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Framing and communication

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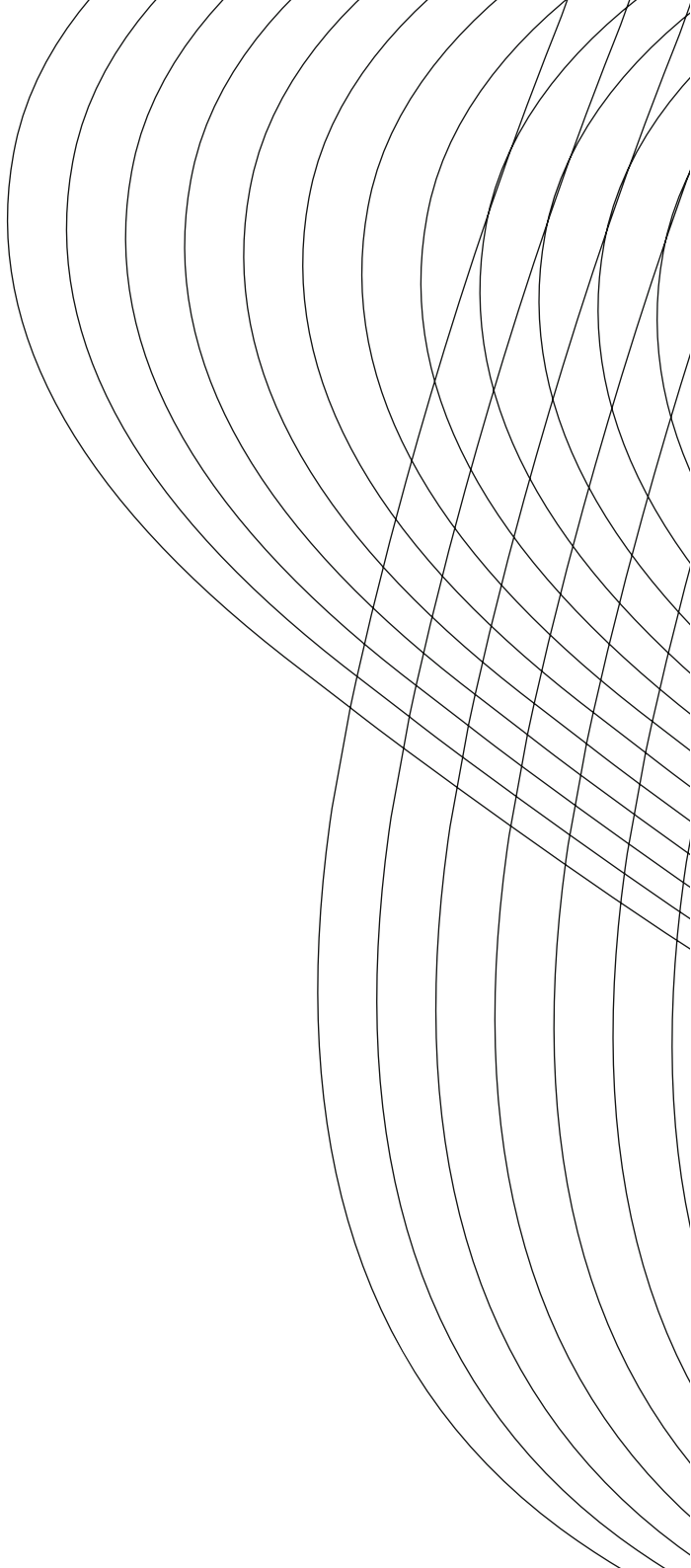


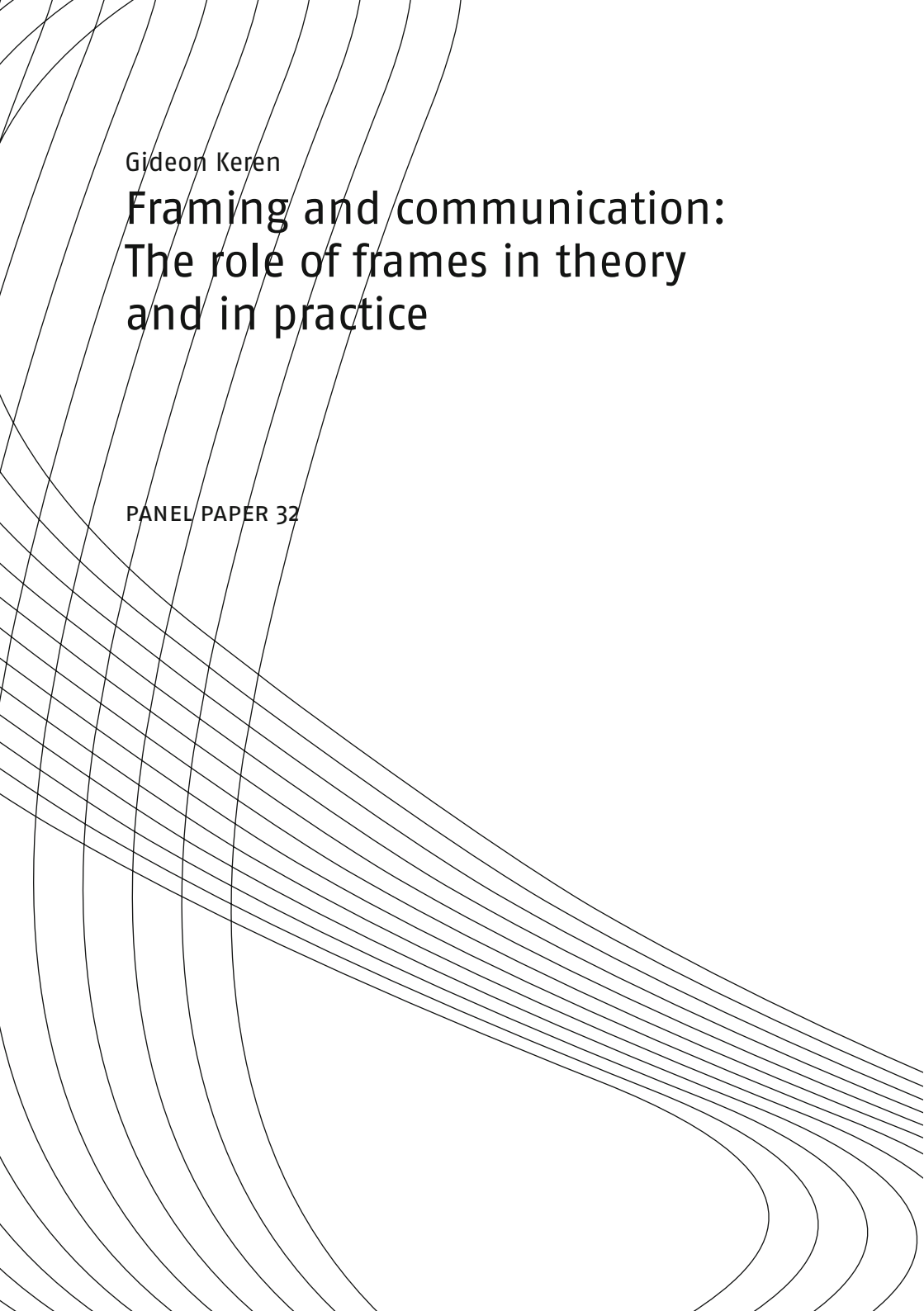
Network for Studies on Pensions, Aging and Retirement

Netspar PANEL PAPERS

Gideon Keren

Framing and communication:
The role of frames in theory
and in practice



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Gideon Keren

Framing and communication: The role of frames in theory and in practice

PANEL PAPER 32



Netspar

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PREFACE

Netspar stimulates debate and fundamental research in the field of pensions, aging and retirement. The aging of the population is front-page news, as many baby boomers are now moving into retirement. More generally, people live longer and in better health while at the same time families choose to have fewer children. Although the aging of the population often gets negative attention, with bleak pictures painted of the doubling of the ratio of the number of people aged 65 and older to the number of the working population during the next decades, it must, at the same time, be a boon to society that so many people are living longer and healthier lives. Can the falling number of working young afford to pay the pensions for a growing number of pensioners? Do people have to work a longer working week and postpone retirement? Or should the pensions be cut or the premiums paid by the working population be raised to afford social security for a growing group of pensioners? Should people be encouraged to take more responsibility for their own pension? What is the changing role of employers associations and trade unions in the organization of pensions? Can and are people prepared to undertake investment for their own pension, or are they happy to leave this to the pension funds? Who takes responsibility for the pension funds? How can a transparent and level playing field for pension funds and insurance companies be ensured? How should an acceptable trade-off be struck between social goals such as solidarity between young and old, or rich and poor, and

individual freedom? But most important of all: how can the benefits of living longer and healthier be harnessed for a happier and more prosperous society?

The Netspar Panel Papers aim to meet the demand for understanding the ever-expanding academic literature on the consequences of aging populations. They also aim to help give a better scientific underpinning of policy advice. They attempt to provide a survey of the latest and most relevant research, try to explain this in a non-technical manner and outline the implications for policy questions faced by Netspar's partners. Let there be no mistake. In many ways, formulating such a position paper is a tougher task than writing an academic paper or an op-ed piece. The authors have benefitted from the comments of the Editorial Board on various drafts and also from the discussions during the presentation of their paper at a Netspar Panel Meeting.

I hope the result helps reaching Netspar's aim to stimulate social innovation in addressing the challenges and opportunities raised by aging in an efficient and equitable manner and in an international setting.

Roel Beetsma

Chairman of the Netspar Editorial Board

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FRAMING AND COMMUNICATION: THE ROLE OF FRAMES IN THEORY AND IN PRACTICE

Recommendations

1. The communication between pension funds and their clients is an intricate matter, and the manner by which information is formulated (or framed, using the present paper's terminology) may affect both how clients perceive the pension fund and the extent to which they trust the fund and its management.
2. An inherent incompatibility exists between presentation of favorable and appealing outcomes and the extent to which these outcomes are perceived as trustworthy. In weighing these two aspects, pension funds are well advised to inform customers in the most accurate and truthful manner in order to ensure that messages are perceived to be trustworthy.
3. A balanced, realistic and neutral message communication can be achieved by emanating relevant information in more than one frame. Because each frame has the potential of affording a biased view, using more than one frame can provide alternative perspectives, resulting in a neutral perspective.
4. Two of the most important aspects of how people perceive and assess retirement options concern risk appraisal and time preferences (inter-temporal choice). Both are susceptible to message framing.
 - (i) Risk communication is more neutral when expressed by numerical rather than by verbal probabilities (which tacitly imply direction).

- (ii) Probabilities expressed in a positive frame are not equivalent to the probabilities of the complementary corresponding events.
 - (iii) Encouraging people to engage in saving behavior beyond their pension rights is best achieved by framing employer's and employee's contributions as one bundle rather than stating them separately. In the latter case, the employee's contribution is already perceived as saving thus lowering the motivation for further savings.
 - (iv) Encouraging savings for the future (which are perceived as current losses) is better achieved by framing the amount saved as a small contribution for a short period (e.g., €5 per week) rather than a large amount for a long period (e.g., €240 per year).
5. Pension funds, particularly during times of economic slowdown, are interested in eliciting and appraising their clients' expectations and opinions. Surveys – even when conducted by professionals—are highly vulnerable to framing effects (e.g., Bruine de Bruin, 2011). The results of such surveys should always be interpreted with sufficient care, and should be cross-validated with different sources.
6. Knowledge and feelings are often difficult to 'map' in a *linear way*. The same message may serve conflicting goals. In particular, it seems that positive frames are generally held to be more desirable and more appealing – yet formulating the same message in a negative frame increases trust and enhances the perceived reliability of the information source.
7. Other things being equal, people tend to discount future rewards exponentially (e.g., Frederick, Loewenstein & O'Donoghue, 2002) such that valuations for small periods of delay decrease rapidly but subsequently fall more slowly for

longer delay periods. In presenting retirement alternatives that involve the trade-off between near and far future, it may be beneficial to highlight the advantages of the near future. For instance, a temporary reduction in existing benefits (as is momentarily the case with some Dutch pension funds) should be framed in terms of increasing clients' current feelings of safety (positive frame) rather than portrayed as a temporary loss for the sake of future gains.

Abstract

Framing effects of different sorts are ubiquitous in the decision-making literature and beyond. Framing refers to situations in which decision makers respond differently to problems that, though differently *framed* (formulated), are considered equivalent from a normative analytical viewpoint. For instance, stating that an operation's probability of success is .90 corresponds to stating that its probability of failure is .10. Although the two statements are logically equivalent they can, in daily life, convey (often tacitly) different information.

Framing effects are important from both *theoretical* and *applied* perspectives. Concerning the *theoretical* facet, framing effects constitute a challenge to rational choice theory because they can lead to inconsistent choice behavior. The incompatibility between framing effects and utility theory was among the incentives that led to the development of prospect theory (Kahneman & Tversky, 1979), which is currently considered (among economists and researchers of judgment and decision making) to be the leading theory of choice.

Framing effects play a vital role in *applied* and practical decision making in various domains such as medicine, marketing, law and policy making – to mention just a few. For instance, the likelihood that a patient will decide to undergo an operation may differ considerably, depending on whether she is informed about the likelihood of success (i.e., 90% chance it will succeed) or failure (i.e., 10% chance it will fail). More generally, there is a fundamental difference between framing outcomes in terms of gains and losses, and this difference has both theoretical and practical implications. In a similar vein, risk and uncertainty can be communicated in different ways. There is a basic difference

between formulating uncertainty in numerical terms (i.e., 70% chance that the operation will be successful) or in verbal (i.e., "it is quite likely that the operation will be successful") terms. Verbal probabilities carry not only chance information but also an additional tacit recommendation of whether or not a certain outcome or actions are desirable.

Section 2 of this paper describes different sorts of framing effects and examines its importance from both a theoretical and an applied viewpoint. Many of the examples described are taken from the health sector, public policy, and marketing, all of which are relevant for the insurance companies and pension funds.

There are different sorts of framing effects. Section 3 describes several alternative classifications based on the mechanisms that supposedly drive these effects.

The following section offers an analysis of two major approaches to the study of framing effects. Briefly, one line of research, termed the "the listener's" approach solely examines how a listener (hearer) of a message interprets a message enclosed in a particular frame and acts accordingly. An alternative framework, based on Grice's (1975, 1978) logic of conversation, examines messages as an exchange taking place between a speaker (the message sender) and a listener (the message receiver). Following this approach, speakers do not choose a frame randomly. Rather, different frames carry additional tacit information that the hearer is attempting to unveil. In game-theoretic terminology, this approach perceives communication as a cooperation game.

Section 5 is devoted entirely to framing effects studied in the context of pension funds. For instance, an employee's contributions (premium payments) to his/her retirement fund can be framed as either being part of the salary, or as representing a

deduction from the salary for the purposes of saving. Although from the viewpoint of a rational economic agent the two are identical, the former formulation evidently leads to a stronger tendency for additional individual savings (beyond the pension fund savings) compared with the second frame.

The final section summarizes the different types of framing effects and briefly presents some possible explanations for the processes underlying them. Two major conclusions to be drawn from the present paper are (i) different types of framing effects are driven by different processes, thus ruling out the possibility of an overall universal theory of framing, and (2) regardless of the processes underlying framing effects, the assumption of *description invariance*, which constitutes one of the major tenets of rational choice theory, is untenable and should be rejected.

1. Introduction

Language, spoken and written, is one of the more important aspects that distinguish human beings from other primates. Indeed, communication among humans is essential for the survival of both the individual and the group and while there are different forms of communication, written and spoken language is by far the more important one, certainly in the modern age. There is a deeply rooted, intricate relation between language and the cognitive system, which raises an old and fundamental question that has never been answered unequivocally: Is language solely a reflection of the internal representation of our cognitive system or does it also actively affect it? Common sense as well as psychological research suggests that the relationship between language and the cognitive system operates in both directions. Research on *framing effects*, which is the theme of the present paper, demonstrates that language can affect the cognitive system's internal representation and in turn determine corresponding behavior.

Framing of information can be associated with different definitions and different viewpoints. Common to the various perspectives is the idea that the same information can be portrayed and formulated in different ways or what is referred to as "different frames". For example, a decision regarding a medical treatment with uncertain outcomes can be affected by whether it is described as having a 90% chance of success or as having a 10% chance of failure, despite the fact that these two descriptions (frames) are logically equivalent. A price difference between cash and credit at the gas station can be framed as a "cash discount" (gain) or a "credit surcharge" (loss). And a glass can be portrayed as being half empty or half full. Again, though these two frames

are unequivocally logically equivalent, they may nevertheless lead to different inferences. For instance, when asked whether the glass was initially full or empty, most of those exposed to the “half full” description deduce that the glass was initially empty, whereas most of those exposed to the “half empty” frame deduce that it was full (Sher & McKenzie, 2006).

The term *frame* has multiple connotations. On an abstract level it implies the composition of different parts of a message according to a particular design. It can refer to a construction (e.g., frame of a building), to a surrounding or a border (e.g., frame of a picture), to a state of mind (e.g., she is in a happy frame of mind), or to the linguistic composition of a sentence or an utterance (Keren, 2011). What all of these (and related) usages have in common is that they afford a certain structural basis or, in perceptual terminology, determine the *Gestalt* of the message. A close analogue to the framing effects discussed in this paper is taken from perception. Consider the two rectangles presented in Figure 1. Each consists of an inner rectangle and a surrounding (the frame). The two inner rectangles are identical yet the one on the left seems to be much brighter than the one on the right. However, the surroundings (or frames) on the left and the right are of different brightness resulting in the viewer experiencing different brightness of the same identical middle rectangle. The effect occurs because our perceptual system is operating in relative terms: Our experiences are always assessed relative to some background or a reference point. In short, different frames result in a different visual experience, much like different frames of the same information result in different interpretations of the identical message.

Framing effects are ubiquitous in research in the social sciences as well as in daily life (e.g., Keren, 2011). In the following section

the importance of framing effects in both theory and practice are discussed and their implications for communication, specifically in domains that are relevant for insurance and pension funds, are presented. Subsequently, I describe different classifications and different approaches to the study of framing. The following part is devoted to applications and implications of framing effects with an emphasis on the domains of pension and insurance. The final section analyzes the processes that supposedly underlie framing effects. Although current research provides us with some insights, there is as yet no overall framing theory—and the question of whether or not such a theory is possible in principle remains unanswered.

2. Why is framing important?

Research on framing effects during the past four decades has flourished exponentially. A major impetus for this research was the seminal work of Kahneman and Tversky (1979, 1984), which challenged the economists' assumption of rational agents. One of the tenets of rational choice theory is the so-called *description invariance* assumption (Tversky & Kahneman, 1986), following which preferences among options should not be affected by inconsequential variations in the description of outcomes of alternative options. The description invariance principle is deeply entrenched in any version of rational choice theory. Yet, massive empirical evidence has been accumulated that demonstrates unequivocally that *description invariance* is an untenable supposition. Probably, the most well known and compelling example is the so-called "Asian disease" problem (Tversky and Kahneman, 1986). The problem describes a possible outbreak of an Asian disease that is expected to kill 600 people. Participants, divided into two groups, are asked to choose between two possible rescue programs: one with certain outcomes (A) and the other with probabilistic outcomes (B). One group of subjects was presented with the following consequences:

"If Program A is adopted 200 persons will be saved" (**Sure prospect**)

"If Program B is adopted 600 persons will be saved with probability of .33". (**Probabilistic prospect**)

Under this formulation the majority opted for the sure program A. A second group was given exactly the same problem, except that the possible consequences were described in a "negative" frame namely "400 will die" (program A) or "600 will die with probability of .67" (program B). Under this formulation the

majority opted for the second option B. This pattern of results is incompatible with the rational choice model and its underlying description invariance assumption.

Several reasons can account for the lack of invariance in the descriptions of decision options. First, decision prospects are usually complex, can be described on many dimensions and contain concealed components such as intentions or hidden agendas. Second, and related, because of their complexity and potential hidden information, the description of decision options is not impartial to point of view or to framing. Depending on the context (and possible individual differences), different decision makers may view the same prospect in a different light and, consequently, their internal representation of the choice problem may not be identical. Further, due to limited processing capacity, queries about decision objects are based on reduction in complexity weighting some aspects more than others. The simplification process and the weighing of attributes often depend on how options are presented or framed. In short, decision options are not just neutrally encoded but are also assessed and evaluated. It is the assessment stage that is vulnerable to framing or the manner in which options are formulated that is responsible for the lack of description invariance.

Besides the theoretical considerations, framing has important implications in almost any domain of life that requires some communication. It may have imperative consequences in shaping public policy, communication in the health sector, decisions taken in courts of law, the appeal and success of new and old products (i.e., marketing), and may affect the pattern of public opinion surveys. Below, I briefly describe some framing effects associated with health communication, the construction of surveys and opinion polls, and product promotion in marketing.

2.1 Medical decisions and messages aimed at motivating healthy behavior

Physicians and patients often have to decide between alternative treatments, choices that may occasionally determine life or death. The way in which the decision is formulated and the manner in which relevant information is framed may influence the likelihood that one or the other cure will be adopted. For instance, a patient's decision on whether to undergo surgery or have radiation therapy may be influenced by the way in which the information of the two alternatives is presented – in a positive (likelihood of survival) or a negative (likelihood of death) frame. Similarly, health communication aimed at encouraging certain behaviors can be framed in terms of the benefits afforded by adopting a health behavior (a gain-framed appeal) or in terms of the costs associated with failing to adopt a health behavior (a loss-framed appeal). Following prospect theory (Kahneman & Tversky, 1979), "losses loom larger than gains", and people are thus *risk prone* under negative frames and *risk averse* under positive frames – as was indeed the case in the Asian disease problem discussed above. Extensive research in the domain of health communication (e.g., Rothman & Salovey, 1997; Rothman et al., 2006) has shown that the relative importance of gains and losses is nevertheless context dependent, and moderated by people's dispositional tendencies as well as by features of the behavioral decision (Rothman & Updergraff, 2011).

Framing in the health sector, as well as in other fields, is not limited to gain – losses framing. There is an extensive literature on verbal (rather than numerical) probabilities that is frequently employed in daily life in situations of uncertainty (Brun & Teigen, 1988; Teigen & Brun, 2003). Unlike numerical probabilities, verbal probabilities convey more than just a neutral impartial likelihood

assessment. Specifically, verbal probabilities carry information about *directionality*: Phrases such as “likely”, “possible” or “not improbable” are associated with positive occurrences, whereas phrases such as “unlikely”, “doubtful” or “uncertain” are associated with negative occurrences. Accordingly, Teigen and Brun (1999) presented participants with a scenario in which a migraine headache patient is considering a new treatment. Participants in one condition were told that the patient was advised that “it is quite uncertain” that the new treatment will be helpful, whereas in the other condition the patient was supposedly informed, “there is a possibility” that the treatment will be helpful. A separate group was presented with the two expressions (“it is quite uncertain” and “there is a possibility”) without any context, and asked to translate them into numerical probabilities. The mean numerical assessment of the two expressions was equal to 31.3% and 31.7%, respectively – virtually the same. However, the large majority of the participants who were informed that “there is a possibility” (positive frame) recommended the treatment, whereas only a small minority among those informed that “it is quite uncertain” (negative frame) recommended the same treatment.

Effective communication is an essential facet in the health sector, which often requires the articulation of benefits from a particular treatment and the corresponding potential associated risks. Gurm & Litaker (2000) report a study showing that the manner by which a treatment’s risk is framed significantly influences the likelihood of consent. Informing patients that a particular treatment is 99% safe significantly increased the likelihood of consent compared to another group of patients who were told that the likelihood of complications is 1 in 100. The same

uncertainty can be communicated in several ways, not all of which carry exactly the same message.

The importance of framing is not limited to communication among individuals. It may also be crucial in policy making and public debates associated with a particular policy. For example, the same medical decision can be framed either by focusing on the individual patient or as a general medical policy problem. Redelmeier & Tversky (1990) report that framing the same decision in these two perspectives yields different patterns of results. Specifically, they show that physicians make different choices when they evaluate problems on a case-by-case basis than when they consider the broader perspective (from a policy viewpoint). In a broader context, these authors (Redelmeier & Tversky, 1992) also demonstrate that people evaluate the same prospect differently, depending on whether it is presented (framed) as a separate event (*segregation*) or as an overall distribution of outcomes (*aggregation*).

A particularly illuminating example for public policy is provided by Johnson and his colleagues (Johnson, Bellman & Lohse 2002; Johnson and Goldstein, 2003), who examined default policies regarding organ donations. They have shown that the rate of donation agreement depends on both the formal default (i.e., *presumed consent* – one is an organ donor unless he or she actively registers not to be, or *explicit consent* – one is not a donor unless he or she actively registers to be one) and the manner in which the question is framed. Specifically, examining the rate of organ donation they had three conditions. In one, opting-out condition, participants were told that the law is *explicit consent*, and were given the choice to confirm or change their status. A second group, in the opting-in condition, had to make an identical choice except that this group assumed

an *implicit consent* policy. Finally, a third neutral group had to make the choice with no prior default. The form of the question had a powerful influence. The authors report that “revealed donation rates were about twice as high when opting-out as when opting-in” (Johnson & Goldstein, 2003, p.1338). The former condition was not different from the neutral condition; only the opting in condition was considerably smaller. Evidently, both the default assumption as well as the framing of the question may have striking effects. It is safe to assume that similar effects are likely to occur in insurance or pension plan choices.

2.2 The role of framing effects in formulating survey questions

Writing appropriate survey questions may seem deceptively simple yet is highly vulnerable to framing effects (Bruine de Bruin, 2011; Hogarth, 1982). For example, respondents are more likely to disagree with negative survey questions such as “This text is boring” (*Yes/No*) than to agree with positive ones such as “This text is interesting” (*Yes/No*) (Kamoen, Holleman, Nouwen, Sanders & Van den Bergh, 2011).

Survey questionnaires can be affected by framing in different ways. First, the wording of a question is essential. Synonyms and different terms that are supposedly equivalent may nevertheless carry different tacit information (Sher & McKenzie, 2006). Similarly, presumed antonyms (at least, according to the dictionary) do not always communicate the exact opposite. For instance, asking whether “the U.S. should forbid public speeches against democracy?” or whether “the U.S. should allow public speeches against democracy?” yields different response patterns. Whereas 54% endorse the first statement, 75% reject the second statement (Rugg, 1941). Schwarz (1996) offers numerous examples of how the wording of a question in a survey can bias the pattern of responses.

Adopting the broader definition of framing (as discussed earlier), survey designs can be subject to framing beyond wording effects. The specific manner by which a questionnaire is assembled and the yardstick used to assess opinions can also be framed in more than one way. Regarding the former, the order in which the same set of questions is assembled may influence participants' responses. For instance, respondents report being less satisfied with their lives in general when they are first asked about happiness in their romantic relationships, compared to when they receive the opposite presentation order (Schwarz, Strack & Mai, 1991). The specific tool by which opinions are assessed (namely, the measurement scale) can also be framed in more than one way. For example, respondents assess themselves as having more success in life (Schwarz et al., 1991) when an 11- point rating scale runs from -5 to + 5 rather than from 0 to 10 (formally, the two scales are obviously equivalent). Supposedly, despite the fact that -5 and 0 are located in the same position on the two scales, respectively, they apparently do not carry the same meaning.

2.3 Framing effects in marketing

There is probably no other natural environment where framing effects are more ubiquitous than in marketing. One of the more important research programs in this context is the so called *mental accounting* which examines different types of framing effects (e.g., Soman, 2004; Thaler, 1985, 1999). Broadly defined, mental accounting examines the processes used by an individual to record, review and analyze his or her expenses. Thaler (1985) developed a theoretical framework of consumer behavior based on the value function of Prospect theory (Kahneman & Tversky, 1979). The basic tenet of the theory is the concept of *mental*

arithmetic which models the manner by which consumers encode their expenses in a mental account. According to the theory, the same expenditure may be formulated in different ways and accordingly be recorded in different accounts and evaluated differently. There are three underlying principles of the theory: (1) Different framings suggest different reference points for comparison, and thus may lead to different evaluations; (2) As assumed in Prospect theory, the value function has different shapes for gains and losses. This assumption captures the psychophysical phenomenon that a difference between \$10 and \$20 is perceived as larger than the difference between \$110 and \$120; (3) The experience intensity of a loss is larger than that of an equal comparable gain – losses loom larger than gains.

Examples of the impact of mental arithmetic abound. For instance, participants in an experiment reported by Kahneman and Tversky (1984) were willing to pay less for a theater ticket after having lost their ticket than after having lost a cash equivalent to the ticket's price. Buying a second ticket after losing the first one is supposedly aversive because it is included in the same account for theater outing, thus unreasonably inflating the price. In contrast, losing the cash is registered in a different account, and does not affect the ticket's price. As another example, a person whose car was damaged in a parking lot and had to spend \$175 to repair the damage, is considered worse-off (more upset) than a person having to pay \$200 for the same repair but winning on the same day \$25 in a football pool (Thaler, 1985), despite the fact that from the viewpoint of a rational agent, both cases are associated with a \$175 loss¹.

1 Note that the last two examples violate the so-called "procedural invariance" assumption. Following rational choice theory, normatively equivalent procedures for assessing preferences should give rise to the same preference order.

Other things being equal, positive frames are considered more favorable than negative ones. Levin (1987) has shown that positive or negative frames of attribute labels are accordingly associated with favorable or unfavorable associations, and these mediate the evaluation of consumer goods. Hence, not surprisingly, people prefer ground beef that is 75% lean over ground beef that is 25% fat. Levin & Gaeth (1988) asked participants to rate (on a scale of 1–7) ground beef on several dimensions such as fatness, quality, greasiness and taste. One group was told that ground beef was 75% lean (positive frame), whereas the other was told that it was 25% fat (negative frame). As expected, the lean ground beef was judged more favorably on all dimensions. More importantly, two other groups of participants were asked to taste a sample of the meat, one group being told that it was 75% lean, the other it was 25% fat. Although the effect here was not as strong, participants who were told they tasted meat that was 75% lean gave more favorable ratings on all dimensions, compared with the group taste-testing the 25% fat meat. Evidently, priming participants with a positive or negative frame affects their subjective judgments so that the positive formulation is experienced more favorably.

Keren (2007) presented his participants with the choice between two butchers: (A) advertised his ground beef as 75% lean, and (B) advertised his meat as 25% fat. Compatible with the findings of Levin & Gaeth, most of the participants in Keren's study preferred butcher (A), who employed the positive frame. Subsequently, participants were told that the percentage of lean and fat can never be measured precisely, and were asked which of the two butchers they would trust more. Evidently, a large majority of the participants opted for the second butcher (B) who they considered most trust worthy. Supposedly, butcher B is perceived as more

trustworthy because he is willing to reveal a presumably negative aspect of his product (which is against his interest).

An even more important point to notice is that frames may often differ on more than one dimension (in this example, product appeal and inferred trust). Most decisions in life – even those considered to be relatively simple – are complex, in the sense that they are made on several dimensions. A particular choice of a message frame may thus attest to different dimensions—and not always necessarily in a compatible way. Keren's (2007) study offers an example in which the same frame provides incompatible cues on two different dimensions—namely, “appeal” and “trustworthiness”.

3. Alternative Classifications of framing effects

There is no unanimous agreement as to how framing should be defined. Generally, a distinction can be made between what I refer to as the *loose* and the *strict* definition of framing. According to the loose (broad) definition, framing concerns different linguistic (or non-linguistic) descriptions of the same message, which transmit the same core information. I label this characterization as the loose view because what constitutes the “core” information remains to be ambiguous. Put differently, when stating that two frames are equivalent, the term ‘equivalent’ can be interpreted in more than one way, a point which is elaborated later. A strict definition of framing should precisely delineate the conditions under which two frames are equivalent. The common criterion employed is *logical equivalence* (e.g., “we have completed 30% of the task” vs. “we still have to complete 70% of the task”) – but even this criterion is not always unequivocal. Some (e.g., Sher & McKenzie, 2006, 2011) have implicitly proposed that the criterion should be related to the *information conveyed* yet here again the implementation of the criterion remains ambiguous under certain conditions.

To surmount the thorny problems associated with defining framing, several typologies have been introduced in the literature. A frequently cited typology, proposed by Levin, Schneider & Gaeth (1998), is focused on valence framing, namely formulating the same message in positive (advantageous) or negative (disadvantageous) terms. These authors distinguish between three types of valence framing: *Attribute* framing, where a specific attribute of the choice options is described in either a positive or an equivalently negative term (e.g., meat that is 75% lean vs. 25% fat). *Risky choice* framing, like the Asian disease problem

presented earlier, involves problems with two prospects – one that is sure and one that is uncertain, and thus risky. Finally, in *goal* framing, the focus is either on the positive consequences of attaining the goal or on avoiding the negative consequences of not attaining the goal (e.g., “performing breast self examinations may lead to early detection of potential cancer and consequently to higher chance of cure” vs. “not conducting the examinations may lead to failure of early detection and decrease the chance of possible cure”).

Levin et al. (1986) suggest that their classification is based on three aspects (i) what is framed, (ii) what is affected, and (iii) how the effect is measured. They further claim that the three types of framing are based on different underlying processes.

Risky choice framing effects are explained as a combination of i) Changing the reference point such that the potential outcomes are perceived as losses or gains, and ii) The value function of Prospect theory (Kahneman & Tversky, 1979) which is said to be concave for gains and convex for losses combined with the assumption of a steeper function for losses than for gains. Hence, attribute weights may be different depending on whether the outcomes are framed as losses or gains.

Attribute framing is accounted for by differential encoding of positive and negative information in associative memory (see also Levin, 1987). Highlighting the positive or negative side (obtained through associations triggered by the positive or negative frame) leads to a selective attention bias in which the positive or the negative aspects, respectively, are presumably overweighed.

Finally, *goal framing* is explained in terms of a negativity bias, the tendency to pay greater attention to negative information (e.g., Peeters & Czapinski, 1990) that supposedly leads to loss aversion. It is important to realize that the Prospect Theory value

function (Kahneman & Tversky, 1979) is composed of two different assumptions: 1. The shape of the function, which is concave for gains and convex for losses. 2. A larger steepness of the negative domain, reflecting loss aversion. Note that loss aversion persists regardless of whether risk is present or absent, and thus goal framing is based on loss aversion triggered by the negativity bias. Goal framing is different from risky choice framing in that (unlike risky framing) it does not have to rely on prospect theory, only on the loss aversion assumption which stands on its own regardless of prospect theory.

Soman (2004) suggests that much of the relevant research focuses mainly on the consequences of framing, largely neglecting the underlying processes; he does note that *mental accounting*, a research program launched by Thaler (1985, 1999), is indeed more process-oriented. Soman's proposed typology distinguishes between *outcome*, *structure*, and *task* framing. In *outcome* framing, the outcome can be articulated in terms of gains or losses, or aggregated vs. disaggregated quantities (e.g., winning \$ 75 in a lottery vs. winning \$ 50 and \$ 25 in a lottery). *Structure* framing refers to the configuration of the information presented such as integration or segregation of information, or whether a two-stage lottery is presented as a sequential decision task or in terms of a contingent event (e.g., Tversky & Kahneman, 1981). *Task* framing refers to the particular nature of the task. For instance, selecting one among two or more options can be achieved by either choosing the preferred option or by rejecting the unwanted ones (Shafir, 1993). Similarly, an option can be *recommended* or its alternatives can be *not recommended* (Van Buiten & Keren, 2009). One may question whether the three proposed categories are well defined and unique. For example, most instances of task framing (e.g., choose vs. reject) are also associated with

structural alterations and may thus be equally classified as structural framing. One may claim that all framing effects involve, in one way or another, structure manipulations. Whether or not a meaningful classification of structures can be found – one that would map the different message structures into different mental structures (i.e., supposedly representing different underlying processes) – remains an open question.

A classification proposed by Druckman (2001 a,b) distinguishes between *frames in communication* and *frames in mind* (or frames in thought). *Frames in communication* center on linguistic aspects of frame construction and implicitly also allude to the speakers' choice of frame. It refers to words, phrases, structure, and presentation styles used by a speaker when relaying information to the listener. *Frames in mind* center more on the listener's processing of the information and the corresponding internal representation and mental model. Whereas the former relates to properties of the communication of a message, the latter describes an individual's internal mental model. Importantly, within a conversational framework (e.g., Grice, 1975, 1978) which is further elaborated later, frames in communication relate to the speaker's perspective whereas frames in mind relate to the receiver (listener) perspective.

The classifications briefly presented above are not orthogonal to each other. Moreover, as already hinted above, even within each classification some categories are not entirely non-overlapping. A main motivation underlying the classification of framing effects is the implicit assumption that different classes of framings are driven by different mechanisms. To obtain a better insight into the possible processes underlying framing effects, it is important to first examine three different approaches to the study of framing.

4. Alternative perspectives on framing

Research on framing has been conducted under two major perspectives. One approach that has been dominant in both domains of policy making and marketing as well as in judgment and decision making, is what I refer to the *Listener's approach* (Keren, 2011). This approach centers solely on the listeners (hearers) perspective: It appraises the interpretation of different frames of the same message and has been of interest for both theoretical as well as practical reasons.

From a theoretical perspective, framing studies have been used to test rational choice theory, specifically the *description invariance* assumption. For instance, as described above, the pattern of responses to alternative framings of the Asian disease problem is incompatible with rational choice. Indeed, In their seminal research, Tversky & Kahneman (1981) explicitly state that their aim is to “describe decision problems in which people systematically violate the requirements of consistency and coherence, and we trace these violations to the psychological principles that govern the perception of decision problems and the evaluation of options” (pp. 453). Based on the accumulating evidence of different framing effects (e.g., Keren, 2011), one can confidently conclude that description invariance is an untenable assumption, a point I return to in the final discussion.

With regard to the more practical facet of framing, the focus is on evaluating which, out of several alternative frames, is most persuasive in influencing an individual (or a group) to adopt a particular type of behavior. An important objective in many applied settings is to examine the judged persuasiveness (or effectiveness) of different message frames. In marketing, for example, marketers will search for those frames that are most

effective in increasing sales. Similarly, policymakers would be interested to find out which frame would be most effective in promoting or carrying out a certain policy. For instance, in promoting particular health-relevant behaviors one may want to know which health messages (e.g., gain- or loss-framed) would be most persuasive.

Kahneman & Tversky's research has initiated an ever-increasing stream of research, yet all it has centered on the role of listeners or decision makers. Schwarz (1996) correctly noted that any communication takes place in a social context. To fully understand framing effects, one must examine the interaction between a speaker's intentions and choice of frame and the listener's corresponding interpretation. As noted by Clark & Schober (1992), communication is primarily about a speaker's intentions, which are essential for comprehending what the speaker actually means. Hence, speaker-listener analysis examines both the speaker's choice of frame (among different alternatives) and the listener's interpretation who attempts to unveil the tacit information underlying the speaker's choice of frame. To some extent, using a game-theoretic terminology, this approach can be conceived as a cooperation game.

The approach in which speaker-listener interaction is pivotal has its roots in Grice's (1975, 1978; see also Schwarz, 1996) logic of conversation. The *listener-based* and the *conversational* (speaker-listener) approach differ not only in that the former focuses solely on the listener while the latter centers on speaker-listener interaction. The two also differ in their theoretical queries as well as in the method of investigation. To appreciate the difference between the two approaches, we analyze once more the Asian disease problem (Table 1) – this time using the conversational perspective.

Van Buiten & Keren (2009a) used the Asian disease problem to test speakers' (rather than listeners') preferences. Participants in their experiment were placed in the role of speakers and exposed to both the sure and risky programs, each of which was stated in both positive (A, B) and negative (A'', B'') frames. Participants in one condition were instructed to assume that they preferred the sure program. Participants in the second condition were instructed to assume they preferred the risky program. All Participants were asked to choose which frame they would use in order to convince the city council of their preference. Participants in the first condition, who were instructed to assume preference of the sure option, had to choose between the A and A'' frames. Similarly, participants in the second condition, who were instructed to assume preference of the risky option, had to choose between the B and B'' frames.

The results are presented in Table 1 (second column) and compared with those reported by Tversky & Kahneman (1981), whose participants were in the role of listeners. As mentioned, participants' choices in the Kahneman & Tversky experiment exhibit inconsistencies when comparing the positive and the negative frames. It is important to note that the analysis compares listeners within different conditions – a *within-listeners* test of compatibility. Following the alternative speaker–listener conversational perspective, one would employ a (*between*) *speaker–listener* test of compatibility, that is, between speakers and listeners. Specifically, comparing the results of listeners and speakers in Table 1 reveals that speakers and listeners enjoy a high level of compatibility (mutual agreement) in the context of the sure program. For instance, most participants (76%) in the role of a speaker who attempts to promote the sure program opt for the positive frame. Correspondingly, when exposed to the

sure program in its positive frame, most participants in the role of listener (72%) prefer this program over the risky one. However, inspection of Table 1 suggests that speakers and listeners do not share the same level of agreement with regard to the risky program. Whereas most speakers (84%) preferred the positive frame for the risky program, only a minority of the listeners (28%) chose the risky program when presented in the positive frame. Hence, the speakers' choice to use the positive frame for enhancing the risky program might not have been optimal – and the findings suggest that they would have been more successful in persuading listeners to adopt the risky program if they had chosen the negative frame².

An additional important difference between the *listener-based* and the *conversational* approaches can be described as follows: The former approach, particularly when testing inconsistencies of rational choice theory, assumes *logical equivalence* according to standard logical requirements. In contrast, the equivalence underlying the conversational approach is closer to what McKenzie and his colleagues (McKenzie & Nelson, 2003; Sher & McKenzie, 2006, 2008) have dubbed as *information equivalence*. This distinction implies a crucial difference: Following the listener-based approach, two logically equivalent frames should yield identical responses. This is in fact the essence of the *description invariance* requirement. Different responses are thus interpreted as inconsistent. In contrast, following the conversational model,

- 2 Following an alternative interpretation, speakers may have been right in using a positive frame for the risky program because, other things being equal, the positive frame is more persuasive. But that would imply that they failed to realize that under these circumstances, the safe option would also be given a negative frame and thus appear even worse. Due to the experimental procedure, the two negative statements were yoked. Under other, more real-life circumstances, the speaker can only control his own utterances, and not the alternatives available to others.

two logically equivalent frames do not necessarily have to yield the same response. On the contrary, if they are not information equivalent, it is often reasonable (even rational) that they should actually yield different responses (suggesting that the listener received the additional information). The key idea is that a speaker may choose to frame the situation in one way rather than another, which can convey choice-relevant information to the listener. The listener-based approach is solely based on the direct information contained in the message. In contrast, according to the conversational model, listeners are assumed to infer indirect information and to construe the speaker's intentions (taking them into account when interpreting the message contents). Hence, despite the fact that a "half full" and a "half empty" glass are logically equivalent, they do not necessarily carry the same information. Apparently, according to the *information leakage hypothesis* (McKenzie & Nelson, 2003), different frames may uncover or 'leak' different tacit information. As another example of information leakage, expressions like "we have used half the time" and "we have half the time left" are logically equivalent, as are the expressions "we have completed half the task" and "we have half the task left". However, statements relating to 'work left', or 'time spent' are interpreted to imply that task completion is behind schedule, whereas their complements 'work done' or 'time left' suggest that completion of the task is ahead of plan (Teigen & Karevold, 2005).

In sum, there are two approaches to the study of framing. Although they are not incompatible, they are based on different assumptions and different research methodology. While the *listener-based* perspective is more outcome-oriented (in terms of direct elicitation of listener responses and corresponding behavior), it suppresses the interactive aspect of communication.

The *conversational* approach takes into account the fact that messages are not just interpreted literally, and that the listener's interpretation may be influenced by situational factors and by (correct or incorrect) inferences about the intentions underlying the message sender (i.e., the speaker). In that respect, the conversational approach is much more process-oriented, and provides a better understanding of the mechanisms underlying framing effects.

5. Framing effects in the interaction between pension funds and their customers

Framing effects have also attracted research interests in different financial domains, such as insurance and pension funds. Johnson, Hershey, Meszaros & Kuntheuther (1993) present several studies showing that insurance decisions are vulnerable to the manner in which they are framed. For instance, in one of their studies a group of subjects was asked how much they were willing to pay for life insurance on a flight from New York to London that would provide \$100,000 in case of death *for any reason*; the mean willingness to pay premium was \$ 12.03. Two other different groups were asked the same question, except that they were to be paid \$100,000 either *in case of death from any act of terrorism* (group 2, mean offered premium= \$14.12), or in the case of *any non-terrorist related mechanical factor* (group 3, mean offered premium = 10.31). The sum of the premiums that subjects were willing to pay for the disjoint events of *terrorism* (group 2) and *mechanical failure* (group 3) was \$24.43, twice as much as the amount the other group was willing to pay for coverage of *any reason*.

The effect can be accounted for by two observations. First, it is again a sort of mental accounting in which segregating a class (all possible reasons) to its constituents leads to the set-up of different accounts. Second, the two separate accounts of "terrorism" and "mechanical failure" are supposedly inflated because they carry much more vivid associations than the simple label of "any reason", thereby resulting in a framing effect in which the whole does not equal the sum of its parts. A slightly similar effect was reported by Gourville (1998), who noted that sellers and fundraisers choose to frame an annual fee in terms of

"pennies-a-day". For instance, a discount acquired by a yearly subscription to a newspaper can be described as €0.25 per day (per issue) or as €90 per year. Evidently, a discount per day is estimated, in terms of percentages, as much lower in the case of a daily discount (13.4%), compared to the comparable estimate of a discount on a yearly basis (29.5%)³.

Several researchers have examined framing in the context of pensions. A direct and elaborate study was carried out recently by Brown, Kapteyn & Mitchell (2011). They examined retirement age decisions that lead up to starting the benefits from the Social Security Administration (SSA). The decision as to when to start the benefits contains a trade-off between early start (as early as age 62) and smaller payments, or later start (as late as age of 70) and larger payments. Brown et. al. (2011) exposed a large panel of participants to the same financial information presented in different frames and measured the extent to which different framing led to different retirement decisions.

Two frames were used as baseline. One frame was based on the formulation currently used by the SSA (since 2008), and is supposedly as neutral as possible regarding the information it contains; the other frame (based on the SSA version before 2008), termed the *breakeven* frame, emphasized "the minimum number of years one would have to live in order for the nominal sum of the incremental monthly payments that arise from the delay to offset the income forgone during the period of the delay". Besides these two frames, two main variables were manipulated in this study: One was *Gain* framing (in which any deferral of the retirement beyond the lowest retirement age of 62 implies higher

3 The percentage estimates were derived by telling participants the amount of discount (€0.25 or €90, respectively) but without disclosing the full price of the newspaper (Evers & Keren, manuscript in preparation).

payments described as a gain) compared with *Loss* framing (in which retiring earlier than the age of 70 implies smaller payments and thus a loss). A second manipulated variable was whether the payments were described as returns on an investment (*investment frame*) or as means for consumption (*consumption frame*).

The most important effect reported by Brown et al. concerns the *breakeven* frame which evidently leads to substantially earlier claiming dates compared with the other frames. Note that this is the only frame that explicitly states that payments are conditional on how long one will live – which supposedly leads people to claim their payments earlier (to ensure that they could utilize all their earned benefits). Another finding, though of a smaller magnitude, is that overall *gain* frames lead to later claiming dates than *loss* frames do. No significant difference was found between *investment* and *consumption* frames. Because investments are associated more with gains and consumption more with losses, it is possible that the two variables (*loss/gain* and *investment/consumption*) were in some respect confounded.

One of the most important dimensions underlying the core ideas of pension funds concerns the time dimension and inter-temporal choice. In a nutshell, the essence of a pension (or any other type of saving) concerns the trade-off between current and future consumption or, alternatively, between current consumption and saving for the future.

The time horizon and the trade-off between current and future incomes can be portrayed in more than one way. Loewenstein (1988) studied inter-temporal choice (i.e., the choice between immediate and delayed consumption) and showed that altering the reference point by using different frames resulted in different evaluations of immediate and delayed consumption alternatives. Minor changes in the manner in which a message is formulated

may have strong effects on the manner by which present vs. future incomes are weighed (see the study by Magen, Dweck & Gross, 2008, presented in the following section).

A basic question faced by pension funds concerns clients' expectations regarding their future benefits. What are people's intuitions about the benefits of long-term savings of which pension funds the prototypical example? It is well known that people misperceive the compounding effects of exponential growth. Indeed, there is ample empirical evidence demonstrating that humans grossly underestimate the growth of exponential functions (e.g., Keren, 1983; Wagenaar & Sagaria, 1975; Wagenaar & Timmers, 1979). The extent of such misperceptions, however, may be subject to framing effects.

A particularly interesting and relevant demonstration in this regard is provided in a study by Binswanger & Carman (2010), who examined people's intuitions as to how their retirement savings accumulate over time. Specifically, in a survey module conducted by the RAND American Life panel, two conditions were employed to elicit participant assessments. In one condition (*Forward perspective*), participants were asked to estimate future consumption given savings (e.g., suppose that you save an extra amount of money, \$ S every month from now until you retire. How much extra money would you get to spend each month during retirement?). Participants in the other condition (*Backward perspective*) were asked to estimate the amount of savings needed for a given level of future consumption (e.g., suppose that during retirement you need an extra amount of money, \$ C every month from now until you retire. How much extra savings would you have to put aside each month from now until you retire, in order to achieve this goal?). From a normative viewpoint, the two assessment frames should yield equivalent estimates. However,

the results indicate a strong and robust difference: The perceived benefits of long-term savings were substantially higher under the backward (compared with the forward) condition. While the results can be interpreted in several ways (which the authors examine in detail) the experiment does not permit the inference of strong conclusions. Notwithstanding, the strength of the effect should not be ignored. Hence, backward framing may be more successful in highlighting the pension plan benefits.

Pension funds, especially nowadays, given the financial crisis, should carefully weigh the messages to their clients. The manner in which different risks are framed and the formulation of the outlook for the future may be vital in the attempt to keep customers informed in a satisfactory way. For instance, even bad news, such as cuts in monthly payments can be done in a positive framework. Informing clients about decreased benefits can be portrayed as an investment for protecting future income (positive frame) or as a necessity for cutting consumption (negative frame).

How people choose between current and future consumption (or, framed alternatively, between current consumption and saving for the future) may also be influenced by framing of seemingly unrelated issues. Specifically, given the perceived uncertainty among the general public regarding the ability of pension funds to (temporarily) fully meet their future obligations, it may be desirable to encourage peoples' saving behavior beyond their pension fund savings. Card & Ransom (2008) studied how the saving behavior of employees depends on the way in which their pension contribution is framed. Specifically, consider an individual who receives a salary of \$100,000 and an additional \$14,000 contribution to his pension account. This can also be framed as a salary of \$107,000 out of which he is required to contribute a \$7,000 to his pension fund. In addition, the employer

is matching this contribution with another \$7,000. Following standard economic theory, the two frames are equivalent (i.e., in both cases the individual received a \$100,000 salary and an additional \$14,000 was added to his pension account), yet Card & Ransom found that additional saving among those exposed to the second formulation is smaller. This finding is readily explained by *mental accounting*: The second frame creates a saving account to which the individual has already contributed \$7,000 thus lowering the incentives for further savings.

6. Closing comments: Possible mechanisms driving framing effects

There is an ever growing literature of framing effects, only few of which have been discussed in the present paper. There seem to be different types of framing effects which presumably are not all driven by exactly the same process. While an overarching theory of framing does not yet exist, some general principles that characterize most if not all framing effects can be identified. Some of these alleged principles are briefly discussed in this final section.

One principle underlying framing effects is in terms of reference points. As noted in the introduction, unlike categorization of visual objects (which are impartial to the distance or angle from which they are perceived), messages in communication are susceptible to point of view. Underlying different frames are different viewpoints or what is usually referred to as different reference points. The importance of reference points appeared in earlier work on goal setting (e.g., Lewin et.al. 1944), and is based on the assumption that our perceptual and judgmental apparatus is attuned to process changes (rather than absolute terms) – hence any evaluation is relative to a reference point.

Reference point effects can be obtained in two ways: (a) By framing an outcome in two alternative ways, yielding a comparison of the alternative options to the reference point from two different angles, which in turn yields a positive (gain) or negative (loss) perspective (as is the case in the Asian disease problem) (b) By shifting the reference point such that the same outcome is compared with alternative reference points. For instance, questions assessing comparative judgments can be phrased in different directions. Asking whether “Tennis is more

or less exciting than soccer" is not necessarily the same as asking whether "Soccer is more or less exciting than Tennis" because the reference point in the former question is soccer, whereas in the latter it is tennis. Direction of comparison naturally determines the relevant reference point (Wänke, Schwarz, & Noelle-Neumann, 1995).

A main characteristic of the cognitive system, accepted by all researchers, is its limited capacity. Both personal experience as well as decades of research, have taught us that we can only attend to a limited number of stimuli, or dimensions of a stimulus, at a given point in time. One of the most fundamental issues in the study of attention is selectivity: What processes lead an organism to attend to some stimuli, or aspects of a particular stimulus, in preference to others? (Kahneman, 1973).

While even a partial answer is beyond the scope of the present paper, suffice it to note that selective attention can take place at both the supraliminal and the subliminal level. Generally speaking, it is proposed here that framing operates as a zoom lens (Eriksen & James, 1986) focusing a person's attention on some (but not other) dimensions of the stimulus, in our context a message. In short, attention may be the overarching process for all types of framing effects.

An illuminating demonstration of the importance of attention is provided by Magen, Dweck & Gross (2008), who studied inter-temporal choices. Participants in one condition (*hidden zero*) were asked to choose between immediate and delayed financial rewards such as (a) \$5 right now or (b) \$6.20 in 26 days. Participants in the other condition (*explicit zero*) were presented with exactly the same choice pairs, except that the immediate option always ended with "and ___ in 0 days. (i.e., do you prefer (a) \$5 right now and \$0 in 26 days or (b) \$6.20 in 26 days). The

choice options in the two conditions are logically equivalent, yet participants in the explicit-zero condition were less inclined to choose the immediate reward than participants in the implicit zero condition. Allegedly, the explicit-zero format draws attention to opportunity- costs associated with choice of the immediate reward. An alternative (not contradictory) explanation, proposed by the authors, is that the explicit zero format alters the problem structure in that "it caused each choice to appear as a sequence, thereby encouraging people to select the improving sequence (i.e., the larger, later reward)" (p. 649).

In sum, the most prevalent facet of framing is to direct attention to certain aspects (while suppressing others) that will enhance a particular interpretation and eventually result in a specific response. Indeed, the most fundamental explanation of framing effects may be in attentional terms: Given the capacity limitations of the cognitive system, some selection has to be made. Different frames evidently direct attentional resources to different aspects by cueing the system toward one or the other attribute.

To illustrate how framing may divert attention (even if it conveys the same message), let us briefly analyze a real-life policy issue which, though taken from a different domain, is nonetheless relevant for the field of pensions and insurance. In the Netherlands, college tuition fees are highly subsidized by the government, and students thus pay only a small fraction of the real costs. In addition, students customarily have received a monthly allowance to assist them in their living costs⁴. Recently, due to the economic slowdown and the pressure to balance the nation's budget, the government decided to limit the tuition

4 This latter funding has been drastically cut (though not eliminated) during the past ten years.

subsidy to a period of four years of study (which is the time it takes most B.A. students to complete their degree). To that end, the government announced that students that do not complete their studies in four years will have to pay a penalty of €3,000 for any additional year of study. Not surprisingly, the announcement annoyed students and resulted in a great deal of commotion.

Whether the decision was wise or not is a political issue. However, the government could have made the decision more palatable – thereby attempting to limit the reactions of outrage – by framing it differently. Rather than framing the decision as a penalty which means that students who do not complete their study on time are punished, the government could have formulated it as a partial loss of a potential gain (“an earlier discontinuation of the full subsidy”): the generous subsidy would have to be reduced, in the event of non-compliance, by €3000. It is important to realize in this example that the additional payment (the so called “penalty”) would not cover the entire real costs. In other words, the student would still be subsidized – albeit by a smaller amount. Hence, the latter framing may help diverting people’s attention to the positive aspect namely that the government is supporting and subsidizing higher education. While framing the payment as a penalty is conceived by students as a pure loss (and additionally as a punishment), articulating it as a reduction in the period of a full subsidy, might have been perceived as a partial loss of a potential gain which may have mitigated the public negative reaction.

References

- Binswanger, J. & Carman, K.G. (2010) The miracle of compound interest: Does our intuition fail? CentER report no. 2010-137 (ISSN 0924-7815).
- Brown, J.R., Kling, J.R., Mullainathan, S. & Vrobel, M.V. (2008) Why don't people insure late-life consumption? A framing explanation of the under-Annuitization puzzle. *American Economic Review: Papers & Proceedings*, 98 (2), 304-309.
- Brown, J.R., Kapteyn, A. & Mitchell, O.S. (2011) Framing effects and expected social security claiming behavior. NBER working paper 17018 (<http://www.nber.org/papers/w17018>)
- Bruine de Bruin, W. (2011) Framing effects in surveys: How respondents make sense of the questions we ask. In G. Keren (ed.) *Perspectives on Framing*. N.Y.: Psychology Press (Taylor and Francis).
- Brun, W. & Teigen, K.H. (1988) Verbal probabilities: Ambiguous, context dependent, or both? *Organizational Behavior and Human Decision Processes*, 47, 390-404.
- Card, D. & Ransom, M.R. (2008) Framing effects in retirement savings. TIAA-CREF Institute: *Trends and Issues*. (June, 2008)
- Clark, H.H. & Schober, M.F. (1992). Asking questions and influencing answers. In J.M. Tanur (ed.), *Questions about questions* (pp. 15-48). New York: Russell Sage.
- Druckman, J.N. (2001a). Evaluating framing effects. *Journal of Economic Psychology*, 22, 91-101.
- Druckman, J.N. (2001b). The implications of framing effects for citizen competence. *Political Behavior*, 23, 225-256.
- Druckman, J.N. (2004). Political preference formation. *American Political Science Review*, 98, 671-686.
- Druckman, J.N. (2010). Competing frames in a political campaign. In B.F. Schaffner & P.J. Sellers (eds), *Winning with words: The origins and impact of framing* (pp. 101-120). New York: Routledge.
- Eriksen, C.W. & St. James, J.D. (1986) Visual attention within and around the field of focal attention: A zoom lens model. *Perception and Psychophysics*, 40, 225-240.
- Evers, E. & Keren, G. (2012) On the temporal framing of price changes. (Manuscript under preparation).
- Frederick, S., Loewenstein, G. & O'Donoghue, T. (2002). "Time Discounting and Time Preference: A Critical Review". *Journal of Economic Literature* 40, 351-401.
- Gourville, J.T. (1998). Pennies-a-day: The effect of temporal reframing on transaction evaluation. *Journal of Consumer Research*, 24(4), 395-408.
- Grice, H.P. (1975). Logic and conversation. In P.C. Cole & J.L. Morgan (eds) *Syntax and Semantics 3: Speech acts* (pp. 41-58). New York: Academic Press.

- Grice, H.P. (1978). Further notes on logic and conversation. In P. Cole (ed.) *Syntax and semantics* (pp. 113-128). New York: Academic Press.
- Gurm, H.S. & Litaker, D.G. (2000) Framing procedural risks to patients: Is 99% safe the same as a risk of 1 in 100? *Academic Medicine*, 75, 840-842.
- Hogarth, R.M. (1982) *Question Framing and Response Consistency*. San Francisco, CA: Jossey-Bass.
- Johnson, E.J., Bellman, S. & Lohse, G.E. (2002) Default, framing, and privacy: Why opting in-opting out. *Marketing Letters*, 13, 5-15.
- Johnson, E.J. & Goldstein, D. Do defaults save lives? *Science*, 302, 1338-1339.
- Johnson, E.J., Hershey, J., Meszaros, J. & Kunreuther, H. (1993). Framing, probability distortions, and insurance decisions. *Journal of Risk and Uncertainty*, 7, 35-51.
- Kahneman, D. & Tversky, A. (1979) Prospect Theory: An analysis of decision under risk. *Econometrica*, 47, 263-291.
- Kahneman, D. & Tversky, A. (1984) Choice, values and frames. *The American Psychologist*, 39, 341-350.
- Kamoen, N., Holleman, B., Nouwen, R., Sanders, T. & Van den Bergh, H. (2011) Absolutely relative or relatively absolute? The linguistic behavior of gradable adjectives and degree modifiers. *Journal of Pragmatics*, 43, 3139-3151.
- Keren, G. (1983) Cultural differences in the misperception of exponential growth. *Perception and Psychophysics*, 34, 289-293.
- Keren, G. (2007) Framing, intentions, and trust-choice incompatibility. *Organizational Behavior and Human Decision Processes*, 103, 238-255.
- Keren, G. (2011) On the definition and possible underpinnings of framing effects: A brief review and a critical evaluation. In G. Keren (ed.) *Perspectives on Framing*. N.Y. : Psychology Press (Taylor and Francis).
- Keren, G. (2011) *Perspectives on Framing*. N.Y.: Psychology Press (Taylor and Francis).
- Levin, I.P. (1987), Associative effects of information framing, *Bulletin of the Psychonomics Society*, 25, 85-86.
- Levin, I.P. & Gaeth, G.J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research*, 15, 374-378.
- Levin, I.P., Schneider, S.L. & Gaeth, G.J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76, 149-188.
- Lewin, K., Dembo, T, Festinger, L. & Sears, P.S. (1944). Levels of aspiration. In J.M. Hunt (ed.), *Personality and the Behavioral Disorders*. N.Y.: Ronald Press.
- Magen, E., Dweck, C.S. & Gross, J.J. (2008) The hidden-zero effect. *Psychological Science*, 19, 648-649.

- McKenzie, C.R.M. & Nelson, J.D. (2003). What a speaker's choice of frame reveals: Reference points, frame selection, and framing effects. *Psychonomic Bulletin & Review*, 10, 596–602.
- Peeters, G. & Czapinski, J. (1990). Positive–negative asymmetry in evaluations: The distinction between affective and informational negativity effects. *European Review of Social Psychology*, 1, 33–60.
- Redelmeier, D.A. & Tversky, A. (1990) Discrepancy between medical decisions for individual patients and groups. *New England Journal of Medicine*, 322, 1162–1164.
- Redelmeier, D.A. & Tversky, A. (1992) On the framing of multiple prospects. *Psychological Science*, 3, 191– 193.
- Rock, I. (1975) *An Introduction to Perception*. N.Y.: Macmillan.
- Rothman, A.J. & Salovey, P. (1997) Shaping perceptions to motivate to motivate healthy behavior: The role of message framing. *Psychological Bulletin*, 121, 3–19.
- Rothman, A.J., Bartels, R.D., Wlaschin, J. & Salovey, P. (2006) The strategic use of gain and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of Communication*, 56, S202–S221.
- Rothman, A.J. & Updegraff, J.A. (2011) Specifying when and how gain- and loss-framed messages motivate healthy behavior: An integrated approach. In G. Keren (ed.) *Perspectives on Framing*. N.Y.: Psychology Press (Taylor and Francis).
- Rugg, D. (1941) Experiments in wording questions. *Public Opinion Quarterly*, 5, 91–92.
- Schwarz, N. (1996) *Cognition and communication*. Mahwah N.J.: Erlbaum.
- Schwarz, N., Strack, F. & Mai, H.P. (1991) Assimilation and contrast effects in part-whole question sequences: A conversational logic analysis. *Public Opinion Quarterly*, 55, 3–23
- Schwarz, N., Knauper, B, Hippler, H.J., Noelle–Neumann, E. & Clark, L.F. (1991) Rating scales: Numeric values may change the meaning of scale labels. *Public Opinion Quarterly*, 49, 388–395
- Shafir, E. (1993). Choosing vs. rejecting: Why some options are both better and worse than others. *Memory and Cognition*, 21, 546–556.
- Sher, S. & McKenzie, C.R.M. (2006). Information leakage from logically equivalent frames. *Cognition*, 101, 467–494.
- Sher, S. & McKenzie, C.R.M. (2011). Levels of information: A framing hierarchy. In G. Keren (ed.) *Perspectives on Framing*. N.Y.: Psychology Press (Taylor and Francis).
- Soman, D. (2004). Framing, loss aversion, and mental accounting. In D.J. Koehler & N. Harvey (eds), *Blackwell Handbook of Judgment & Decision Making* (pp. 379–398). Oxford: Blackwell.
- Teigen, K.H. & Brun, W. (1999) The directionality of verbal probability expressions: Effects on decisions, predictions, and probabilistic reasoning. *Organizational Behavior and Human Decision Processes*, 80, 155–190.

- Teigen, K. H. & Brun, W. (2003) Verbal probabilities: A question of frame? *Journal of Behavioral Decision Making*, 16, 53-72.
- Teigen, K.H. & Karevold, K.I. (2005) Looking back versus looking ahead: Framing of time and work at different stages of a project. *Journal of Behavioral Decision Making*, 18, 229-246.
- Thaler, R. (1985). Mental accounting and consumer choice. *Marketing Science*, 4, 199-214.
- Thaler, R. (1999). Mental accounting matters. *Journal of Behavioral Decision Making*, 12, 183-206.
- Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453-458.
- Tversky, A. & Kahneman, D. (1986) Rational choice and the framing of decisions. *The Journal of Business*, 59, s251- s278.
- Tversky, A. & Kahneman, D. (1981) The framing of decisions and the psychology of choice. *Science*, 211 (no. 4481), 453-458.
- Van Buiten, M. & Keren, G. (2009b). Speakers choice of frame in binary choice: Effects of recommendation mode and option attractiveness. *Judgment and Decision Making*, 4, 51-63.
- Wagenaar, W.A. & Sagaria, S. (1975) Misperception of exponential growth. *Perception & Psychophysics*, 18, 416-422.
- Wagenaar, W.A. & Timmers, H. (1979) The pond-and-Duckweed problem: Three experiments on the misperception of exponential growth. *Acta Psychologica*, 43, 239-251.
- Wänke, M., Schwarz, N. & Noëlle-Neumann, E. (1995). Question wording in comparative judgments: Understanding and manipulating the dynamics of the direction of comparison. *Public Opinion Quarterly*, 59, 347-372.

Appendix

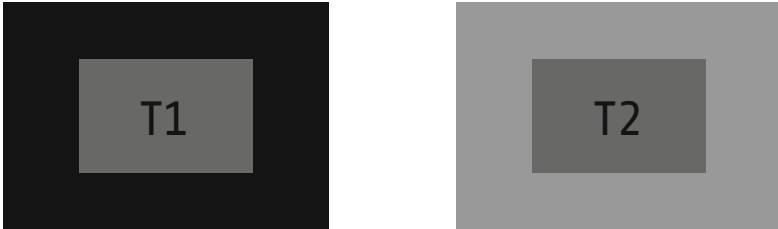


Figure 1: Perceptual framing – the two inner rectangles are identical, but the one on the right seems darker due to a lighter frame.

			K&T	VB & K	
(A)	Sure	200 will be saved	72%	76%	} Positive frames
(B)	Risky	p=1/3 600 saved	28%	84%	
(A'')	Sure	400 will die	22%	24%	} Negative frames
(B'')	Risky	p=2/3 600 will die	78%	16%	

Table 1: Results of the Asian disease problem as conceived by listeners (first column) and speakers (second column).

The first column portrays the percentage of participants (in the role of listeners) who chose the sure program when exposed to the positive frame, and the corresponding percentages among participants exposed to the negative frame. (Kahneman & Tversky, 1981). The second column represents speaker's choice of frame and is taken from van Buiten & Keren (2009a).

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Framing and communication: The role of frames in theory and in practice

Framing effects of different sorts are prominently present in the decision-making literature and beyond it. Framing refers to situations in which decision makers respond differently to problems that, though differently framed (formulated), are considered equivalent from a normative analytical viewpoint. In this paper Gideon Keren (TiU) interprets the literature on how framing influences decision-making on taking and covering risk.