pays a premium that is too high. To recover the utility level, the payment would have to result in a higher wealth level in the loss state than the consumer actually experiences in E . On the contrary, the premium, as well as wealth levels, are accounted for in monetary terms. Therefore, it would be a feasible compensation to force the insurance agent to refund the overpaid premium $\Delta P(I)$. In return, the consumer has to give up an amount ΔW_1 to reduce the indemnification payment. As a result, D will be restored.

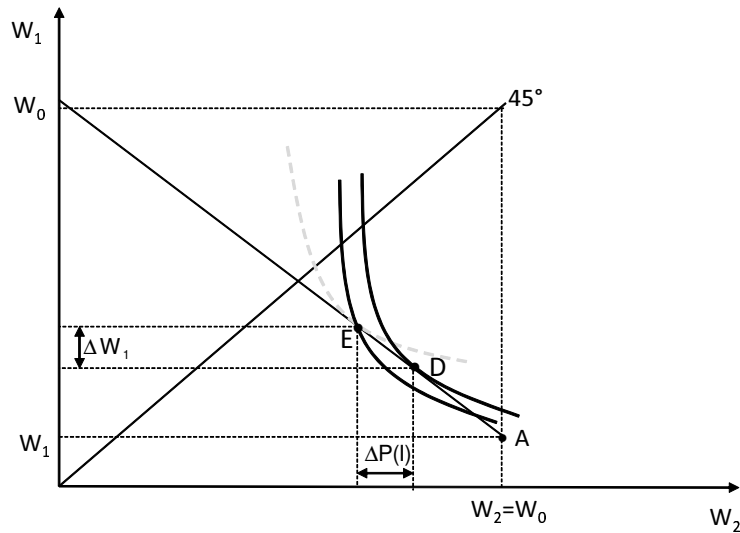


Figure 3: Compensation in a case of an overestimation of loss probabilities

4 Examples

The last section discusses the interdependencies of legal obligations and economic variables as well as possibilities to compensate consumers. So far, the analysis bases upon general examples without any link to specific insurance policies. This section, on the contrary, will discuss the ideal behavior of intermediaries on the basis of selected prevalent insurances.

4.1 Household Contents Insurance

A household contents insurance covers personal belongings against losses and ranks among the predominantly taken out insurance policies in Germany (Allensbacher Werbeträger-Analyse, 2011, p.55). It compensates the replacement value of the household elements. Therefore, the insured sum is based upon the amount which is needed to replace the whole contents. Despite the wide distribution of that kind of insurance coverage, consumers tend to underestimate the amount of a possible loss. That mistake is of serious consequence. An insurer who discovers the underinsurance of a client will

often settle claims only proportionally even if the sum insured is not reached. This case can be analyzed within the economic model of insurance demand: First, the total wealth of a consumer has to be decomposed into financial assets on the one hand, and into physical property on the other hand, whereas the latter contains the insurable household elements. In the event of a loss, it is the value of the physical property that matters. Again, the starting point will be a situation without any mistakes. In Figure 4, the endowment point A depicts the total wealth level W_0 on the abscissa and the wealth level of all assets but the value of the household contents on the ordinate. At a given loss probability ρ , it is optimal to choose wealth levels corresponding to point D , as represented. Considering a fair premium, it is optimal to take out full insurance coverage. However, a consumer who underestimates the value of his personal belongings

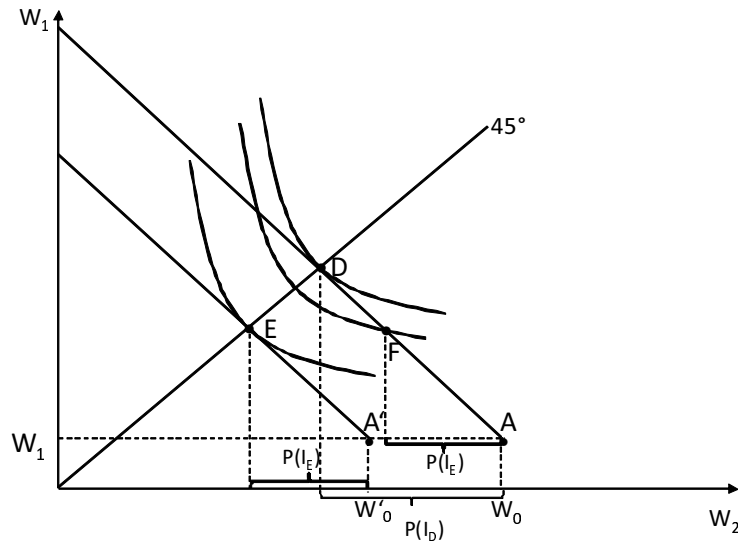


Figure 4: Underestimation of a potential loss

misjudges the amount of the physical property. Hence, the total wealth is underestimated. Consequently, the insurance line shifts inward and the consumer considers A' instead of A as the relevant endowment point. Also, the insurer calculates the premium according to the wrongly estimated and also requested loss amount. Finally, the consumer considers himself to face a wealth level in each state according to point E as well as a corresponding level of expected utility. But, the premium payment ($P(I_E)$) actually only yields point F in Figure 4, hence, a situation in which the consumer is underinsured. Since the resulting α in F is too low compared with the full coverage, the consumer faces a loss in terms of expected utility as shown.

How should an intermediary influence the stated insurance demand decision? What actions and counseling activities can be expected? Since the underestimation results from a wrong evaluation of the existing values, an insurance agent is expected to either determine the approximately right value of the personal belongings by precise and specific questions or to gather the information by himself during a visit to the consumer's house. The alternative is to agree upon a waiver of underinsurance. In this case, the

calculations are based upon a predetermined amount insured per square meter ⁷. Both alternatives are suitable actions in order to avoid the mistake of an underestimation of the potential loss. An intermediary who fails to verify the potential loss amount, and, if necessary, fails to correct the initial estimations, neglects his duty to inquire all relevant information. Also, by applying the diligence criterion for businessman, an intermediary acts carelessly if he does not double-check the possibility of an underinsurance because he should be aware of those commonly made mistakes. Thus, the intermediary is liable for the resulting damages.

4.2 Occupational Disability Insurance

A disability insurance maintains the livelihood in the case of an inability to work as a result of an accident or illness. In 2011, one in four employed persons held a disability insurance policy (Allensbacher Werbeträger-Analyse, 2011, p.55) whereas the remaining 75% insure that risk either differently (such as via saving accounts), or not at all. In fact, consumer protection organizations state that consumers tend to underestimate the risk of an occupational disability, which is in line with the findings of representative studies on behalf of large insurance companies (Continentale Lebensversicherung AG, 2011; Birkner, 2012).

In contrast to the previous example, an underestimation of the loss probability will result in too little insurance, if one follows the economic analysis. Figure 5 depicts graphically the effects of the stated underestimation. Still, the points *A* and *D* represent the endowment point respectively the ideal insurance demand decision given the economic determinants. An underestimation will increase the absolute value of the slope of the indifference curve. The case of a loss becomes more unlikely, and therefore the consumer is not willing to give up as much wealth in the no-loss state to gain wealth in the loss state compared with a situation in which the estimation is unbiased. Given the wrong estimation, point *E* in Figure 5 is the optimal choice. But, as the α is too low compared to the true optimum, the consumer does not maximize the expected utility in *E*. In the case of occupational disability insurance policies, an insurance agent should inform the consumer about the actual probability of loss occurrence since the underestimation seems to be a common mistake. However, Birkner (2012) states that consumers misconceive the causes of the inability to work. Whereas mental disorders constitute the main cause of occupational disabilities (41%, Deutsche Rentenversicherung (2012)), consumers consider problems with the musculoskeletal system to be predominant, followed by accidents. Hence, consumers underestimate their individual probability of the risk mainly because they misjudge the causes. Thus, consumers might find it reasonable to substitute an occupational disability insurance by an accident insurance since the premium for the latter usually is lower. From an economic point of view, the consumers not only misjudge the probabilities of the possible states of the world, they are also not aware of them. Additionally, consumers lack knowledge about possible substitutes respectively about the loss of coverage which comes along with a assumed alternative. In

⁷At the moment, this amount is around 650 EUR per square meter.

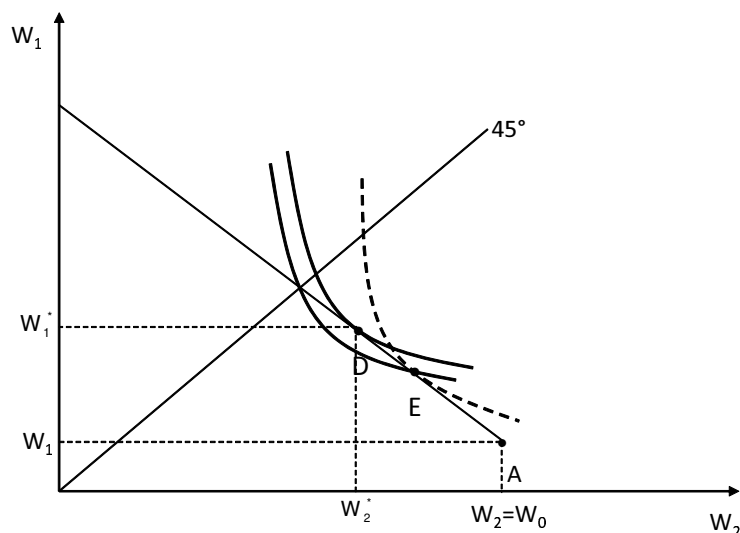


Figure 5: Underestimation of the loss probability

this case, the insurance agent has to inform the consumer about different types of more or less substitutable contracts (duty to inform), and about potential misjudgements that have to be corrected based upon objective facts (duty to inquire all relevant factors). In contrast to the previous example, the case of the occupational disability insurance shows that the consumer not only faces an insurance demand decision in terms of the degree of coverage, i.e. the α , but also faces a selection problem as far as differentiated but still substitutable products are concerned. Only if the consumer has information about the monetary consequences in each possible state with regard to perhaps slightly differentiated products and the corresponding loss probabilities, he is able to evaluate the expected utilities and finally pick the contract that is optimal given the individual degree of risk aversion. Thus, the intermediaries' task is to enable that choice by supplying objective and complete information. Stated differently, an insurance intermediary who provides selected information only, and thus indirectly pushes the consumer to take out a certain policy is liable for the given advice and potentially has to compensate a resulting loss.

4.3 Legal Protection Insurance

The legal protection insurance basically covers the costs and expenses of legal proceedings and can be found in about 25% of German households (Allensbacher Werbeträger-Analyse, 2011, p.55). A legal protection insurance policy can refer to single fields of law, but it is also possible to choose a combination of different fields within a single contract. Usually, a legal protection insurance pays for legal proceedings after a waiting period of three months. However, each insurer provides a list of cases that are not insured, for example the risk in connection with building projects including its funding or disputes concerning family affairs.

In order to solve the insurance demand decision problem, a consumer needs to know which fields of law are relevant for his single situation. Stated economically, the consumer has to be aware of all potentially relevant states of the world and their probabilities of occurrence. Next, excluded cases of each insurance policy have to be systematically evaluated concerning their relevance for the individual. Additionally, the consumer has to compare the premiums of single policies that refer to single fields of law to those products which already combine different aspects. It might be the case that a combination of policies is cheaper than single components or vice versa⁸ which should be noticed since the premium directly affects the consumers' expected utility as shown in Figure 6. As the loading increases, the insurance line flattens out. As a result of the higher premium, it becomes optimal to buy less coverage than point *D*. An insurance agent has to point

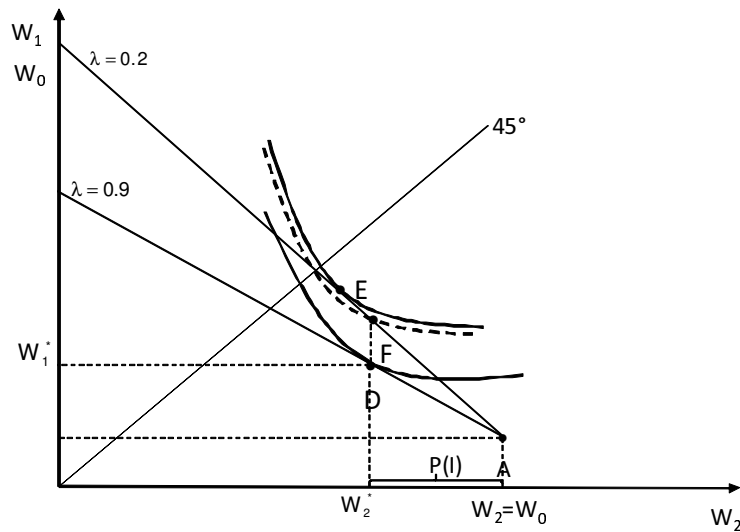


Figure 6: Differences in premiums

out possible policies in the field of legal protection insurances and has to inform about differences in the premiums of identical products which might result from combinations. Additionally, he has to discover which states of the world seem relevant for the individual consumer in order to prevent an overestimation of the specific loss probabilities. If the potential insurant neither owns a car, nor is in possession of a driver's license, legal protection concerning traffic issues might be neglected because a legal dispute is unlikely. An other example might be that a consumer who lives in his own house, does not primarily need legal protection in the case of conflicts between tenant and owner.

⁸For example: Combinations of legal protection in the fields private and traffic. VGH Insurance: The combination is 7.5% cheaper than single policies (www.vgh.de). Advocard Insurance: The combination is 13.3% more expensive than two single policies (www.advocard.de).

4.4 Discussion

Consumers make mistakes while taking out insurance policies. Shapira and Venezia (2008) basically state that consumers buy too much insurance and also Mossin (1968) argues that individuals take out full coverage instead of partial coverage. Even though one can imagine such mistakes result from overestimations of loss probabilities, or even an overestimation of the potential loss, the given examples state also situations in which the insurance coverage is too low. However, the effect is comparable: an other than the optimal choice results in utility losses.

The existing remuneration scheme in Germany rewards the sale of insurance policies, whereas the amount of that payment might also depend on the premium rate paid by the consumer (Beenken, 2011). On the one hand, if only the commissions matter for insurance agents, underinsurance should not be a problem since the agent always has an incentive to sell more insurance than the consumer initially demands. Nevertheless, to analyze a consumer's situation requires effort and is therefore costly from an intermediaries' point of view. Without the possibility to monitor the intermediaries' work, the incentive to spend only little effort on counseling activities is high as predicted by the principal-agent theory. On the other hand, there is no incentive to sell less than the demanded coverage in the case of overinsurance. Additionally, a third aspect emerges. Since some of the products are differentiated but still partially substitutable, the consumer faces a selection problem. Consider for instance term versus endowment life insurances.

The design of the liability rule has to consider both overinsurance and underinsurance as well as selection issues. Therefore, the diligence level of each duty has to be set appropriately. Neither an overload of diligence, nor too low requirements are efficient. On the one hand, information that is easily available has to be collected and considered while giving advice. On the other hand, the information should only be acquired and kept in mind by the intermediary if the consumer cannot collect and consider that information cheaper. However, the insurance agent has expert knowledge and therefore is usually considered to collect information at lower costs than the consumer. That necessary expertise, on the contrary, results in a rather weak self-information responsibility on consumers (Curti, 2005, p.211), and a more severe obligation on the intermediaries' part. The examples show that the complexity and, thus, the demand for information and advice differ according to the insurance policy which has to be considered when defining and applying a certain diligence level.

5 Conclusion

How should intermediaries influence the insurance demand decision? The answer to that question has to refer to the interdependency of economic determinants and legal duties. Intermediaries have the possibility to guide the demand decision by delivering objective information on the one hand, and by considering the individuals' situation and economic circumstances on the other hand. The economic theory provides determinants that are essential for the insurance demand decision. Undoubtedly, consumers lack information

about certain variables and, therefore, misjudge their demand for insurances. So, an intermediaries' task is to discover that misjudgment and to provide the right information. Since the information in the insurance market is asymmetrically distributed, an insurance agent has an incentive to behave opportunistically - a tendency that is reinforced by the remuneration scheme in Germany.

Insurance intermediaries are regulated by law. Among other things, the law states basically four obligations and a liability rule to sanction any violations. In order to interpret and substantiate the legal terms, they have to match the relevant economic determinants to state the ideal behavior of an intermediary. The theoretical examples show that the counseling activity necessarily varies between different products. Whereas, an intermediary has to fix overestimations or underestimations of probabilities, or potential loss amounts in some cases, he has to deal with selection problems in others. The liability rule is supposed to ensure that the intermediary provides the right information in each of the cases at the individual level. Since the diligence standard is at least comparable to the one a prudent businessman has to meet, an insurance agent is liable for acting carelessly which assumes that a risk was noticed, but still ignored at the time the counseling took place. To sum up, the diligence standard formulated by the law has to be applied to the specific economic determinants of insurance demand which are within the intermediaries' sphere of influence. For this purpose, the combination of legal obligations and economic variable can be used as a checklist to cover all relevant aspects of an ideal counseling interview. Now, let's return to the introductory cases and court decisions and take all economic factors and their legal counterparts into consideration.

The first case dealt with an automobile insurance for a used RV that was partially financed by credit. The question is how an ideal counseling interview could have influenced the insurance demand decision? First, the intermediary has to base the advice upon a sufficient number of contract alternatives to provide the consumer with a set of possible actions. In this case, the intermediary should inform about the different alternatives, i.e. part vs. comprehensive insurance coverage as well as the resulting premium differentials. Being an expert, the intermediary knows the relevant differences and can easily determine the premiums. Second, all relevant factors have to be inquired. Since the RV is partially financed, the need for a comprehensive coverage should be put into question as well as the objective amount in the case of a constructive total loss since the insurance should reduce the financial risk of the credit repayment in the loss state. The relevant information was available because the consumer mentioned the credit during the counseling interview. Depending on the individual financial situation of the consumer - the new RV was paid for by turning in an old car and an old RV in addition to the downpayment - the intermediary should have at least offered the comprehensive full coverage. As far as the documentation is concerned, it has to be stated that in the case of financing via credit, a comprehensive coverage reduces the financial risk of loan repayment in several events whereas a part insurance covers only certain occurrences.

In the second case, a residential building insurance, a water pipe burst, but the resulting damage was not part of the insurance coverage. Which information should have ideally been provided by the intermediary? In this case the consumer was interested in an update of the insurance conditions and an adjustment of the sum insured. Thus, the

insurance agent has to inform about all possible contract alternatives that are within his portfolio and can serve as an alternative to the current contract. Also, the main differences should be stated. Since the consumer explicitly mentioned the water pipes and the swimming pool in the backyard, the intermediary has to refer to the corresponding policy details and has to fix the incorrect assumptions about the enclosure of certain water pipes. Even though the pipes might have not been part of either policy, the old and the new one, the consumer obviously could not distinguish between fresh water and drain pipes. Whereas the fresh water pipes are included, the drain pipes are not. This differentiation should have been part of the counseling interview as well as the note that the new insurance conditions do not differ from the old ones concerning this aspect. The advice should have been to switch from the current to the new conditions as long as the consumer is better off. With regard to the drain pipes, the intermediary has to state that, so far, those are not included. That information gives the consumer the opportunity to take reasonable precautions. In fact, some insurers offer supplementary insurances concerning drain pipes and the intermediary should provide or at least mention those offers. The documentation should elucidate about enclosures and exclusions from insurance coverage as well as the differences of the two tariffs. If an additional contract was part of the counseling interview, the documentation has to refer to that information as well, even if the consumer did not accept it.

Finally, in the last case, the consumer not only switched to a new tariff but changed insurance companies as well. None of the accumulated old-age reserves could be transferred. Additionally, the patient-centered care differed in some aspects. The intermediary established the initial contact by offering an alternative to the existing policy. Nevertheless, he still owes advice that is based upon a sufficient number of contracts. Therefore, he should state the advantages and disadvantages of every alternative in order to present the whole set of possible actions. Concerning the wishes and needs of the customer, the new policy conditions should at least be equal to the existing ones (chief physician, single room, private ward). In the case of a setback, the insurance agent has to evaluate if the consumer accepts this - perhaps in exchange for a different, higher valued benefit. Additionally, the intermediary has to calculate the transferable amount of the old-age reserves and has to inform about resulting consequences of the non-transferable part. In this case, the lower premium of the new policy cannot offset the loss of the old-age reserves and the resulting consequences for the premium development once the consumer retires. Thus, the insurance intermediary should advise against any change. The documentation has to state that any change will result in a financial loss.

Law versus economics? Actually, the paper demonstrates that both aspects complement one another. Whereas the theory of insurance economics focuses on relevant and necessary determinants that have to be known in order to solve the decision-making problem, the insurance law provides the legal instrument to force the parties to reveal private information.

Still, some aspects remain unanswered. As soon as insurance policies are assumed to be heterogeneous and perhaps represent substitutes, the decision-making problem no longer refers to the optimal determination of coverage only, but also states a selection problem a consumer has to deal with. Another aspect refers to the provided information.

Recall the example of the household contents insurance. A consumer underestimates his physical capital. The intermediaries' advice is to agree upon a waiver of underinsurance which yields a way too high insurance amount, and as a result to a premium that is too costly. The intermediary solved the problem of underinsurance, but at the same time, a different mistake happened. Was the advice right or wrong?

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