Risk taking for oneself and others: A structural model approach*

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Abstract

Economic theory makes no predictions about social factors affecting decisions under risk. We examine situations in which a decision maker decides for herself and another person under conditions of payoff equality, and compare them to individual decisions. Estimating a structural model we find that responsibility leaves utility curvature unaffected, but accentuates the subjective distortion of very small and very large probabilities for both gains and losses. We also find that responsibility reduces loss aversion, but that this results only obtains under some specific definitions of the latter. These results serve to generalize and reconcile some of the still largely contradictory findings in the literature. They also have implications for financial agency, which we discuss.

Keywords: risk preferences; responsibility; social preferences;

JEL-classification: C93; D03; D80; O12

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1 Introduction

The focus of decision theory has long been on individual decision processes, whereby the decision maker is the only person affected by her decisions. In many situations, however, financial decisions have payoff consequences affecting not only the decision maker herself but also others—be they family members, or principals for whom an agent is called to make a decision. We focus on situations where incentives are perfectly aligned between agent and principal (e.g., a CEO compensated in restricted company stock; a family head who administers the finances for the household). The question, then, is whether decisions taken when responsible for somebody else's payoffs as well as one's own differ from decisions taken in the purely individual context. The answer to this question has implications for whether what we know from the wide-ranging literature on individual decisions can be directly applied to such situations of *responsibility*, or not.

We are interested in situations of *payoff equality*, in which a decision maker and a passive other (whom we shall refer to as *recipient*) are affected by the payoffs resulting from a decision in a symmetric fashion. Economic theory makes no predictions about this type of situation, and in general interactions between risk preferences and other-regarding behavior are poorly understood (Güth, Levati and Ploner, 2008). Bolton and Ockenfels (2010) found no difference between a situation of individual decisions and one in which the decision maker and the recipient were equally affected by the decisions. Pahlke, Strasser and Vieider (2015) studied decisions under payoff equality for the gain and loss domain, as well as for different probabilities and for mixed gain-loss prospects. They concluded that responsibility increased risk aversion for moderate to large probability prospects in the gain domain (a finding later replicated by Bolton, Ockenfels and Stauf, 2015), but increased risk seeking for moderate probability losses and small probability gains, pointing to an accentuation of the four-fold pattern of risk attitudes found under prospect theory (Tversky and Kahneman, 1992). They found no effect of responsibility on mixed gain-loss prospects. Humphrey and Renner (2011) found no effect of responsibility using a price-list design popularized by Holt and Laury

(2002). Andersson, Holm, Tyran and Wengström (2015) estimated a structural model of decision making and found no effect of responsibility on utility curvature, but found loss aversion to be reduced relative to individual decisions in situations of payoff equality.

Choice situations involving payoff equality must be distinguished from a number of other decision situations, which, while being related, differ from it in one or more important aspects. Most closely related are situations in which an agent decides for a principal without any consequences to herself, and which compare such an agency choice to individual decisions the agent takes for herself. Investigating such a situation, Chakravarty, Harrison, Haruvy and Rutström (2011) found increased risk taking in decisions for others. Reynolds, Joseph and Sherwood (2009), on the other hand, found agents to be more risk averse when deciding for a group of three to five others than when deciding for themselves. Eriksen and Kvaløy (2010) investigated myopic loss aversion using an investment task (Gneezy and Potters, 1997), and found risk taking to decrease in decisions for others. Using the same task, Pollmann, Potters and Trautmann (2014) found risk taking to *increase* when making decisions for others. In agreement with the last results, Polman (2012) found loss aversion to decrease in decisions for others in a simple choice task.[1] Other more remotely related studies concern situations in which payoffs accrue to others in strategic game settings (see e.g. Charness and Jackson, 2009), or in group decisions (e.g. Sutter, 2009)—see Trautmann and Vieider (2012) for an overview. We will henceforth concentrate on situations of payoff equality, but will return to these related studies in the discussion.

In this paper we revisit the issue of responsibility under payoff equality using a rich data set specifically designed to estimate structural models. Compared to Pahlke et al. (2015), we explore an even richer domain of decision situations,

[1] Yet a different class of decision situations involve so-called *accountability*. Pahlke, Strasser and Vieider (2012) investigated situations of payoff equality, where the treatment conisted in requiring the decision makers to justify her decisions in front of the recipient. They found that such accountability reduces loss aversion. Pollmann et al. (2014) implemented a different accountability mechanism in situations where agents took decisions on behalf of principals, where the principal could reward the agent for the decision taken either before the outcome becomes known or after. They find this accountability mechanism to reduce risk taking for both accountability mechanisms relative to decisions for others without accountability.

including gains and losses across a variety of probability levels and outcomes, as well as mixed gain-loss prospects. This allows us to estimate a full structural model of prospect theory, which makes it possible to identify systematic trends in the data and to test different hypotheses on the effect of responsibility against each other. Compared to the structural model estimated by Andersson et al. (2015), who use only 50-50 prospects over gains or mixed prospects over gains and losses, the richness of our decision tasks allows us to estimate a completely flexible structural model, including different utility functions for gains and losses, domain-specific probability weighting functions, and loss aversion. This is important, inasmuch as different underlying modeling assumptions in structural estimations can result in very different estimates of loss aversion, both in terms of absolute values and in correlation analysis. This also allows us to approximate some of the different decision situations and modeling assumptions used in the literature on responsibility under payoff equality, and thus to try and consolidate a quickly growing but still largely contradictory literature.

The results paint a clear picture. For both gains and losses, probability weighting becomes more extreme under responsibility relative to individual decisions. This results in an accentuation of the four-fold pattern of risk preferences under responsibility relative to the individual baseline—increased risk seeking for small probability gains and moderate to large probability losses, increased risk aversion for moderate to large probability gains and small probability losses. This is important inasmuch as deviations from linear probability weighting are generally considered a rationality violation (Wakker, 2010). If people overweight small probabilities and underweight large probabilities more when responsible, this means that they leave even more money on the table when responsible for somebody else than when deciding only for themselves.

Our results may also reconcile the different conclusions reached by Bolton and Ockenfels (2010), Pahlke et al. (2015), Humphrey and Renner (2011), Andersson et al. (2015), and Bolton et al. (2015) concerning the effects of responsibility for moderate probability gains. This derives directly from our insight that the effect of responsibility changes systematically across probability levels, so that differences will be most pronounced for very large and very small probabilities, while they are likely to be weaker for the 50-50 probabilities employed in most studies. We also confirm the finding by Andersson et al. (2015) of reduced loss aversion under responsibility. This finding, however, holds only for a specific definition of loss aversion mimicking their structural model. We fail to replicate the effect under a more flexible definition that emerges naturally from our own model, thus partially reconciling their finding with the null-finding by Pahlke et al. (2015). Using a definition that captures overall behavior in the mixed prospect (i.e., capturing risk preference over mixed prospects more generally), we find a marginally significant reduction in risk aversion over mixed prospects under responsibility.

2 Modeling and experiment

2.1 Theory and hypotheses

We adopt cumulative prospect theory (PT) as our main model of choice (Tversky and Kahneman, 1992), given that we are interested in descriptive modeling. PT includes reference-dependent formulations of expected utility theory (EUT) as a special case (Andersson et al., 2015; Diecidue and van de Ven, 2008; von Gaudecker, van Soest and Wengström, 2011). PT's main difference from reference-dependent formulations of EUT is that it allows for subjective transformations of probabilities into decision weights in addition to subjective transformation of outcomes into utilities. This will allow us to test hypotheses of a cautious shift under responsibility (Bolton and Ockenfels, 2010; Bolton et al., 2015) directly against a hypothesis of an accentuation of the four-fold pattern of risk preferences (Pahlke et al., 2015), as well as any potential effects on loss aversion (Andersson et al., 2015).

The four-fold pattern of risk preferences consists in the finding that people are generally risk averse for moderate to large probability gains and small probability losses, while being risk seeking for small probability gains and moderate to large probability losses (Tversky and Kahneman, 1992). This pattern derives directly from the concept of *probabilistic insensitivity*, whereby people tend to systematically distort probabilities, overweighting small probabilities and underweighting moderate to large probabilities (Abdellaoui, 2000; Bleichrodt and Pinto, 2000; Kilka and Weber, 2001; Wu and Gonzalez, 1996).[2]

Probabilistic insensitivity is best characterized in terms of upper or lower subadditivity (Tversky and Wakker, 1995), whereby the same difference in terms of probabilities results in a smaller difference in probability weights away from the endpoints of $p = 0$ and $p = 1$ than close to them, thus giving rise to the characteristic inverse-S shape of the weighting function. Figure 1 illustrates this idea for a typical probability weighting function. Moving from a probability of 0 to a probability q results in a probability weight of $\pi(q)$. However, once we increase the probability from q to $2q$, this adds only an additional $\pi(2q) - \pi(q)$ to the overall decision weight, which is clearly smaller than $\pi(q)$. A parallel but mirrored observation holds for the opposite side of the probability spectrum, where $1 - \pi(1 - q)$ is much larger than the decision weight contributed by an equivalent increase in probability mass aways from certainty, $\pi(1-q) - \pi(1-2q)$.

Economic theory is silent on the type of decisions described in this paper.[3] Building on the findings of Pahlke et al. (2015), we hypothesize that responsibility may lead to hightened affect relative to individual decisions. Rottenstreich and Hsee (2001) showed that increased affect associated with an outcome reduces probabilistic sensitivity, even keeping subjective valuations of the outcomes constant. Hsee and Rottenstreich (2004) further showed that such increased affect will result in larger jumps at the probability endpoints, and thus a flatter probability weighting function in intermediate probability ranges. This line of reasoning leads us to hypothesize that being responsible for somebody else's outcomes as well as one's own will result in decreased probabilistic sensitivity.

[2]We follow the convention in the literature to apply probability transformations to the highest outcome in absolute terms, so that effects for losses are mirrored with respect to those for gains. This means that, assuming linear utility, the overweighting of small probabilities indicates risk seeking for gains, but risk aversion for losses. Similarly, the typically found underweighting of large probabilities indicates risk aversion for gains, but risk seeking for losses.

[3]Notice that theories modeling social effects on decisions, such as the model of Fehr and Schmidt (1999), concern only situations of payoff inequality, and make no predictions for the case in which the payoffs of the decision maker and the recipient are exactly equal.

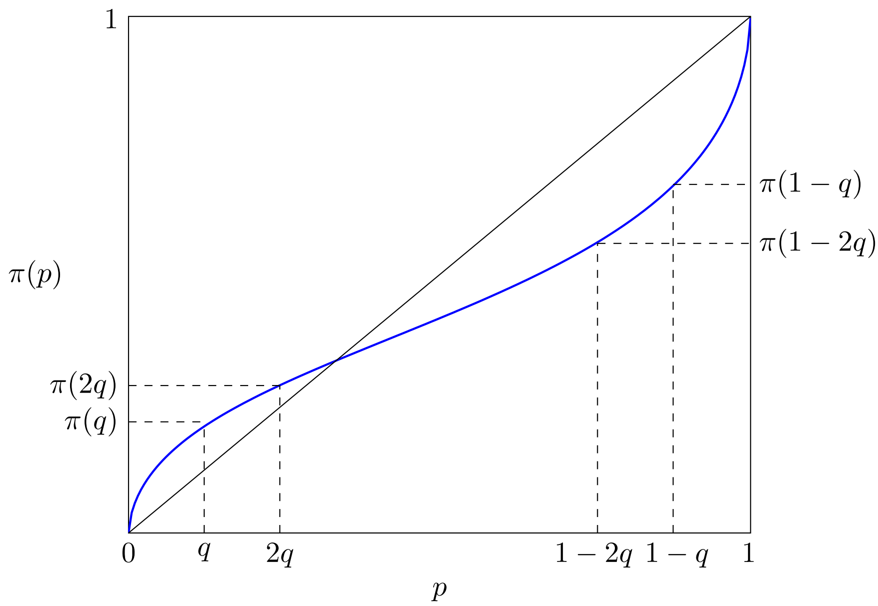


Figure 1: The certainty and possibility effects and probabilistic insensivity

We are now in a position to formalize our simple model. We describe decisions over binary prospects offering a probability p of winning (losing) an outcome x, or else y with a complementary probability, represented $(x, p; y)$. For outcomes that fall purely into one domain, i.e. $x > y \geq 0$ or $0 \geq y > x$, we can represent the utility of a prospect ξ, $U(\xi)$, as follows:

$$U(\xi_i) = w_r^j(p_i)v(x_i) + [1 - w_r^j(p_i)]v(y_i) \tag{1}$$

whereby the probability weighting function $w(p)$ is a strictly increasing function that maps probabilities into decision weights, and which satisfies $w(0) = 0$ and $w(1) = 1$; the superscript j indicates the decision domain and can take the values $+$ for gains and $-$ for losses; the subscript i indicates the particular prospect at hand; and $v(.)$ represents a utility or value function which indicates preferences over outcomes, with a fixed point such that $v(0) = 0$. The subscript r to the probability weighting function indicates that probability weighting (and only probability weighting) is considered a function of the treatment, and may thus differ between individual decisions and decisions under responsibility. For mixed prospects, where $x > 0 > y$, the utility of the prospect can be represented as:

$$U(\xi_i) = w_r^+(p_i)v(x_i) + \lambda_r w_r^-(1-p_i)v(y_i) \quad (2)$$

where λ indicates loss aversion, generally represented as a kink in the utility function at the origin (Abdellaoui, Bleichrodt and Paraschiv, 2007; Köbberling and Wakker, 2005). With this theoretical setup in mind, we can now further clarify our hypotheses:

> ***H1***: Being responsible for somebody else's outcomes in addition to one's own results in an accentuation of the four-fold pattern of risk preferences
>
> ***H2***: There is no uniform 'cautious shift' of risk preferences over the outcome space, so that utility curvature is unaffected by responsibility
>
> ***H3***: Loss aversion is reduced by responsibility

We have explained our reasoning behind H1 and H2 above and will return to it in the discussion.[4] The reasoning for loss aversion is different. Indeed, it may appear odd that one treats loss aversion differently than utility curvature, since under prospect theory loss aversion is part of the utility function. Nevertheless, loss aversion is well known to be the most volatile component of utility (List, 2004; Wakker, 2010). There exists furthermore evidence that loss aversion may be reduced under conditions of responsibility (Andersson et al., 2015), or when decision makers think they may need to justify their choices to somebody else (Pahlke et al., 2012; Vieider, 2009).

2.2 The experiment

We recruited 200 subjects at the National University of Colombia, Medellín Campus, and randomly assigned half to the individual and half to the responsibility

[4] An alternative prediction derives from the observation that being responsible for somebody else entails deciding over twice the monetary stakes. In this case, we would expect utility to be more concave under responsibility than in the individual treatment (or the weighting function to shift uniformly downwards for gains), since risk aversion has been found to increase in stake levels for both large and small probabilities for gains (Fehr-Duda, Bruhin, Epper and Schubert, 2010; Holt and Laury, 2002; Kachelmeier and Shehata, 1992; Lefebvre, Vieider and Villeval, 2010). This alternative hypothesis will also be tested below.

treatment.[5] 55% of subjects were male, and the average age was 21.2 years. Most of the subjects studied mathematics (72%) or economics (10%). The experiment was run using paper and pencil. The whole experiment, including payout, lasted about 1h to 1h15.

We elicit certainty equivalents (*CEs*) to measure risk preferences. CEs provide a rich amount of information, are easy to explain to subjects, and the sure amounts of money to be used in the elicitation are naturally limited between the lower and upper amount of the prospect. This makes them well suited to estimate structural models (Abdellaoui, Baillon, Placido and Wakker, 2011; Bruhin, Fehr-Duda and Epper, 2010). By varying the outcomes and the probabilities involved, it is easy to create the type of orthogonality needed to separate attitudes towards outcomes from attitudes towards probabilities, reflected in the utility function and the probability weighting function respectively.

Table 1: Decision tasks, amounts in PPP Euros

gains	losses	mixed
(5, 1/2; 0)	(-5, 1/2; 0)	0∼(20, 1/2; z*)
(10, 1/2; 0)	(-10, 1/2; 0)	
(20, 1/2; 0)	(-20, 1/2; 0)	
(30, 1/2; 0)	(-20, 1/2; -5)	
(30, 1/2; 0)	(-20, 1/2; -10)	
(30, 1/2; 10)		
(20, 1/8; 0)	(-20 1/8; 0)	
(20, 2/8; 0)	(-20, 2/8; 0	
(20, 3/8; 0)	(-20, 3/8; 0)	
(20, 5/8; 0)	(-20, 5/8; 0)	
(20, 6/8; 0)	(-20, 6/8; 0)	
(20, 7/8; 0)	(-20, 7/8; 0)	

For mixed prospects, the loss z was varied in the elicitation

Overall, we elicited 36 CEs per subject, but we here concentrate on the 24 choice lists involving known probabilities. Table 1 provides an overview of the decision tasks, and figure 2 shows an example of a choice list. Prospects are described in the format $(x, p; y)$, where p is the probability of obtaining x, and y obtains with a complementary probability $1 - p$, $|x| > |y|$. Outcomes are shown in PPP Euros (Euro 1 = US \$1.2 = 1,500 Columbian Pesos in PPP). The

[5] The 100 subjects in the individual treatment are also part of the Colombian sample in the large data set presented by Vieider, Lefebvre, Bouchouicha, Chmura, Hakimov, Krawczyk and Martinsson (2015b).

sure amounts in a choice list were always made to vary between the lowest and the highest amount, avoiding potential distortions due to noise in unbalanced choice lists (Andersson, Tyran, Wengström and Holm, 2013). We imposed single switching in the choice lists, so as to impute a unique switching point to each subject. This was done to avoid potential issues with different proportions of multiple switchers across treatments, since no clear preferences can be assigned to such individuals assuming monotonicity. It has also the advantage of allowing for efficient econometric approaches making direct use of the switching point. The average between the last sure amount for which the safe option was chosen and the first for which the prospect was chosen is then encoded as the CE of the prospect. In addition to the prospects over gains and losses, we used one mixed prospect, which is necessary to obtain a measure of loss aversion. In this case, we obtained the value z^* which satisfies the indifference $0 \sim (20, 1/2; -z)$, where z varied in a choice list from -20 to -2.[6] The full instructions for the responsibility treatment can be found in the appendix. Instructions for the individual treatment are available for download at www.ferdinandvieider.com/instructions.html.

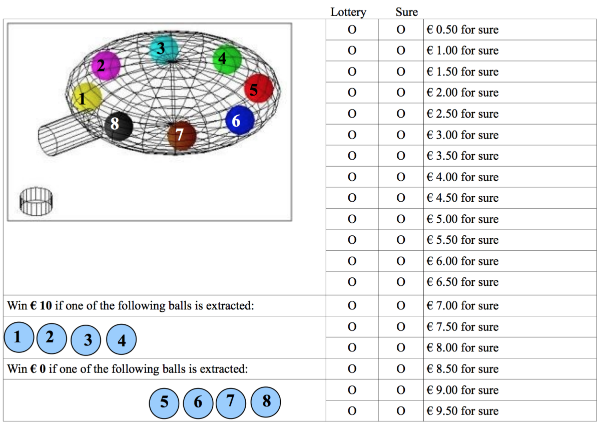


Figure 2: Example of choice list to elicit a CE

Gains were administered before losses, which took part from an endowment (see Etchart-Vincent and L'Haridon, 2011, for evidence that it does not matter

[6]This follows standard procedures for mixed prospects, in which usually either the gain or the loss amount in the prospect is varied in the choice list instead of the sure amount. Varying the sure amount would require it to have both positive and negative amounts, with an all-too-salient fixed point at zero that might distort choices.

whether losses take place from an endowment or are real). We also had ambiguous prospects that will not be analyzed here, and which were always presented in block after the risky prospects. The prospects were presented to subjects in a fixed order, whereby first 50-50 prospects were presented in order of ascending expected value, and then the remaining prospects were presented in order of increasing probability. The fixed order was kept since a large-scale pilot involving 330 subjects showed that it made the task less cognitively demanding than a random ordering, while having no effect on the preference parameters (results available upon request).[7] The ordering is the same across the treatment and control groups.

The treatment was implemented using the strategy method. In the individual condition, each subject was told that (s)he would play out one of the decisions selected at random—the standard procedure in this kind of experiment. Each task had the same probability of being extracted for real play, after which one of the decisions in the chosen task would be chosen at random, again with equal probability. In the responsibility condition, subjects learned that, after they had completed the experiment, half of them would be randomly extracted to play the role of decision maker, and half the role of recipient. This allowed us to have a relatively large subject pool, and avoided additional complications arising from the need to invite completely passive recipients. Each decision maker would then be randomly and anonymously paired with one recipient. At this point, one of the choices of the decision maker would be randomly extracted to be played for real money according to procedures identical to those used in the individual condition. The payoff obtained from playing this task would then be given both to the decision maker and to the recipient, whose own decisions would not be played out.

[7] This large-scale pilot was executed in order to find the best compromise between ease of understanding and logistical tractability and data validity. Having a large sample for the analysis of order effects avoids false null findings due to insufficient power.

2.3 Functional forms and econometric approach

In order to specify the model, let us now determine the functional forms to be used. For the utility function, we use a sign-dependent power function. This is the most popular function in the empirical literature and it has some desirable theoretical qualities (Wakker, 2008). It has also been found to provide the best compromise between fit and parsimony in prospect-theory models (Stott, 2006). We thus adopt the following functional form:

$$v(x) = \begin{cases} x^{\mu} & \text{if } x > 0 \\ -(-x)^{\nu} & \text{if } x \leq 0 \end{cases} \tag{3}$$

where μ and ν are the utility curvature parameters for gains and losses respectively. Using different functional forms does not qualitatively affect our findings. The stability of our results to restrictions on this general form, such as imposing equality of utility curvature for gains and losses, will be examined below.

For weighting, we adopt the 2-parameter weighting function developed by Prelec (1998). Using a two-parameter function gives us maximum flexibility in the estimations. The results are qualitatively stable if we use an alternative two-parameter function such as the one developed by Goldstein and Einhorn (1987) and Lattimore, Baker and Witte (1992). The function takes the following form:

$$w(p) = exp(-\beta^{j}(-ln(p))^{\alpha^{j}}) \tag{4}$$

where β is a parameter that governs mostly the elevation of the weighting function, with higher values indicating a less elevated function. This indicates the weight assigned to the best outcome for gains, and the weight assigned to the worst outcome for losses. A higher value of β *ceteris paribus* thus indicates increased risk aversion for gains, and increased risk seeking for losses over the probability space on average. The parameter α governs the slope of the probability weighting function and hence probabilistic sensitivity. A value of $\alpha = 1$ indicates linearity of the weighting function (the EUT case), and $\alpha < 1$ representing the typical case of *probabilistic insentivity.* An increase in the four-fold pattern of risk preferences would now be reflected in a lower value of α. A change in β, on the other hand, would indicate a cautious/risky shift, since β governs the average elevation of the weighting function.

The model considered so far is fully deterministic, assuming that subjects know their preferences perfectly well and execute them without making mistakes. We now abandon this restrictive assumption and introduce an explicit stochastic structure. We start from the observation that our experimental tasks consist in eliciting certainty equivalents for different prospects, such that by definition $ce_i \sim (x_i, p_i; y_i)$, where $\sim$ indicates indifference. We can represent this indifference by expressing the ce as a function of the utility representation in equation 1 above:

$$\hat{ce}_i = v^{-1}[w_r^j(p_i)v(x_i) + \left(1 - w_r^j(p_i)\right) v(y_i)] \tag{5}$$

Given this setup, the actual certainty equivalent we observe will be equal to the certainty equivalent calculated from our model plus some error term, or $ce_i = \hat{ce}_i + \epsilon_i$.[8] We assume this error to be normally distributed with mean zero, $\epsilon_i \sim N(0, \sigma_i^2)$. This assumption allows for serially correlated errors by the same decision maker, which is not possible under a logit model (see Train, 2009). Following Bruhin et al. (2010), we can now express the probability density function $\psi(.)$ for a given subject n and prospect i as follows

$$\psi(\theta_{nr}, \sigma_{nijr}) = \frac{1}{\sigma_{nijr}} \, \phi\left(\frac{\hat{ce}_{nir} - ce_{ni}}{\sigma_{nijr}}\right) \tag{6}$$

where ϕ is the standard normal density function, and $\theta = \{\mu, \nu, \lambda, \alpha^j, \beta^j, \}$ indicates the vector of decision-maker specific parameters to be estimated. The subscripts n and r to the parameter vector θ indicate that we estimate the parameters as a linear function of the treatment as well as observable subject characteristics, i.e. $\hat{\theta} = \theta_k + \beta R + \gamma X$, where θ_k is a vector of constants, R is a

[8]The procedure followed for mixed prospects as represented in equation 2 is similar, except that we derive everything in terms of the elicited loss amount z instead of a certainty equivalent. The explicit derivation is omitted from the text for parsimony.

dummy that is 1 for the responsibility treatment and else 0, and X is a matrix of observable characteristics of the decision makers. Notice how *all* the parameters in the vector θ will now be regressed on the treatment, since our hypotheses laid out above need to be tested empirically and cannot simply be imposed on the structural model. Finally, σ indicates a so-called Fechner error (Hey and Orme, 1994). The subscripts emphasize that we are allowing for four different types of heterscedasticity, whereby n indicates as usual the observable characteristics of the decision maker, j indicates the decision domain (gains vs. losses; the error for the mixed domain is assumed equal to the one for losses, as we elicited the loss amount for that case). The subscript i indicates that we allow the error term to depend on the specific prospect, or rather, on the difference between the high and low outcome in the prospect, such that $\sigma_i = \sigma|x_i - y_i|$.[9] This allows the error term to differ for choice lists of different lengths, since the sure amount always varies in equal steps between x_i and y_i. Finally, the subscript r indicates that we also allow for heteroscedasticity across treatments.

These parameters can now be estimated by standard maximum likelihood procedures. To obtain the overall likelihood function, we now need to take the product of the density functions above across prospects for each subject:

$$L_n(\theta_{nr}) = \prod_i \psi(\theta_{nr}, \sigma_{nijr}) \tag{7}$$

where θ is the vector of parameters to be estimated such as to maximize the likelihood function. Taking logs and summing over decision makers we obtain

$$LL(\theta_{nr}) = \sum_{n=1}^{N} \ln\left[\psi(\theta_{nr}, \sigma_{nir})\right] \tag{8}$$

We estimate this log-likelihood function in Stata 13 using the Broyden-Fletcher-Goldfarb-Shanno optimization algorithm. Errors are always clustered at the sub-

[9] Wilcox (2011) pointed out a potential probelm when applying such a model in a discrete choice setup, whereby the probability of choosing the riskier prospect may be increasing in risk aversion in some cases. This probelm does not apply in our setting. Also, Apesteguia and Ballester (2014) have shown that this probelm does not occur even in discrete choice models when a derived certainty equivalent is compared to a sure amount, as in our setup.

ject level.

3 Results

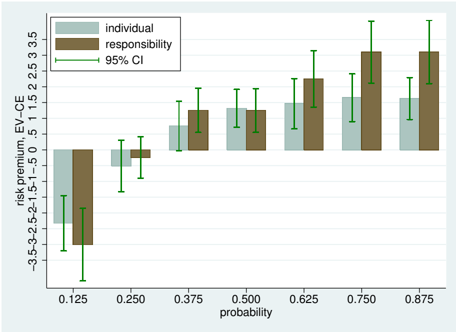
We present the results in three parts. We start from some descriptive data on the actual certainty equivalents elicited. Part 2 then establishes the main results and shows our structural estimations. In part 3, we look at alternative definitions of loss aversion and the extent to which these definitions help to reconcile different findings in the literature.

3.1 Descriptives of non-parametric data

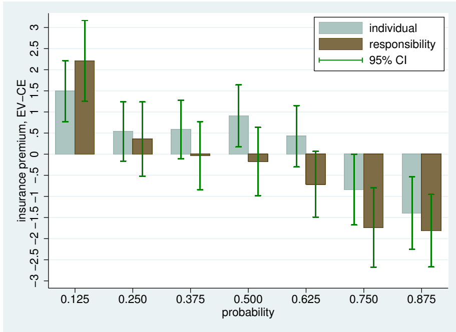
We start by presenting some descriptive results. While this does not allow us to separately identify the different parameters described in the model above, it ought to give us a first indication of whether risk preferences shift in the same direction across the probability spectrum (as predicted by the cautious shift hypothesis), or whether there are contrasting effects across the probability spectrum (as predicted by the four-fold pattern hypothesis). In order to represent the results in an intuitive way, we use risk premia, simply defined as $EV - CE$ (using normalized risk premia instead does not affect the results). Figure 3 graphs the risk premia together with their confidence intervals for prospects offering €20 or 0 PPP in absolute value.[10]

Figure 3(a) shows the risk premia for gains by probability of winning the prize and by treatment. In general, we find a negative risk premium for the smallest probability of $p = 0.125$, indicating risk seeking. This trend changes to risk neutrality for $p = 0.25$, and to risk aversion for larger probabilities. In terms of treatment effects, we find subjects in the responsibility treatment to be more risk seeking for the smallest probability, although this effect fails to reach significance in our non-nonparametric data. For intermediate probabilities, there is no discernible difference between individual decisions and decisions under

[10] We have omitted prospects with different outcomes for 50-50 probabilities for ease of representation. Results for those prospects are similar. In particular, we find no treatment differences for any 50-50 prospect over either gains or losses.



(a) Gains



(b) losses

Figure 3: Risk preferences by probability and country

responsibility. For the largest probabilities, however, we observe increased risk aversion in the responsibility treatment—an effect that is significant at the 5% level for $p = 0.75$ and $p = 0.875$. By and large, we thus observe qualitatively different treatment effects across the probability spectrum.

Figure 3(b) shows the equivalent data for losses. The graph appears mirrored with respect to the one for gains. The risk premium is now best thought of as an 'insurance premium', i.e. the sure amount of money beyond the expected value a subject is willing to part with in order to avoid playing the prospect. Overall, we find risk aversion for small probabilities and risk seeking for large probabilities, confirming the four-fold pattern of risk preferences. Relative to gains, there is a larger probability range for which choices are approximately risk neutral. Relative to individual choices, subjects in the responsibility treatment are more risk averse for the smallest probability of $p = 0.125$, although this effect is again not significant at conventional levels. As already seen for gains, this tendency reverses as probabilities increase, and for $p = 0.625$ and $p = 0.75$ we see significantly higher levels of risk seeking under responsibility (the effect is, however, not significant for the largest probability of $p = 0.875$).

Finally, figure 4 shows the results for the mixed prospect. We use a normalized measure obtained by dividing the elicited loss that makes a decision maker indifferent between playing the prospect and the status quo, z, by the gain in the prospect. A larger number thus indicates reduced risk aversion over mixed

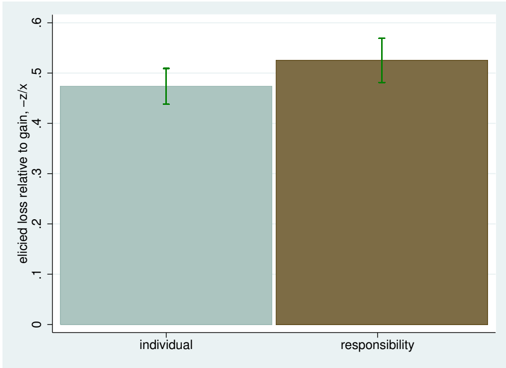


Figure 4: Risk preferences for mixed prospects

prospects. In the individual treatment, we find that subjects on average start choosing the prospect over the status quo for losses that are slightly smaller than half the gain. In the responsibility treatment, they start accepting the mixed prospect somewhat sooner—an effect that is marginally significant ($p = 0.072$). The structural estimations will tell us more about whether this effect is indeed driven by the mixed nature of the prospect, and can thus be ascribed to loss aversion.

3.2 Results of structural estimations

We will now move on to our structural estimations. Relative to the non-parametric results shown above, this allows us to separate different parameters that may underlie the data shown above, and thus to identify systematic trends in the data while filtering out noise. The results from the structural estimation of the prospect theory model are shown in table 2. The regression makes all variables of the model, as well as the noise term, depend on the treatment dummy. In addition, the regression controls for sex and age of the subjects. We find that older subjects have more concave utility for gains, but that they are also less loss averse. Older subjects also exhibit more noise in their decision process.

This brings us to the treatment effects. Being responsible for somebody else's payoffs as well as one's own significantly decreases probabilistic sensitivity relatively to the individual baseline for both gains and losses. This confirms our hypothesis 1. There are no effects on the elevation of the probability weighting function for either gains or losses. There are also no effects on utility curvature. This confirms our hypothesis 2, and indicates that there is no general cautious shift. Finally, we find no differences between treatments in terms of loss aversion. Hypothesis 3 is thus not supported by the data. In general, we do not find much evidence for loss aversion, and we even find marginally significant evidence for gain seeking, defined as $\lambda < 1$, in the aggregate ($\chi^2 = 3.28, p = 0.070$). Low loss aversion is indeed quite typical for structural estimates of cumulative prospect theory models (see e.g. Harrison and Rutström, 2009, for similar results).

Table 2: Structural estimation of PT model

$LL = -15,448$	utility			$w(p)$ gains		$w(p)$ losses		
$N = 200$	μ	ν	λ	α^+	β^+	α^-	β^-	σ
responsibility	-0.161	-0.148	-0.192	-0.139**	-0.139	-0.124*	-0.119	0.020
	(0.116)	(0.184)	(0.240)	(0.064)	(0.118)	(0.071)	(0.178)	(0.013)
male	0.194	0.211	0.126	0.025	0.131	-0.022	0.235	0.010
	(0.126)	(0.195)	(0.239)	(0.066)	(0.123)	(0.072)	(0.181)	(0.013)
age	-0.122**	-0.077	-0.095***	0.011	-0.050	-0.012	-0.049	0.013**
	(0.052)	(0.074)	(0.032)	(0.032)	(0.050)	(0.038)	(0.067)	(0.006)
constant	0.979***	1.525***	0.776***	0.673***	0.982***	0.841***	1.336***	0.202***
	(0.110)	(0.190)	(0.269)	(0.061)	(0.101)	(0.057)	(0.170)	(0.012)

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01; z-score used for age

Table 3 replicates the regressions from table 2, dropping the treatment dummy for the utility curvature parameters. This is instructive inasmuch as the utility curvature parameters and the elevation parameter for the probability weighting function are to some extent collinear, moving in opposite directions in the regression in table 2.[11] This affords a cleaner test of our hypothesis of increased sensitivity. We keep the treatment dummy for all parameters of the weighting function, including the elevation parameters, to test for potential global effects which are unchanging across the probability spectrum. We also keep the dummy for loss aversion.

The results confirm the ones uncovered in the first regression. We find reduced probabilistic sensitivity for both gains and losses. The elevation parameters are not significantly affected by the treatment. Relative to table 2, the point esti-

[11]To see this, notice how μ and β^+ both have a negative coefficient. For utility, this indicates increased curvature, and hence more risk aversion. For the weighting function, this indicates a higher elevation, and thus *less* risk aversion. An equivalent but mirrored conclusion holds for losses. Such collinearity between utility and weighting is indeed unavoidable in structural estimations of prospect theory—see Zeisberger, Vrecko and Langer (2012) for a discussion.

Table 3: Structural estimation of PT model, hypothesized effects

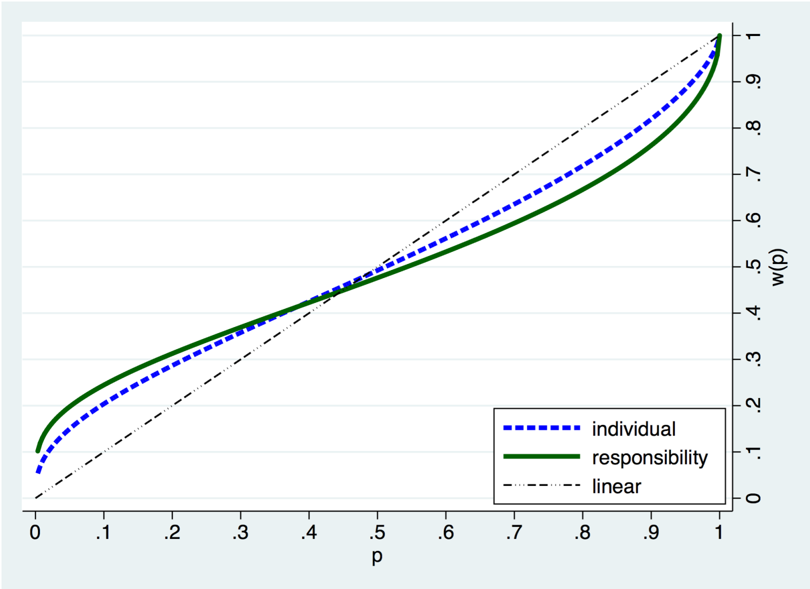
$LL = -15,483$	utility			$w(p)$ gains		$w(p)$ losses		
$N = 200$	μ	ν	λ	α^+	β^+	α^-	β^-	σ
responsibility			-0.111	-0.137**	0.005	-0.119*	-0.002	0.019
			(0.089)	(0.064)	(0.057)	(0.071)	(0.077)	(0.013)
male	0.211	0.182	0.190	0.025	0.144	-0.026	0.210	0.009
	(0.151)	(0.205)	(0.263)	(0.066)	(0.139)	(0.072)	(0.187)	(0.014)
age	-0.115	-0.064	-0.100***	0.007	-0.047	-0.012	-0.041	0.013**
	(0.086)	(0.104)	(0.032)	(0.031)	(0.078)	(0.039)	(0.085)	(0.007)
constant	0.891***	1.468***	0.700***	0.671***	0.906***	0.840***	1.291***	0.203***
	(0.087)	(0.147)	(0.194)	(0.060)	(0.089)	(0.058)	(0.137)	(0.013)

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01; z-score used for age

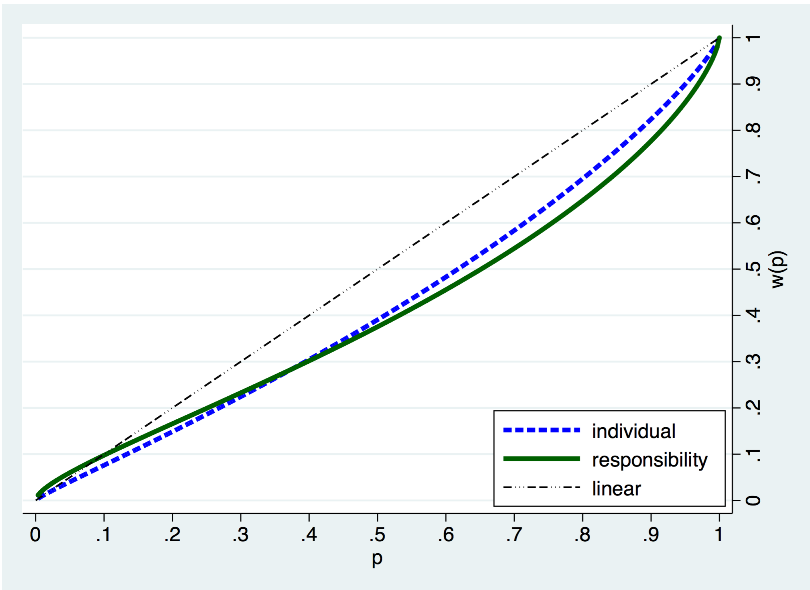
mates of the treatment differences for the elevation parameters are now also tiny, which derives from the elimination of the collinearity with the utility parameters.

In order to better illustrate the findings, figure 5 shows a graph of the weighting functions for both gains (panel 5(a)) and losses (panel 5(b)). For gains, the function under responsibility is more elevated than the one from the individual treatment for small probabilities, indicating increased risk seeking under responsibility for small probabilities. The two functions cross just below $p = 0.4$, after which the weighting function in the responsibility treatment stays below the one in the individual treatment, indicating increased risk aversion under responsibility. For losses, both functions are more depressed, indicating probabilistic optimism. Nonetheless, the relation between the two functions is similar to the one for gains (if somewhat weaker). This indicates more risk aversion under responsibility for small probabilities, and increased risk seeking for moderate to large probabilities.

The effects found correspond closely to those predicted by Pahlke et al. (2015). This is all the more remarkable since a) the elicitation tasks were quite different; and b) the hypotheses were blind to the experimenter executing the experiments. In contradiction to our hypothesis 3, and other than reported by Andersson et al. (2015), we do not find an effect of the treatment on loss aversion, even though our manipulation is the same as in their equal payoffs treatment. One reason for this may lie in the different model we estimate—this is further explored in the next section.



(a) gains



(b) losses

Figure 5: Probability weighting functions, treatment effect

3.3 Definitions of loss aversion

Given our modeling assumptions, the loss aversion parameter will be influenced by both utility and probability weighting for gains and losses, i.e. $\lambda = \frac{w^+(p)v(x)}{w^-(p)v(y)}$, as is typical for cumulative prospect theory (Schmidt and Zank, 2005). This also results in the extremely low value of loss aversion as reflected in the constant, which is largely due to the highly concave utility function for losses.[12] Andersson et al. (2015), on the other hand, do not estimate probability weighting. Also, since they have no choices in the pure loss domain, they must assume utility curvature for losses to be the same as for gains—an assumption that is rejected by our data. We now proceed to testing whether the treatment effect on loss aversion is different assuming other definitions of loss aversion.

One possibility is to impose equality of utility curvature for gains and losses, such that $\mu \equiv \nu$. While this seems to contradict our results above, it moves one step closer to the model used by Andersson et al. (2015). At the same time, we keep the model flexible thanks to the different weighting parameters for gains and losses, which due to the two-parameter formulation can absorbe some of the risk preferences previously captured in utility curvature. Fixing utility curvature to be the same for gains and losses may also reduce collinearity issues, while at the same time addressing potential issues in the estimation of loss aversion when power utility is allowed to differ between gains and losses (see Wakker, 2010, for a detailed discussion). The results of this model thus ought to provide a stability check for our results, and are reported in table 4.

Table 4: Structural estimation of PT model, restricted utility

$LL = -15,470$	utility		$w(p)$ gains		$w(p)$ losses		
$N = 200$	μ	λ	α^+	β^+	α^-	β^-	σ
responsibility	-0.165	-0.478	-0.142**	-0.139	-0.120*	-0.133	0.020
	(0.116)	(0.291)	(0.065)	(0.116)	(0.068)	(0.118)	(0.013)
male	0.202	0.442*	0.027	0.128	-0.019	0.217*	0.010
	(0.127)	(0.257)	(0.066)	(0.120)	(0.069)	(0.119)	(0.013)
age	-0.119*	-0.193***	0.006	-0.036	-0.012	-0.086*	0.013**
	(0.061)	(0.038)	(0.030)	(0.056)	(0.036)	(0.049)	(0.006)
constant	1.164***	2.159***	0.675***	1.150***	0.823***	1.049***	0.202***
	(0.110)	(0.294)	(0.061)	(0.098)	(0.055)	(0.108)	(0.012)

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01; z-score used for age

The constant of the only utility curvature parameter, μ, is now larger than the parameter for gains in our main model above, but smaller than the one previously estimated for losses. Overall, it is not significantly different from 1,

[12] This may be considered to be somewhat unusual. However, utility functions for losses have been found to take different shapes, from convex to linear and concave (Abdellaoui, Bleichrodt and L'Haridon, 2008).

indicating linear utility. The difference appears to be especially large for losses, but this effect is partially compensated by the elevation parameter for losses, β^-, which is now smaller than before, indicating a more elevated probability weighting function, and thus capturing some of the risk aversion lost in the utility parameter. Loss aversion is now found to be significantly larger than 1, and comes close to the canonical value of 2.25. Somewhat surprisingly, males are found to be more loss averse than females. Most importantly, however, all our previous results remain stable—responsibility reduces probabilistic sensitivity for both gains and losses, and has no effect on loss aversion, utility curvature, or the elevation parameters of the weighting function.

We can even go one step further and exactly replicate the model estimated by Andersson et al. (2015). Since they use only 50-50 prospects over gains or mixed gain-loss prospects, we start by excluding all our prospects having a different probability, as well as our pure loss prospects. We again restrict the utility parameter to be the same for gains and losses, $\mu \equiv \nu$, and impose that probabilities be treated linearly, i.e. $w(p) \equiv p$. The model estimated on these parameters only is shown in table 5, with regression I being homoscedastic across decision makers and regression II introducing heteroscedasticity (as in all our models above). In both regressions, we reproduce their main results of a) no effect of the treatment on utility curvature; and b) decreased loss aversion under responsibility for others. This shows that the difference between the results obtained in this study and those reported by Andersson et al. (2015) are small, and depend on subtle modeling choices (although the null-result for mixed prospects reported by Pahlke et al., 2015, appears more difficult to reconcile with the present findings).

Finally, we reestimate our model using a 'behavioral' definition of loss aversion, whereby $\lambda = \frac{x}{-z}$. Given that both probabilities and outcomes are treated linearly in this definition, it constitutes a measure capturing overall risk preferences in mixed prospects, while the model over pure gains and losses remains unaffected relative to the most general CPT model estimated above. The results are reported in table 6 (results omitting the treatment dummy for utility curvature are virtually identical, and are not shown due to space constraints). Looking

Table 5: Structural estimation, Andersson et al. model

	I			II		
	μ	λ	σ	μ	λ	σ
responsibility	-0.040	-0.256**		-0.035	-0.229**	0.009
	(0.049)	(0.112)		(0.050)	(0.114)	(0.013)
male	0.039	0.085		0.023	0.047	0.006
	(0.050)	(0.118)		(0.052)	(0.125)	(0.013)
age	-0.065***	-0.119*		-0.054**	-0.081	0.016**
	(0.022)	(0.061)		(0.024)	(0.086)	(0.007)
constant	0.935***	2.019***	0.212***	0.939***	2.011***	0.203***
	(0.040)	(0.099)	(0.006)	(0.040)	(0.099)	(0.012)
Subjects	200	200	200	200	200	200
Wald chi^2	9.11	9.11	9.11	5.18	5.18	5.18

Standard errors in parentheses; * p<0.10, ** p<0.05, *** p<0.01; z-score used for age

at the constant, we can see that the baseline loss aversion estimate is again close to the canonical value of 2.25 reported by Tversky and Kahneman (1992). We find a marginally significant result indicating a reduction in loss aversion under responsibility, in agreement with the result reported by Andersson et al. (2015).

Table 6: Structural model with 'behavioral' loss aversion

$LL = -15,449$	utility			$w(p)$ gains		$w(p)$ losses		
$N = 200$	μ	ν	λ	α^+	β^+	α^-	β^-	σ
responsibility	-0.153	-0.174	-0.184*	-0.138**	-0.132	-0.125*	-0.138	0.020
	(0.123)	(0.211)	(0.108)	(0.064)	(0.123)	(0.071)	(0.194)	(0.013)
male	0.206	0.142	0.004	0.025	0.142	-0.025	0.182	0.010
	(0.136)	(0.212)	(0.110)	(0.066)	(0.130)	(0.073)	(0.189)	(0.013)
age	-0.122**	-0.065	0.023	0.011	-0.051	-0.011	-0.040	0.013**
	(0.053)	(0.116)	(0.068)	(0.032)	(0.050)	(0.039)	(0.093)	(0.006)
constant	0.969***	1.571***	2.097***	0.672***	0.974***	0.843***	1.370***	0.202***
	(0.112)	(0.205)	(0.094)	(0.061)	(0.102)	(0.057)	(0.179)	(0.012)

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01; z-score used for age

4 General discussion and conclusion

The evidence presented in this paper shows clearly that probabilistic sensitivity is systematically affected when being responsible for somebody else—a result that remains stable under several different modeling assumptions. In particular, the decrease in probabilistic sensitivity found when a decision maker is responsible for somebody else's outcomes as well as her own results in an accentuation of risk seeking for small probability gains and large probability losses relative to the individual case, and to an accentuation of risk aversion for large probability gains and small probability losses. These effects appear to be highly consistent. They are also important from an economic point of view. The risk premium relative to the expected value for a typical large-probability prospect increases by about 5 percentage points under responsibility relative to individual decisions. For small probabilities, the relative risk premium is almost 19 percentage points lower under responsibility. And even for intermediate probabilities of 0.5, we still find the relative risk premium under responsibility to be 2.8 percentage points higher than for individual decisions.

Our findings also serve to organize a large part of the previous literature on responsibility under payoff equality. Table 7 summarizes the papers eliciting risk preferences in an individual condition and comparing them to decisions under responsibility under conditions of payoff equality. We concentrate on the evidence for gains, where more studies are available. Next to the reference, we list the number of subjects, type of elicitation task, and the experimental design (within- or between-subjects). In terms of the between- versus within-subject design, we hypothezise that the latter is more likely to produce significant results than the former, other things being equal, as it increases statistical power and may create contrast effects (Greenwald, 1978).

Table 7: Overview of papers, effects of responsibility for gains

Reference	study nr./effect	task	design	S.s	significant
Bolton and Ockenfels (2010)	task 1 & 2	choice task	between-subjects	104	no
Pahlke et al. (2015)	exp. 1	choice task	between-subjects	96	yes
Pahlke et al. (2015)	exp. 2	choice task	between-subjects	120	yes
Humphrey and Renner (2011)	lottery, friends	Holt & Laury	between-subjects	98	no
Humphrey and Renner (2011)	lottery, strangers	Holt & Laury	between-subjects	100	no
Andersson et al. (2015)	utility	choice list	between-subjects	342	no
Bolton et al. (2015)	with info*	Holt & Laury	within-subjects	64	yes
Bolton et al. (2015)	without info*	Holt & Laury	within-subjects	64	yes

Nr. of subjects includes subjects in both treatments, but excludes purely passive recipients

* Pools decisions from a condition in which payoff equality and one with inverse payoff correlation

Most of the studies listed used intermediate probability gains. The exception to this rule are the studies employing the Holt & Laury choice lists, in which probabilities are varied within the list. Nevertheless, most people usually switch at intermediate probabilities in such choice lists. For gains obtaining with probabilities around 0.5, we find an increase in risk aversion under responsibility in the present paper, but since this increase derives from a rotation in the weighting function, it is relatively modest for a 50-50 probability. The strength of the effect may thus depend on the degree of risk aversion in the individual treatment, as well as the statistical power with which any differences are measured. Bolton and Ockenfels (2010) used choice tasks between a safe amount and a risky prospect. Since every subject just made one choice, they did not have much statistical power in their between-subjects design, nevertheless finding a significance level of $p = 0.125$ in favor of responsibility increasing risk aversion. Pahlke et al. (2015) found a significant effect for 50-50 probabilities with slightly lower subject numbers, also using a between-subjects design. This may be due to the use of several different choice pairs per subject analyzed in a panel data probit structure, which is likely to boost statistical power. In their experiment 2 they used tasks offering a 90% chance of winning in the baseline, and again found responsibility to increase risk aversion (while finding responsibility to decrease risk aversion for a probability of 0.1). Humphrey and Renner (2011) found no difference between treatments using a Holt & Laury task.

Bolton et al. (2015) found significant effects of a responsibility treatment in two experimental conditions, one involving no information provided to the decision maker, and one in which the risk preferences of the passive recipient were communicated to the decision maker. They used in part a condition of payoff equality, and in part one in which the payoffs of the decision maker and the recipient were negatively correlated, but pooled these as they found no difference. Using the same type of Holt & Laury task employed by Humphrey and Renner (2011), they found a clear difference between treatments, going in the direction of more risk aversion by decision makers when they were responsible for somebody else. One of the reasons for which they found quite strong effects may be the within-subject design, which increases statistical power and may create a direct contrast between the individual choice tasks, always administered first, and the social responsibility condition. Overall, their results are thus not in contradiction to the ones found in this paper.

The obvious next question will be whether these insights can also organize results beyond the situation of payoff equality, and particularly whether they can be generalized to the type of agency situations involving asymmetrical payoffs briefly reviewed in the introduction. While we have no direct evidence to offer for that case, Andersson et al. (2015) did not find a significant difference between a symmetric payoffs treatment and one in which decision makers decided only for others. That also seems to agree with the finding of Bolton et al. (2015) according to which there is no difference between positively and negatively correlated payoffs for the decision maker and the recipient. That said, the agency literature differs from the one of payoff equality along a number of other dimensions, including the decision tasks used and the provision of information to the decision makers. Further research is thus needed to uncover potential sources of differences between the payoff equality literature and such agency situations.

The effects of responsibility on loss aversion are less clear than the effects for gains just described. Crucially, we have found that whether an effect is found or not may depend on the definition adopted—implicitly or explicitly—in the setup of the structural model. In general, this ought to make us also generally weary of the strong influence modeling assumptions in structural models may have on loss aversion. Vieider, Deer, Eid, Martinsson, McGee, Schoch and Stojic (2015a) systematically estimated seven different definitions of loss aversion separately for 30 different countries. They showed that both absolute levels and ranges of loss aversion coefficients wary widely across definitions. What is more, they also showed opposite effects in correlation analysis across definitions, with women more loss averse than men according to some, but less loss averse according to other definitions. Given furthermore the contradictory effects between studies investigating the effect of responsibility in the mixed domain, we are less confident in drawing conclusions in this respect.

If one were to accept that loss aversion is indeed reduced under responsibility (for which we have shown only mixed support), then it would be interesting to also reconsider the effects of responsibility under the aspect of its power to reduce biases in decision making. Indeed, both probability weighting and loss aversion ought to be considered biases if one assumes expected utility to be normative, as most people would (Wakker, 2010). While the contradictory effects may appear puzzling at first sight, they are nonetheless consistent with previous findings in the literature, which have found loss aversion to be volatile and easy to debias (List, 2004; Polman, 2012; Vieider, 2009), while probability distortions have proved much more elusive following some manipulations (Hsee and Rottenstreich, 2004; Pahlke et al., 2012; Rottenstreich and Hsee, 2001). The mechanisms underlying these differential effects are not yet well understood, and deserve further investigation.

References

Abdellaoui, Mohammed (2000) 'Parameter-Free Elicitation of Utility and Probability Weighting Functions.' *Management Science* 46(11), 1497–1512

Abdellaoui, Mohammed, Aurélien Baillon, Lætitia Placido, and Peter P. Wakker (2011) 'The Rich Domain of Uncertainty : Source Functions and Their Experimental Implementation.' *American Economic Review* 101, 695–723

Abdellaoui, Mohammed, Han Bleichrodt, and Corina Paraschiv (2007) 'Loss Aversion Under Prospect Theory: A Parameter-Free Measurement.' *Management Science* 53(10), 1659–1674

Abdellaoui, Mohammed, Han Bleichrodt, and Olivier L'Haridon (2008) 'A tractable method to measure utility and loss aversion under prospect theory.' *Journal of Risk and Uncertainty* 36(3), 245–266

Andersson, Ola, Håkan J. Holm, Jean-Robert Tyran, and Erik Wengström (2015) 'Deciding for Others Reduces Loss Aversion.' *Management Science, forthcoming*

Andersson, Ola, Jean-Robert Tyran, Erik Wengström, and Håkan J. Holm (2013) 'Risk Aversion Relates to Cognitive Ability: Fact or Fiction?' *IFN Working Paper No. 964*

Apesteguia, José, and Miguel A. Ballester (2014) 'Discrete choice estimation of risk aversion.' *Working Paper*

Bleichrodt, Han, and Jose Luis Pinto (2000) 'A Parameter-Free Elicitation of the Probability Weighting Function in Medical Decision Analysis.' *Management Science* 46(11), 1485–1496

Bolton, Gary E, and Axel Ockenfels (2010) 'Risk Taking and Social Comparison - A Comment on "Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States".' *American Economic Review* 100(1), 628–633

Bolton, Gary E., Axel Ockenfels, and Julia Stauf (2015) 'Social responsibility promotes conservative risk behavior.' *European Economic Review* 74, 109–127

Bruhin, Adrian, Helga Fehr-Duda, and Thomas Epper (2010) 'Risk and Rationality: Uncovering Heterogeneity in Probability Distortion.' *Econometrica* 78(4), 1375–1412

Chakravarty, Sujoy, Glenn W Harrison, Ernan E Haruvy, and E. Elisabet Rutström (2011) 'Are You Risk Averse Over Other People' s Money?' *Southern Economic Journal* 77(4), 901–913

Charness, Gary, and Matthew O Jackson (2009) 'The role of responsibility in strategic risk-taking.' *Journal of Economic Behavior & Organization* 69, 241–247

Diecidue, Enrico, and Jeroen van de Ven (2008) 'Aspiration Level, Probability of Success and Failure, and Expected Utility.' *International Economic Review* 49(2), 683–700

Eriksen, Kristoffer W., and Ola Kvaløy (2010) 'Myopic Investment Management.' *Review of Finance* 14(3), 521–542

Etchart-Vincent, Nathalie, and Olivier L'Haridon (2011) 'Monetary Incentives in the Loss Domain and Behavior toward Risk: An Experimental Comparison of Three Reward Schemes Inclusing Real Losses.' *Journal of Risk and Uncertainty* 42, 61–83

Fehr-Duda, Helga, Adrian Bruhin, Thomas F. Epper, and Renate Schubert (2010) 'Rationality on the Rise: Why Relative Risk Aversion Increases with Stake Size.' *Journal of Risk and Uncertainty* 40(2), 147–180

Fehr, Ernst, and Klaus M. Schmidt (1999) 'A Theory of Fairness, Competition, and Cooperation.' *The Quarterly Journal of Economics* 114(3), 817–868

Gneezy, Uri, and Jan Potters (1997) 'An Experiment on Risk Taking and Evaluation Periods.' *The Quarterly Journal of Economics* 112(2), 631 – 45

Goldstein, William M., and Hillel J. Einhorn (1987) 'Expression theory and the preference reversal phenomena.' *Psychological Review* 94(2), 236–254

Greenwald, Anthony G. (1978) 'Within-Subject Designs: To Use or Not to Use?' *Psychological Bulletin* pp. 314–320

Güth, Werner, Vittoria Levati, and Matteo Ploner (2008) 'On the social dimension of time and risk preferences: An experimental study.' *Economic Inquiry* 46(2), 261–272

Harrison, Glenn W., and E. Elisabet Rutström (2009) 'Expected utility theory and prospect theory: one wedding and a decent funeral.' *Experimental Economics* 12(2), 133–158

Hey, John D., and Chris Orme (1994) 'Investigating Generalizations of Expected Utility Theory Using Experimental Data.' *Econometrica* 62(6), 1291–1326

Holt, Charles A., and Susan K. Laury (2002) 'Risk Aversion and Incentive Effects.' *American Economic Review* pp. 1644–1655

Hsee, Christopher, and Yuval Rottenstreich (2004) 'Music, Pandas, and Muggers: On the Affective Psychology of Value.' *Journal of Experimental Psychology: General* 133(1), 23–30

Humphrey, Steven J., and Elke Renner (2011) 'The Social Cost of Responsibility.' *CeDEx discussion paper 2011-02*

Kachelmeier, Steven J., and Mohamed Shehata (1992) 'Examining Risk Preferences under High Monetary Incentives: Experimental Evidence from the People's Republic of China.' *American Economic Review* 82(5), 1120–1141

Kilka, Michael, and Martin Weber (2001) 'What Determines the Shape of the Probability Weighting Function under Uncertainty?' *Management Science* 47(12), 1712–1726

Köbberling, Veronika, and Peter P. Wakker (2005) 'An index of loss aversion.' *Journal of Economic Theory* 122(1), 119 – 131

Lattimore, Pamela M., Joanna R. Baker, and Anna D. Witte (1992) 'The Influence of Probability on Risky Choice.' *Journal of Economic Behavior & Organization* 17, 377–400

Lefebvre, Mathieu, Ferdinand M. Vieider, and Marie Claire Villeval (2010) 'Incentive Effects on Risk Attitude in Small Probability Prospects.' *Economics Letters* 119, 115–120

List, John A. (2004) 'Neoclassical Theory Versus Prospect Theory: Evidence from the Marketplace.' *Econometrica* 72(2), 615 – 625

Pahlke, Julius, Sebastian Strasser, and Ferdinand M. Vieider (2012) 'Risk-Taking for Others under Accountability.' *Economics Letters* 114(1), 102–105

_ (2015) 'Responsibility Effects in Decision Making under Risk.' *Journal of Risk and Uncertainty, forthcoming*

Pollmann, Monique M. H., Jan Potters, and Stefan T. Trautmann (2014) 'Risk taking by agents: The role of ex-ante and ex-post accountability.' *Economics Letters* 123(3), 387–390

Polman, Evan (2012) 'Self–other decision making and loss aversion.' *Organizational Behavior and Human Decision Processes* 119(2), 141–150

Prelec, Drazen (1998) 'The Probability Weighting Function.' *Econometrica* 66, 497–527

Reynolds, Douglas B., Jacob Joseph, and Reuben Sherwood (2009) 'Risky Shift versus Cautious Shift: Determining Differences in Risk Taking between Private and Public Management Decision Making.' *Journal of Business and Economics Research* 7(1), 63–77

Rottenstreich, Yuval, and Christopher K. Hsee (2001) 'Money, Kisses, and Electric Shocks: On the Affective Psychology of Risk.' *Psychological Science* 12(3), 185–190

Schmidt, Ulrich, and Horst Zank (2005) 'What is Loss Aversion?' *Journal of Risk and Uncertainty* 30(2), 157–167

Stott, Henry P. (2006) 'Cumulative Prospect Theory's Functional Menagerie.' *Journal of Risk and Uncertainty* 32, 101–130

Sutter, Matthias (2009) 'Individual Behavior and Group Membership: Comment.' *American Economic Review* 99(5), 2247–2257

Train, Kenneth (2009) *Discrete choice methods with simulation* (Cambridge; New York: Cambridge University Press)

Trautmann, Stefan T., and Ferdinand M. Vieider (2012) 'Social Influences on Risk Attitudes: Applications in Economics.' In *Handbook of Risk Theory,* ed. S. Roeser (Springer) pp. 225–243

Tversky, Amos, and Daniel Kahneman (1992) 'Advances in Prospect Theory: Cumulative Representation of Uncertainty.' *Journal of Risk and Uncertainty* 5, 297–323

Tversky, Amos, and Peter P. Wakker (1995) 'Risk Attitudes and Decision Weights.' *Econometrica* 63(6), 1255–1280

Vieider, Ferdinand M. (2009) 'The effect of accountability on loss aversion.' *Acta psychologica* 132(1), 96–101

Vieider, Ferdinand M., Lachlan Deer, Ashraf Eid, Peter Martinsson, Peter McGee, Daniel Schoch, and Hrvoje Stojic (2015a) 'What loss aversion? The implications of modelling choices in structural estimations under risk.' *Working Paper*

Vieider, Ferdinand M., Mathieu Lefebvre, Ranoua Bouchouicha, Thorsten Chmura, Rustamdjan Hakimov, Michal Krawczyk, and Peter Martinsson (2015b) 'Common components of risk and uncertainty attitudes across contexts and domains: Evidence from 30 countries.' *Journal of the European Economic Association* 13(3), 421–452 von Gaudecker, Hans-Martin, Arthur van Soest, and Erik Wengström (2011) 'Heterogeneity in Risky Choice Behaviour in a Broad Population.' *American Economic Review* 101(2), 664–694

Wakker, Peter P. (2008) 'Explaining the characteristics of the power (CRRA) utility family.' *Health Economics* 17(12), 1329–1344

_ (2010) *Prospect Theory for Risk and Ambiguity* (Cambridge: Cambridge University Press)

Wilcox, Nathaniel T. (2011) ''Stochastically more risk averse:' A contextual theory of stochastic discrete choice under risk.' *Journal of Econometrics* 162(1), 89–104

Wu, George, and Richard Gonzalez (1996) 'Curvature of the Probability Weighting Function.' *Management Science* 42(12), 1676–1690

Zeisberger, Stefan, Dennis Vrecko, and Thomas Langer (2012) 'Measuring the time stability of Prospect Theory preferences.' *Theory and Decision* 72(3), 359–386

A ONLINE APPENDIX: Full-lenght instructions

Below we include the full-length instructions for the responsibility treatment in English. Instructions for the individual treatment can be downloaded at: *remove for anonymous peer review.*

<u>Instructions [Responsibility Treatment]</u>

Thank you for participating in this experiment in decision making! You will obtained 6000 Pesos for having come to the experiment—those 6000 Pesos are yours to keep independently of the outcomes in the experiment. In addition, you will be compensated with whatever you earn during the experiment according to the procedures described in the instructions.

The instructions will be read to you in a short while. You may consult these instructions at any time during the experiment. In case you should have any questions or doubts, please raise your hand and an experimenter will come and assist you in private.

Please consider each decision carefully. Take a careful look at outcomes and the probabilities associated to them before taking a decision. Remember that your final payoffs, as well as those of somebody else, from this experiment will depend on the decisions you make (and of course, on chance).

Please remain seated when you are finished with the tasks. This experiment consists of two parts. Once everybody has finished the tasks in part I, new instructions will be read to you for part II. At the very end of the experiment, you will be asked to fill out a questionnaire. The answer to the questionnaire as well as all your answers to the tasks will be private, and cannot be traced back to you personally. Once you are done filling in the questionnaire, an experimenter will call you up. Your payoff will then be determined in private, you will be given the money you won, after which you can leave.

Do not talk during the experiment, or you will be immediately excluded from the experiment !

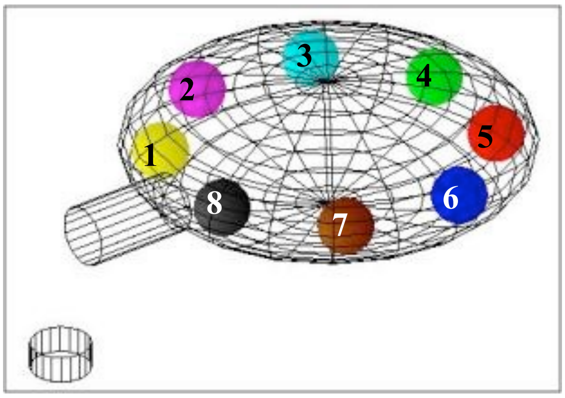
Good luck!

PART I

Choice tasks
In the present experiment, you will be asked to choose repeatedly between a fixed amount of money and a lottery. The lottery will always give you a chance to win one of two amounts of money. Figure 1 shows a typical choice task. You are asked repeatedly to choose between playing the lottery and obtaining a sure amount of money. **For each row**, you are asked to indicate whether you would prefer to play the lottery or to obtain the sure amount of money by ticking the preferred option.

The urn indicated in the figure contains eight numbered balls. One ball will be extracted from the urn to determine your payoffs in case you should play the lottery. In the lottery displayed, if ball 1 , 2 , 3, or 4 is extracted, you obtain 15000 Pesos; if ball 5 , 6 , 7 , 8 is extracted, you obtain nothing. Please pay close attention to the amounts to be won as well as the number of balls associated with each outcome, since they change across decisions.

Fig. 1: Example of a typical decision task



Win **15000 Pesos** if one of the following balls is extracted:

1 2 3 4

Win **0 Pesos** if one of the following balls is extracted:

5 6 7 8

Lottery	Sure amount	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure

We are interested in the amount for which you will switch from preferring the lottery to preferring the sure amount. Most likely, you will begin by choosing the lottery for small sure amounts, and at a certain point switch to the sure amount as the latter increases. If you do not want the lottery at all, you can choose to get the sure amount in the first row and then continue with the sure amount for all choices (if you prefer 750 Pesos over the lottery you should also prefer 1500 Pesos over the lottery, etc.). Where you will switch from the lottery to the sure amount depends entirely on your preferences—there are no right or wrong answers. However, **you should NOT switch back and forth several times between lottery and sure amount!** You will be excluded from the experiment if you do so or if it is not possible to clearly recognize your preference (for example, if you have not ticked any box for a given row or ticked both boxes for a given row).

Types of choices
You will be asked to take 18 decisions, for each one of which you will need to decide between a lottery and a series of sure amounts as exemplified in figure 1 above. **Please pay close attention to the amounts to be won as well as the number of balls associated with each outcome!** Indeed, both the higher and lower amount, as well as the number of balls, change between decision problems. Since your final payoff depends on these decisions, it is crucial for you to pay close attention to these features.

There are **two different types of lotteries** involved. Figure 2 below shows the two different types of lotteries that you will encounter. Fig 2a shows the urn already familiar from figure 1 above. It contains exactly eight (8) balls, numbered from 1 to 8.

In Urn in Fig. 2b also contains exactly eight (8) balls. However, you cannot see what numbers the balls contained in the urn have. This means that **you do not know the exact numbers that are present in that urn**. All balls bear a number between 1 and 8 inclusive (have either 1 , 2 , 3 , 4 , 5 , 6 , 7 , or 8 written on them), but it is possible that some numbers are absent from this urn while others occur repeatedly. Thus you do not know the exact composition of the urn.

Fig. 2a: transparent urn

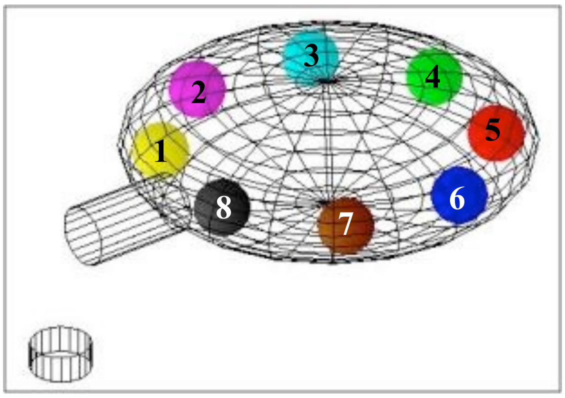
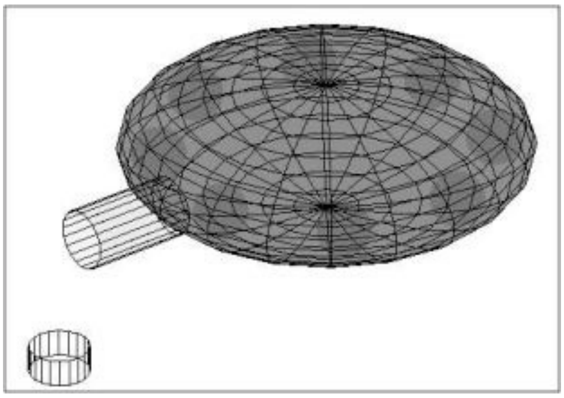


Fig. 2b: opaque urn



Types of players
There are two types of players in this experiment: active **decision makers** and passive **recipients**. After the experimental session is over, half of the people taking part in the experiment will be randomly assigned the role of decision maker and the other half the role of recipient. Each decision maker will then be randomly paired with one recipient. This paring is completely anonymous, and you will at no time find out with whom you have been paired.

At the end, **only decisions of decision makers will be played out**. These decisions will then be played out **for both the decision maker and the passive recipient**. That is, if you will be assigned the role of decision maker, your decision will determine your own payoff as well as the payoff of somebody else in this experiment. If you will be assigned the role of recipient, your payoffs will not be determined by your own decisions, but rather by the decisions of somebody else. Since you do not know which role you will be assigned at the moment when you are taking the decisions, **please consider each choice carefully since it may determine your payoffs from this experiment as well as the payoffs of somebody else**.

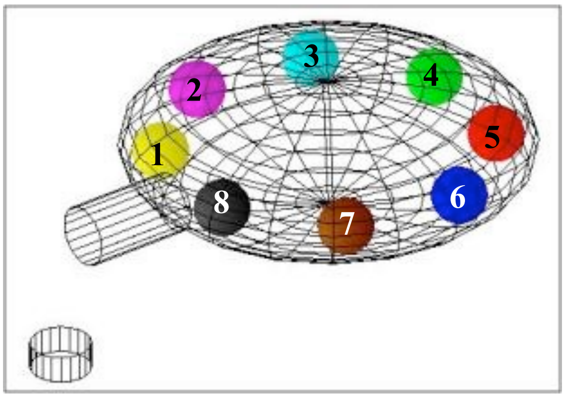
Payoff determination
After you have taken all the decisions, it will first be determined whether you are assigned the role of decision maker or of recipient. If you are assigned the role of decision maker, one of your decisions will then be randomly drawn for real pay, i.e. **the amounts indicated in the decision problem will be paid out for real**. First, either part I or part II will be selected for real play by a coin flip. If part I is selected, then one of the decision tasks is drawn at random, using a chance device with equal probability for each decision task to be extracted. For the extracted decision task, one of your decisions, corresponding to one row for which you had to indicate your preference between the sure amount and the lottery, will then be drawn at random with **equal probability for each row**. If for the row that is drawn you have indicated that you prefer the sure amount of money, you will simply be paid that amount.

In case you have chosen the lottery for the randomly determined row, then that lottery will be played according to the probabilities indicated. For the transparent urn, this will involve drawing a ball from an urn in which all numbers from 1 to 8 inclusive are present. If you should desire to do so, you can verify that there are indeed all balls from 1 to 8 in the urn. You will then be paid the outcome corresponding to the ball you drew.

For the opaque urn, the procedure is exactly analogous, except that you will now draw a ball from a pre-composed urn, the exact composition of which you do not know. You will also be paid the outcome corresponding to the ball you drw. If you should desire to do so, after the draw you can verify that there are indeed 8 balls with numbers between 1 and 8 inclusive in the urn.

At the same time that you get your money, you will also put the same amount of money in an envelope and seal it. This is the **payoff for the passive recipient** who has been assigned to you. After all subjects who had been selected as decision makers have played, those who have been assigned the role of passive recipients will be handed their payoffs in the sealed envelopes. Any recipient who may desire to do so can at this point open the envelop and take a look at the monetary amount contained in it. The recipient may also **ask to see the choices of the decision maker** who determined the payoff. The identity of the decision maker will however not be revealed.

Decision 1



Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure

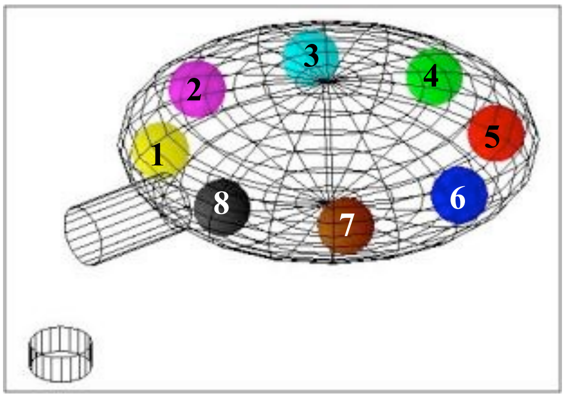
Win **7500 Pesos** if one of the following balls is extracted:

1 2 3 4

Win **0 Pesos** if one of the following balls is extracted:

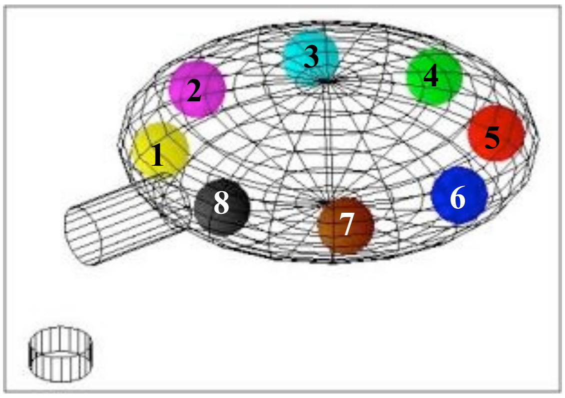
5 6 7 8

Decision 2



	Lottery	Sure	
	O	O	750 Pesos for sure
	O	O	1500 Pesos for sure
	O	O	2250 Pesos for sure
	O	O	3000 Pesos for sure
	O	O	3750 Pesos for sure
	O	O	4500 Pesos for sure
	O	O	5250 Pesos for sure
	O	O	6000 Pesos for sure
	O	O	6750 Pesos for sure
	O	O	7500 Pesos for sure
	O	O	8250 Pesos for sure
	O	O	9000 Pesos for sure
	O	O	9750 Pesos for sure
Win **15000 Pesos** if one of the following balls is extracted:	O	O	10500 Pesos for sure
1 2 3 4	O	O	11250 Pesos for sure
	O	O	12000 Pesos for sure
Win **0 Pesos** if one of the following balls is extracted:	O	O	12750 Pesos for sure
5 6 7 8	O	O	13500 Pesos for sure
	O	O	14250 Pesos for sure

Decision 3



Win **30000 Pesos** if one of the following balls is extracted:

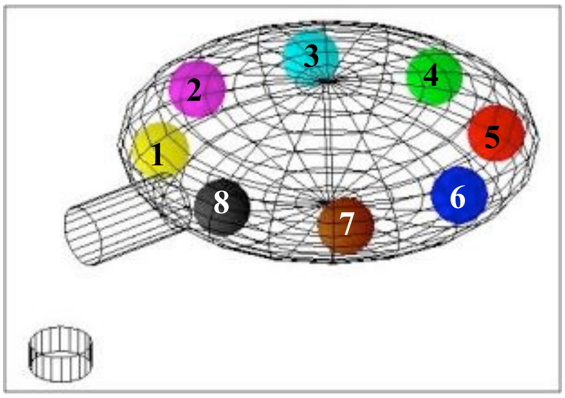
1 2 3 4

Win **0 Pesos** if one of the following balls is extracted:

5 6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 4



Win **45000 Pesos** if one of the following balls is extracted:

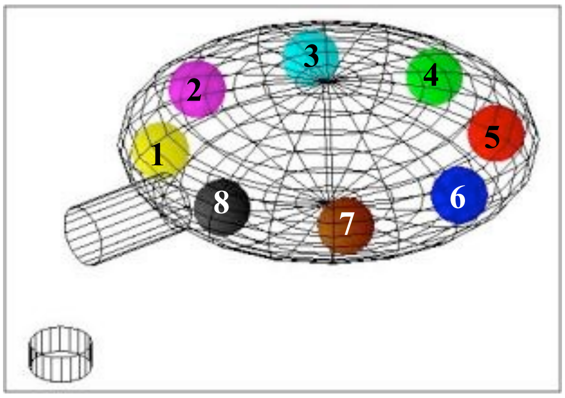
1 2 3 4

Win **0 Pesos** if one of the following balls is extracted:

5 6 7 8

Lottery	Sure	
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure
O	O	30000 Pesos for sure
O	O	30750 Pesos for sure
O	O	31500 Pesos for sure
O	O	32250 Pesos for sure
O	O	33000 Pesos for sure
O	O	33750 Pesos for sure
O	O	34500 Pesos for sure
O	O	35250 Pesos for sure
O	O	36000 Pesos for sure
O	O	36750 Pesos for sure

Decision 5



Win **45000 Pesos** if one of the following balls is extracted:

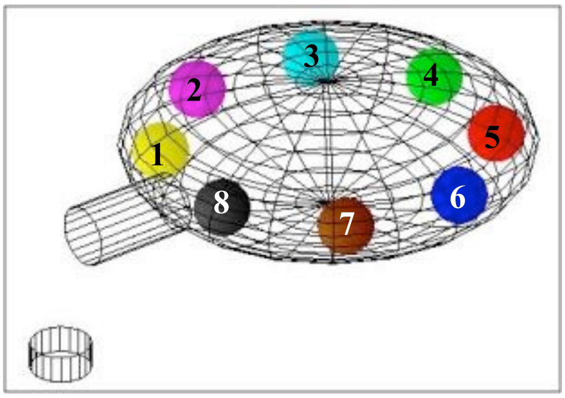
1 2 3 4

Win **15000 Pesos** if one of the following balls is extracted:

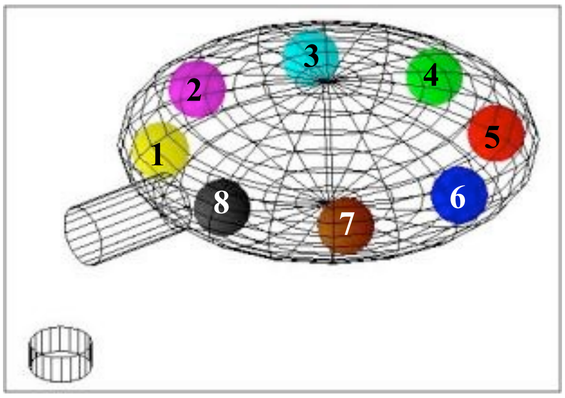
5 6 7 8

Lottery	Sure	
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure
O	O	30000 Pesos for sure
O	O	30750 Pesos for sure
O	O	31500 Pesos for sure
O	O	32250 Pesos for sure
O	O	33000 Pesos for sure
O	O	33750 Pesos for sure
O	O	34500 Pesos for sure
O	O	35250 Pesos for sure
O	O	36000 Pesos for sure
O	O	36750 Pesos for sure
O	O	37500 Pesos for sure
O	O	38250 Pesos for sure
O	O	39000 Pesos for sure
O	O	39750 Pesos for sure
O	O	40500 Pesos for sure
O	O	41250 Pesos for sure
O	O	42000 Pesos for sure
O	O	42750 Pesos for sure
O	O	43500 Pesos for sure
O	O	44250 Pesos for sure

Decision 6

	Lottery	Sure	
	O	O	30750 Pesos for sure
	O	O	31500 Pesos for sure
	O	O	32250 Pesos for sure
	O	O	33000 Pesos for sure
	O	O	33750 Pesos for sure
	O	O	34500 Pesos for sure
	O	O	35250 Pesos for sure
	O	O	36000 Pesos for sure
	O	O	36750 Pesos for sure
	O	O	37500 Pesos for sure
	O	O	38250 Pesos for sure
	O	O	39000 Pesos for sure
	O	O	39750 Pesos for sure
Win **45000 Pesos** if one of the following balls is extracted:	O	O	40500 Pesos for sure
1 2 3 4	O	O	41250 Pesos for sure
	O	O	42000 Pesos for sure
Win **30000 Pesos** if one of the following balls is extracted:	O	O	42750 Pesos for sure
5 6 7 8	O	O	43500 Pesos for sure
	O	O	44250 Pesos for sure

Decision 7



Win **30000 Pesos** if one of the following balls is extracted:

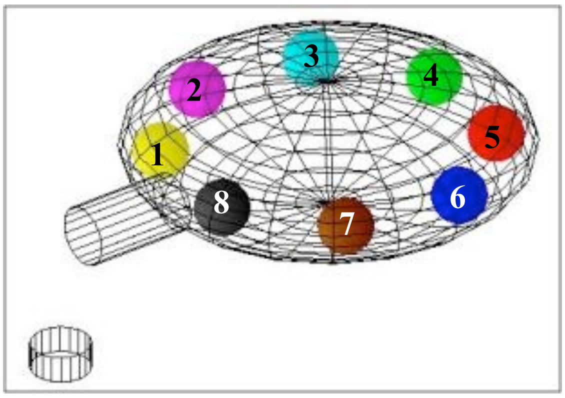
1

Win **0 Pesos** if one of the following balls is extracted:

2 3 4 5 6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 8



Win **30000 Pesos** if one of the following balls is extracted:

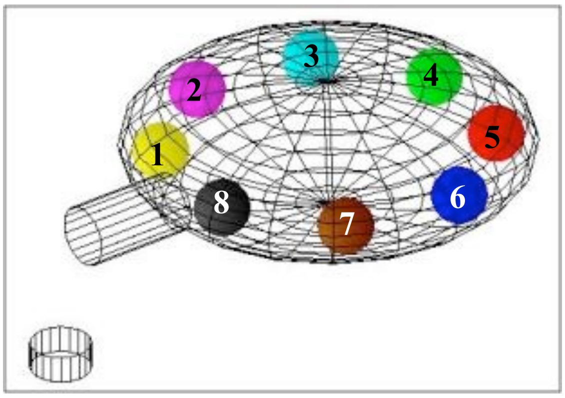
1 2

Win **0 Pesos** if one of the following balls is extracted:

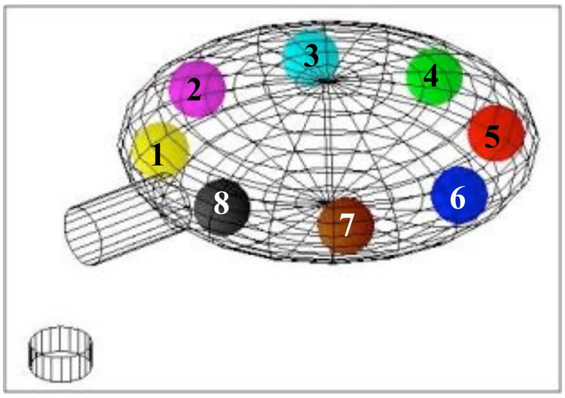
3 4 5 6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

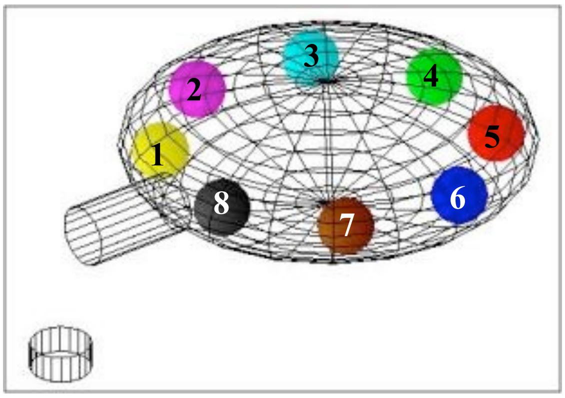
Decision 9

	Lottery	Sure	
	O	O	750 Pesos for sure
	O	O	1500 Pesos for sure
	O	O	2250 Pesos for sure
	O	O	3000 Pesos for sure
	O	O	3750 Pesos for sure
	O	O	4500 Pesos for sure
	O	O	5250 Pesos for sure
	O	O	6000 Pesos for sure
	O	O	6750 Pesos for sure
	O	O	7500 Pesos for sure
	O	O	8250 Pesos for sure
	O	O	9000 Pesos for sure
	O	O	9750 Pesos for sure
Win **30000 Pesos** if one of the following balls is extracted:	O	O	10500 Pesos for sure
1 2 3	O	O	11250 Pesos for sure
	O	O	12000 Pesos for sure
Win **0 Pesos** if one of the following balls is extracted:	O	O	12750 Pesos for sure
4 5 6 7 8	O	O	13500 Pesos for sure
	O	O	14250 Pesos for sure
	O	O	15000 Pesos for sure
	O	O	15750 Pesos for sure
	O	O	16500 Pesos for sure
	O	O	17250 Pesos for sure
	O	O	18000 Pesos for sure
	O	O	18750 Pesos for sure
	O	O	19500 Pesos for sure
	O	O	20250 Pesos for sure
	O	O	21000 Pesos for sure
	O	O	21750 Pesos for sure
	O	O	22500 Pesos for sure
	O	O	23250 Pesos for sure
	O	O	24000 Pesos for sure
	O	O	24750 Pesos for sure
	O	O	25500 Pesos for sure
	O	O	26250 Pesos for sure
	O	O	27000 Pesos for sure
	O	O	27750 Pesos for sure
	O	O	28500 Pesos for sure
	O	O	29250 Pesos for sure

Decision 10

	Lottery	Sure	
	O	O	750 Pesos for sure
	O	O	1500 Pesos for sure
	O	O	2250 Pesos for sure
	O	O	3000 Pesos for sure
	O	O	3750 Pesos for sure
	O	O	4500 Pesos for sure
	O	O	5250 Pesos for sure
	O	O	6000 Pesos for sure
	O	O	6750 Pesos for sure
	O	O	7500 Pesos for sure
	O	O	8250 Pesos for sure
	O	O	9000 Pesos for sure
	O	O	9750 Pesos for sure
Win **30000 Pesos** if one of the following balls is extracted:	O	O	10500 Pesos for sure
1 2 3 4 5	O	O	11250 Pesos for sure
	O	O	12000 Pesos for sure
Win **0 Pesos** if one of the following balls is extracted:	O	O	12750 Pesos for sure
6 7 8	O	O	13500 Pesos for sure
	O	O	14250 Pesos for sure
	O	O	15000 Pesos for sure
	O	O	15750 Pesos for sure
	O	O	16500 Pesos for sure
	O	O	17250 Pesos for sure
	O	O	18000 Pesos for sure
	O	O	18750 Pesos for sure
	O	O	19500 Pesos for sure
	O	O	20250 Pesos for sure
	O	O	21000 Pesos for sure
	O	O	21750 Pesos for sure
	O	O	22500 Pesos for sure
	O	O	23250 Pesos for sure
	O	O	24000 Pesos for sure
	O	O	24750 Pesos for sure
	O	O	25500 Pesos for sure
	O	O	26250 Pesos for sure
	O	O	27000 Pesos for sure
	O	O	27750 Pesos for sure
	O	O	28500 Pesos for sure
	O	O	29250 Pesos for sure

Decision 11



Win **30000 Pesos** if one of the following balls is extracted:

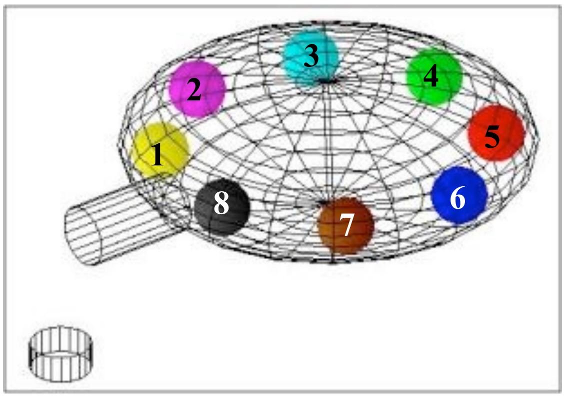
1 2 3 4 5 6

Win **0 Pesos** if one of the following balls is extracted:

7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 12



Win **30000 Pesos** if one of the following balls is extracted:

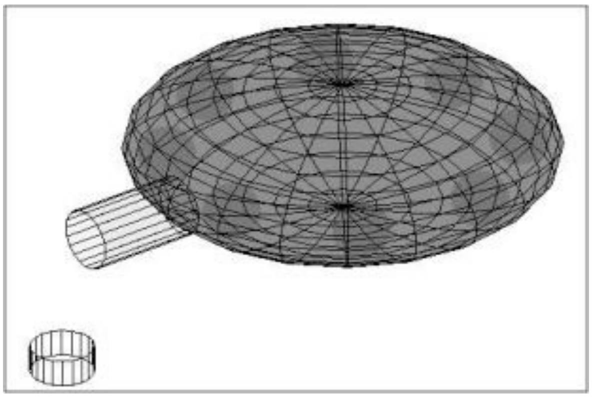
1 2 3 4 5 6 7

Win **0 Pesos** if one of the following balls is extracted:

8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 13



Win **30000 Pesos** if one of the following balls is extracted:

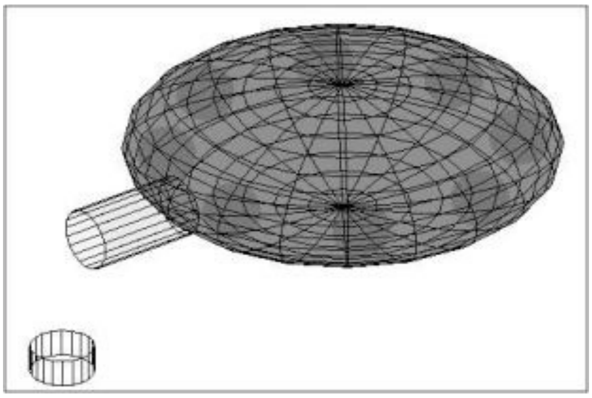
1

Win **0 Pesos** if one of the following balls is extracted:

2 3 4 5 6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 14



Win **30000 Pesos** if one of the following balls is extracted:

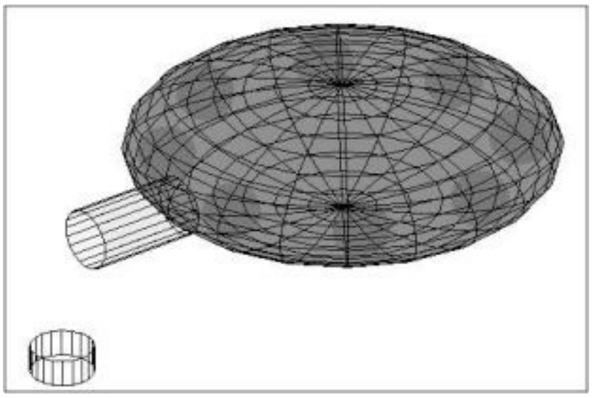
1 2

Win **0 Pesos** if one of the following balls is extracted:

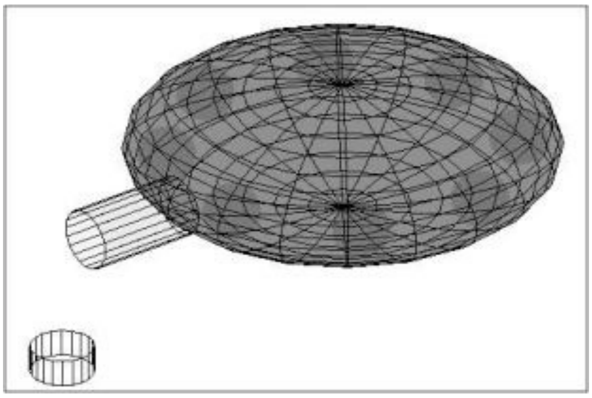
3 4 5 6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 15

	Lottery	Sure	
	O	O	750 Pesos for sure
	O	O	1500 Pesos for sure
	O	O	2250 Pesos for sure
	O	O	3000 Pesos for sure
	O	O	3750 Pesos for sure
	O	O	4500 Pesos for sure
	O	O	5250 Pesos for sure
	O	O	6000 Pesos for sure
	O	O	6750 Pesos for sure
	O	O	7500 Pesos for sure
	O	O	8250 Pesos for sure
	O	O	9000 Pesos for sure
	O	O	9750 Pesos for sure
Win **30000 Pesos** if one of the following balls is extracted:	O	O	10500 Pesos for sure
1 **2** **3**	O	O	11250 Pesos for sure
	O	O	12000 Pesos for sure
Win **0 Pesos** if one of the following balls is extracted:	O	O	12750 Pesos for sure
4 **5** **6** **7** **8**	O	O	13500 Pesos for sure
	O	O	14250 Pesos for sure
	O	O	15000 Pesos for sure
	O	O	15750 Pesos for sure
	O	O	16500 Pesos for sure
	O	O	17250 Pesos for sure
	O	O	18000 Pesos for sure
	O	O	18750 Pesos for sure
	O	O	19500 Pesos for sure
	O	O	20250 Pesos for sure
	O	O	21000 Pesos for sure
	O	O	21750 Pesos for sure
	O	O	22500 Pesos for sure
	O	O	23250 Pesos for sure
	O	O	24000 Pesos for sure
	O	O	24750 Pesos for sure
	O	O	25500 Pesos for sure
	O	O	26250 Pesos for sure
	O	O	27000 Pesos for sure
	O	O	27750 Pesos for sure
	O	O	28500 Pesos for sure
	O	O	29250 Pesos for sure

Decision 16



Win **30000 Pesos** if one of the following balls is extracted:

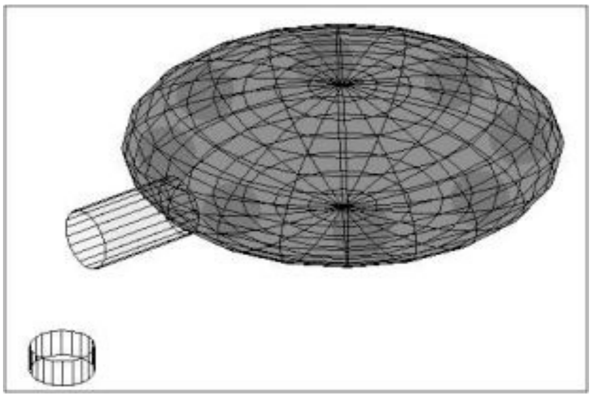
1 2 3 4 5

Win **0 Pesos** if one of the following balls is extracted:

6 7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 17



Win **30000 Pesos** if one of the following balls is extracted:

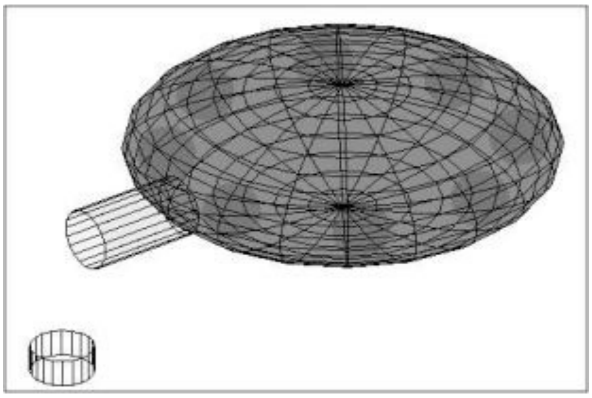
1 2 3 4 5 6

Win **0 Pesos** if one of the following balls is extracted:

7 8

Lottery	Sure	
O	O	750 Pesos for sure
O	O	1500 Pesos for sure
O	O	2250 Pesos for sure
O	O	3000 Pesos for sure
O	O	3750 Pesos for sure
O	O	4500 Pesos for sure
O	O	5250 Pesos for sure
O	O	6000 Pesos for sure
O	O	6750 Pesos for sure
O	O	7500 Pesos for sure
O	O	8250 Pesos for sure
O	O	9000 Pesos for sure
O	O	9750 Pesos for sure
O	O	10500 Pesos for sure
O	O	11250 Pesos for sure
O	O	12000 Pesos for sure
O	O	12750 Pesos for sure
O	O	13500 Pesos for sure
O	O	14250 Pesos for sure
O	O	15000 Pesos for sure
O	O	15750 Pesos for sure
O	O	16500 Pesos for sure
O	O	17250 Pesos for sure
O	O	18000 Pesos for sure
O	O	18750 Pesos for sure
O	O	19500 Pesos for sure
O	O	20250 Pesos for sure
O	O	21000 Pesos for sure
O	O	21750 Pesos for sure
O	O	22500 Pesos for sure
O	O	23250 Pesos for sure
O	O	24000 Pesos for sure
O	O	24750 Pesos for sure
O	O	25500 Pesos for sure
O	O	26250 Pesos for sure
O	O	27000 Pesos for sure
O	O	27750 Pesos for sure
O	O	28500 Pesos for sure
O	O	29250 Pesos for sure

Decision 18

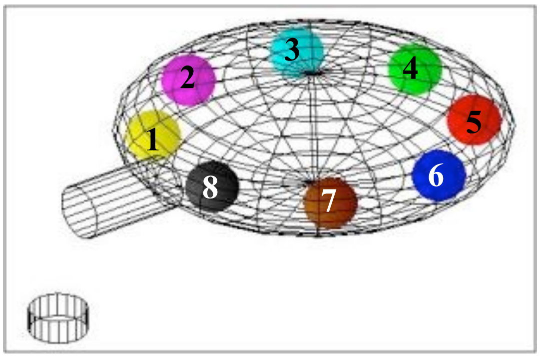
	Lottery	Sure	
	O	O	750 Pesos for sure
	O	O	1500 Pesos for sure
	O	O	2250 Pesos for sure
	O	O	3000 Pesos for sure
	O	O	3750 Pesos for sure
	O	O	4500 Pesos for sure
	O	O	5250 Pesos for sure
	O	O	6000 Pesos for sure
	O	O	6750 Pesos for sure
	O	O	7500 Pesos for sure
	O	O	8250 Pesos for sure
	O	O	9000 Pesos for sure
	O	O	9750 Pesos for sure
Win **30000 Pesos** if one of the following balls is extracted:	O	O	10500 Pesos for sure
1 2 3 4 5 6 7	O	O	11250 Pesos for sure
	O	O	12000 Pesos for sure
Win **0 Pesos** if one of the following balls is extracted:	O	O	12750 Pesos for sure
8	O	O	13500 Pesos for sure
	O	O	14250 Pesos for sure
	O	O	15000 Pesos for sure
	O	O	15750 Pesos for sure
	O	O	16500 Pesos for sure
	O	O	17250 Pesos for sure
	O	O	18000 Pesos for sure
	O	O	18750 Pesos for sure
	O	O	19500 Pesos for sure
	O	O	20250 Pesos for sure
	O	O	21000 Pesos for sure
	O	O	21750 Pesos for sure
	O	O	22500 Pesos for sure
	O	O	23250 Pesos for sure
	O	O	24000 Pesos for sure
	O	O	24750 Pesos for sure
	O	O	25500 Pesos for sure
	O	O	26250 Pesos for sure
	O	O	27000 Pesos for sure
	O	O	27750 Pesos for sure
	O	O	28500 Pesos for sure
	O	O	29250 Pesos for sure

PART II

If part II should be chosen for real play, you and your recipient/your decision maker are endowed with 30000 Pesos. These 30000 Pesos are yours, but it is possible that you will lose part or all of the money in the experiment (but no more than that).

In part II you are again asked to repeatedly choose between the two types of lotteries you have already encountered in part I of the experiment and a series of sure amounts. However, the main difference now is that **the amounts involved are negative instead of positive**. Figure 4 shows an example of such a choice.

Fig. 4: example of a typical decision task from part II



Lose 15000 Pesos if one of the following balls is extracted:

1 2 3 4

Lose 0 Pesos if one of the following balls is extracted:

5 6 7 8

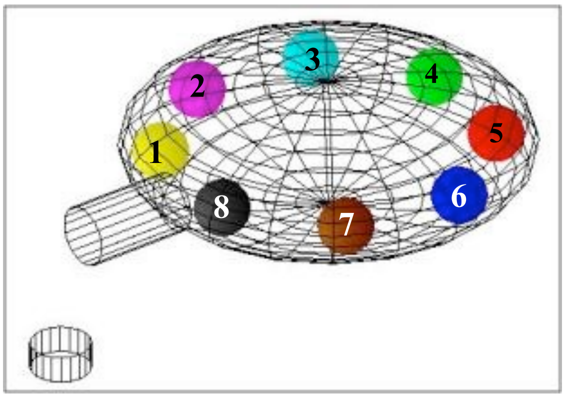
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure

In the example displayed, you face the following lottery: if a ball with the number 1 , 2 , 3, or 4 is extracted, **you lose 15000 Pesos**. If a ball with the number 5 , 6 , 7 , or 8 is extracted, you lose nothing. Please choose again for each row whether you would rather give up (i.e., pay) the sure amount indicated to the right or play the lottery.

Notice that, most likely, you will now **begin to the right** by choosing to give up the sure amounts as long as this implies giving up small amounts, and then switch to the lottery at a certain point. If you do not want to give up sure amounts at all, then in the first row you can choose the lottery and then continue with the lottery for all choices (if you are not willing to pay 750 Pesos to avoid playing the lottery, then you should not be willing to pay 1500 Pesos to avoid it). Once again, when exactly you switch from the sure loss to the lottery depends entirely on your preferences—there are no right or wrong answers. However, **you should NOT switch back and forth several times between lottery and sure amount!** You will be excluded from the experiment if you do so or if it is not possible to clearly recognize your preference (for example because you have not ticked any box for a given row or ticked both boxes for a row).

In addition to the pure loss choices described above, you will also face some choices in which **both negative <u>and</u> positive amounts are involved**. Also, what changes is now not the sure amount to the right, which is always equal to zero, but rather the amount you can lose in the lottery. Figure 3 shows an example of this kind of choice problem.

Fig. 3: decision task where lottery amount changes



Win 30000 Pesos if one of the following balls is extracted:

1 2 3 4

If one of the following balls is extracted, then:

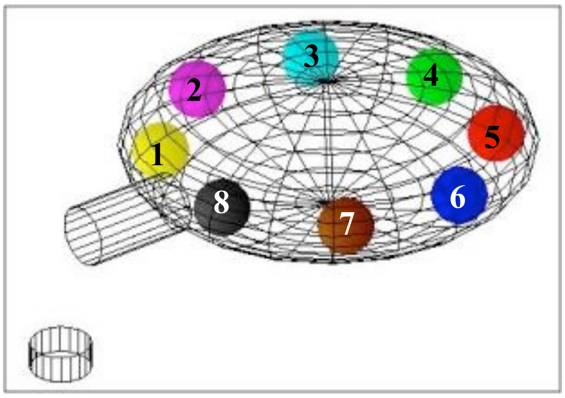
5 6 7 8

Lose 30000 Pesos	O	O	0 Pesos for sure
Lose 28500 Pesos	O	O	0 Pesos for sure
Lose 27000 Pesos	O	O	0 Pesos for sure
Lose 25500 Pesos	O	O	0 Pesos for sure
Lose 24000 Pesos	O	O	0 Pesos for sure
Lose 22500 Pesos	O	O	0 Pesos for sure
Lose 21000 Pesos	O	O	0 Pesos for sure
Lose 19500 Pesos	O	O	0 Pesos for sure
Lose 18000 Pesos	O	O	0 Pesos for sure
Lose 16500 Pesos	O	O	0 Pesos for sure
Lose 15000 Pesos	O	O	0 Pesos for sure

What is required of you in this task is exactly the same as for the other tasks. For each row, you should choose whether you prefer the sure amount to the right (which is now always zero), or the lottery to the left. Pay attention however: **what changes is now the amount that can be lost in the lottery**. Most likely, you would thus start from the right and choose zero for high losses, and then switch to the left as the losses in the lottery get smaller. You can however also start with the lottery and continue with it if that is your preference (if you prefer a lottery in which you can win 30000 Pesos or lose 30000 Pesos to zero, then you should also prefer the lottery when you can lose only 28500 Pesos). When you switch from the zero sure amount to the lottery depends only on your preferences—there is no right or wrong answer. However, **you should NOT switch back and forth several times between lottery and sure amount!** You will be excluded from the experiment if you do so or if it is not possible to clearly recognize your preference (for example because you have not ticked any box for a given row or ticked both boxes for a row).

Payoff determination
In case part II should be chosen for real play, your payoff from part II will be determined in a way analogous to the payoff determination in the first part. First, it will be determined whether you are a decisions maker, so that your decisions are played out for yourself and a recipient, or whether your are a recipient, so that somebody else's decisions will determine your payoff. Then, one of the decision tasks will be chosen at random, and then one of the rows for which you or your assigned decision maker had to indicate a choice. In each case, **every choice task or row has an equal probability of being selected**. According to your/your decision maker's choice, you will then have to pay the sure amount, or the lottery will be played out by drawing a ball from the indicated urn.

Decision II-1



Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure

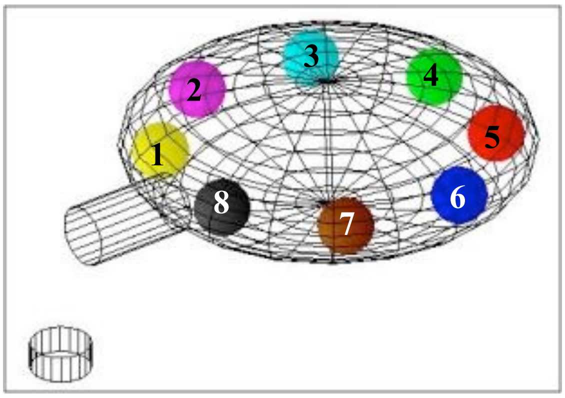
Lose 7500 Pesos if one of the following balls is extracted:

1 2 3 4

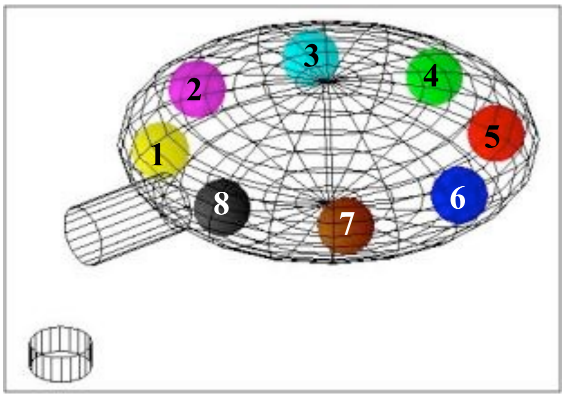
Lose 0 Pesos if one of the following balls is extracted:

5 6 7 8

Decision II-2

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 15000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3 4	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
5 6 7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure

Decision II-3



Lose 30000 Pesos if one of the following balls is extracted:

1 2 3 4

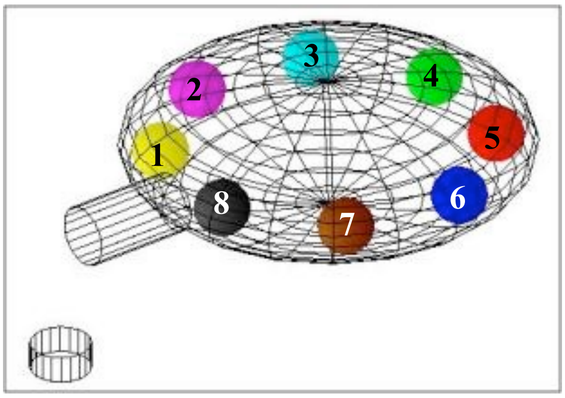
Lose 0 Pesos if one of the following balls is extracted:

5 6 7 8

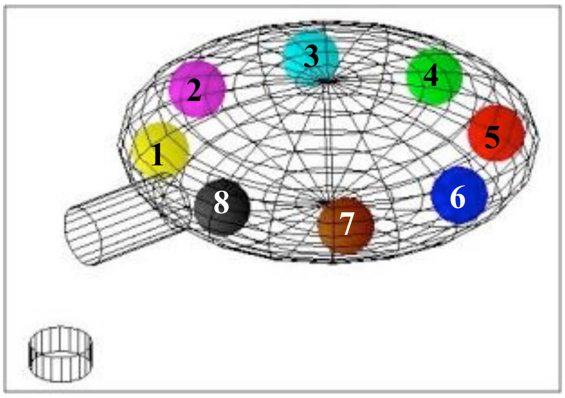
Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure

	O	O	– 29250 Pesos for sure

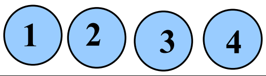
Decision II-4

	Lottery	Sure	
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
	O	O	– 10500 Pesos for sure
	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
	O	O	– 12750 Pesos for sure
	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 18000 Pesos for sure
1 2 3 4	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
Lose 7500 Pesos if one of the following balls is extracted:	O	O	– 20250 Pesos for sure
5 6 7 8	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure
	O	O	– 29250 Pesos for sure

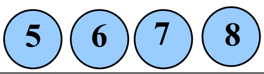
Decision II-5



Lose 30000 Pesos if one of the following balls is extracted:

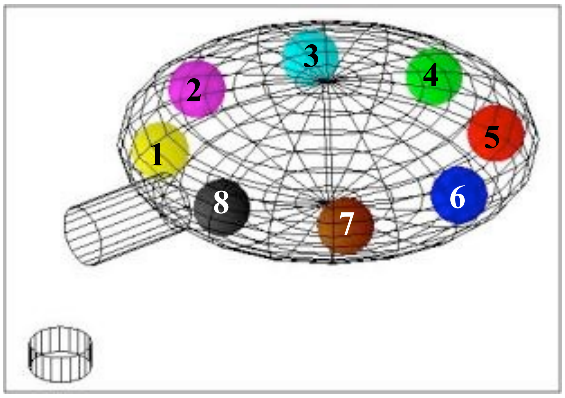


Lose 15000 Pesos if one of the following balls is extracted:



Lottery	Sure	
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure
O	O	– 29250 Pesos for sure

Decision II-6



Lose 30000 Pesos if one of the following balls is extracted:

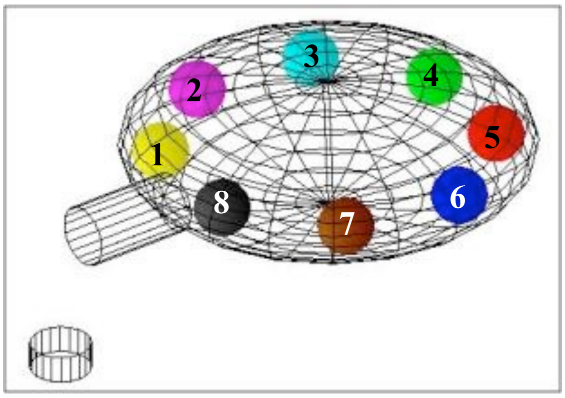
1

Lose 0 Pesos if one of the following balls is extracted:

2 3 4 5 6 7 8

Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure
O	O	– 29250 Pesos for sure

Decision II-7



Lose 30000 Pesos if one of the following balls is extracted:

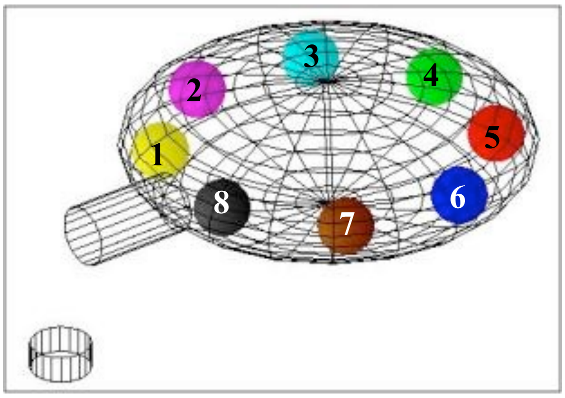
1 2

Lose 0 Pesos if one of the following balls is extracted:

3 4 5 6 7 8

Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure
O	O	– 29250 Pesos for sure

Decision II-8



Lose 30000 Pesos if one of the following balls is extracted:

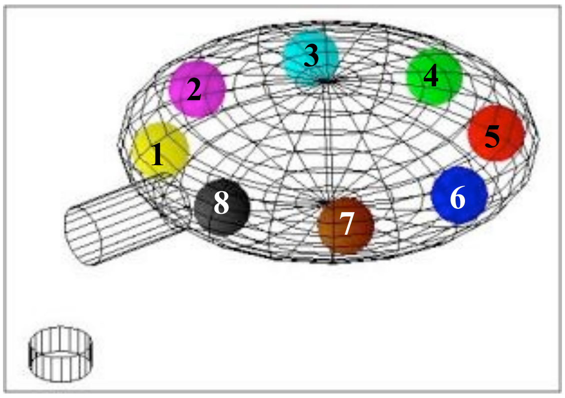
1 2 3

Lose 0 Pesos if one of the following balls is extracted:

4 5 6 7 8

Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure
O	O	– 29250 Pesos for sure

Decision II-9



Lose 30000 Pesos if one of the following balls is extracted:

1 2 3 4 5

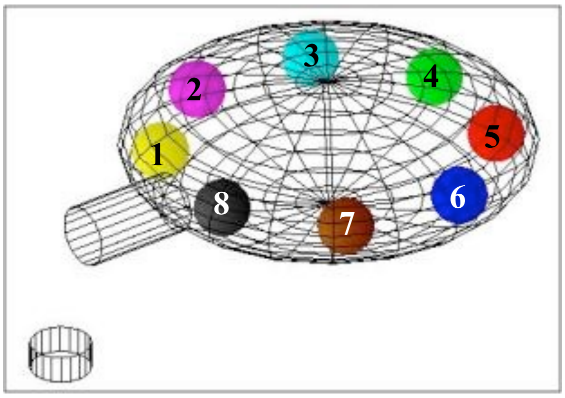
Lose 0 Pesos if one of the following balls is extracted:

6 7 8

Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure

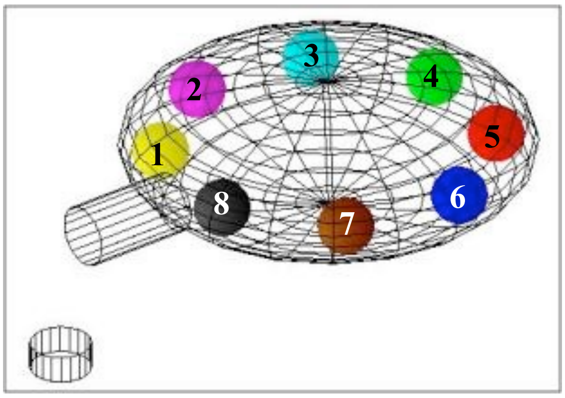
	O	O	– 29250 Pesos for sure

Decision II-10

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3 4 5 6	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

	O	O	– 29250 Pesos for sure

Decision II-11



Lose 30000 Pesos if one of the following balls is extracted:

1 2 3 4 5 6 7

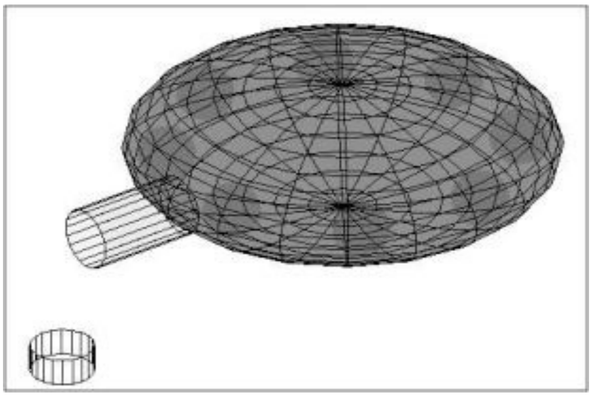
Lose 0 Pesos if one of the following balls is extracted:

8

Lottery	Sure	
O	O	– 750 Pesos for sure
O	O	– 1500 Pesos for sure
O	O	– 2250 Pesos for sure
O	O	– 3000 Pesos for sure
O	O	– 3750 Pesos for sure
O	O	– 4500 Pesos for sure
O	O	– 5250 Pesos for sure
O	O	– 6000 Pesos for sure
O	O	– 6750 Pesos for sure
O	O	– 7500 Pesos for sure
O	O	– 8250 Pesos for sure
O	O	– 9000 Pesos for sure
O	O	– 9750 Pesos for sure
O	O	– 10500 Pesos for sure
O	O	– 11250 Pesos for sure
O	O	– 12000 Pesos for sure
O	O	– 12750 Pesos for sure
O	O	– 13500 Pesos for sure
O	O	– 14250 Pesos for sure
O	O	– 15000 Pesos for sure
O	O	– 15750 Pesos for sure
O	O	– 16500 Pesos for sure
O	O	– 17250 Pesos for sure
O	O	– 18000 Pesos for sure
O	O	– 18750 Pesos for sure
O	O	– 19500 Pesos for sure
O	O	– 20250 Pesos for sure
O	O	– 21000 Pesos for sure
O	O	– 21750 Pesos for sure
O	O	– 22500 Pesos for sure
O	O	– 23250 Pesos for sure
O	O	– 24000 Pesos for sure
O	O	– 24750 Pesos for sure
O	O	– 25500 Pesos for sure
O	O	– 26250 Pesos for sure
O	O	– 27000 Pesos for sure
O	O	– 27750 Pesos for sure
O	O	– 28500 Pesos for sure

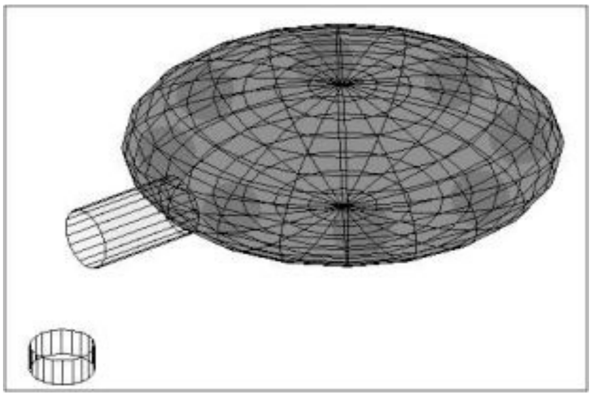
	O	O	– 29250 Pesos for sure

Decision II-12

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
2 3 4 5 6 7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

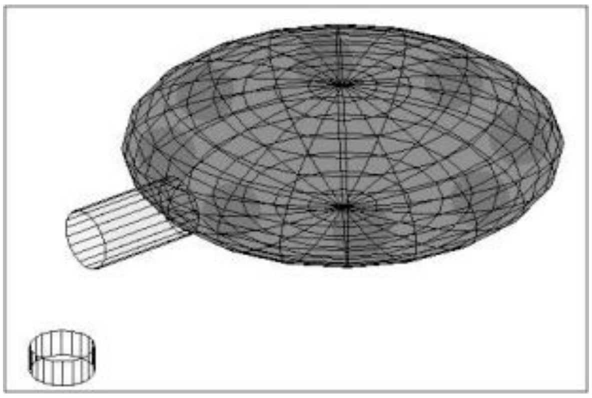
	O	O	– 29250 Pesos for sure

Decision II-13

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
3 4 5 6 7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

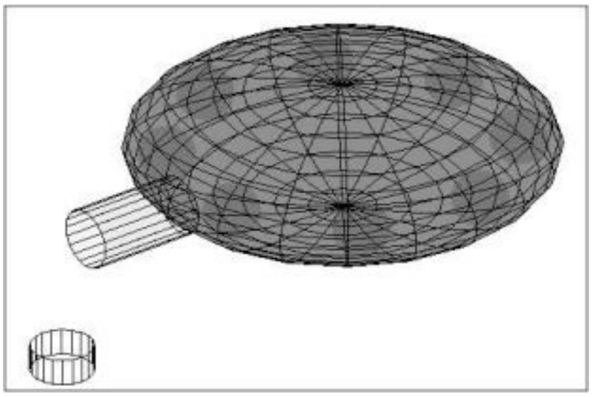
	O	O	– 29250 Pesos for sure

Decision II-14

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
4 5 6 7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

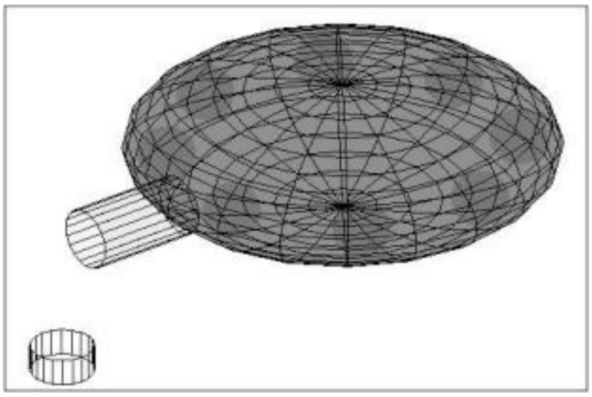
	O	O	– 29250 Pesos for sure

Decision II-15

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3 4 5	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
6 7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

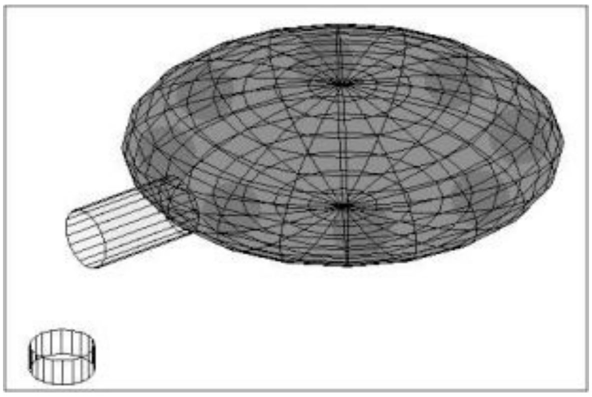
	O	O	– 29250 Pesos for sure

Decision II-16

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3 4 5 6	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
7 8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

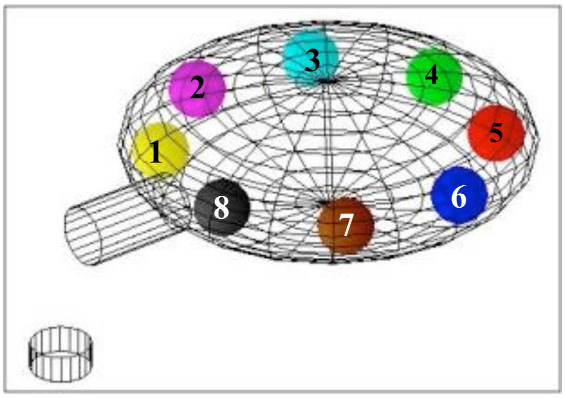
	O	O	– 29250 Pesos for sure

Decision II-17

	Lottery	Sure	
	O	O	– 750 Pesos for sure
	O	O	– 1500 Pesos for sure
	O	O	– 2250 Pesos for sure
	O	O	– 3000 Pesos for sure
	O	O	– 3750 Pesos for sure
	O	O	– 4500 Pesos for sure
	O	O	– 5250 Pesos for sure
	O	O	– 6000 Pesos for sure
	O	O	– 6750 Pesos for sure
	O	O	– 7500 Pesos for sure
	O	O	– 8250 Pesos for sure
	O	O	– 9000 Pesos for sure
	O	O	– 9750 Pesos for sure
Lose 30000 Pesos if one of the following balls is extracted:	O	O	– 10500 Pesos for sure
1 2 3 4 5 6 7	O	O	– 11250 Pesos for sure
	O	O	– 12000 Pesos for sure
Lose 0 Pesos if one of the following balls is extracted:	O	O	– 12750 Pesos for sure
8	O	O	– 13500 Pesos for sure
	O	O	– 14250 Pesos for sure
	O	O	– 15000 Pesos for sure
	O	O	– 15750 Pesos for sure
	O	O	– 16500 Pesos for sure
	O	O	– 17250 Pesos for sure
	O	O	– 18000 Pesos for sure
	O	O	– 18750 Pesos for sure
	O	O	– 19500 Pesos for sure
	O	O	– 20250 Pesos for sure
	O	O	– 21000 Pesos for sure
	O	O	– 21750 Pesos for sure
	O	O	– 22500 Pesos for sure
	O	O	– 23250 Pesos for sure
	O	O	– 24000 Pesos for sure
	O	O	– 24750 Pesos for sure
	O	O	– 25500 Pesos for sure
	O	O	– 26250 Pesos for sure
	O	O	– 27000 Pesos for sure
	O	O	– 27750 Pesos for sure
	O	O	– 28500 Pesos for sure

	O	O	– 29250 Pesos for sure

Decision II-18



Win 30000 Pesos if one of the following balls is extracted:

1 2 3 4

If one of the following balls is extracted, then:

5 6 7 8

	Lottery	Sure	
Lose 30000 Pesos	O	O	0 Pesos for sure
Lose 28500 Pesos	O	O	0 Pesos for sure
Lose 27000 Pesos	O	O	0 Pesos for sure
Lose 25500 Pesos	O	O	0 Pesos for sure
Lose 24000 Pesos	O	O	0 Pesos for sure
Lose 22500 Pesos	O	O	0 Pesos for sure
Lose 21000 Pesos	O	O	0 Pesos for sure
Lose 19500 Pesos	O	O	0 Pesos for sure
Lose 18000 Pesos	O	O	0 Pesos for sure
Lose 16500 Pesos	O	O	0 Pesos for sure
Lose 15000 Pesos	O	O	0 Pesos for sure
Lose 13500 Pesos	O	O	0 Pesos for sure
Lose 12000 Pesos	O	O	0 Pesos for sure
Lose 10500 Pesos	O	O	0 Pesos for sure
Lose 9000 Pesos	O	O	0 Pesos for sure
Lose 7500 Pesos	O	O	0 Pesos for sure
Lose 6000 Pesos	O	O	0 Pesos for sure
Lose 4500 Pesos	O	O	0 Pesos for sure

Questionnaire

Please answer the following questions about yourself. All answers are confidential and cannot be traced back to you personally.

Age: ___________ Study year:____________

O female O male

What is your studies major?
O economics or business
O mathematics or engineering
O natural sciences
O medicine
O social sciences
O humanities
O arts
O other

Please indicate your grade point average: __________

Are you originally from Colombia? O yes O no

If not, which country are you from originally? __________________

Are both your parents from Colombia? O yes O no

Have you ever lived abroad for a significant period of time?
O never
O less than six months
O between six months and a year
O between one and two years
O between two and five years
O longer than five years

Could you give a rough indication of your monthly living expenses? _________
Could you give a rough indication of your monthly stipend? ___________

Please indicate how many older siblings you have:_____________
Please indicate how many younger siblings you have:______________

Are you married? O yes O no

How tall are you? ___________cm

Please consider the following statement: “Man-induced climate change is a serious danger that could threaten our way of life”. Please indicate on the scale below the extent to which you agree with this statement, with 1 indicating “I don't agree at all” and 7 indicating “I fully agree”:

1	2	3	4	5	6	7
O	O	O	O	O	O	O

Please consider the following statement: “It is imperative to take immediate action to limit potential catastrophic consequences from changes in global climate, even if such action may be costly”. Please indicate on the scale below the extent to which you agree with this statement, with 1 indicating “I don't agree at all” and 7 indicating “I fully agree”:

1	2	3	4	5	6	7

O	O	O	O	O	O	O

The following section seeks to evaluate your cultural orientation. Please indicate your agreement with each of the following statements:

	Stongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. Individuals should sacrifice self-interest for the group that they belong to	O	O	O	O	O
2. Individuals should stick with the group even through difficulties	O	O	O	O	O
3. Group welfare is more important than individual rewards	O	O	O	O	O
4. Group success is more important than individual success	O	O	O	O	O
5. Individuals should pursue their goals after considering the welfare of the group	O	O	O	O	O
6. Group loyalty should be encouraged even if individual goals suffer	O	O	O	O	O
7. People in higher positions should make most decisions without consulting people in lower positions	O	O	O	O	O
8. People in higher positions should not delegate important tasks to people in lower positions	O	O	O	O	O
9. People in higher positions should not ask the opinions of people in lower positions too frequently	O	O	O	O	O
10. People ion higher positions should avoid social interaction with people in lower positions	O	O	O	O	O
11. People in lower positions should not disagree with decisions made by people in higher positions	O	O	O	O	O
12. It is important to have instructions spelled out in detail so that I always know what I am expected to do	O	O	O	O	O
13. It is important to closely follow instructions and procedures	O	O	O	O	O
14. Rules/regulations are important because they inform me of what is expected of me	O	O	O	O	O
15. Standardized work procedures are helpful	O	O	O	O	O
16. Instructions for operations are important	O	O	O	O	O
17. It is more important for men to have a professional career than it is for women	O	O	O	O	O
18. Men usually solve problems with logical analysis; women usually solve problems with intuition	O	O	O	O	O
19. Solving difficult problems usually requires an active forcible approach, which is typical for men	O	O	O	O	O
20. There are some jobs that a man can always do better than a woman	O	O	O	O	O
21. Even though certain food products are available in a number of different flavors, I tend to buy the same flavor	O	O	O	O	O
22. I would rather stick with a brand I usually buy than try something I am not very sure of	O	O	O	O	O
23. I think of myself as a brand-loyal consumer	O	O	O	O	O
24. When I go to a restaurant, I feel it is safer to order dishes I am familiar with	O	O	O	O	O
25. If I like a brand, I rarely switch from it just to try something different	O	O	O	O	O
26. I am very cautious in trying new or different products	O	O	O	O	O
27. I rarely buy brands about which I am uncertain how they will perform	O	O	O	O	O
28. I usually eat the same kinds of foods on a regular basis	O	O	O	O	O

How do you see yourself? Are you generally a person who is fully willing to take risks or do you try to avoid taking risks? Please tick a box on the scale below, where 0 means “risk averse” and 10 means “fully prepared to take risks”:

Risk averse										Fully prepared to take risks
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**

O	O	O	O	O	O	O	O	O	O	O

People can behave differently in different situations.
How would you rate your willingness to take risks in the following areas?
How is it …

	risk averse									fully prepared to take risks
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
– while driving?	O	O	O	O	O	O	O	O	O	O	O
– in financial matters?	O	O	O	O	O	O	O	O	O	O	O
– during leisure and sport?	O	O	O	O	O	O	O	O	O	O	O
– in your occupation?	O	O	O	O	O	O	O	O	O	O	O
– with your health?	O	O	O	O	O	O	O	O	O	O	O
– your faith in other people?	O	O	O	O	O	O	O	O	O	O	O

How do you see others? Do you think that others are generally more willing to take risks than yourself or do you you think that others are less willing to take risks? Please tick a box on the scale below, where 0 means “others are less willing to take risk” and 10 means “others are more willing to take risks”:

Others less willing to take risks										Others more willing to take risks
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
O	O	O	O	O	O	O	O	O	O	O

Please consider what you would do in the following situation:

Imagine that you had won 100,000 Euros in the lottery. Almost immediately after you collect the winnings, you receive the following financial offer from a reputable bank, the conditions of which are as follows:
There is the chance to double the money within two years. It is equally possible that you could lose half of the amount invested. You have the opportunity to invest the full amount, part of the amount or reject the offer. What share of your lottery winnings would you be prepared to invest in this financially risky, yet lucrative investment?

O 100.000 Euros
O 80.000 Euros
O 60.000 Euros
O 40.000 Euros
O 20.000 Euros
O Nothing, I would decline the offer

How many inhabitants has the town where you lived at the age of 16?

____________________inhabitants

What are your religious views?
O atheist/agnostic
O catholic
O protestant
O muslim
O jewish
O hinduist
O buddist
O other: ________________

How satisfied are you today with the following areas of your life?
Please answer by using the following scale:
0 means **“totally unhappy”**
10 means **“totally happy”**

Totally unhappy

Totally happy

How satisfied are you with

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
– your health	O	O	O	O	O	O	O	O	O	O	O
– your sleep	O	O	O	O	O	O	O	O	O	O	O
– your study	O	O	O	O	O	O	O	O	O	O	O
– your income	O	O	O	O	O	O	O	O	O	O	O
– your dwelling	O	O	O	O	O	O	O	O	O	O	O
– your free time	O	O	O	O	O	O	O	O	O	O	O

23. In conclusion, we would like to ask you about your satisfaction with your life in general
Please answer according to the following scale:
0 means “completely dissatisfied” and **10** means **“completely satisfied”**
How satisfied are you with your life, all things considered?

Completely dissatisfied										Completely satisfied
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
O	O	O	O	O	O	O	O	O	O	O

Thank you for taking part in this experiment! Please remain seated until an experimenter calls you up.