

# 1 Introduction

“Making decisions is like speaking prose – people do it all the time, knowingly or unknowingly. It is hardly surprising, then, that the topic of decision making is shared by many disciplines, from mathematics and statistics, through economics and political science, to sociology and psychology.” (Kahneman & Tversky, 1984, p. 341).

Most of our daily decisions are made under uncertainty and risk – without complete information about all relevant aspects. We all make such decisions constantly, from the simplest “should I take my raincoat today?” to more serious examples, such as those on investment and portfolio decisions, holding of shares, insurance patterns, negotiation processes, or the next move of your counterpart in a conflict. Within these situations, the bounded rationality (Simon, 1976) of individuals and institutions towards risk and uncertainty is embedded. In light of the ongoing not yet survived economic crisis, catastrophes may result from the bounded rationality of decision makers.

The ideal of Mr. Spock of Star Trek as an individual who is completely rational is unrealistic for human beings. Our way of thinking is influenced by several biases resulting in irrational decisions and planning of our daily lives. For example, we suffer a strong tendency to weigh negative information more heavily than positive information in a wide range of contexts (Kahneman & Tversky, 1979; Kunda, 1999; Baron, 2004).

One of the core tasks of economics scholars is to create proper models that predict the real and most often bounded rationality of human behavior given certain incentives, preferences, and constraints. These models are evaluated by their success at explaining economic phenomena in an irrational world and at describing efficient solutions.

Behavioral economics explores the implications of the violations of rationality, with the goal of making economic theories more plausible by explaining and predicting behavior (Ho et al., 2006). It is a research discipline that integrates psychological insights into formal economic models. Fruitfully applied are the behavioral models in disciplines such as finance (Barberis & Thaler, 2003), marketing (Ho et al., 2006), and organizational behavior (Camerer & Malmendier,

2005). In the past 30 years, behavioral economics has changed from a niche topic to one that is well represented in all major international research journals.

The central theory underlying this doctoral thesis is prospect theory (Kahneman & Tversky, 1979), which is the “rational theory of irrational behavior” (Wakker, 2010, p. 2). Among behavioral economists, it was the first descriptive theory<sup>1</sup> that considered irrational behavior explicitly (Kahneman, 2003), and more than 30 years after its inception, “prospect theory is still the only theory that can deliver the full spectrum of what is required for decision under uncertainty, with a natural integration of risk and ambiguity” (Wakker, 2010, p. 2). Prospect theory has attracted much attention both from practitioners and from academics (e.g., Benartzi & Thaler, 1995; Barberis et al., 1998; Hirshleifer & Subrahmanyam, 1998). According to a study by Kim et al. (2006), Kahneman and Tversky (1979) has been the second most frequently cited paper in economics since 1970. Closely associated with this is the growing importance of behavioral aspects in decision theories, rewarded by the 2002 Nobel Prize in Economics to Daniel Kahneman.<sup>2</sup>

Prospect theory builds on the concept of subjective values – gains and losses defined in terms of a reference point (Baron, 2004). The key feature is this reference dependency – how an individual’s perception of gains or losses (or success or failure) depends on a starting or reference point (e.g., the status quo). Individuals tend to include reference points in making their decisions in order to simplify the process of the utility maximization of choices. Several theoretical and empirical studies have evidenced that an individual’s decision making is indeed reference point-dependent (Bleichrodt, 2007).

Reference points can generally be defined as any stimulus that “other stimuli are seen in relation to” (Rosch, 1975). Individuals constantly adapt a level of psychological dimension and find it to be neutral. “In a similar way, we adapt to the reduced light in a movie theater when we enter it – finding it not particularly dark after a few seconds – and then readapt to the much brighter light outside when we leave the theater – finding it not to be unusually bright after a few seconds” (Dawes, 2001, p. 195).

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<sup>1</sup> Economists traditionally conceptualize the individual as a “homo economicus”, rational individual and unemotional utility maximizers.

<sup>2</sup> His colleague Amos Tversky had already died, but it is broadly believed that he would have shared this honor.

Although reference-dependent preferences are well explored in the psychology research field, prospect theory takes the reference point only as a given fact and does not provide hypotheses for reference point formation in the economic context. Up to now, research on the nature of reference points in the economics literature is limited (Kőszegi & Rabin, 2006). For instance, one of the most fundamental and most direct issues is the question “what serves as a reference point?” to which the answer has not yet been sufficiently and satisfactorily provided in the literature. Therefore, the focus of this dissertation is on what information serves as a reference point, what influences the use of one reference point over another, and how context characteristics, framings, emotions, feelings, and personality differences influence these reference points.

To provide new insights, I adopt an interdisciplinary research approach bundling methods from the distinct areas of economics and psychology. As Rabin (2002, p. 660) pointed out, “the idea that economists should incorporate behavioral evidence from psychology (...) is so fundamentally and manifestly good economics, that I am confident this line of research will have long-term influence in economics.”

## 1.1 Motivation

A substantial body of research has already evidenced the importance of reference-dependent preferences. Reference points deserve this attention, because of their potential consequences on the evaluation and approach of decision making under risk and uncertainty.

Several studies have used the idea of reference points to explain suboptimal human behavior and decision making. An example is a field study in the mid-1990s of New York City taxicab drivers (Camerer et al., 1997). These cab drivers pay a fixed fee for 12 hours car renting and then keep all their revenues from their shifts. However, they can choose how long they want to work. Although the rational profit-maximizing approach would suggest working longer hours on good days (e.g., rainy days) and finishing early on bad days, Camerer et al. (1997) observed a different behavior. They showed that cab drivers set themselves a target earnings level for each working day as their reference points and treat shortfalls relative to that target earning as a loss. The study observed that

cab drivers finish working whenever they reach their reference points, resulting in knocking off work early on good days and working longer on bad days.

Numerous articles in marketing journals have dealt with the topic of reference prices. Reference prices are standards against which the purchase price of a product or service is judged (Monroe, 1973; Mazumdar & Sinha, 2005). Thus, purchase decisions are based on the setting of reference prices. Therefore, marketing scientists and practitioners are interested in understanding how these reference points are built and manipulated.

Panel data analyses have provided evidence that prior price experiences, prices encountered on recent occasions, and prior promotional purchases are the most influential reference price factors. The results of these analyses have shown that, for instance, customers who are loyal to a few brands integrate the price experiences of only their favorite brands (Mazumdar & Sinha, 2005). Determinants such as price trends, current and anticipated economic conditions, the predictive signals of future prices, and household demographics seem to influence reference price formation as well (Winer, 1985; Mazumdar & Sinha, 2005). Studies have also provided insights into which kinds of stores (e.g., outlet, normal store), levels of provided services, or assortments offered in a store influence individual reference prices. "For example, the same price of a bottle of wine could be judged more favorably if it is sold in a specialty wine store than if it is sold in a discount wine store" (Mazumdar & Sinha, 2005, p. 87). Moreover, studies have already developed analytical models to assess the profit implications for companies when reference prices are included in the consumer demand function. For example, Greenleaf (1995) showed that reference price effects increase profits on promotions. He demonstrated how retailers may develop an optimal strategy for repeated promotions over time that maximizes the company's profits (Mazumdar & Sinha, 2005). For instance, this study showed that in the presence of reference price effects, the optimal strategy of a monopolist is to institute a cyclical (high-low) pricing policy. This and further studies with respect to pricing and promotional strategies demonstrate that reference prices are an important factor in managerial decisions.

In organizational studies, risk–return relationships (Bowman, 1980) have received a lot of attention. Fiegenbaum and Thomas (1988) summarized risk–return studies and used prospect theory to predict the non-linear relationships between risks and returns for companies (Lehner, 2000). Based on empirical

tests by Fiegenbaum (1990), they showed that managers in firms with returns below a certain reference point are risk-seeking, which results in negative risk–return associations. This finding is very important in light of the fact that risky firms are related to lower performance (e.g., Bromiley, 1991). Fiegenbaum et al. (1996) argued that a firm’s choice of a specific reference point may help it achieve strategic alignments, which might lead to improved performance and ideally even sustainable competitive advantage. Hence, an essential aspect for explaining these organizational behaviors is the reference point, which affects the outcomes of strategic decisions in firms.

This chapter proposes that insights into reference points help identify how individuals actually make and how they should make decisions to maximize their choice outcomes over several disciplines. However, the research community has not yet been able to provide appropriate and explicit advice on how individuals decide under uncertainty and risk.

## 1.2 Structure of the dissertation

This dissertation includes three parts and eight chapters. The first part deals with the theoretical foundations of descriptive decision theories under uncertainty and risk and presents the concept of reference-dependent preferences as the major research field. It also discusses research gaps and the research questions of this dissertation in order to provide a first step towards closing the identified gaps. The second part introduces the research approach and includes three experiments that investigate the research questions of this dissertation. The third part summarizes the key findings and discusses the main theoretical and practical implications.

More specifically, *chapter 2* introduces expected utility theory. In the next step, it discusses the anomalies and biases that it cannot explain, but with its widely accepted non-expected utility counterpart – prospect theory. After outlining prospect theory, it then concludes with the main limitation of prospect theory – the lack of insights into reference-dependent preferences.

*Chapter 3* reviews the existing literature on reference-dependent preferences. For this purpose, a framework is developed. Within this framework, this chapter also introduces the main underlying research questions of this work. In order to provide a deeper understanding of reference-dependent preferences, key terms

are defined, i.e., what constitutes a reference point, the process of the formation of a reference point, and factors influencing the formation of reference points.

**Chapter 4** describes the research design and explains the methods used in the empirical studies. Specifically, these empirical studies rely on experimental approaches to identify the individual reference points of participants including their cognitive formation. The benefits and limitations of using experiments are also discussed. This chapter ends with a presentation of the statistical methods used to test the research questions of this dissertation.

**Chapter 5** experimentally investigates the adaptation process of reference points. Specifically, the central purpose of this chapter is to explore the role of expectations on the magnitude of reference point adaptation in the domain of gains and losses over time. I perform univariate analysis in order to determine and compare the adaptation of reference points with expectations. Moreover, the results are theoretically discussed and, more importantly, the disappointment effect is presented as a new explanation for the observed results within reference point adaptation in the domain of losses.

**Chapter 6** experimentally analyzes the individual differences that might determine the formation and adaptation of reference points. Specifically, for the first time, this chapter investigates to what extent personality differences affect reference point adaptation in the domains of gains and losses. In particular, it formulates hypotheses stating that personality traits affect the formation of reference points and that the impact in the domains of gains and losses differs. In the next step, univariate analyses are conducted to test these hypotheses. After presenting the results, the chapter ends with a discussion of the results and theoretical implications.

**Chapter 7** experimentally analyzes the multiple reference points of different manager types by considering risk as information that might serve as a reference point. The central aim of this chapter is to extend the reference dependence literature. To my knowledge, for the first time it is argued that affects (i.e., emotions and feelings) seem to determine reference point formation. Based on affect theory, I formulate my hypotheses stating that even equal information and situations might lead to different degree of cognitive reference point formation based on the context-related affective expressions of managers. This chapter also investigates for the first time whether risk might be a further factor on reference points in multiple and dynamic reference point settings. Then, univariate and

multivariate analyses are performed to test the hypotheses. The chapter ends with a discussion of the results as well as theoretical and practical implications.

Finally, *chapter 8* concludes with a summary of the main results and contributions of this dissertation. Based on the key findings of the studies presented, recommendations for further research are presented and implications for research and practice are discussed.

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