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Behavioural and Traditional Approaches to Insurance

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Abstract:

Research Question: In which ways can behavioural economics explain systematic deviations from rational decision-making in the insurance market? Which behavioural interventions, i.e., debiasing strategies and nudge measures, can improve the rationality of decisions, individual and social well-being, and market efficiency? **Motivation:** Insurance plays a central role in financial risk management. However, policyholders and insurers often make decisions that deviate from traditional financial theory. These deviations are systematically influenced by cognitive biases, such as availability heuristics, framing effect, status quo bias, overconfidence, etc. This paper examines why rational choice models fail to describe the actual behaviour of participants in insurance markets, and how psychological mechanisms distort the decision-making process. Building on fundamental papers in behavioural economics (Kahneman & Tversky, 1979; Thaler & Sunstein, 2008), as well as empirical studies in the insurance field (e.g., Kunreuther & Pauly, 2004), the paper integrates these insights to enhance theoretical understanding and practical interventions, with the aim of improving the quality of decisions and market outcomes. **Data:** The paper uses a literature review methodology and synthesizes findings of selected relevant papers, experimental and field studies on behavioural biases that affect both policyholders and insurance company managers. The time frame covers several decades - from seminal papers (e.g., Kahneman & Tversky, 1979) to the latest empirical research (e.g., Fan, Liu, & Liu, 2025). **Tools:** To the best of our knowledge, this topic has not been previously investigated in the academic literature in Serbia. The paper is conceived as a review article, with the emphasis on identifying heuristics, cognitive distortions, and the effectiveness of nudge interventions, connecting theoretical knowledge with practical implications for policyholders, insurers and regulators. In this sense, the study represents a good starting point for new research on the impact of psychological phenomena on the Serbian insurance market. **Findings:** Behavioural factors offer a more realistic and empirically better grounded explanations of insurance-related decisions than neoclassical assumptions of rationality. The behaviour of policyholders and insurers is systematically influenced by cognitive distortions, which results in underinsurance, mispricing of premiums, suboptimal design of insurance products and ineffective risk management. Interventions based on nudge approach - such as defaults or messages based on social norms - can effectively improve the quality of decisions and increase participation in insurance schemes. However, the nudge approach has limitations, especially regarding ethical issues and transferability across different cultures and contexts. Optimal public policy design requires a balance between libertarian paternalism and regulatory oversight, while ensuring both protection and freedom of choice. **Contribution:** The paper contributes to the literature as follows: integrates the insights from behavioural economics and insurance theory into a cohesive analytical framework; highlights the dual behavioural distortions that affect both policyholders and insurers; proposes a set of evidence-based interventions aiming to improve both individual and market level outcomes; offers a critical evaluation of the ethical and institutional limitations of behavioural interventions in the insurance sector; and informs policymakers and industry practitioners about how behavioural principles can improve the design of insurance products, transparency and efficiency of insurance markets.

Keywords: behavioural finance, insurance, heuristics, biases, nudge

JEL classification: G22, G41, D60

1. Introduction

The insurance represents a key mechanism for risk management and for the preservation of the financial security of individuals, firms and other organizations. The insurance market can be analysed from the perspective of neoclassical (traditional) finance and behavioural finance. In the neoclassical framework,

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rational market participants, having complete information, make optimal decisions that maximize the expected utility, while markets are considered to be efficient. For example, a rational individual with complete knowledge of the probability of a traffic accident, and the possible amount of loss would precisely calculate the premium he is willing to pay to avoid risk, and decide whether buying insurance is worthwhile. Similarly, rational managers of insurance companies design products that perfectly match policyholder demand.

Although the neoclassical model provides a theoretically consistent framework, it ignores psychological elements such as fear, optimism, emotion, mood, and cognitive biases. The analyses of actual decisions in insurance indicate significant deviations from the predictions of neoclassical finance. The policyholders are not fully rational, do not have complete information, have limited cognitive capacities, and rely on heuristics when making decisions, which is why they are subject to various cognitive biases and emotional influences. These factors lead to decisions that deviate from optimal choices and outcomes – individuals often do not purchase insurance even when it would be beneficial; overpay for low-risk events; underestimate rare but catastrophic risks; and react more strongly to the framing and presentation of insurance products than to their actual content (see, e.g., Johnson, Hershey, Meszaros, & Kunreuther, 1993; Kunreuther, Pauly, & McMorro, 2013; Slovic, Fischhoff, & Lichtenstein, 1977; Taleb, 2007). Therefore, it can be useful to observe insurance decisions from the perspective of behavioural economics and finance.

In a behavioural context, the analysis of the actual behaviours of participants in the insurance market is of great importance both for policyholders and insurers - for policyholders, in order to support making more informed and better decisions about the purchase of insurance products; and for insurers, in order to improve product design. Nudging and debiasing mechanisms can be applied to increase the well-being of policyholders (Thaler & Sunstein, 2008). Nudging exploits existing biases by changing the so-called choice architecture, i.e., the external environment of decision-making. Debiasing aims to change the decision-making process itself by correcting the internal cognitive distortions of individuals.

The aim of this paper is to demonstrate how individuals really make decisions in the insurance market and how these decisions can be improved in terms of quality and rationality. The contribution of the paper is reflected in emphasizing the importance of understanding the impact of psychological factors on the behaviour of the policyholders, which enables insurance companies to design products and strategies that account for the actual insurer's behaviour. The goal is to enhance the well-being of both the insured and the insurer.

The paper represents a comprehensive review of the relevant literature in the insurance field with the aim of integrating key theoretical behavioural concepts - such as heuristics, biases, prospect theory, and the nudge approach - with empirical findings that explain the behaviour of managers of the insurance companies in designing products and communication with policyholders. The analysed papers cover a long time period - from seminal papers (e.g., Kahneman & Tversky, 1979; 1984; Tversky & Kahneman, 1974) to the recent research (e.g., Dellaert, Johnson, Duncan, & Baker, 2024; Fan et al., 2025; Sagbas, Saruc, & Balki, 2025).

Accordingly, the paper is structured to follow a logical flow from the theoretical considerations to the practical application of nudge interventions. The paper is organized as follows: Section 1 considers the psychological and behavioural foundations of risk perception and decision-making in insurance; Section 2 is focused on heuristics and biases relevant to different types of insurance; Section 3 analyses the behavioural interventions, and nudge measures in the insurance products design, distribution and communication; Finally, Section 4 considers the implications for regulation, ethical dilemmas, and the limits of acceptable influence on the policyholders' behaviour.

2. Psychological and Behavioural Foundations of Risk Perception and Decision-making in Insurance

The insurance market mitigates the financial consequences of adverse events. It contributes to individual's wealth, and economic stability and development by transferring and diversifying of risks. Insurance market's structure and dynamics can be analysed from the viewpoint of two theoretical paradigms: traditional (neoclassical) finance, and behavioural finance.

In the traditional framework, market participants are considered as rational actors that, operating in efficient markets and with access to complete information, make decisions that maximize individual utility. The foundations of this paradigm are based on the rational expectations hypothesis, the efficient market hypothesis (Fama, 1970; 1991; 1998; Fama & French, 1992), the normative theory of decision-making, and

the expected utility theory (von Neumann & Morgenstern, 1944). It is assumed that rational agents are perfectly informed, unlimited in information processing capacity, and able to clearly define goals through evaluating all available alternatives. The normative decision theory considers the rationality and logic of decision-making, while the expected utility theory combines the probabilities and utilities of individual outcomes to identify the optimal alternative.

Due to numerous observed inconsistencies in the traditional framework, which were also documented in empirical studies, during the 1980s there was a gradual - and then increasingly intensive - development of behavioural finance (see, e.g., DeLong, Shleifer, Summers, & Waldmann, 1990; Fama, 1970; 1991; 1998; Fama & French, 1992; Jensen, 1978; Lee, Shleifer, & Thaler, 1991; Mehra & Prescott, 1985).

Behavioural finance integrates psychological insights into the analysis of economic decision-making, accepting the principles of bounded rationality, descriptive decision theory, and prospect theory (Kahneman & Tversky, 1979). Market participants are not necessarily fully rational; on the contrary, they are prone to cognitive limitations, systematic biases, emotions, and social influences. Decisions are made in markets that are not always perfectly efficient, and the goal is not the maximization of expected utility but subjective (perceived or experienced) value of the outcome.

Insurance, as a risk transfer mechanism, allows individuals and institutions to mitigate the variability of wealth by paying a premium to protect themselves against potential future losses. In the neoclassical approach, it is assumed that policyholders, who avoid risk, rationally and accurately assess the probability of a harmful event, the amount of loss, and its timing. They are consistent over time, and discount future benefits (payments from the insurer) at a constant rate, where the discount factor is an exponential function of time. Premiums reflect the objective risks, and no policyholder or insurer can earn long-term above-average returns solely by relying on publicly available information (Fama, 1970; 1991; 1998).

Empirical research in the field of insurance, however, indicates systematic deviations from rationality. Potential insureds often misjudge the probabilities of damage and the amount of potential losses, rely on a limited set of experiences, overemphasize the immediate cost of the premium, underestimate future benefits, and overestimate their own ability to control events (illusion of control). Furthermore, reliance on state aid and ex-post solidarity additionally contributes to the weak demand for protection against rare but catastrophic risks. They buy insurance against catastrophic risks only after the event becomes salient, through personal experience or media coverage, even though the objective risk has not changed.

The key theoretical foundation of behavioural economics is Prospect Theory (Kahneman & Tversky, 1979). Unlike the expected utility theory, the prospect theory considers that individuals value outcomes in relation to a reference point (which is most often the status quo), transform objective probabilities into subjective decision weights, and experience losses more intensely than equivalent gains (loss aversion). The value function is concave in the domain of gains and convex in the domain of losses, with a steeper slope for losses (Kahneman & Tversky, 1992).

The probability weighting function leads to the overestimation of small probabilities, and the underestimation of large probabilities (Kahneman & Tversky, 1979; 1984). Policyholders are willing to accept a small safe loss (premium) to avoid a rare but potentially large loss, when they act rationally. At the same time, they are prone to games of low probability and high gains (lotto, gambling). These two behaviours are mutually inconsistent.

The prospect theory is closely related to narrow framing and mental accounting (Kahneman & Tversky, 1984; Thaler, 1985; Kahneman, 2011). Instead of assessing the overall exposure to risk, individuals often consider each risk in isolation, within a separate "mental account". For example, the policyholders may separately evaluate car, travel, and property insurance, without considering synergies in coverage, which may lead to suboptimal choices. On the other hand, since the potential loss of baggage is mentally perceived as a particularly aversive and isolated event, individuals are often willing to purchase supplementary insurance for baggage in air travel, even though it covers a relatively small risk with a high implicit premium. These examples illustrate how loss aversion and mental accounting contribute to overinsurance of trivial risks, while simultaneously underestimating more significant ones.

The additional dimension comes from the intertemporal biases. Findings on hyperbolic and quasi-hyperbolic discounting (Laibson, 1997; Loewenstein & Prelec, 1992) point out present bias, when individuals overestimate immediate, certain costs, such as insurance premiums, and underestimate future, uncertain benefits, such as payment by the insurer. This results in myopic behaviour, i.e., a disproportionate focus of

the insured on short-term outcomes, with the absence of self-control in terms of managing impulses and desires for immediate gratification. Such time distortions often result in postponing or avoiding the purchase of very useful long-term products, such as life, pension, and health insurance.

The elaborated behavioural elements within this section - reference points, probability weighting, loss aversion, mental accounting, narrow framing, and present bias - represent the theoretical foundation for the analysis of heuristics and biases in specific types of insurance, as well as for the design of behavioural interventions and nudge strategies in the next sections. To summarize this section, the effective comparative presentation of key differences between the neoclassical and behavioural perspectives is given in Table 1.

Table 1: Comparison of neoclassical and behavioural perspectives in insurance markets

Element	Neoclassical approach	Behavioural approach
Rationality	Full rationality; stable preferences; consistent maximization of expected utility.	Bounded rationality; decisions are shaped by heuristics, biases, emotions and social influences.
Information	Complete, accurate, freely available, and processed correctly.	Incomplete, selectively perceived, and often misinterpreted.
Decision-making	Normative models; expected utility theory; time-consistent preferences.	Descriptive models; prospect theory; decisions depend on context, framing, and reference points.
Risk perception	Assessed objectively, based on statistical probabilities.	Probabilities are subjectively transformed; small probabilities are often overestimated, and large ones are underestimated.
Attitudes toward gains and losses	Symmetrical attitude; utility depends on the level of total wealth.	Loss aversion; losses "loom larger" than equivalent gains; the value is estimated in relation to the reference point.
Mental accounting	The overall risk exposure is relevant.	Mental accounting changes the perception of costs and benefits, which results in systematic deviations from rationality.
Intertemporal decisions	Stable, time-consistent preferences; exponential discounting.	Hyperbolic/quasi-hyperbolic discounting; present bias; myopia towards the future insurance benefits.
Insurance markets and premiums	Markets are efficient; premiums reflect objective risks.	Markets can be inefficient; premiums, coverage and co-payments reflect perceptions, biases and social norms.
Insurance decisions	Insurance is purchased when the expected utility of protection exceeds the expected loss.	Postponement of decisions; tendency to suboptimal coverage; influence of inertia and defaults.

Source: Authors, based on relevant literature

3. Heuristics and Biases Relevant to Different Types of Insurance

The previous section outlined the key psychological mechanisms and elements of prospect theory that shape risk perception and outcome evaluation. This section links these mechanisms to different types of insurance to show how heuristics and cognitive biases generate specific patterns of policyholders' behaviour (Fan et al., 2025; Thaler & Benartzi, 2004; Yin, Chen, Kunreuther, & Michel-Kerjan, 2016). Such an approach is consistent with contemporary literature reviews of behavioural aspects of insurance, which emphasize that similar patterns of biases are manifested differently depending on product design and decision contexts (Kunreuther et al., 2013; Pitthan & De Witte, 2021).

3.1 Life and pension insurance

Present bias, myopia, and underestimation of long-term risks are particularly pronounced in the domain of life and pension insurance, leading to postponing the purchase of insurance, and insufficient savings accumulation. Present bias and lack of self-control cause individuals to perceive the premium as a certain and immediate “loss”, while future benefits (e.g., insurance payout, annuities or family protection) are psychologically discounted as distant in time. The resulting time inconsistency in decision-making is well documented in the literature (Kremer, Rao, & Schilbach, 2019; Laibson, 1997; Loewenstein & Prelec, 1992).

Empirical evidence shows that mechanisms based on automatic inclusion in savings and insurance programs (defaults) with gradual increases in contributions to the programme, such as the Save More Tomorrow - SMarT, significantly raise participation rates and contribution levels (Thaler & Benartzi, 2004). The essence of this programme is that employees commit themselves in advance to automatically invest part of their future salary increases in savings and future pensions, instead of setting aside a portion of their current salaries. In such a way, psychological resistance to the reduction of the current salary is avoided. Loss aversion and power of inertia is utilized for long-term increase of individuals' well-being.

The influence of loss aversion and reference point dependence is also present in the preference for policies that contain a savings component. Hwang (2024) finds that strong loss aversion reduces the likelihood of purchasing “pure” risk insurance—where the premium is “lost” if an adverse event does not occur—and increases the preference for policies that guarantee some payout, even when the expected payout is objectively low.

3.2 Health and supplementary health insurance

In health and supplementary health insurance, the focus on the immediate cost of premiums and co-payments often overshadows the overall value of protection. Mental accounting leads to policyholders' perception of premium as a separate “current” expense, while the risk of illness is placed on another mental account. This results in an underestimation of both the risk of illness and the amount of future medical expenses. The outcome is the rejection of relatively favourable policies, especially among younger and healthier individuals.

Experimental and field studies highlight that the framing of insurance terms—for example, whether emphasis is placed on potential loss of benefits, no-claim bonuses, or additional costs—significantly influences the choice of a plan (Johnson et al., 1993). When the consequences of insufficient coverage are presented as a potentially large “out-of-pocket” loss, the willingness to purchase higher coverage increases, which is consistent with loss aversion.

Recent research (e.g., Fan et al., 2025) shows that product labelling - i.e., its presentation or framing (e.g., “investment in health” versus “additional cost”) - and price presentation (e.g., separating the premium and an administrative fee versus bundling them, or presenting the price on a daily basis, such as “only 30 dinars a day”) affect the likelihood of health insurance purchasing. These findings underscore the importance of mental accounting, framing, and price salience.

3.3 Property and catastrophe insurance

In property insurance and catastrophic risk insurance, the heuristics of availability (Tversky & Kahneman, 1973) and representativeness (Tversky & Kahneman, 1974) result in risk underestimation until a disaster occurs in their immediate environment, after which they often exhibit temporary overinsurance. Classic studies of Kunreuther et al. (2013) show that the purchase of insurance increases immediately after an adverse event (such as a flood, earthquake, or storm), but the interest declines as the memory fades, even though the objective level of risk has not changed (Kunreuther et al., 2013; Kunreuther & Pauly, 2004).

Yin et al. (2016) document a combination of the availability heuristic and the gambler's fallacy: after a disaster, policyholders overestimate the likelihood of recurrence, while later some of them mistakenly conclude that a “quiet period is coming”, which leads them to abandon coverage.

Loss aversion also affects the choice of the deductible amount: many policyholders prefer a lower deductible and a higher premium, although it is not economically optimal. This happens because paying a high out-of-

pocket amount is perceived as a particularly aversive loss compared to the gradual payment of higher premiums (Johnson et al., 1993; Kunreuther et al., 2013). The rise in deductible leads to the increase in risk aversion (Graminha & Afonso, 2022).

3.4 Auto insurance and compulsory insurance

Social norms, the illusion of control, and overconfidence in one's own driving abilities play a significant role in auto insurance and mandatory insurance schemes. Overconfidence and optimistic bias lead to the fact that many drivers consider themselves "above average" in terms of driving competence, thus underestimating the probability of being involved in an accident. This, in turn, reduces the willingness to buy comprehensive or broader coverage insurance (Graminha & Afonso, 2022).

The status quo bias further contributes to policyholders' reluctance to revise initially selected limits and coverage options, even after changes in vehicle value (e.g., purchasing a new vehicle when the old one was insured) or vehicle usage patterns.

Empirical evidence of Cummins and Tennyson (1996) shows that higher levels of coverage in auto insurance can be associated with more frequent and larger claims. Recent research (Sagbas et al., 2025) emphasizes that the perception of fairness, trust in the insurer, and social norms moderate the tendency towards opportunistic behaviour. This further complicates the interdependence between coverage design, expected policyholder behaviour, and regulatory requirements.

Taken together, the above points suggest that the same cognitive biases—availability and representativeness heuristics, status quo bias, loss aversion, mental accounting, overoptimism, and illusion of control - manifest themselves in different ways in life, health, property, and auto insurance. These insights have direct implications for product design, premium structure, presentation of key information, and formulation of regulatory frameworks, which is further analysed in the following section on behavioural interventions and public policy.

4. Nudge Interventions in the Design, Distribution and Communication of Insurance Products

There are two basic approaches to improving the quality of individual decision-making. The first one, rooted in neoclassical economics, relies on incentives, prohibitions, and sanctions. The second one, derived from behavioural economics, involves the application of subtler interventions that do not restrict the freedom of choice. This section focuses on behavioural interventions that use the insights about heuristics and biases described in previous sections to improve policyholders' decisions—without restricting choice.

Interventions aimed at improving the decisions of individuals in a way that is consistent with their well-being criteria, while preserving freedom of choice and autonomy is normatively grounded in the concept of libertarian paternalism. The concept is "paternalistic" because it implies care and a protective role. It is also "libertarian" because it seeks to achieve the goal of improving the individuals' well-being without coercion, and with preserving the freedom of their choices.

The concept of nudge was developed within the framework of libertarian paternalism to capture how subtle features of choice architecture can steer individuals' behaviour in predictable ways, while leaving individuals' freedom of choice and autonomy intact. In the spirit of Thaler and Sunstein (2008), a nudge is any element of choice architecture that predictably alters behaviour without forbidding options or significantly changing incentives. All options remain formally available, but the context is structured to facilitate the choice of the option that is, according to the relevant criteria, better for decision makers. More precisely, nudge interventions are characterized by the following features: 1) they aim to enable individuals to make better decisions independently, without imposing final solutions; 2) they impose very small or no costs on those to whom they apply; 3) they have negligible influence on the choices of rational and well-informed actors; 4) they can significantly improve outcomes for less informed or more error-prone individuals – in a way that is still consistent with their preferences; 5) they encourage a change in behaviour without imposing prohibitions, restrictions or penalties.

In the insurance context, nudge interventions are particularly relevant because decisions are made infrequently, are complex, involve delayed benefits, and are psychologically abstract. These are the reasons why policyholders are often passive, postpone decisions, or rely on inadequate mental models. Nudge measures precisely target the vulnerabilities of individuals, such as status quo bias, present bias, availability

heuristic, mistrust, and information overload. The most commonly applied behavioural interventions in insurance are as follows: defaults, outcome framing, enhanced information disclosure and simplification of choices, and appeals to social norms (Dellaert et al., 2024; Duflo & Saez, 2003; Johnson et al., 1993; Madrian & Shea, 2001; Thaler & Benartzi, 2004).

4.1 Defaults

Default options are pre-defined choices that are automatically applied if the individual does not make a different active decision – i.e., in the absence of opt-out behaviour. Instead of requiring active consent (opt-in), the default option is automatically considered as the chosen alternative. Due to status quo bias and inertia, individuals rarely change the default, even if it would be quick, easy, and cost-free. Consequently, the adoption rate of defaults is usually significantly high.

The well-known example of defaults can be found in the study by Madrian and Shea (2001). The share of employees participating in voluntary pension insurance plans increased from 49% to 86% after the introduction of automatic inclusion in the plan with the possibility of withdrawal. Loss aversion explains this pattern – abandoning a plan is psychologically perceived as a loss. Typically, the default option is a pre-defined pension or life insurance programme in which employees are automatically included at the commencement of employment. For the insurance market in general, carefully designed defaults, such as the automatic inclusion of reasonably broad coverage with a simple opt-out, can effectively exploit status quo bias to increase policyholder protection.

When the default option is carefully defined so that it aligns with individuals' preferences and their long-term interests, it is possible to improve outcomes without compromising the freedom of choice. This approach is illustrated by the previously mentioned Save More Tomorrow (SMarT) program, which enables employees to commit themselves in advance to automatically invest part of future salary increases into pension savings (Thaler & Benartzi, 2004). The study reports a strong response: 78% of employees joined the programme, 80% remained in the programme through four salary increases, while the average savings rate increased from 3.5% to 13.6% in approximately forty months. The success of the SMarT programme is also attributed to mental accounting, because it enables savings without the feeling of loss. The key idea is to avoid the perception of immediate loss, which creates a psychological resistance to savings. Due to loss aversion, taking funds from current income to finance savings is perceived as a significantly higher psychological cost than forgoing part of future salary increases.

4.2 Simplification of Choices and Information

Decision-making of policyholders can be substantially facilitated by improving their understanding of insurance products through simplification of language and design, reduction in the number of available options, and presentation of options using clear visual formats and illustrative examples. For example, instead of presenting a dozen options, it is advisable to reduce the number of alternative insurance plans to a maximum of three or four, with a clear emphasis on the “recommended option” that reflects a rational and adequate level of protection.

The study by Dellaert et al. (2024) examines how specific elements of choice architecture influence the quality of insurance decisions in the context of choosing health insurance plans. The study focuses on two factors: plan display order (e.g., display of best options at the top) and categorization of plans (e.g., separation by type). When the best options were placed at the top of the list, the categorization facilitated making better choices. However, when the best options were placed later on the list, the categorization made the optimal choice more difficult. These findings emphasize that choice architecture must be carefully designed and empirically tested, as the same tool can improve or worsen outcomes depending on the implementation.

4.3 Social Norms and Social Proof

Social norms, through the promotion of certain behavioural patterns as socially acceptable and useful, such as participation in voluntary pension insurance or insurance against natural disasters, lead to the increase in insurance coverage. The typical messages are as follows: “Eighty percent of employees in your company already pay into voluntary pension funds - are you one of them?” or “Three quarters of the residents in your city are already insured against flood risk - are you too?” These messages exploit individuals' tendency to conform to group behaviour and their regret aversion.

Such interventions specifically target the heuristics of representativeness and social proof: if “people like me” buy a certain insurance, I begin to perceive that choice as valid and reliable. The mechanism is particularly relevant for complex insurance products that are difficult for individuals to evaluate.

4.4 Choice Architecture in Insurance Practice

Small adjustments in choice architecture – such as framing the message, sequencing information, or removing frictions – can activate existing behavioural tendencies (e.g., inertia, preference for simplicity) in a way that benefits both policyholders and insurers. For example, a German insurer applied a nudging strategy during the stage of reporting car damage. Clients are typically offered the option of having their vehicle repaired in a network of recommended services, but the take-up rate was low. Through carefully scripted agent conversations and reframing how the benefits were presented, the take-up rate increased from around 25% to over 30%, while third-party liability insurance increased from 10% to 30%. In addition, the nudge intervention led to a reduction in claims processing costs and a better user experience (iptiQ, 2021).

The company iptiQ (Swiss Re) established an internal Behavioural Science Unit intending to apply behavioural interventions along the entire customer journey - from the initial offer to client retention. By redesigning messages, improving visual illustration of benefits, and optimizing the timing of communication, measurable results were achieved: 25% rise in the number of clients that requested life insurance; the conversion rate from free to paid products, when upgrade options were positioned earlier in the interaction, increased by 65%; and the number of policyholders who opted for automatic premium payment via direct debit increased by 300%, when the simplicity of the process was highlighted (iptiQ, 2021; Swiss Reinsurance Company Ltd [Swiss Re], 2021).

The presented practical examples and research findings confirm that carefully designed and empirically validated nudging can substantially improve market outcomes without restricting individual choice. The understanding of behavioural factors enables managers of insurance companies to: 1) design products tailored to the genuine needs and behavioural patterns of policyholders; 2) develop communication strategies that effectively convey the value of insurance; 3) implement digital tools that reduce complexity and operational barriers; and 4) use nudge techniques to encourage beneficial behaviours (e.g., timely purchase of insurance, adequate levels of coverage, continuous payment of premiums), while avoiding manipulative practices. The feedback mechanisms and visualization of risks can be part of nudge strategy if they are based on accurate and transparent information, but not on excessive appeals to fear. The line between legitimate inducement and manipulation will be discussed in more detail in the following section that deals with regulatory and ethical implications.

5. Implications for Regulation, Ethical Dilemmas and Limits of Acceptable Influence on the Behaviour of the Policyholders

The insurance market is usually highly regulated, which means that regulators play a key role. In the traditional perspective, the regulator trying to preserve the stability of the market prescribes obligations whose compliance is encouraged, while non-compliance results in penalties. However, from the point of view of behavioural economics, the regulator is not only the guardian of market stability, but also the architect of choice that shapes the institutional framework in which insurance decisions are made. This includes defining rules on transparency, standardization of offers, risks and benefits disclosure, and defaults - all of which considerably affect the policyholders' behaviour.

In certain circumstances, behavioural interventions alone may be insufficient. When individuals systematically underestimate risks, do not respond to nudging mechanisms, and refuse to buy insurance, government support becomes necessary, often by subsidizing premiums. The goal is to make insurance more affordable and attractive. Reliance on government aid and post-disaster humanitarian assistance often leads to lack of insurance or underinsurance (Browne & Hoyt, 2000). In a behavioural perspective, these phenomena reveal the limits of the insurance market – individuals often forgo coverage for rare but highly damaging catastrophic risks, despite rational arguments that favour such a protection. The solution can be subsidizing of premiums, which will encourage the purchase of insurance, even among individuals strongly influenced by narrow framing and mental accounting, creating benefits not only for policyholders and insurers, but for society as a whole (Kunreuther & Pauly, 2004; Kunreuther & Michel-Kerjan, 2015).

Insurance is made mandatory by law for certain risk categories, precisely because market mechanisms fail due to behavioural biases in decision-making. This approach is most often applied when there are significant negative externalities, high risks for third parties, or in situations in which the absence of insurance can result

in severe social and economic consequences (Kunreuther & Roth, 1998; Kunreuther, Pauly, & McMorrow, 1998). Examples include compulsory property insurance in high-risk areas, auto liability insurance, work injury insurance, and professional liability insurance. In this sense, the insurance required by law functions as a corrective mechanism for market failures resulting from behavioural biases.

Although the “nudge agenda” and related interventions have shown significant success, there are numerous questions and challenges - theoretical, methodological, and ethical. One aspect of criticism refers to the risk of producing only a “list of anomalies” without sufficiently clear criteria for when and how interventions should be applied, which is especially important in a strongly regulated sectors such as insurance. Therefore, it is necessary to integrate traditional economic models with insights from psychology to develop a more coherent and comprehensive framework for understanding economic behaviour (Thaler & Sunstein, 2008; Camerer & Loewenstein, 2004).

Criticisms of behavioural economics also refer to methodological limitations. This field often relies on laboratory experiments that may have limited external validity and be susceptible to biases because of small and unrepresentative samples (Harrison & List, 2004; Ioannidis, 2005; Levitt & List, 2007). Participants’ awareness that they are being observed can change their behaviour - a phenomenon known as the Hawthorne effect - which further undermines the reliability of the results. Nevertheless, numerous field experiments and empirical studies confirmed the applicability of laboratory findings in real circumstances (Kahneman, 2011; Thaler & Sunstein, 2008). In addition, econometric analyzes provided additional support for these findings, thereby strengthening the overall validity of laboratory-based conclusions (Levitt & List, 2007).

The effectiveness of behavioural interventions can also be constrained by limited transferability across different cultural and socioeconomic contexts (Henrich, Heine, & Norenzayan, 2010; Hsee & Weber, 1999). Interventions that are successful in individualistic or economically developed environments do not necessarily produce the same results in collectivist or less developed societies, where priorities and reactions to incentives may differ significantly. However, when behavioural interventions are carefully tailored to the local context, they can complement or even replace traditional economic policies, especially when conventional approaches showed limited effectiveness (Banerjee & Duflo, 2011). In the insurance sector, nudge interventions must be tested in specific institutional and cultural environments before widespread implementation, instead of uncritically transferring of “success stories” from other countries. Regulators and insurers cannot simply adopt standardized nudge designs. They have to adapt them to financial and insurance literacy, trust in institutions, and historical experience with insurance.

Another open question concerns the ethical justification of nudging. Behavioural interventions - especially nudge techniques - have been criticized for violating individual autonomy and for using psychological mechanisms without full transparency (Bovens, 2009; Hausman & Welch, 2010; Sunstein, 2015a; 2015b). Critics claim that nudging can represent a form of covert manipulation, potentially undermining trust in institutions (Sunstein, 2015a; 2015b; Schmidt, 2017). Additionally, questions of the benevolence and competence of the choice architects have been raised, because they may consciously or unconsciously pursue their own interests, or also be subject to cognitive biases (Thaler & Sunstein, 2008; Rizzo & Whitman, 2009; 2020). Poorly designed or poorly implemented nudges can thus result in unfavorable outcomes, especially when policymakers cannot reliably identify what is in the best interests of others (Mises, 1998). Finally, the fear that the “nudge agenda” may represent the beginning of a slippery slope towards increasingly coercive forms of state interventionism, disguised as a benign form of “soft paternalism”, was expressed (Angner, 2016).

Proponents of behavioural policy, however, point out that nudge interventions, when properly designed, do not violate autonomy but help individuals make decisions aligned with long-term interests, especially in contexts where bounded rationality makes optimal choices difficult (Hausman & Welch, 2010; Wilkinson & Klaes, 2018). The food in the school canteen must be somehow arranged — there is no “neutral” arrangement. If you place sweets at the entrance and at eye level, more will be bought; if you put fruit, water, and healthier meals in the same place, and move sweets a little further or lower/higher, people still have a full choice, but the environment will slightly “push” them towards a healthier decision. As no decision-making context is completely neutral, choice architecture is inevitable and can be ethically justified if it contributes to the common good without limiting freedom of choice (Thaler & Sunstein, 2008).

Potential abuses of nudging should not be attributed to the concept itself, but to the responsibility and competence of policymakers, whose intentions and abilities must be publicly scrutinized. Concerns about the “slippery slope” toward coercive interventionism are important and deserve attention, but they should not a priori disqualify the nudge approach. Its legitimacy ultimately depends on empirical results, transparency in implementation, and respect for fundamental ethical principles.

In the context of insurance regulations, this implies several practical criteria: (1) transparency - individuals must be clearly informed which options are default, which are recommended, and for what reasons; (2) alignment with the long-term interests of the policyholders – nudges must not be designed to exploit cognitive biases to sell products that are unfavorable to clients; (3) limiting “dark patterns” - regulatory measures should prevent choice architectures that make it difficult to terminate contracts, conceal key information or aggressively push individuals towards more expensive coverage; (4) special protection of vulnerable groups - older, less educated and digitally inexperienced individuals are especially susceptible to manipulative forms of nudging; (5) balance between profitability and trust – excessive focus on additional coverage may increase short-term sales, but in the long-term it may erode public trust and undermine the legitimacy of the insurance sector.

Conclusion

Insurance is an environment in which making decisions is cognitively demanding. They are made rarely, with limited attention and with pronounced time asymmetry: the premium is an immediate and certain cost (loss), while the benefits of coverage are delayed, probabilistic, and psychologically abstract. Under such conditions, departures from neoclassical rational choice are not random, but systematic. It justifies the use of a complementary behavioural framework, elaborated in the paper. The behavioural framework helps explain the mechanisms behind these departures and highlights institutional design levers that can improve outcomes while preserving market principles.

The reviewed literature indicates that the key psychological mechanisms – status quo bias, loss aversion, availability heuristic, and present bias – are directly related to underinsurance, postponement of insurance purchase, and choice of inadequate coverage levels. The way insurance options are structured and the presentation of contractual attributes can almost be as strong determinants of policyholders’ choice as the fundamental characteristics of the product. Therefore, the choice architecture becomes a regulatory relevant dimension of the insurance market.

Interventions in the spirit of libertarian paternalism can be understood as cheap instruments for reducing cognitive frictions – through defaults, framing and standardized presentation, etc. – while preserving formal freedom of choice. The key advantage of these interventions, compared to restrictive enforcement measures, bans and penalties, is that they retain formal freedom of choice and usually impose negligible direct costs, while at the same time they can have a disproportionately greater impact on segments of the population that are less informed, less financially literate or more liable to cognitive distortions. Their legitimacy, however, depends on verifiable conditions: transparency, proportionality, compliance with the long-term interest of the policyholder and clear sanctioning of manipulative forms (dark patterns) that hide information or make it difficult to terminate the contract.

The limitations of the research concern the fragmentation and the lack of a single behavioural finance theoretical framework, which makes it difficult to compare the findings and synthesize the results. The methodological approach, surveys, and the possibility of generalizing the experimental research results are also questionable. In addition, it is challenging to generalize research results from one cultural environment and context to other cultures and contexts. It is crucial to fulfill the requirement on the ethics of nudging. Many studies focus on specific types of insurance, and not on the insurance sector as a whole. Some studies focus on the effectiveness of behavioural interventions in the short-term, while ignoring the long-term effects on the behaviour of insured persons and insurers.

Nevertheless, the integration of behavioural and traditional approaches to insurance is crucial for the development of the field and the increase in the policyholders’ well-being. Experiments are a very valuable methodology for belief elicitation of participants, and especially if the goal is to observe and analyze causal relationships. Findings obtained in one culture and context can be adapted to the specificities of others, which makes them applicable to other cultures and contexts. Special attention should be devoted to the risks of unethical nudging. Financiers of experimental research should insist on the analysis of the long-term effects of nudging on the behaviour of the policyholders and insurers, as only in that case are behavioural interventions meaningful.

In summary, there is no doubt that behavioural insights represent a rational supplement to traditional instruments of regulation and market mechanisms, particularly in the segments with pronounced externalities (third-party protection, catastrophic risks), where improving coverage adequacy and timeliness of decisions is difficult to achieve. When carefully designed and under regulatory oversight, behavioural interventions can contribute to greater financial security and individual well-being in the long-term. They are beneficial in preserving individual autonomy and freedom of choice and strengthening the resilience and sustainability of the insurance sector, as well as trust in market institutions.

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