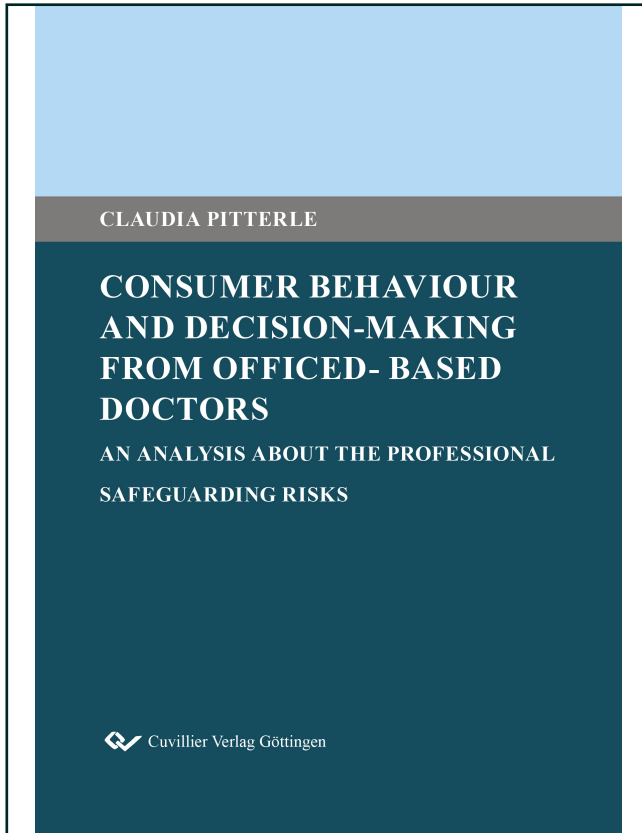




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**Consumer Behaviour and Decision-Making from  
Officed- Based Doctors**

An Analysis about the Professional Safeguarding Risks



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# I. Introduction

## *1.1 Introduction to the topic*

On a day-to-day basis, individuals typically make approximately 20.000 decisions (Pöppel, 2008, p. 19). This happens mainly unconsciously and automatically. Constantly new information has to be managed and new decisions have to be made professionally as well as privately. Many decisions are easy, but others are not. Insurance decisions are among the latter. The preoccupation with risk protection and its perception is increasingly coming to the fore, especially against the backdrop of climate change, cyber-attacks, the aging of the population and, not least, global health crises such as the COVID-19 pandemic. This topic area concerns the German government as well as independent research institutes and interest groups of the insurance industry.

In the context of these interests, studies and surveys repeatedly identify structural insurance gaps and a tendency toward underinsuring. This reveals systematic deviations from economically appropriate insurance coverage (European Commission, 2017; GDV, 2020). There is even talk of being "misinsured", which is due to incorrect risk perception, assessment, and evaluation on the part of the insured (Goslar Institut, 2016).

Officed- based doctors also take measures for their individual risk protection as part of their professional security. They ask for insurance for their practice and make arrangements, also in the form of entrepreneurial powers of attorney, to insure themselves adequately against existential risks. Such instruments ensure that a regulated practice operation can continue to be maintained in spite of the risks involved. This target group contributes greatly to the well-being of the population and is indispensable for the German health system.

Insurance companies and associations lack target group-specific analyses in the area of practising doctors and are increasingly showing interest in such an investigation.

Driven by personal concern and 23 years of advising academics and doctors, the researcher frequently encounters behavioural biases in insurance decisions and perceptions of their insurable risks. Trends also indicate that clients prefer to seek out low-cost insurance contracts and purchase insurance contracts online without consultation. The research interest of this thesis therefore refers to a systematic analysis of risk protection for practising doctors in private practice as well as the investigation of potential, structural insurance gaps in order to provide a basis for decision-making for targeted counselling.

## *1.2 Aim and approach of the work*

The aim of the thesis was to explore the office-based doctors' behaviours towards professional safe-guarding risks in Germany. To this objective, the thesis included an inventory of contracted insurance policies and powers of attorney, an analysis of decision-making behaviour in the context of insurance demand, and the identification of heuristics and biases. The overarching purpose behind this is not only to understand manifested decision-making behaviour in greater depth, but also to identify new research perspectives and develop counselling approaches.

As such, the research questions were:

1. How do office-based doctors in Germany perceive and respond to professional safeguarding risks?
2. Are their decisions influenced by heuristics and biases?

Using a two in one approach, the application of heuristics is examined, and factors are identified that indicate deviations from economically appropriate insurance cover.

After taking stock of the existing insurance cover, the focus is on decision-making behaviour in the context of insurance demand. In particular, the influence of behavioural economic factors on individual decision-making processes is taken into account. In light of this, the work is based on behavioural economics and integrates the sub-disciplines of behavioural finance and behavioural insurance. With behavioural economics, traditional models of economics were supplemented with insights from psychology, in the words of Colin Camerer (1999) "Reunifying psychology and economics".

In recent years, the focus of economics has increasingly been on identifying explanations for behavioural patterns that show deviations from the ideal image of homo economicus. In this context, homo economicus follows economic goals with a clear mind, uninfluenced by emotions, and maximising benefits (Von Nitzsch, 2021, p. 5).

In this context, this means that the risk perception of decision-makers in the area of insurance deviates significantly from real risks due to psychological distortion effects and "irrational" decisions are made (Gatzert & Müller-Peters, 2020).

Interest in the context of insurance demand has existed for years in order to gain insights into the concrete decision-making behaviour of individuals.

Kunreuther (1978), in his book "Disaster Insurance Protection: Public Policy Lessons", already worked out the importance and relevance of adequate insurance protection in the USA at the end of the 1970s. Many studies and experiments on insurance demand followed in order to find explanations for "wrong" insurance purchase behaviour. Richter et al. 2019 also contributed to a

better understanding in Germany with their article "Insurance customer behaviour: Lessons from behavioural economics" with the elaborated findings in people's insurance demand. Previous and further studies as well as experiments contributed to a detailed investigation in the field of insurance demand of practising doctors. To date, no other study has been conducted in this form on this target group and at least not in the field of property insurance for medical practice.

Given this research gap and the need for deeper understanding, a model was developed in the conceptual framework that identifies the main factors that influence behaviour and are due to heuristics and biases. This theoretical model was constructed from academic literature, previous in-depth interviews, and the researchers' professional experience. Furthermore, a set of hypotheses was developed in relation to actual behaviour. To test these developed hypotheses, the decision was made to use a specific research approach. Although at first glance it was a single quantitative survey, it actually took a two in one approach to test both sets of different hypotheses. The decision to adopt this approach arose from the limited time capacity of the target group of doctors, partly due to the challenging time of the COVID-19 pandemic. It was therefore preferable for the doctors to participate in only one survey. In addition, it was important to have the same respondents for both sets of hypotheses. Both sets of hypotheses form the foundation of the subsequent analysis of the results. For empirical testing, an online survey was conducted using a tailored developed questionnaire. Only doctors in private practice from different medical specialties and age cohorts took part in this survey. The collected data were analysed using descriptive and inferential statistical methods. The results indicate that doctors in private practice are subject to biases that resulted in low insurance demand. Of eight possible practice insurances, only three are insured on average. Preference was given to insurances known from the private insurance environment. Personal contact with the broker or agent when taking out an insurance policy is preferred to taking out an insurance policy via the Internet. The internet is only used to obtain information. Contact with the broker or agent is mainly sought only when necessary. Further findings were revealed with regard to variable knowledge. Among other things, the more knowledge, the more likely it is that insurance will be taken out, and the more comprehensive the insurance cover demanded. The variable importance of an insurance policy has no influence on the probability of taking out such cover. The conclusions of the thesis indicate that there are significant gaps in the understanding and perception of the risk and need for insurance.

This work thus provides further insights in the context of insurance demand from the area of property insurance. Likewise, recommendations for action for the consultation of doctors and reasons for further research can be elaborated.

### *1.3 Structure of the work*

In order to achieve the aforementioned goals and to formulate the research question of the thesis, the basis is laid at the beginning with the most relevant terminology and decision-theoretical foundations on decision-making behaviour for insurance demand. This is followed by the empirical thesis and the conclusions for the insurance industry as well as possibilities for further research.

Within the framework of the terminology, the basics and hedging options of insurance are explained in the first section of the second chapter. In the second chapter, after an insight into the current state of research, the derivations by means of decision-theoretical approaches from pre- and descriptive decision theory follow within the framework of the theoretical explanations. These are supplemented by theoretical approaches of the "dual process theory". This is followed by the most important Expected Utility Theories from decision theory, the Expected Utility Theory as well as the Prospect Theory.

Since the main focus of this work comes from behavioural economics, decisions are explained in the context of the decision-making process, including information perception, processing and evaluation. The decision maker faces uncertainty as well as a flood of information and applies tools called heuristics. This process is discussed in detail and it is shown where biases can systematically arise in general as well as in insurance decisions in particular. This chapter concludes with the deviation of the set of hypotheses.

To address the research aim and answer the research questions, the third chapter presents the empirical study, preceded by an introduction to the research methodology and is based on the previous theoretical explanations. The study is divided into three parts. The first part focuses on a general analysis of occupational insurance. The second and third parts follow a two in one approach. The second part is represented by the evaluation of the descriptive hypotheses, which describe actual behaviour. This observed behaviour is closely related to the explanatory research hypotheses of the third part. A special model was developed to investigate and evaluate these research hypotheses. This model represents the insurance-specific influencing factors that affect insurance decisions and can lead to biases. The results are summarised at the end of each chapter and the most significant findings have already been formulated.

The fourth chapter contains a summary of the main findings and resulting implications for the insurance industry. Potential areas for future research are also suggested.

## **II. Consumer behaviour, insurances, and decision- making behaviour**

### ***II.1 Part 1 Consumer behaviour, insurances, and decision- making behaviour***

This chapter serves as an introduction to provide a comprehensive understanding of consumer behaviour, hedging options through insurance and powers of attorney, and decision-making behaviour.

The focus of this second part of the chapter is on decision theories. Here, prescriptive as well as descriptive theories and dual process theories are explained in more detail. Particular focus is placed on descriptive theory as well as "dual process theories ", which originate from behavioural economics, as these lay the foundation for heuristics and biases. The term bias is also referred to in the literature as phenomenon or demand anomalies, depending on the researcher and author. At the end of the chapter, the deviation of the hypotheses is explained.

#### *II.1.1 Consumer behaviour*

Consumer behaviour comprises the observable actions of individuals when purchasing or consuming economic goods (Reich & Zerres, 2018, p. 35). Hoffmann and Akbar (2018, p. 3) expand the term and also speak of services that a consumer purchases, consumes or disposes of.

Consumer behaviour research is understood as an application-oriented behavioural science and combines the fields of psychology, sociology, biological behavioural research, and marketing as an interdisciplinary research area. The fundamental goal of consumer behaviour research is to understand and explain the behaviour of individuals. This results in the development and recommendation of marketing instruments by means of product policy with the objectives: Developing safe products and guaranteeing satisfaction (Reich & Zerres, 2018, pp. 35-38). Thus, theories with microeconomic references and roots from behavioural economics, as exemplified by Kahneman and Tversky (1979) with Prospect Theory and Thaler (1985) with mental accounting moved into consumer behaviour research. Relevant findings from behavioural economics include heuristics and phenomena such as the availability heuristic and overconfidence, which will be referred to repeatedly throughout the work (Kroeber-Riel & Gröppel-Klein, 2019, pp. 21-34).

The Prospect Theory (Theil, 2002) mentioned above provides a special application for explaining the behaviour of individuals using the example of insurance decisions. It makes it possible to examine the effects of behavioural patterns, phenomena individually and in interaction, and to better understand decisions and causes (Richter et al., 2018, p. 29). According to Kroeber-Riel and Gröppel-Klein (2019, p. 25), it can be observed in the field of consumption that the use of simple heuristics is a widespread phenomenon.

This paper builds on these findings and refers to the approaches of the disciplines of behavioural economics, behavioural finance, and behavioural insurance.

### *II.1.2 Risk protection options through insurance and business powers of attorney*

In every life situation, hazards threaten private individuals as well as companies. "The term hazard is understood as the possibility of the occurrence of an economically disadvantageous event" (Kuckertz et al., 2016, p. 33). Often also referred to as risk.

The term risk is used in many ways in economic theory, in insurance language and in general usage and is therefore explained briefly.

In economic theory, the risk of an action or uncontrolled action is a probability distribution of possible consequences, expressed two-dimensionally in the probability of occurrence and severity of the consequences. In insurance economics, the term is used to express the probability of occurrence and severity of loss. In the insurance industry, the policyholder or the insurance contract including the policyholder is characterised as a risk, e.g., in the case of an insured object.

The colloquial concept of risk is usually limited to the individual's risk of loss and is based on the possibility of an unfavourable event occurring due to uncertainty or lack of knowledge (Zweifel & Eisen, 2000, pp. 33-34).

These described risks or dangers occur in the form of events to individuals, ranging from e.g., death, illness, and disability, to property, such as fire, burglary as well as assets, e.g., compensation for damages.

The causes of these events are based on objective risks, such as human behaviour in events that cannot be influenced, e.g., forces of nature, and subjective risks, such as human behaviour in events that can be influenced, such as negligent fire protection. This risk of negligent care up to the point of causing a loss through fraudulent deception of the insurance company is also referred to as moral hazard (Kuckertz et al., 2013, pp. 33-34).

Not only the concepts of danger and risk should be considered, but also that of damage. Thus, danger is understood as the possibility of harm but not the harm itself. Direct damage is considered as an adverse effect on individuals as on existing goods. Such damage should be compensated for as far as possible (Hax, 1964, p. 10).

### *II.1.3 The essence of insurance*

Three different financial provision options compensate for or reduce the financial losses caused by the occurrence of a loss (Kuckertz et al., 2016, p. 36):

1. Recourse to state benefits, e.g., social assistance, utilities such as victims of violent crime and subsidies e.g., loans
2. Own individual monetary reserves
3. Insurance

Since both the occurrence of a loss and the need are uncertain, insurance proves to be the most appropriate. Insurance payments compensate for the economic consequences in the event of a loss such as fire, storm, illness, death, etc. Funds for insurance payments are collectively provided by the premium payments of individuals (also referred to as policyholders in this context). This is the so-called insurance principle. The policyholder acquires a legal claim to the agreed insurance benefit (Kuckertz et al., 2016, p. 37). This transfer of risks is also called risk business (Farny, 1995, p. 14).

In addition to the risk business described above, which forms the core, the nature of the overall insurance business also includes the savings and deposit business. This is legally and factually connected as soon as premiums are returned. Service business, such as advising the customer before or during the term of the insurance and handling the risk and savings and deposit business (e.g., claims processing), is also part of the overall insurance business (Farny, 1995, pp. 21-58).

The distribution of the total insurance business of these three components depends on the insurance class, the characteristics of the insurance cover and the insured events as well as the type of customer. Individuals as clients have different needs for quality and quantity of advisory services (Farny, 1995, p. 44). This service character and the long-term nature of the contracts are of considerable importance for the decision of the policyholder because the insurance products and their benefits are often incomprehensible. This results in a need for explanation of the product, from which a limited rational behaviour of the policyholder as a buyer of products is also inferred. In addition, there is the long-term binding effect of many contracts as well as the realisation of claims or insurance benefits possibly only in the future (Theil, 2002, pp. 31-32).

The respective insured risk in the insurance contract is a probability distribution of losses from the perspective of the policyholder and a probability distribution of insurance benefits from the perspective of the insurer (Farny, 1995, p. 22). This probability distribution is understood as the fact that an economic subject or policyholder causes several possible outcomes, each with known as well as unknown probabilities when deciding on his (economic) behaviour. This also includes inactivity (Farny, 1995, p. 17). More detailed explanations will follow in the further course.

#### *Influencing factors for a customised insurance cover*

Private as well as commercial insurance cover has the advantage that it can be adapted appropriately to the respective situation of the household as well as the business or self-employed



activity. This flexibility enables the insurance seeker to take out individual insurance cover tailored to his or her needs and professional situation and preferences. In the context of medical practice, this work focuses on commercial/self-employed property insurance cover. There is no investigation in the context of private personal insurance, such as finance and pension provision.

Various influencing factors such as risk propensity, coverage framework, income and assets have an effect on the customised, individual insurance coverage of an insurance seeker.

### *Risk propensity*

Demand for insurance varies between individuals and is clearly characterised by individual risk propensity and willingness to take risks (Outreville, 2013). Outreville summarises 76 studies in his review of empirical research on insurance demand and risk behaviour. In these studies, the respective risk tolerances, risk behaviour in relation to wealth, status, gender, education, housing, etc. on insurance demand were examined.

The following results in relation to the demand for insurance were found:

- The key causes of changes in willingness to insure are individuals' relative risk aversion and the wealth elasticity of insured risk assets.
- Risk aversion, in turn, is very closely related to the level of education. Individuals with a high level of education are less risk averse. More risk-averse individuals show a lower tendency to pursue higher education. It was also shown that risk aversion decreases with the level of education.
- Parental education is also important. Thus, it was shown that a higher parental education exerts a significantly positive influence on the willingness to take risks.

In this context, it should be noted for the interpretation of the results that education, income and wealth generally correlate strongly. However, causal relationships could not be investigated in the literature.

Another finding in relation to consumption decisions:

- When it comes to risky consumption decisions, risk aversion grows with education.

Studies with an age reference were also evaluated. However, these were more difficult due to the cohort effect and the different economic growth periods. In this context showed:

- A lower risk aversion was found among middle-aged individuals compared to young people.
- Risk aversion decreases with increasing age up to 65 years, which can be represented as a u-shaped relationship.

This individual risk propensity, which establishes a person's need for insurance, can therefore directly affect the demand for insurance. Based on the individual risk preferences, an assessment is made to determine whether and to what extent insurance cover is desired.

#### *Coverage framework*

Liability risks largely determine the scope of cover and the insurance protection chosen. Unintentionally causing damage to a third party and becoming liable for damages has considerable financial consequences. A doctor, for example, is liable to his patients within the framework of his treatment contract. This arises from the treatment and thus the consensual medical activity on the patient. The treatment contract is part of the Patients' Rights Act. This in turn is regulated in the BGB in § 630 (§ 630a BGB – Einzelnorm, n.d.). In the context of such liability risks, the insurance cover of a liability insurance also applies. This is subject to compulsory insurance for doctors for the first time in Germany under the Health Care Expansion Act (GVWG) and must be covered. All other insurances are optional and are not subject to any legal requirement. If doctors work together in a practice, agreements on possible insurances can also be made among them within the framework of a partnership agreement. When a new doctor joins the joint practice, the doctor may also be included in certain insurances in individual cases. When a new practice is established, the doctor himself determines his insurance cover and the associated risks as well as possible damages that affect him and the practice.

The financial assets also determine the insurance cover. Thus, if the assets are high, it is possible to bear small damages oneself, although this again depends on the personal risk propensity.

#### *Income and assets*

Small losses are easier to bear with increased income and asset reserves. A high income and corresponding asset reserves can symbolise prosperity, which, however, also comes with financial risks. This is especially true if it involves a large practice as well as staff and, not least, family. At the same time, asset reserves also make insurance cover affordable. Nevertheless, the willingness to spend financial resources is a matter of each individual.

The demand for insurance is in a field of tension between the various influencing factors: on the one hand, prescribed by the legislator and, on the other hand, adapted to individual needs on the basis of personal risk propensity, income and assets.

In the following, the characteristics of insurance will be discussed in more detail. Different types of insurance are considered, the scope of coverage is explained, and the products examined are described in more detail.

### II.1.4 Insurance Features

The term "insurance" triggers the idea of security in people and a strong need for security arises due to the constant danger in everyday life. "Insurance" is usually associated with terms such as danger, risk, damage, and compensation (Hax, 1964, p. 10).

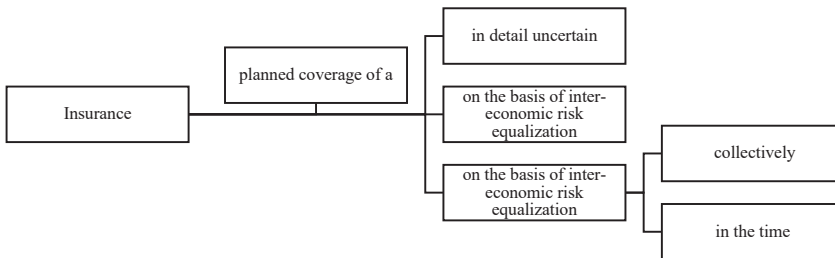
There are many different explanations for the definition insurance, mainly derived from economic practice.

Hax (Hax, 1964, p. 22) describes "insurance is the coverage of an individually uncertain but collectively estimable monetary need on the basis of an inter-economic equalisation of risk". For Zweifel and Eisen (2000, p. 3) "insurance is a means or procedure by which the uncertainty of future experience can be reduced".

The following definition of insurance by Farny (Farny, 1995, p. 13) is generally accepted as standard.

**Figure 1**

*Definition of insurance*



Source: own representation according to Farny (1995, p. 13)

Farny considers for the first time the production technique of risk equalisation in his definition, which is based on the law of large numbers. Discoverer Jakob Bernoulli found that in long series of experiments the relative frequencies are approximately equal to the associated probabilities. Likewise, Bernoulli made statements in a series of experiments about how exactly probabilities and relative frequencies correspond (Bewersdorff, 2011, pp. 25-26). In order to determine the need for possible compensation sums, it must be possible to estimate them. This is done according to the number of insured events, e.g., the claims frequency or in life insurance according to the mortality probability and the amount of the insurance benefit. This is determined within the framework of claims averages. Insurance companies then use statistical surveys and actuarial methods to calculate premiums, based on the law of large numbers (Kuckertz et al., 2013, p. 39).