



Discussion Paper Series

2005 – 06

Department of Economics
Royal Holloway College
University of London
Egham TW20 0EX

©2005 Massimo Finocchiaro Castro. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit including © notice, is given to the source.

Cultural Goods and Laboratory Experiments

Massimo Finocchiaro Castro ♦

*Department of Economics, Royal Holloway College, University of London, UK
&
DEMQ, University of Catania, Italy*

May 9, 2005

Abstract

In a two-stage public goods experiment, we study the framing effect due to the adoption of a cultural context. Our results show a slight increase in the allocations of subjects' endowments to the cultural good when the cultural context is implemented in the laboratory. In particular, in one treatment, the framing effect has a strong impact in the last two periods only.

JEL Classification: A13, H41, C92, Z10.

Keywords: cultural education, cultural good, framing, experiments, voluntary provision.

♦ Address: Department of Economics, Royal Holloway College, Egham, Surrey, TW20 0EX, UK; Tel.: +44 (0)1784 414158; E-mail: m.finocchiaro-castro@rhul.ac.uk

I would like to thank Hans Normann, Isidoro Mazza and Dirk Engelmann for their inspiring suggestions and insights. I am grateful to Benedetto Bruno and Sebastiano Sciré Scappuzzo for their invaluable help with the programming. I have also benefited from the interesting comments of the participants of the RSS seminars at the Royal Holloway College and from the participants in the 2004 International ESA meeting in Amsterdam. All errors remain mine.

1. Introduction

This paper deals with the individual choices regarding the voluntary provision of cultural goods in an experimental context. The possibility to apply the public good framework to the cultural goods is widely supported in the literature (Scandizzo, 1992; Mazza, 1993; Throsby, 1994; Pethig and Cheng, 2000; Finocchiaro Castro and Mazza, 2001). Given that the aim of the present work is not to discuss on the definition of cultural goods¹ and on their features, we assume that only the “public good” nature of cultural goods matters for our analysis. This dominant “public nature” of the cultural goods can be inferred when we consider the provision of cultural goods at the social level. Thus, we can include both of the characteristics of non-rivalry and non-excludability into the definition of cultural goods, given the relevance of those goods for the society as a whole (Mossetto, 1993; Trimarchi, 1993).

The novelty of our work is given by the application of the experimental procedure to cultural economics. To the best of our knowledge, there are no experimental works aimed at testing theoretical problems coming from cultural economics. In our experiment, the players are asked, first, to choose whether to invest their initial endowments in cultural education or not and, second, to decide whether to contribute to the provision of a cultural good or not. We believe that a change in the framing should affect significantly individual choices in our experimental design. The relationship between investment cultural education and the voluntary contribution to cultural goods is supported by Throsby (2001, pag.114), who affirms that “it is apparent that a person’s enjoyment of music, literature, drama, the visual arts and so on and hence her willingness to spend money on consuming them, are importantly related to her knowledge and understandings of these art forms. Such a cultural competence is acquired through education and experience, and hence stronger and more discriminating tastes for the arts are likely to be shown by better educated and by those who have already become consumers”. Therefore, there are two forces able to influence the allocation of

¹ In this paper we adopt the definition of cultural goods given by Throsby (1999), “artefacts or services which through the display of beauty, knowledge or memories of the past, offer an enduring experience”.

individual endowments to the provision of cultural goods: education and previous consumption. In this paper we focus on the effects of cultural education, which has been, according to our opinion, not fully explored yet.

Referring to the relevant literature (Champarnaud et al., 2002; Fryer, 2002; van der Ploeg, 2002), we can define the cultural education as a process of acquisition of competence in order to better understand the different forms of art. Then, it is evident that the investment in cultural education has both a private and a public component. More specifically, the former is given by the individual satisfaction from the art consumption due to the increased skills in arts; the latter is represented by the positive externality generated by the higher level of cultural education reached at the social level (Klamer, 1996; Finocchiaro Castro and Mazza, 2001; Throsby, 2001; van der Ploeg, 2002). In our analysis, we only consider the public component of cultural education because it is the most relevant to our study of the total level of voluntary contributions to the cultural education reached in each group and not the individual act of art consumption.

Our paper aims at testing the presence of a framing effect (Tversky and Kahneman, 1981; Andreoni, 1995; Fehr, Gaechter and Kirchsteiger, 1997; Eckel and Grossman, 1996; Abbink and Hennig-Schmidt, 2002) due to the implementation of a “cultural context” in a two-stage two public goods game². What we want to look for is, first, the existence and, then, the magnitude of the effect of the change in the experimental instructions from a neutral to a loaded wording. Compared with the neutral context, we were expecting to assist to an increase in the subjects’ contribution levels to the cultural good in the cultural context treatments. Strikingly, our prevision about contributions to cultural goods, most of the times, has not been confirmed by experimental data, showing only a slight difference in contributions due to the framing effects.

The present paper is structured as follows. Section 2 discusses the characteristics of cultural goods and reviews the relevant results coming from the literature on framing effects. Section 3

² In another paper, Finocchiaro Castro (2005), we use the same data set to test whether there are any differences in the eventual cooperation in a two-stage two public goods experiment compared to the cooperation coming from a standard VCM treatment.

describes the experimental design and the theoretical predictions. Section 4 presents and discusses the results of the experiment and Section 5 concludes.

2. Background

2.1 The Public Good Nature of Culture

In the last decades economists seem to concern more and more about the link between the preservation and restoration of historical buildings, the level of cultural good and the economic theory (Champarnaud et al., 2002; Fryer, 2002; van der Ploeg, 2002). One of the first puzzles to be solved by the economists trying to apply the main tools of economic theory to cultural matters has been the definition of cultural good. Given that the aim of the present work is not to discuss on the definition of cultural goods and on their features, we will consider only the “public good” nature of cultural goods, which is, by the way, one of the most widely mentioned characteristic among the cultural economics literature (Blaug, 1976; Ginsburgh and Menger, 1996; Hutter and Rizzo, 1997; Towse, 1997; Frey, 2000; Throsby, 2001).

The main effect coming from the public good nature of cultural goods is the presence of positive externality for the whole society when these goods are provided (Scandizzo, 1992; Mazza, 1993; Throsby, 1994; Pethig and Cheng, 2000; Finocchiaro Castro and Mazza, 2001). As it has been noted by Mazza (1993, pg.37) “although cultural goods may be rival in consumption, it is often suggested that they produce ‘national feeling’ benefits which are non-excludable”. A similar opinion is the one pursued by Mossetto (1993, pg.96) who describes the ambiguous role of artistic goods saying that “artistic goods are endowed with non-excludability even if the consumption is sometimes rival”. Moreover, Sable and Kling (2001) point out that while in some cases exclusion from the benefits of a cultural good may be technically possible it is typically not desirable, and that, in some cases, the nature of the cultural good is such that, at some threshold, the good becomes rival in consumption due to congestion. However, we will consider the provision of cultural goods

for the society as a whole in order to be able to include both the characteristics of non-rivalry and non-excludability into the definition of cultural goods, given the relevance of those goods for the society as a whole³.

2.2 Framing in Experiments

Before describing the state of arts regarding the results on the effects of framing in public goods experiments, let us explain what *framing* commonly means. A clear and, at the same time, broad definition of framing can be borrowed from Elliot and Hayward (1998, pg.232). They describe a frame as “a framework within information is considered, selected, interpreted, evaluated or simply understood”. The authors go further on with their analysis stating, in the same paragraph that “framing is then any manipulation of factors causing a change in an individual’s frame such that a predictable behaviour is affected, that predictable behaviour is a framing effect”. The relevant literature, suggests the presence of two types of framing: the *pure-framing* and the *valence framing*. The former occurs when subjects are presented with alternative, although perfectly equivalent, problem wordings (see Albers and Harstad, 1991; Kashima and Maher, 1995). Differently, the latter refers to situation where the information is presented to the subjects either in a negative or in a positive light⁴.

A significant number of studies on economics and psychology have focused on the analysis of valence framing effects. The first and, probably, most important contribution is the one of Tversky and Kahneman (1981) that has been replicated several times finding substantial regularities in the results (Knetsch and Sinden, 1984; Bohm and Lind, 1992; Kahneman and Knetsch, 1992; Bateman et al., 1997a and 1997b). Tversky and Kahneman (1981)’s main result is the presence of a choice reversal effect. They elicit subjects’ attitudes towards a program against a fictitious disease, and present the tasks either in positive terms (number of lives saved) or in negative terms (number of lives lost). Subjects have to choose one of two options: a risky outcome and a sure outcome with

³ This point of view is suggested by Trimarchi (1993).

⁴ For a detailed review of valence framing studies see Levin, Schneider and Gaeth (1998).

identical expected value. The authors find that the majority of subjects who are given the positively framed task chooses the sure outcome whereas the majority of subjects who are given the negatively framed task goes for the risky choice. In other words, individuals are willing to take risks when it gives them a chance to avoid losses, but they tend to be risk-averse when they are confronted with opportunities to make gains.

Relatively few studies have investigated the effects due to valence framing in public goods experiments. An interesting attempt to analyze the impact of positive versus negative framing in a standard linear public goods experiment has been run by Andreoni (1995). He finds that subjects are more willing to cooperate when the provision of the public goods is posed as a positive externality rather than a negative externality, even though the potential outcomes are the same. Park (2000) examines the robustness of Andreoni's findings. In particular, he checks whether this behavioural asymmetry exists uniformly across the subjects who have different preferences regarding one's own welfare relative to the welfare of others. Park (2000) finds that the negative framing has the most salient effect on the subjects who have individualistic preferences, whereas it has rather insignificant effect on the subjects who have cooperative preferences.

At the same time, other works confirm the presence of strong framing effects on cooperation. In particular, subjects appear to be more willing to cooperate when they face a positive framing than when facing a negative framing. Sonnemans et al. (1998) show that, in a step-level public goods experiment, the framing effect is due to the fact that economically equivalent outcomes have differential psychological impacts on subjects in both positive and negative frames. Willinger and Ziegelmayer (1999) investigate the framing effect in a public good game with an interior solution to verify Andreoni (1995)'s results. They find that the average level of contribution in the negative treatment is significantly lower than in the positive treatment and agrees with the equilibrium prediction. Finally, Cookson (2000) measures the effects of three difference variations in presentation together in the same standard repeated public goods game. The first presentational variation aims at checking if the positive "restart effect" found in earlier public goods experiments

can be interpreted as framing effect; the second variation is to describe the payoff function in two different ways; the third variation concerns the possible different ways of constructing instructions and comprehension tasks. Cookson finds that all three presentational changes generate systematic and statistically significant effects in the same direction found in previous studies.

2.3 Neutral Context versus in-Context Experimental Settings

One of the common advices when writing the instructions for an experiment is to avoid any kind of suggesting words (see, e.g. Davis and Holt, 1993). Every sentence has to be neutrally formulated in order to exclude the case for any expressions that may affect subjects' behaviour. Thus, the majority of experimental studies implement a neutral and abstract set of instructions. Interesting examples of the effects of loaded instructions on experimental results may be taken from many different applications of experimental economics: beneficent behaviour and crowding out hypothesis (Bolton and Katok, 1995); dictator game (Eckel and Grossman, 1996); labour (Fehr, Gaechter and Kirchsteiger, 1997; Engelmann and Ortmann, 2002); public choice (Potters and van Winden, 2000); ultimatum game (Hoffman, McCabe and Smith, 2000); rational choice and public policy (Druckman, 2001); corruption (Abbink and Hennig-Schmidt, 2002).

In our paper, we will stress the importance of the adoption of the experimental methodology to investigate the effects of changes in the context, when applied to different kinds of economic issues. The significance of framing is also pointed out by Loomes (1999, pg.39) "it may be more useful to try to study the impact of context than to pursue the impossible goal of eliminating it". According to us, this problem seems to be even more in the need of an answer when social and cultural factors as well as other-regarding behaviour matter.

3. Experimental Design and Predictions

3.1 The Design

Our experimental setting involves two treatments, each of them played for 10 periods. The first treatment is a standard public-good game with participants divided into five groups of four players. All subjects are endowed with six tokens. They have to decide on the allocation of their endowment between a private good, A (x_i), and a public good B (g_i). Each token placed in A (x_i) earns one Experimental Unit (EU) for the subject. In contrast, each token allocated to B (g_i) gives exactly the same payoff to each member of the group as shown in equation (1). Then, each subject gets the following payoff,

$$\pi_i = x_i + 0.3 \sum_{i=1}^4 g_i, \quad (1)$$

s.t. $x_i + g_i = 6$

The second treatment is organised as a two-stage two public goods game, where the second stage of the game is identical to the first treatment, differing only in the initial endowment. During stage I, subjects are asked to decide whether to allocate their initial endowment of six tokens between a private good, C (y_i), and a public good D (z_i). They are informed that the payoff from C (y_i), together with a fixed amount of 6 tokens, will constitute the initial endowment for each participant available at the beginning of each period of stage II. Each token allocated to D (z_i) gives exactly the same payoff to each member of the group, as shown in equation (2). Then, each subject gets the following payoff,

$$\pi_i = (x_i + y_i) + \left(0.4 \sum_{j=1}^4 z_j + 0.3 \sum_{j=1}^4 g_j \right) \quad (2)$$

s.t. $y_i + z_i = 6$ and $x_i - y_i + g_i = 6$

Considering equation (2), it is important to remember that the term in parentheses represents the earnings accruing equally to each member of the group from both D (z_i) and B (g_i). In this case, the marginal return accruing to every subject from D (z_i) is 0.4.

Our experiment deals with the investigation of possible framing effects due to the adoption of loaded instructions. In order to accomplish this task, we run the two treatments described above both in a neutral context and in a cultural context. The cultural context only differs from the neutral context in the adoption of a loaded wording recalling some cultural concepts relevant to our analysis. Table 1 presents a clear description of the changes adopted in the cultural context, all the other features of the treatments remaining the same as in the neutral context.

To summarize, we had a 2x2 treatment design with five groups of four subjects in each treatment. All the treatments lasted for ten periods. We implemented a fixed matching protocol⁵. That is, each subject played with the same group members during each treatment. The first treatment (T1NC) is a standard public good game; while the second treatment (T2NC) is organised as a two-stage public goods game, where the second stage of the game is identical to the first treatment. Finally, the third (T1CC) and fourth (T2CC) treatment are exactly the same as, respectively, the first and the second treatment, with the only difference given by framing adopted.

- Table 1 about here -

The experiment was conducted at the University of Catania. A total of 80 subjects were recruited among a population of students from a wide range of fields, such as economics, law and political science. Each student participated in only one treatment of the experiment. The staff of the *Centro Informazione Giuridica*, at the University of Catania, developed the experimental software. Before beginning the experiment, the instructions were read aloud and explained in detail⁶. Any kind of communication was forbidden. Subjects typed written responses directly into the computer in their own time. At the end of each treatment, subjects were paid anonymously in cash at an

⁵ Subjects were aware that the software was assigning to each of them a new subject number after each period of the experiment. This is usually done in order to avoid any reputation effect within each group.

⁶ In our experiment, we adopted the standard VCM instructions that, however, are available upon request.

exchange rate of 0.10 euro per EU earned. On average, the subjects earned 16.50 euro including a 5 euro show-up fee. Each treatment lasted between 40 and 60 minutes.

3.2 Predictions

According to the standard game-theoretic approach, the Nash dominant strategy, obtained applying the backward induction procedure, predicts zero contribution to the provision of public goods. In each period, a self-interested fully rational subject should be playing the free-riding strategy⁷. From equation (1) and (2), it is clear that the Nash equilibrium does not coincide with the Pareto optimal solution. The full cooperation strategy suggests that each member of a group should invest all of her endowment in the provision of public goods, reaching the level of full cooperation at both stages.

The attempt at coordinating towards the full cooperation has to be considered as a deviation from the Nash equilibrium strategy. Given this, we should not find any difference in subjects' allocations done in both the neutral and cultural context treatments. An alternative possible outcome of our experimental setting is the case where subjects increase the contribution levels when playing in the cultural context. This means that individual behaviour may differ across strategically equivalent situations, contradicting traditional economic models. Surprisingly, while our data confirm this tendency only during the last periods of the treatment 2, they fail to verify any framing effects on the contribution levels in treatment 1⁸.

⁷ This strategy leads to the payoff of 6 tokens and 12 tokens in each period in the first and second treatment respectively.

⁸ The only exception is given by the investment in cultural education made in the last period of treatment 1 that are higher in the cultural context than in the neutral context.

4. The Results

4.1 The data

We first discuss some general aspects of our data. In Table 2 we show the average level of contribution of each treatment as a percentage of the endowment⁹. We begin by looking at the differences in the rates of contribution to the cultural good between the first (T1) and the second (T2) treatment. The contributions to the cultural good from T1 are always higher than the ones from the second stage of T2. On average, the level of contribution is 47.1% in T1 and 37.5% in T2. The same can be said if we consider only the results from period 1. While T1 starts at a very high level of contributions (62.1%), the second treatment shows a lower level of contributions (47%)¹⁰.

Moreover, the values of T1 and T2 show two decreasing patterns and their relationships are negative and significant¹¹. It is important to notice that both trends end up further away from the Nash prediction of complete free riding (36.3% in T1 and 29.5% in T2)¹².

- Table 2 about here -

From Table 2, we can also analyse the levels of contribution to the cultural education achieved during the second stage of T2. First, we can notice that, on average, the contributions made under the cultural context (37.3%) are higher than the ones done under the neutral context (32.6%). At the same time, if we check more in details the levels of contribution per period, an interesting result stands out from the data. While, until period 4, the values of cultural education in the neutral context are higher than the ones in the cultural context, they decrease below the values of cultural education reached in the cultural context from period 5 to period 10.

⁹ The levels of contributions coming from the second stages of both contexts have been weighted according to the different endowments available to each subject.

¹⁰ Note that those levels of cooperation are perfectly in line with other experimental results on public goods (see Ledyard, 1995; Davis and Holt, 1993).

¹¹ At the 5% level, the p-values, referring to the 2-tailed Pearson correlation test, are $p=0.01$ and $p=0.03$ in T1 and T2 respectively.

¹² Interestingly, in T1 the level of contribution in the last period (36.3%) is higher than the previous one (35.4%) and does not show the usual strong end-effect.

Now we move on to the analysis of the time trend of the four treatments separately. In other words, we consider the effects of the change in the context adopted. The decreasing patterns shown in Fig.1 seem to be the same across the treatments, while there is a stronger end-effect in the second treatment than in the first treatment¹³.

- Figure 1 about here -

The only treatment showing a negative but not significant time trend is T2CC¹⁴. Finally, we consider the contributions to the cultural education made during the treatments T2NC and T2CC. Also in this case, we can notice the late effect of framing on the contributions to the cultural education when the cultural context is adopted¹⁵. From Fig.2, it is possible to see the difference in the trends of the two treatments. The values coming from the cultural context are always greater than those of the neutral context after period 4, although they both show the common end-effect.

4.2 *The effects of Framing*

In this section, we will investigate the effects of the implementation of the cultural context on the investments in cultural education and the contributions to cultural good compared with the neutral context case.

4.2.1 *The investment in cultural education*

After period 4, the values coming from the cultural context are always greater than those of the neutral context, although decreasing. This result seems to be entirely due to the framing effect that has emphasized the role of the investment in cultural education. Moreover, Fig.1 shows the

¹³ At the 1% level, three treatments out of four show a negative and significant time trend with $p_{T1NCcg}=0.01$, $p_{T1CCcg}=0.01$ and $p_{T2NCcg}=0.00$ respectively.

¹⁴ In fact, we assist to an increasing pattern of contributions from period 6 to period 10 that explains why the time trend is not significant.

¹⁵ While the time trend in the neutral context is negative and significant ($p_{T2NCce}=0.01$), the result from the cultural context shows a negative but not significant time trend ($p_{T2CCce}=0.139$).

striking increase of the investment in cultural education, in the last period of the experiment, due to the change in the framing (31.7% in the case of cultural context and 14.2% in the case of neutral context)¹⁶.

As done before, we have also checked for significant differences in the first and last period. Regarding the former, there are clearly no significant differences between the two framings ($p = 0.337$). In fact, also graphically, it is possible to see that the values relative to the first period are very close each other. This observation suggests that the framing is not able to sustain high levels of contribution from the beginning of the experiment.

- *Figure 2 about here* -

Looking at the last period of observation, we notice the strong increase in the distance between those two lines. In fact, subjects seem to need some time to take advantage of the adoption of the cultural framing. There is a significant difference in the values and we can reject the null hypothesis, stating that the two contexts come from the same distribution¹⁷. Also graphically, the value of cultural education in the cultural context is larger than the one reached in the neutral context.

On the average, subjects do not seem to be willing to fully cooperate even if we introduce a different framing which makes clearer and easier the way to choose the most efficient strategy. In fact, they have caught this intuition just after period 4.

4.2.2. *The contribution to the cultural goods*

First, we analyse the effects of framing on the contributions to the cultural good in T1. As shown in Fig.1, the two lines are both decreasing regardless of the context implemented. In the case

¹⁶ According to the Mann-Whitney U test ($p = 0.6$) we cannot reject the null hypothesis stating that the two groups of observations have the same distribution.

¹⁷ This is confirmed by the Mann-Whitney U test applied to the last period data ($p = 0.036$).

of cultural context, the level of contribution starts from a pretty high value (62.5%) and, then, it decreases until period 8 (28.3%). Surprisingly, during the last two periods, the level of contributions increases slightly above the 30%, contrasting the well known end-game effect. Although it may seem due to the implementation of the cultural context, the cultural context contributions to the cultural good are almost always below the level of the neutral context contributions. Hence, the framing effect does not seem to be able to explain the rise in the last two periods¹⁸.

In the case of cultural context, even if the instructions have been written such in a way to make clear references to the concepts of cultural good and cultural education, we have not found any significant variations in the contribution levels during the first treatment. These results seem to contrast the common findings of the experimental literature regarding the framing effects discussed in section 2.2.

Second, we study the patterns of contributions to cultural goods in T2. Fig.2 shows that the two lines take almost the same values until period 6 and they decline until the last period. The most interesting feature is the steep increase in the contribution to the cultural good in the case of the cultural context from period 7 onward. In fact, while the neutral context case shows a decreasing trend and a clear end-effect in the contributions, the level of contributions in the cultural context increases. Moreover, it remains well above the one of the neutral context and presents a light end-effect in the last period only¹⁹.

Concluding, the effect of framing seems to be focused on the last periods of the experiment where the differences in contributions become significant. This behaviour may imply the fact that the kindness motives can be sustained more strongly adopting an in-context experimental setting than a neutral one. Nevertheless, it seems peculiar that, given such a clear and straight reference to

¹⁸ We have tested all those descriptive running the Mann-Whitney U test, which confirms that the differences between the two contexts are not significant ($p = 0.347$). This result is also proved when considering both the first period ($p = 0.739$) and the last period of the experiment ($p = 0.389$).

¹⁹ The Mann-Whitney U test does not find any significant difference between groups of observations ($p=0.450$). The same can be said when considering the observations coming from the first period only ($p=0.523$). However, if we check for the last two periods of observations, the differences are all significant with $p=0.028$ and $p=0.016$ in periods 9 and 10 respectively.

cultural goods in the instructions, the effect of framing starts so late. Further research is required to analyze more in depth the role of framing when a cultural context is implemented.

5. Concluding Remarks

The main aim of our work has been to investigate the framing effect on subjects' contributions to the cultural goods due to the adoption of a cultural context in the experiment. Our first result shows that a change in the framing does not have any effect either on the investments in cultural education, except in the last period, or on the contributions to the cultural good in the first treatment. It is interesting to notice that while the first treatment does not show the common end-effect, most probably, because of the peculiar context implemented, in the second treatment the framing seems to have a strong effect only on the last two periods. Such an effect appears to be completely due to the adoption of the cultural context although we have to highlight the amount of time that subjects have surprisingly needed to increase the cooperation. Hence, it seems that, even if implementing a clear and direct context such as a cultural one, individual behaviour is not so affected by the context to increase the level of cooperation from the beginning of the experiment. These experimental findings indicate that more attention has to be devoted to the investigation of the still ambiguous role played by the framing in public goods experiments.

References

- Abbink, K. and Hennig-Schmidt, H., 2002. Neutral versus loaded instructions in a bribery experiment. University of Nottingham, Mimeo.
- Albers, W. and Harstad, R.M., 1991. A framing effect observed in a market game, In Selten, R. (Ed.), *Game equilibrium models II. Methods, morals and markets*, Springer Publishing Company, New York, pp. 308-336.
- Andreoni, J., 1995. Warm-glow versus cold-prickle: the effects of positive and negative framing on cooperation in experiments. *Quarterly Journal of Economics*, 90, 1-21.
- Bateman, L., Munroe, A., Rhodes, B., Starmer, C. and Sugden, R., 1997a. A test of the theory of reference-dependent preferences. *Quarterly Journal of Economics*, 112, 479-505.
- Bateman, L., Munroe, A., Rhodes, B., Starmer, C. and Sugden, R., 1997b. Does part-whole bias exist? An experimental investigation. *Economic Journal*, 107, 322-333.

- Blaug, M. (ed.), 1976, *The economics of the arts*, (London, Martin Robinson).
- Bohm, P. and Lind, H., 1992. A note on the robustness of a classical framing result. *Journal of Economic Psychology* 13, 355-361.
- Bolton, G.E. and Katok, E., 1995. An experimental test of crowding out hypothesis: the nature of beneficent behavior. Working Paper Series in Management Science, Pennsylvania State University.
- Champarnaud, L., Ginsburgh, V. and Michel, P., 2002. Can cultural education crowd out arts subsidization?. CORE Discussion Papers, n° 2002/40.
- Cookson, R., 2000. Framing effects in public goods experiments. *Experimental Economics* 3, 55-79.
- Davis, D.D., and Holt, C.A., 1993, *Experimental Economics* (Princeton University Press, Princeton, NJ).
- Druckman, J.N., 2001. Using credible advice to overcome framing effects. *The Journal of Law, Economics and Organization* 17, 62-82.
- Eckel, C.C. and Grossman P.J., 1996. Altruism in anonymous dictator games. *Games and Economic Behavior* 16, 181-191.
- Elliot, C. and Hayward, D.M., 1998. The expanding definition of framing and its particular impact on economic experimentation. *Journal of Socio-Economics* 27, 229-243.
- Engelmann, D. and Ortmann, A., 2002. The robustness of laboratory gift exchange: a reconsideration. CERGE-EI, mimeo.
- Fehr, E., Gächter, S. and Kirchsteiger, G., 1997. Reciprocity as a contract enforcement device. *Econometrica* 65, 833-860.
- Finocchiaro Castro, M. and Mazza, I., 2001. Cultural Capital and Voluntary Provision of Cultural Goods. Paper presented at the 12th ACEI conference, Erasmus University, Rotterdam.
- Finocchiaro Castro, M., 2005. Behaviour in a two-stage two public goods game. Mimeo.
- Frey, B.S., 2000, *Arts & economics – Analysis & cultural policy* (Berlin, Springer).
- Fryer, R.G. Jr., 2002. Cultural capital. University of Chicago, Mimeo.
- Ginsburgh, V.A. and Menger, P.-M. (eds.), 1996, *Economics of the arts – Selected essays* (Amsterdam, Elsevier/North Holland).
- Hoffman, E., McCabe, K. and Smith, V., 2000. The impact of exchange context and the activation of equity ultimatum games. *Experimental Economics* 3, 5-9.
- Hutter, M. and Rizzo, I. (eds.), 1997, *Economic perspectives on cultural heritage*, (Basingstoke, MacMillan).
- Kahneman, D. and Knetsch, J.L., 1992. Valuing public goods: the purchase of moral satisfaction. *Journal of Environmental Economics and Management* 22, 57-70.
- Kashima, Y. and Maher, P., 1995. Framing of decisions under ambiguity. *Journal of Behavioral Decision Making*, 8, 33-49.
- Klamer, A. (ed.), 1996, *The Value of culture – On the relationship between economics and arts* (Amsterdam, Amsterdam University Press).
- Knetsch, J.L., and Sinden, J.A., 1984. Willingness to pay and compensation demanded: experimental evidence of an unexpected disparity in measures of values. *Quarterly Journal of Economics* 99, 507-521
- Ledyard, J.O., 1995. Public Goods: a survey of experimental research, In: Kagel, J.H., Roth, A.E. (Eds.), *Handbook of Experimental Economics*, Princeton University Press, Princeton, NJ, pp. 111-194.
- Levin, I.P., Schneider, S.L. and Gaeth G.J., 1998. All frames are not created equal: a typology and critical analysis of valence framing effects. *Organizational Behavior and Human Decision Processes* 76, 149-188.
- Loomes, G., 1999. Some lessons from past experiments and some challenges for the future. *The Economic Journal* 109, 35-45.

- Mazza, I., 1993. A microeconomic analysis of a patronage and sponsorship, In: Peacock, A. e Rizzo, R. (Eds.), *Cultural Economics and Cultural Policies*, Kluwer Academic Publishers, pp. 35-53.
- Mossetto, G., 1993, *Aesthetics and Economics* (Boston, Kluwer).
- Offerman, T., Sonnemans, J. and Schram, A., 1996. Value orientations, expectations, and voluntary contributions in public goods. *Economic Journal* 106, 817-845.
- Park, E.-S., 2000. Warm-glow versus cold-prickle: a further experimental study of framing effects on free-riding. *Journal of Economic Behavior and Organization* 43, 405-421.
- Pethig, R. and Cheng S.-W., 2000. Cultural goods consumption and cultural capital. University of Siegen, Mimeo.
- Ploeg, R. van der, 2002. In art we trust. *De Economist*, 150, 335-361.
- Potters, J and van Winden, F., 2000. Professionals and students in a lobbying experiment. Professional rules of conduct and subject surrogacy. *Journal of Economic Behavior and Organization* 43, 499-522.
- Sable, K.A. and Kling, R.W., 2001. The double public good: a conceptual framework for “shared experience” values associated with heritage conservation. *Journal of Cultural Economics*, 25, 77-89.
- Scandizzo, P.L., 1992. Cultural goods and economic growth. *Ricerche Economiche* 46, 91-110.
- Schram, A. and Sonnemans, J., 1996. Why people vote: experimental evidence. *Journal of Economic Psychology*, 17, 417-442.
- Sonnemans, J., Schram, A, and Offerman, T. 1998. Public good provision and public bad prevention: the effect of framing. *Journal of Economic Behavior and Organization* 7, 47-70.
- Throsby, D., 1994. The production and consumption of the arts: a view of cultural economics. *Journal of Economic Literature* 32, 1-29.
- Throsby, D., 1999. Cultural capital. *Journal of Cultural Economics* 23, 3-12.
- Throsby, D., 2001, *Economics and Culture* (Cambridge University Press).
- Towse, R. (ed.), 1997, *Cultural economics: the arts, the heritage and the media industries*, (Cheltenham, Edward Elgar).
- Trimarchi, M., 1993, *Economia e Cultura. Organizzazione e Finanziamento delle Istituzioni Culturali* (Angeli Editore).
- Tversky, A and Kahneman, D, 1981. The framing of decisions and the psychology of choice. *The Science*, 211, 453-458.
- Willinger, M. and Ziegelmeyer, A., 1999. Framing and cooperation in public good games: an experiment with an interior solution. *Economic Letters* 65, 323-328.

Table 1: Wording adopted in the treatments

Neutral Context	Cultural Context	Stage
Project A	“private good”	Stage II
Project B	“cultural good”	Stage II
Project C	“investment in cultural education”	Stage I
Project D	“Saving tokens to phase II”	Stage I

Table 2: Percentage of Endowment Contributed to the Cultural Good and Cultural Education per Period

<i>Period</i>		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>Average</i>
Treatment 1 - Neutral Context	Cultural Good	62,5	54,2	56,7	55,8	46,7	52,5	49,2	46,7	40,8	39,2	50,4
Treatment 1 – Cultural Context	Cultural Good	61,7	63,3	51,7	35,8	47,5	47,5	38,3	28,3	30,0	33,3	43,7
Treatment 2 – Neutral Context	Cultural Education	46,7	43,3	51,7	47,5	30,0	29,2	17,5	22,5	23,3	14,2	32,6
	Cultural Good	45,7	41,3	47,4	46,1	41,9	31,7	24,3	23,0	25,5	16,5	34,3
Treatment 2 – Cultural Context	Cultural Education	40,8	37,5	40,8	45,8	46,7	30,0	31,7	26,7	40,8	31,7	37,3
	Cultural Good	48,4	38,4	40,8	39,8	45,2	29,4	40,1	35,4	45,5	42,5	40,6

Contribution to Cultural Good

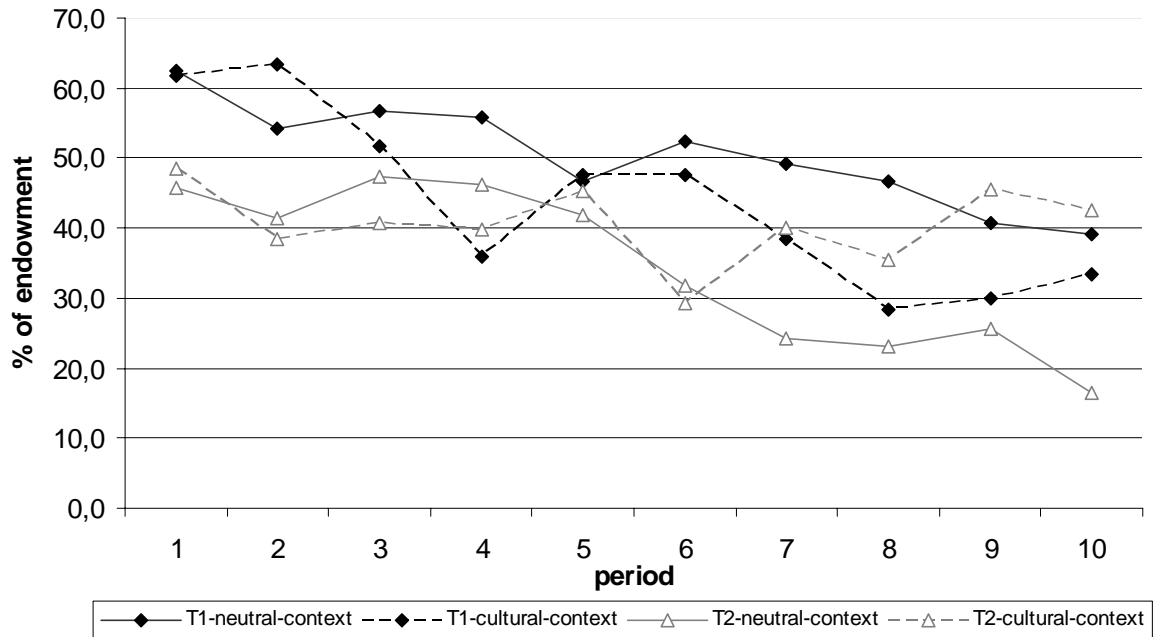


Figure 1

Treatment 2

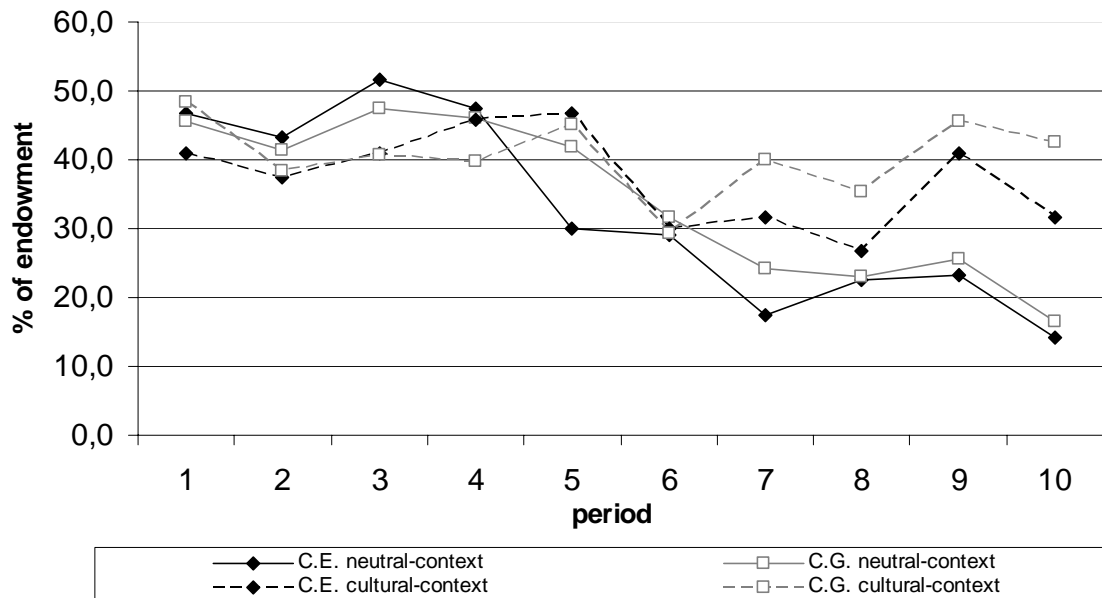


Figure 2