

## **The Frame Effect Revisited: Is Trust able to Transform People from Risk Averse to Risk Taker?**

**Giovanna GALLI**

University of Modena and Reggio Emilia, Department of Communication and Economics  
giovanna.galli@unimore.it

**Marcello TEDESCHI**

University of Modena and Reggio Emilia, Department of Communication and Economics  
marcello.tedeschi@unimore.it

**Maria Cristiana MARTINI**

University of Modena and Reggio Emilia, Department of Communication and Economics  
mariacristiana.martini@unimore.it

### **Abstract**

When people have to choose between two equivalent options, they prefer the certain one in gain domain and probabilistic one in loss domain: this is the main statement of Tversky and Kahneman (1981) Frame effect. It has been explained through rational choice theory, according to which people tend to underestimate large probabilities and therefore to under-evaluate the expected value of a probabilistic choice (Tversky, Kahneman (1981, 1986). Nevertheless, different literature contributions assert trust is able to reduce risk perception and therefore can drive people towards decisions they wouldn't have taken with high risk perception (Galli, Nardin, 1997; Tedeschi, Galli, Martini, 2017). If this assertion is generally valid, trust should have impact also on frame effect, at least reducing risk aversion in gain domain. Three preliminary tests have been conducted to measure the impact of trust on risk perception in binary choices. Frame effect has been reproduced in three different scenarios, people having to choose between two alternatives with the same expected value, both in gain and loss domain. Each scenario was first tested in its original formulation and then with the introduction of a more detailed description of the context or alternatives, introducing items able to represent cognitive and emotional dimensions of trust. Results confirm risk aversion reduction in gain domain with a 'magnitudo' of the effect depending on the trust construct adopted to enrich alternatives.

**Keywords:** Frame Effect, Brand Trust, Interpersonal Trust.

**JEL classification:** M31.

### **1. Theoretical framework**

This paper aims to study the role that trust may have when people face a choice under risk or uncertainty.

We adopt the traditional experimental approach of Kahneman Tversky's framing effect but through two different manipulation, in the scenario's problem or in the available alternatives, we introduce two main trust dimensions that is competence and benevolence.

It happens, even in everyday life, we have to face decisions with some degree of risk. According to a classic economic approach to decision making under risk, we should analyse the problem in a strictly rational mode, that is, we should select that alternatives with the highest expected value weighting each alternative value by its probability. Unfortunately, quite rarely we select these strategies because off the effort they need to be developed. More reasonably, we evaluate risky alternatives adopting some less demanding strategies based on both individual and contextual factor. Indeed risk perception may depends on several factors that look more or less relevant in each choice context.

For instance, people tend to evaluate an event as more or less risky, that is probable, if images

of such event can be retrieved, rapidly or slowly, from memory or, again, if they are able to classify that event into a broader representative category. From the seminal work of Kahnemann and Tversky (1979) until today, a big amount of researches have highlighted how risk can be perceived. Kahneman and Tversky (1981, 1986) reveal that people exhibit a regular gap between stated probabilities of an event and the perception they have of the same result. They have the predisposition to overweight small probabilities and underweight large probabilities. Moreover, it seems that underweighting of stated probabilities increases when uncertainty about possible outcomes increases (Einhorn, Hogarth, 1988). In choice contexts risk attitude can be influenced by problem description or feelings and, accordingly, preferences can emerge from adaptive decision making processes (Blavatsky, 2009; Lichtenstein, Slovic, 2006; Payne, Bettman, Johnson 1988, 1993; Tversky, Slovic, Kahneman 1990; Loewenstein, et al., 2001). One of the most interesting axiom of Prospect Theory, perhaps also the most disruptive behavioral hypothesis against the paradigm of Expected Utility theory, assert people is often risk averse when the decision problem is set up in the domain of gain or in a positive frame and, on the contrary, they tend to be more risk prone when the decision problem is framed in term of losses or in the negative domains. This hypothesis highlight the effects of a changing from the reference point, or status quo, and the different sensitivity people show for gains or losses.

Nonetheless, even if prospect theory and its related analysis of risk can be considered a cornerstone in the behavioral approach, there are other perspective in the studies of economic behavior that shed light on different variables able to alter individual risk perception or the way people face risky choices.

Trust, among others, has been sponsored as a variable able to modify individual perception of risk and uncertainty through cognitive and/or emotional intervening processes (Galli, Nardin, 1997; Tedeschi, Galli, Martini, 2017; Pappas 2016). If this assertion is generally valid, trust should have impact also on frame effect, at least reducing risk aversion in gain domain (Lewicki, Bunker, 1996; Sheppard, Sherman, 1998).

Trust, in interpersonal relations, can be represented as the reliability on a subject's non-opportunistic behavior and on his/her honesty and care assistance or, also, as the willingness of a person to depend on the actions of another one. Even if the relationship between risk and trust has been analyzed deeply and supported in different research field (Lin 2003; Fairley et al. 2016; Delbufalo 2015) a large part of the literature on this topic consider trust both a mono-dimensional construct and a multi-dimensional one with each dimension influencing in different ways relevant and related marketing constructs.

Adopting in-depth investigated key features on interpersonal trust, Delgado (2003, 2004), suggests the existence of two main dimensions, competence and benevolence, which define the whole construct in a more complete way. Other authors have underlined the existence of more than two dimensions.

About the relationship between trust and risk, several authors have argued perceived risk affects trust, whereas the causal relationship between the two constructs can be reversed: trust could mitigate risk perception, which in turn directly affects choice or intention. Moreover, risk grows when uncertainty grows, so that this last variable need to be considered to completely evaluate the interdependent role of risk and trust.

This paper focuses on the relation between trust and risk attitude. In particular, we assume that trust affects risk perception and consequently individual risk attitude. To achieve this object, four experiments have been conducted to measure the impact of trust on risk perception in binary choices. Frame effect has been reproduced in three different scenarios, people having to choose between two alternatives with the same expected value, both in gain and loss domain. Each scenario was first tested in its original formulation and then with the introduction of a more

detailed description of the context or of the alternatives, introducing items able to represent cognitive and emotional dimensions of trust such as competence and benevolence

## 2. Methodology, data analysis and results

Three different scenario (mobile phone, financial investmet, sea aquarium) have been developed to test the classical Kahneman and Tvesky?s framing effects.

To test the effects of trust on risk attitude two different manipulation of trust traits are adopted. In two scenarios (mobile phone, financial investment) respondents chose between alternatives (sure gain/loss vs probabilistic gain/loss) offered by a neutral, competent o benevolent assistant described in the scenario.

In other two scenarios (financial investment, aquarium) a neutral, benevolent or competent traits are described in the alternatives available.

In the first manipulation, respondents face two alternatives presented in the same neutral, benevolent or competent scenario.

In the second manipulation respondent face two alternatives each characterized by a neutral, benevolent or competent description. In particular the traits of benevolence and competence are set against each other both in positive and negative frame

Therefore our hypothesis are:

According to Kahneman and Tversky’s prospect theory we expect sure gain be preferred to probabilistic one in positive frame and the opposite in negative frame. This should apply in all conditions, that is with neutral benevolent and competent description. Moreover since choice in positive domain are less cognitive demanding than choice in negative domain (Gonzales et al. 2005) benevolence trust description should alter respondents risk attitude. When both competence and benevolence are compared between alternaives they will affect risk attitude with a different degree.

Experiments were submitted online to 591 students from january to june. Overall 24 different binary choices were presented and each respondet were randomly assigned to three different choice conditions conveniently separated by other filler.

The collected data were analysed using descriptive statistics, and T-test.

Respondents of the first scenario (mobile phone) deal with a problem described as follows:

### MOBILE PHONE

Unfortunately, some days ago, your new mobile phone of your beloved brand broke and you sent it to the official authorized repair shop to be fixed in guarantee. The repair shop calls and informs you that about 20 gigabytes of your photos could be lost. Unfortunately, you did not save them in other safer place. The repair shop of your beloved brand (...) asks you to choose among the followings two alternatives

(...)\* (*Benevolence description: ... always helpful in difficult choices and willing to face difficulties for you*)  
(*Competence description: ... with great knowledge and experience*)

| Positive frame  | Negative frame  |
|---|---|
| <b>Option A:</b> 7gigabytes will be saved<br><b>Option B:</b> 35% probability to save 20 gigabytes and 65% probability to save nothing€ | <b>Option A:</b> 13 gigabytes will be lost<br><b>Option B:</b> 65% probability to lose 20gigabytes and 35% lose nothing |

Results in the mobile phone scenario (trust described in the scenario) show a significative frame effect (Table 1). Since framing effect appear when preferences for the sure positive alternative are higher (not simply different) than preferences for sure negative alternative results in competent condition are retained too.

In this scenario there are no evidence that benevolence or competence affect risk attitude

(aversion or propensity) of respondents.

**Table. 1 Mobile phone**

|                       |                      | Neutral  |              | Benevolent |              | Competent |              |
|-----------------------|----------------------|----------|--------------|------------|--------------|-----------|--------------|
|                       |                      | N        | %            | N          | %            | N         | %            |
| <b>Positive frame</b> | Sure Alternative     | 46       | <b>63,89</b> | 25         | <b>56,82</b> | 27        | <b>51,92</b> |
|                       | Probable Alternative | 26       | 36,11        | 19         | 43,18        | 25        | 48,08        |
| <b>Negative frame</b> | Sure Alternative     | 13       | <b>28,26</b> | 15         | <b>33,33</b> | 12        | <b>32,43</b> |
|                       | Probable Alternative | 33       | 71,74        | 30         | 66,67        | 25        | 67,57        |
|                       | <i>t</i> -test       | P= 0,000 |              | P= 0,026   |              | P= 0,068  |              |

The second scenario consist of two choices between returns on shares recommended by a neutral, benevolent or competent financial advisor. Similarly to the previous case, trust was described in the problem scenario as follows.

#### FINANCIAL INVESTMENT (trust described in the scenario)

You have always used a financial consultant and, with his help, you have invested part of your savings in a portfolio of shares. Your consultant calls and informs you that, due to the high price volatility, the expected returns for this year are at risk of approximately € 2000. The consultant, (...)\*, asks you to choose between two different strategies A and B to operate on your portfolio with the following expected results:

(...)\* (*Benevolence description: ... always helpful in difficult choices and willing to face difficulties for you*)  
(*Competence description: ... with great knowledge and experience*)

| Positive frame  | Negative frame  |
|---|---|
| <b>Option A:</b> 700€ will be saved<br><b>Option B:</b> 35% probability to save 2000€ and 65% probability to save 0 € | <b>Option A:</b> 1300€ will be lost<br><b>Option B:</b> 65% probability to lose 2000€ and 35% lose 0€ |

Also in this experiments significant framing effect occur in each condition (neutral, benevolent, competent). However the role of a benevolent financial advisor play, in this case, a significant effect reducing preferences for the sure positive alternative from 73% to 52,2% ( $p = 0,051$ ). In other words benevolence reduce risk aversion and push respondents to prefer the riskier alternative (Table 2).

**Table. 2 Financial investments**

|                       |                      | Neutral  |             | Benevolent |             | Competent |             |
|-----------------------|----------------------|----------|-------------|------------|-------------|-----------|-------------|
|                       |                      | N        | %           | N          | %           | N         | %           |
| <b>Positive frame</b> | Sure Alternative     | 27       | <b>73,0</b> | 24         | <b>52,2</b> | 29        | <b>64,4</b> |
|                       | Probable Alternative | 10       | 27,0        | 22         | 47,8        | 16        | 35,6        |
| <b>Negative frame</b> | Sure Alternative     | 19       | <b>36,5</b> | 19         | <b>26,4</b> | 13        | <b>29,5</b> |
|                       | Probable Alternative | 33       | 63,5        | 53         | 73,6        | 31        | 70,5        |
|                       | <i>t</i> -test       | P= 0,001 |             | P= 0,004   |             | P= 0,001  |             |

In the following experiments the benevolent and competent traits of trust have been moved from problem text to alternatives. In particular benevolence and competence have been described in each binary choice and assigned alternatively to sure alternatives or to probable alternatives, both in positive and negative frame. This manipulation should give respondents a better understandings of these two traits since they can appreciate them in contraposition.

## FINANCIAL INVESTMENT (trust described in the alternatives)

In the last months, you invested 2.000 € in shares and now, because of the high volatility of the markets and the consequently price reduction, you find yourself in a very risky situation. To decide what to do you ask to two different financial consultants that you have known for a long time. They suggest the following solutions. Which do you choose?

| Positive frame   | Negative frame   |
|--|--|
| <b>Consultant A, (...)*</b> suggests a strategy with the following expected result: <i>700€ will be saved</i>  | <b>Consultant A, (...)*</b> suggests a strategy with the following expected result: <i>1300 € will be lost</i>                             |
| <b>Consultant B, (...)*</b> suggests a strategy with the following expected result: <i>35% probability to save 2000€ and 65% probability to save 0 €</i> | <b>Consultant B, (...)*</b> suggests a strategy with the following expected result: <i>65% probability to lose 2000 € and 35% lose 0 €</i> |

(...)\* (Benevolence description: ... that you have always believed helpful in difficult choices and willing to face difficulties for you)

(Competence description: ... that you have always believed with great knowledge and experience)

Results shows that framing effects hold only in those conditions in which trust was clearly described in the alternatives but not in the neutral condition, that is, without trust involved (Table 3)

In the positive frame, trust traits do affect risk aversion of the respondent. However, even if preferences for sure alternative increase, significantly, when it is characterized by benevolence ( $p = 0,047$ ) they grow even more when sure alternative is characterized by competence ( $p = 0, 01$ )

**Table 3 Financial investment (trust described in the alternatives)**

|                       |                      | Neutral  |              | Benevolent      |              | Competent       |              |
|-----------------------|----------------------|----------|--------------|-----------------|--------------|-----------------|--------------|
|                       |                      | Neutral  |              | Competent       |              | Benevolent      |              |
|                       |                      | N        | %            | N               | %            | N               | %            |
| <b>Positive frame</b> | Sure Alternative     | 26       | <b>49,06</b> | 27              | <b>61,36</b> | 40              | <b>80,0</b>  |
|                       | Probable Alternative | 27       | 50,94        | 17              | 38,64        | 10              | 20,0         |
| <b>Negative frame</b> | Sure Alternative     | 21       | <b>37,50</b> | 21              | <b>42,86</b> | 18              | <b>41,86</b> |
|                       | Probable Alternative | 35       | 62,50        | 28              | 57,14        | 25              | 58,14        |
|                       | <i>t</i> -test       | P= 0,223 |              | <b>P= 0,075</b> |              | <b>P= 0,000</b> |              |

The last experiment follows the same format of financial investment with trust described in the alternatives. In this case the scenario describe a situation really close to the famous Asian Disease of Kahneman and Tversky. Respondents had to choose between alternatives that involved the life of very rare fishes in a sea aquarium.

## SEA AQUARIUM (trust described in the alternatives)

Imagine you have a sea aquarium with 20 fishes of rare beauty. Unfortunately, in the last days, the aquarium has been infected by a bacterium and all fishes are at risk of contamination and death. You turned to your usual aquarium shop that proposed you two alternative brand medicine with these expected results. Which do you choose?

| Positive frame   | Negative frame   |
|--|--|
| <b>Brand medicine A: (...)*</b> expected result: 7 fishes will be saved  | <b>Brand medicine A: (...)*</b> expected result: 13 fishes will die                                    |
| <b>Brand Medicine B: (...)*</b> 35% probability 20 fish will be saved and 65 % probability no fish will be saved | <b>Brand Medicine B: (...)*</b> 65% probability 20 fish will die and 35 % probability no fish will die |

(...)\* (Benevolence description: ... that you have always believed to be a brand helpful in difficult choices and willing to face difficulties for you)

(Competence description: ... that you have always believed to be a brand with great knowledge and experience)

Also in the last experiment, the framing effect holds in every condition, that is, with alternatives described with or without trust traits.

Trust description do not modify significantly risk attitude, in particular the risk aversion, of the respondents in the positive frame (Table 4) Contrary to our hypothesis trust play a role in negative frame and increase risk propensity when the probable results is characterized by the benevolent form of trust ( $p = 0,074$ )

**Table 4 Sea aquarium**

|                       |                      | Neutral  |              | Benevolent |              | Competent  |              |
|-----------------------|----------------------|----------|--------------|------------|--------------|------------|--------------|
|                       |                      | Neutral  | Neutral      | Competent  | Competent    | Benevolent | Benevolent   |
|                       |                      | N        | %            | N          | %            | N          | %            |
| <b>Positive frame</b> | Sure Alternative     | 39       | <b>79,59</b> | 29         | <b>67,44</b> | 40         | <b>71,43</b> |
|                       | Probable Alternative | 10       | 20,41        | 14         | 32,56        | 16         | 28,57        |
| <b>Negative frame</b> | Sure Alternative     | 25       | <b>50</b>    | 21         | <b>39,62</b> | 14         | <b>31,82</b> |
|                       | Probable Alternative | 25       | 50           | 32         | 60,38        | 30         | 68,18        |
|                       | <i>t</i> -test       | P= 0,002 |              | P= 0,007   |              | P= 0,000   |              |

### 3. Discussion

According to Prospect Theory people are more likely to choose a sure gain instead of a probable higher value, when the decision problem is framed in positive manner, while they prefer a larger probable loss to a sure one if the same problem is framed in negative terms.

In other words, changing in a different but logically equivalent way the description of a problem, can give to decision maker a different perception of what he/she is facing.

In order to verify the robustness of this preference reversal we introduced into the decision problem a trust description since it is a relevant factor able to modify individual risk perception. Our results show that such effects is evident in all the conditions except one (third experiment about financial investment). In three experiments over four, trust description, significantly modify risk attitude of the respondents driving them to be more risk seeker. Generally, when people feel they can rely on someone else, that can help them in difficult choice, it is likely they will adopt more extreme decisions. In these cases, attention focus of the decision makers move from probabilities data, difficult to compute, to the more attractive and easier to appreciate, higher payoffs. In particular, in positive domain choice are easier and respondent tend to be more intuitive (Gonzales et al. 2005) and applying fast cognitive processes that reduce the cognitive effort (Payne et al. 1993). Moreover since this process is also emotionally based (Mellers, Schwartz, & Ritov, 1999) benevolence, which is considered an emotional trait of trust, is the best candidate to be responsible for the risk attitude shifting.

When both benevolence and competence are described as part of the alternatives and paired in binary choice (financial investments), risk aversion increase. In these case, presenting the description of the alternatives in an more difficult way, that is quantitative and qualitative information mixed together, affect the fluency of preferences formation. Comparing more complex alternatives push respondents to be more conservative, that is, more risk averse.

In negative domain, where losses looms larger than gain, and displeasure feelings are more relevant, risk propensity increases if the alternative is supported by benevolence.

### 4. Limits, further research and implications

This study has been conducted on a limited number of respondents. Results confirm, overall, the initial hypothesis but some extension should be evaluated to take into account the negative domain of prospect theory.

Even with the limits described, some implications are relevant. Even if trust affect risk a better

understanding of the link between trust and context is needed: trust in the context of money saved/lost or life saved/lost has not the same weight. Equally relevant, use trust description in the scenario or as an attribute of the available alternative can be relevant from an information processing review but some alternative explanation would be interesting in order to understand the framing bias

### References

- BLAVATSKYY, P. R. (2009). *Preference reversals and probabilistic decisions*. Journal of Risk and Uncertainty, 39.
- C GONZALEZ, B., DANA J., KOSHINO H., JUST M. (2005). *The framing effect and risky decisions: Examining cognitive functions with fMRI*. - Journal of Economic Psychology, 26.
- DELBUFFALO E., (2015). *Subjective trust and perceived risk influences on exchange performance in supplier-manufacturer relationships*. Scandinavian Journal of Management 31.
- DELGADO-BALLESTER E. (2004). *Applicability of a brand trust scale across product categories*. European Journal of Marketing, vol. 38, n. 5/6.
- DELGADO-BALLESTER E., MUNERA-ALEMÁN J.L., YAIGÜE-GUILLÉN M. (2003). *Development and validation of a brand trust scale*. International Journal of Market Research, vol. 45, n. 1.
- EINHORN H.J., HOGARTH R.M. (1981). Behavioral Decision Theory: Processes of Judgement and Choice. *Annual Review of Psychology*, 32
- KAHNEMAN D., TVERSKY A. (1979). *Prospect theory: an analysis of decisions under risk*. *Econometrica*, 47.
- KIM FAIRLEY K., SANFEY A., VYRASTEKOVA J., WEITZEL U. B., (2016). Trust and risk revisited. *Journal of Economic Psychology* 57.
- LICHTENSTEIN, S., & SLOVIC, P. (2006). *The construction of preference*. Cambridge: Cambridge University Press
- LIM N., (2003). Consumers' perceived risk: sources versus consequences. *Electronic Commerce Research and Applications* 2
- LOEWENSTEIN, G., WEBER, E. U., HSEE, C. K., WELCH, N. (2001). Risk as feelings. *Psychological Bulletin*, 127.
- NOVEMSKY N., DHAR R., SCHWARTZ N., SIMONSON I. (2007). Preference Fluency in Choice. *Journal of Marketing Research* Vol. XLIV
- PAPPAS N., (2016). *Marketing strategies, perceived risks, and consumer trust in online buying behaviour*. *Journal of Retailing and Consumer Services*, 29.
- PAYNE J.W., BETTMAN J.R., JOHNSON E.J. (1993), *The adaptive decision maker*, Cambridge, Cambridge University Press
- PAYNE J.W., BETTMAN, J.R., JOHNSON E.J. (1988), "Adaptive strategy selection in decision making: an information search and protocol analysis", *Journal of Experimental Psychology: Learning Memory and Cognition*, Vol. 14.
- TVERSKY A., SLOVIC P., KAHNEMAN D. (1990), "The causes of preference reversal", *American Economic Review*, Vol. 80, n.1, March.