

Nunes, Paulo A.L.D.; Rossetto, Luca; de Blaeij, Arianne

Working Paper

Monetary Value Assessment of Clam Fishing Management Practices in the Venice Lagoon: Results from a Stated Choice Exercise

Nota di Lavoro, No. 67.2003

Provided in Cooperation with:

Fondazione Eni Enrico Mattei (FEEM)

Suggested Citation: Nunes, Paulo A.L.D.; Rossetto, Luca; de Blaeij, Arianne (2003) : Monetary Value Assessment of Clam Fishing Management Practices in the Venice Lagoon: Results from a Stated Choice Exercise, Nota di Lavoro, No. 67.2003, Fondazione Eni Enrico Mattei (FEEM), Milano

This Version is available at:

<https://hdl.handle.net/10419/118089>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

**Monetary Value Assessment of
Clam Fishing Management
Practices in the Venice Lagoon:
Results from a Stated
Choice Exercise**

Paulo A.L.D. Nunes, Luca Rossetto and
Arianne de Blaeij
NOTA DI LAVORO 67.2003

JULY 2003

SIEV – Sustainability Indicators and Environmental Valuation

Paulo A.L.D. Nunes, *Ca' Foscari University Venice,
Fondazione Eni Enrico Mattei and Free University Amsterdam*
Luca Rossetto, *University of Padova*
Arianne de Blaeij, *Free University Amsterdam*

This paper can be downloaded without charge at:

The Fondazione Eni Enrico Mattei Note di Lavoro Series Index:
<http://www.feem.it/Feem/Pub/Publications/WPapers/default.html>

Social Science Research Network Electronic Paper Collection:
http://papers.ssrn.com/abstract_id=XXXXXX

The opinions expressed in this paper do not necessarily reflect the position of
Fondazione Eni Enrico Mattei

Monetary Value Assessment of Clam Fishing Management Practices in the Venice Lagoon: Results from a Stated Choice Exercise

Summary

This article focuses on the economic valuation of alternative clam management practices in the Venice Lagoon. The proposed valuation method is characterized by the design of a survey questionnaire next to the fishermen population. In each questionnaire two fishing alternatives are described. The respondent is asked to choose one of them. This valuation method, referred in the article as conjoint valuation, gives sufficient flexibility to set, alter, and combine different management practices. Furthermore, this approach presents an important advantage to the well-known contingent valuation method since it makes the monetary valuation of each management attribute possible. Estimation results of the random utility model show that fishermen's willingness to pay for a larger clam fishing area is approximately 568 € per year. In addition, an individual fisherman would be willing to pay 1,005 € for a change from today's fishing situation practice towards a fishing practice exclusively based on vibrant rake system. If we take into account the interaction between fishing management attributes and fishermen characteristics, we can see that the valuation of each management practice differs substantially across the two populations. We can observe that the population of fishermen that operate in the cooperative regime presents not only a higher monetary valuation for an increase in the dimension of the fishing concession, which is now valued at 811 €, but also a stronger willingness to pay for a change from today's fishing situation towards a fishing practice exclusively based on vibrant rake system, which is now estimated at 2,456 €. Finally, the adoption of a clam fish management practice in Venice Lagoon that is exclusively based on the use of manual rakes, which is associated to the lowest damage to the Lagoon ecosystem, will represent a welfare loss of 5,904 € per fisherman per year. Combining this value with the total number of fishermen currently operating in the Lagoon of Venice, the welfare loss associated with the adoption of such clam management policy that is exclusively based on the use of manual rakes amounts to 11.8 € million per year. This figure can be regarded as an upper bound to the cost of implementation of a clam fishing system anchored in the use of manual, ecosystem friendly rakes.

Keywords: Exotic marine species, Fishing rakes, Manila clam, Fishing effort, Open access, Welfare damages, Policy guidance, Permit price.

JEL: C25, C29, D62, H41, Q20, Q25, Q30

This research was funded by a grant from the Consortium for Managing the Coordination Centre of the Research Activities concerning the Venice Lagoon System (CORILA) within its Research Programme 2000-2004, in particular the research line 1.1 "Economic valuation of environmental goods".

Address for correspondence:

Paulo A.L.D.Nunes
Fondazione Eni Enrico Mattei
Palazzo Querini Stampalia
Castello 5252
30122 Venice
Italy
Fax: +39-041-2711-461
E-mail: pnunes@unive.it

I. Introduction

This article focuses on the estimation, and discussion, of the economic valuation results of alternative clam fishing management practices in the Lagoon of Venice. The proposed valuation approach is anchored in the use of the stated preference methodology and it is characterized by the design of a contingent choice survey, which was carried out by personal interviewers (see ‘Exploring the use of stated preferences methods to value fish management practices’ for more details on the involved econometric modeling and survey design aspects). The organization of the article is as follows. Section 2 describes the recent fish management practices, as a result of the introduction of exotic clam species in the Venice Lagoon. Section 3 discusses the range of the economic estimates and evaluates these for different policy scenarios. Section 4 concludes.

II. Statement of the natural resource problem

A. Clam fish management practices in the lagoon of Venice

Clam fishing in the Lagoon of Venice comes from several fishing activities. These include fishing in lagoon canals and water areas; valley fishing; farm fishing (aquaculture); and clam fishing (CVN 1999). These activities involved the harvest of two endemic species, *Tapes decussatus*, and *Scrobicularia plana*. Originally, clam fishing relied on manual rakes and triangular iron dredges, also known by the local fishermen population as ‘cassa’. Such a traditional fishing practice goes back to the *Serenissima Republic* as was characterized by many restrictions. For example, nets had to conform to pre-determined models, their mesh needed to be of a certain dimension, and fishing was absolutely forbidden in some periods of the year (see Ninni 1940, Pellizzato and Giorgiutti 1997). Until recently, clam fishing activity in the lagoon continued to be strongly regulated. The local authority together with fishing cooperatives controlled the fishing activity by fixing prices and amounts of catch, as well as defining and managing specific areas in the lagoon (Bevilacqua 1998). Furthermore, until the end of the Second World War motorboats were limited to the port of Chioggia. Elsewhere in lagoon there were only rowing and sailing boats. Their main fishing systems were limited to trawl nets, fyke-nets, gillnets, seine nets, and other manual equipments (Brunelli *et al.* 1940, Zolezzi 1944).

Today more than 2,000 people are employed in the clam fishery sector. The current clam fishing practice is characterized by an open access situation. In other words, in order to fish in the Lagoon, it is necessary to buy a license. There is no limit of the total licenses issued per fishing season. This fact together with the high revenues associated with clam fishing have

encouraged an increasing fishing effort, resulting in the adoption of technological intensive equipment and the progressive abandon of the traditional fishing practices (Pellizzato and Giorgiutti 1997). In this context, the Lagoon has been assisting the widespread of mechanical and vibrating fishing equipments, including the use of suction dredgers and rakes for harvesting clams (see Figure 1).

*** Introduce Figure 1 about here ***

B. The introduction of the exotic clam species

The clam fishing effort in the Lagoon has strongly increased since 1983, coinciding with the introduction of *Tapes philippinarum*, also called the Manila clam in the Lagoon. This exotic species originally comes from the Indo-Pacific region and it has rapidly adapted to the lagoon environment. Now it is responsible for colonising large shallow areas and competing directly in the ecological niche with the endemic clam species. Furthermore, the relatively high market price of this species, ranging from 1.6 to 3.6 euro a kilogram, has contributed to an increase of the Manila clam fishing profitability. Because of the open access situation, many operators came into this activity. Most of them adopted mechanical equipment, such as the vibrating rake technology, used exclusively for the harvest of this shellfish. All together, this has led to significant in the fish management practices. For example, in 1998, the fishing fleet was composed of about 600 vessels, 84 of which used vibrating rake technology. The vibrating rake is equipped with an electrical cage, shaking and filtering sediment mechanisms with a capacity to harvest 150 to 200 kg of clam shellfish a day (Pellizzato *et al* 2000). Manila clams live at water bottom and for this reason they are very sensitive to water movements and to deposit and accumulation of water sediments (Orel *et al.* 1997). Since the harvest of this shellfish implies sediment movements, these have become exceptionally significant with the introduction of mechanical and vibrating fishing equipments. Therefore, the adoption of these vibrating technologies has brought unavoidable negative environmental impacts on the morphology, processes and marine life functions of the Lagoon (ICRAM 1994, Pranovi and Giovanardi 1994, Sfriso 2000).

These management practices are currently are far and away from being a sustainable economical activity as they have been causing unprecedented damages to the marine system. For example, market data shows a diminishing supply of approximately 40% between 2000 and 2001 due to a reduction in the clam's stock (see Granzotto *et al.* 2002 for additional details). To make matters worse, such a heavy fishing pressure has been followed by an

increased pollution in the Lagoon due to the neighborhood industrial activities, such as the oil refineries located at Marghera. These have also contributed to caused significant environmental damage to the marine ecosystem, including the destruction of nursery areas and feeding grounds of many commercial fishes.

In such a context, the economic valuation of alternative clam management practices is of central importance since it sheds light in the involved welfare changes (see van den Bergh *et al.* 2002, Nunes and van den Bergh 2002). These can be compared with the benefits derived from protecting the Lagoon from environmental damage across alternative policy scenarios. Valuation results are presented and discussed in the following section.

III. Monetary valuation results

The questionnaire was carried out in summer 2001. The sampling was executed across the two main areas of the Lagoon: the northern area, including Burano, and the southern area. The questionnaire was performed by face-to-face interviews, involving the participation of researchers with high levels of field knowledge as the interviewers. The interviewers contacted 193 fishermen, 114 of which completed the questionnaire. The non-participation rate is therefore about 40 percent. Figure 2 shows the descriptive statistics of the surveys responses.

*** Introduce Figure 2 about here ***

The present questionnaire only contains one section, the contingent choice question. The empirical specification of the random utility model is characterized by decomposing the systematic utility component in terms of price of the permit, area of fishing concession, and the type of fishing system. The valuation results are presented in Table 1a. First, we can observe that all explanatory variable estimates reveal to be statistically significant at the 90 percent level indicating that respondents receive an utility change whenever these change. Second, estimation results show that the probability of the choice of a management practice is positively related to the dimension of the fishing concession area, i.e. any policy option that is characterized by increasing the fishing area is *ceteris paribus* associated with an increase of the utility and therefore supported by the fishermen. Third, the choice of a management practice reveals to be negatively related to its associated costs, reflecting the fact that higher prices result in lower utilities. Finally, the choice of a management practice reveals to be positively related to its degree of technology, measured in a three-level attribute. In other

words, any policy option that is characterized by the exclusive use of a vibrant rake is, *ceteris paribus*, associated with a positive impact in fishermen's welfare and thus connected with a higher probability of choice.

*** Introduce Table 1a and Table 1b about here ***

In the present application, stated preference results are used to predict the monetary impact of changing the dimension of the fishing area and type of fishing system on fishing behavior. Monetary valuation results show that the amount of money that an individual fisherman would be willing to pay for a change in the dimension of the fishing concession is 568 €. In addition, Table 3b shows that the economic welfare impact of a change in the clam management practice, due to a change in the fishing system amounts to 1,005 €. In other words, an individual fisherman would be willing to pay 1,005 € for a change from today's fishing situation towards a fishing practice exclusively based on the vibrant rake system.

We can also observe that only a relatively small part of the variance of the observed stated preference behavior can be explained by these fishing-related-attributes, the R^2 is about 19 percent. As a consequence the respective monetary valuation results are characterized by relatively wide interval estimates. For example, according to Table 3b, fishermen's WTP for a larger fishing concession ranges between 125 € and 1,732 €. In order to improve MNL estimation results, we study the degree to which preferences for fishing programs differ between the two segments of the fishermen population. In this context, two fishing segments were defined, corresponding to two types of fishing regimes in the Venice Lagoon. One fishing regime refers to a fishing fleet that is composed of vessels jointly managed by cooperatives. The other refers to a fishing regime that is characterized by smaller and individually owned vessels. While the former are currently submitted to a set of cooperative managing rules, the latter are often managed by private individuals, who predominantly fish as a complementary income source to their main economic activity. In addition, some of these individuals are unauthorized or illegal fishermen.

Therefore, we explore an additional model formulation, see Table 2a, which includes interactions of operations in collective regime and operations in individual regime (individual characteristics) with the attributes originally under consideration at the stated preferences model. In fact, the introduction of such information contributed to a significant qualitative improvement of our econometric model. This is now capable of explaining more than thirty percent of the variance of the observed stated preferences behavior – see R^2 in Table 2a.

As before, estimation results show that as the price of the permit increases, utility decreases. Similarly, as the concession area increases, utility increases. In addition, regime interactions coefficients are added to the main effects for fishermen who operate in the cooperative regime. Since fishermen who operate in the individual regime are coded as zero, we can see that fishermen who operate in the cooperative regime present a higher sensitivity to the price of the permits, see the estimate for regime*price cross effect in Table 2a. In fact, for the population that operate in the individual regime, a price increase is characterized by a negative impact in the utility and estimated to be of the magnitude -0.0007 . In contrast, the fishermen population who operate in the cooperative regime this impact decreases to -0.0028 ($= -0.0007 - 0.0011$). Independently of the type of fishermen, price estimates are statistically significant indicating that, everything held constant, fishermen continue to receive more utility from lower prices.

*** Introduce Table 2a and Table 2b about here ***

We can also observe that a change in the dimension of the concession area presents stronger impact on the utility of the population of the fishermen who operate in the cooperative regime than on fishermen who operate in the individual regime, 1.167 and 0.5814 respectively. Finally, estimation results show that the welfare impact of a change in the fishing system differs substantially across the two fishermen populations, which is particularly strong for the fishermen who operate in the cooperative regime. Such parameter estimates are reflected in the economic welfare measurements – see Table 2b. In fact, when comparing these valuation results with the ones presented in Table 1b, which represents the polled fisherman population, we can observe that the population of fishermen who operate in the cooperative regime present higher monetary valuation for an increase in the dimension of the fishing concession, which is now valued at 811 €. In addition, this population is characterized by a stronger willingness to pay for a change from today's fishing situation towards a fishing practice exclusively based on vibrant rake system, which is now estimated at 2,456 €.

Finally we address a policy issue related to the economic value assessment exercise of a change in the clam management practice in Lagoon Venice due to an adoption of a clam system exclusively based the use of manual rakes, which are described as the showing the lowest environmental damage. In other words, how much would it cost to pay all fishermen, independently of their current fishing equipment, to adopt such an environmental friendly clam fishing technology? According to our calculations – see Table 3a and 3b – the financial

costs associated with the adoption of such a policy is estimated to be 5,904 € per fisherman per year, ranging up to a maximum of 80,160 € per fisherman per year, depending on the type of fishermen population and current management practice. Combining this value with the total number of fishermen currently operating in the Lagoon of Venice, the total welfare loss associated with the adoption of the manual clam fishing technology is estimated to at 11.8 € million per year. This information is crucial for the evaluation of the costs due to the adoption of a clam fishing system based on the use of manual rakes. In this context, this figure can be regarded as an lower bound to the benefits of implementation of a clam fishing system based associated with the lowest environmental damage in the Lagoon.

IV. Conclusions

This article focused on the economic valuation of alternative clam management practices in the Lagoon of Venice. The proposed valuation method is characterized by the design of a questionnaire. Estimation results show that: (1) fishermen bear an utility change whenever the price of the annual permit, the fishing technological system and the dimension of the fishing area change; (2) the probability of the choice of a management practice is positively related to the dimension of the fishing concession area and the level of technology. In other words, any policy option that is characterized by the exclusive use of the vibrating and scrapers fishery system is associated with a positive impact in fishermen's welfare. Furthermore, (3) the choice of a management practice reveals to be negatively related to its associated costs, reflecting the fact that higher prices of the annual permit result in lower utilities.

In addition, economic results show that individual fisherman value: (1) positively the enlargement of the fishing area (ranging from 568 € to 811 €, ha/year); (2) positively the change from today's fishing situation practice towards a fishing practice exclusively based on the vibrant rake system (ranging from 1,005 € to 2,455 €, year); (3) negatively the change from today's fishing situation practice towards a fishing practice exclusively based in the use of manual, ecosystem friendly rakes (5,905 € to 80,160 €, year). Furthermore, combining the valuation results with the fishermen population (2,000) means that the adoption of a clam fishing management practice that is exclusively based on the use of the manual rakes will be associated with a welfare loss that ranges from 11.8 € to 160.3 € million per year. Such a range reflects that the welfare impact of a change in clam management practices differs substantially across the population of fishermen that operates in the cooperative regime and the population of fishermen that operates in the individual regime. Finally, from a policy perspective the adoption of a clam fish management practice anchored in the use of manual,

ecosystem friendly rakes, and associated forgone environmental damages on the morphology processes and marine life functions, will require an annual a lump sum payment to the fisherman population that amounts to no less than 11.8 €million per year.

REFERENCE

- Bevilacqua, P. (1998) *Venezia e La Acque*, Donzelli Press, Venice, Italy.
- Boatto, V., L. Galletto, G. Orel, M. Pellizzato, L. Rossetto, A. Sfriso, S. Silvestri and A. Zentilin (2002) 'Evaluation of alternative scenarios for alieutic resources management in the Lagoon of Venice', Working Paper presented at 1st Corila Conference, Isola di San Servolo, Venice, Italy.
- Brunelli, G. (1940) 'La pesca nella laguna: parte generale e introduttiva', in G. Brunelli, G. Magrini, L. Milani and P. Orsi, *La laguna di Venezia*, Essay, Vol. III, section IV, tome IX, par. LII, Venice, Italy.
- CVN – Consorzio Venezia Nuova (1999) *Monitoraggio delle Attività di Pesca Artigianale e del Pescato in Laguna Aperta*, Accordo di Programma Magistrato alle Acque, Provincia di Venezia, Final report.
- Granzotto, A., P. Franzoi, A. Longo, F. Pranovi and P. Torricelli (2002) 'La pesca nella laguna di Venezia: un percorso di sostenibilità nel recupero delle tradizioni - Lo stato dell'arte', Working Paper, Fondazione Eni Enrico Mattei, Venice, Italy.
- ICRAM (1994) 'Indagine preliminare sull'utilizzo della draga idraulica (turbosoffiante) per la pesca dei bivalvi in ambiente lagunare', *Quaderni*, 7.
- Ninni, E. (1940) 'Attrezzi e sistemi di pesca nella Laguna', in G. Brunelli, G. Magrini, L. Milani P. Orsi, *La laguna di Venezia*, Essay, Vol. III section IV, tome IX, par. LII, Venice, Italy.
- Nunes, P.A.L.D. and J.C.J.M. van den Bergh (2002) "Measuring the economic value of a marine protection program against the introduction of non-indigenous species in the Netherlands", *Tinbergen Institute Discussion Paper 057/3*, 54 pages, Tinbergen Institute, The Netherlands.
- Orel, G., G. Di Silvio and G. Pessa G. (1997) *Effetti della Draga e del Rastrello sul Sistema Lagunare*, Report for the judicial act n. 20729/96 R.G.N., Venice, Italy.
- Pelizzato, M., R. Rossi, C. Solidoro, R. Pastres and C.D. Melaku (2000) 'Modelling the growth of *Tapes philippinarum* in Northern Adriatic lagoons', *Marine Ecology Series*, **199**, pp. 137-148.
- Pellizzato, M. and E. Giorgiutti (1997) *Attrezzi e Sistemi di Pesca nella Provincia di Venezia*, Provincia di Venezia, Venice, Italy.

- Pranovi, F. and O. Giovanardi (1994) 'The impact of hydraulic dredging for short-necked clams on an infaunal community in the lagoon of Venice', *Science Marine*, **58**, pp. 345-353.
- Rabagliati, R. (1984) 'Caratteristiche idrodinamiche e tendenze evolutive della laguna di Venezia', in (WWF, eds) *Laguna Conservazione di un Ecosistema*, Arsenale Press, Venice, Italy.
- Sfriso, A. (2000) 'Eutrofizzazione e inquinamento delle acque e dei sedimenti nella parte centrale della laguna di Venezia', in (CVN, MAV, LLPP, eds), *Nuovi Interventi per la Salvaguardia di Venezia*, vol. 3, Venice, Italy.
- van den Bergh, J.C.J.M., P.A.L.D. Nunes, H.M. Dotinga, W.H.C.F. Kooistra, E.G. Vrieling and L. Peperzak (2002) "Exotic harmful algae in marine ecosystems: an integrated biological-economic-legal analysis of impacts and policies", *Marine Policy*, **26**, pages. 59-74
- Zolezzi, G. (1944) 'La pesca nella provincia di Venezia', *Bollettino Pesca, Piscicoltura e Idrobiologia*, **22**, pp. 155-231.

Table 1a: Stated preferences model estimates ^(a)

Variable	Estimate	p-value
Price of the permit	– 0.0006	0.000 *
Area	0.3340	0.005 *
Fishing system ^(b)	– 0.6017	0.085 **
Adjusted R ²	0.1911	

Table 1b: Economic welfare measurement

WTP for	Point estimate	95% Confidence Interval ^(d)
Area	568 € (1.70) ^(c)	[125 € ; 1 732 €]
Fishing system ^(b)	1 005 € (1.36) ^(c)	[– 119 € ; 3 236 €]

Notes:

* (**) Statistically significant at 5% (10%).

^(a) Calculations are performed using the MULTINOMIAL LOGIT procedure in *LIMDEP*[®].

^(b) Ordinal categorical variable with 0 = today (benchmark), 1 = manual, and – 1 = vibrant.

^(c) t-values are computed using the delta method.

^(d) CI is estimated using the asymptotic t-test method as described by Armstrong *et al.* (2001).

Table 2a: Stated preferences model estimates with cross effects for the fishing regime ^(a)

Variable	Estimate	p-value
Price of the permit	– 0.0007	0.008 *
Area	0.5814	0.008 *
Fishing system ^(b)	– 1.7661	0.013
Regime ^(c) * Price	– 0.0011	0.316
Regime ^(c) * area	0.5856	0.492
Regime ^(c) * system	4.2996	0.052 *
Adjusted R ²	0.3023	

Table 2b: Economic welfare measurement

WTP for	Point estimate	95% Confidence Interval ^(e)
Area	811 € (1.97) ^(d)	[225 € ; 2 917 €]
Fishing system ^(b)	2 456 € (1.84) ^(d)	[403 € ; 8 340 €]

Notes:

* (**) Statistically significant at 5% (10%).

^(a) Calculations are performed using the MULTINOMIAL LOGIT procedure in LIMDEP[®].

^(b) Ordinal categorical variable (0 = today, 1 = exclusively manual, – 1 = exclusively vibrant).

^(c) Regime is a dummy variable with 1 denoting regime cooperative and 0 regime individual.

^(d) t-values are computed using the delta method.

^(e) CI is estimated using the asymptotic t-test method as described by Armstrong *et al.* (2001)

Table 3a: Model estimation with cross effects for the fishing regime ^(a)

Variable	Estimate	p-value
Price of the permit	– 0.0003	0.030 *
Area	0.2787	0.031 *
Fishing system = Manual	– 1.8644	0.013 *
Regime ^(b) * Price	– 0.0015	0.170
Regime ^(b) * area	0.8888	0.292
Regime ^(b) * manual	4.4041	0.048 *
Adjusted R ²	0.3023	

Table 3b: Economic welfare measurement

WTP for	Point estimate	95% Confidence Interval ^(d)
Fishing system = Manual	– 5 904 € (1.66) ^(c)	[– 80 160 € ; – 953 €]

Notes:

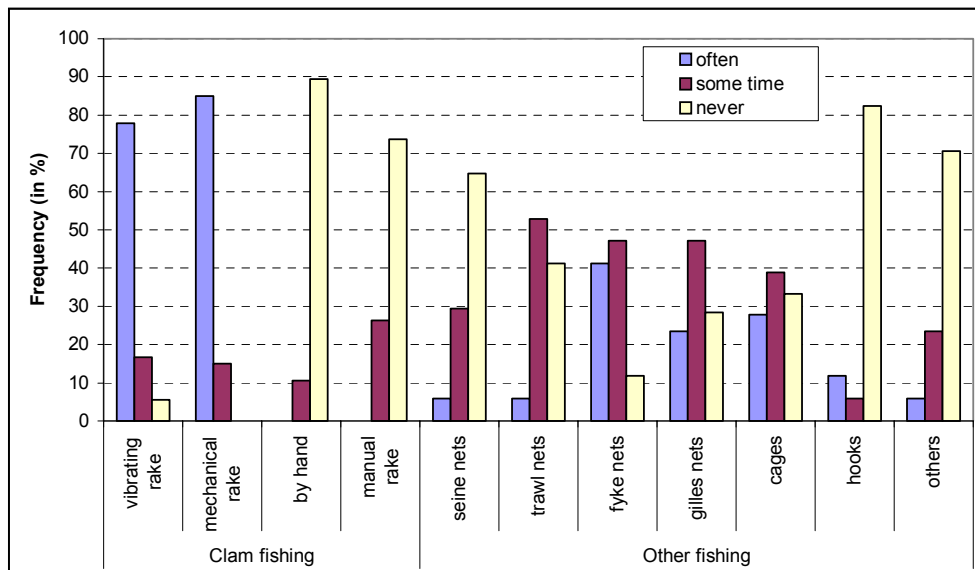
* Statistically significant at 5%.

^(a) Calculations are performed using the MULTINOMIAL LOGIT procedure in LIMDEP[®].

^(b) Regime is a dummy variable with 1 denoting regime cooperative and 0 regime individual

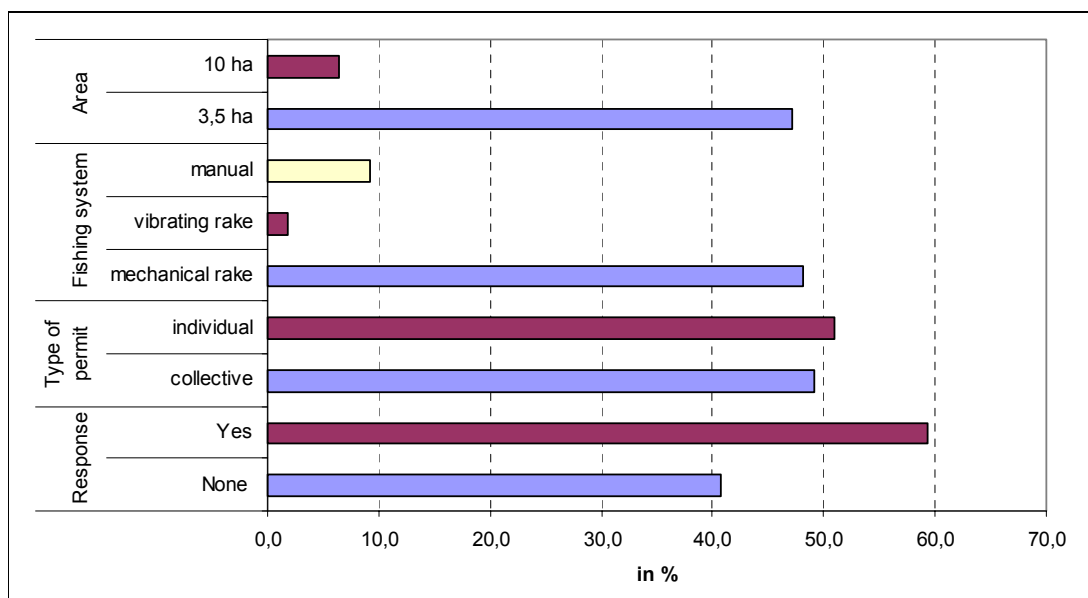
^(c) t-values are computed using the delta method.

^(d) CI is estimated using the asymptotic t-test method as described by Armstrong *et al.* (2001)



Source: Boatto et al. (2002)

Figure 1 - Diffusion of fishing equipments in the Lagoon of Venice



Source: Boatto et al. (2002)

Figure 2 - Descriptive statistics of contingent choice questionnaire

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

Our working papers are available on the Internet at the following addresses:

<http://www.feem.it/Feem/Pub/Publications/WPapers/default.html>

<http://papers.ssrn.com>

SUST	1.2002	<i>K. TANO, M.D. FAMINOW, M. KAMUANGA and B. SWALLOW: <u>Using Conjoint Analysis to Estimate Farmers' Preferences for Cattle Traits in West Africa</u></i>
ETA	2.2002	<i>Efrem CASTELNUOVO and Paolo SURICO: <u>What Does Monetary Policy Reveal about Central Bank's Preferences?</u></i>
WAT	3.2002	<i>Duncan KNOWLER and Edward BARBIER: <u>The Economics of a "Mixed Blessing" Effect: A Case Study of the Black Sea</u></i>
CLIM	4.2002	<i>Andreas LÖSCHEL: <u>Technological Change in Economic Models of Environmental Policy: A Survey</u></i>
VOL	5.2002	<i>Carlo CARRARO and Carmen MARCHIORI: <u>Stable Coalitions</u></i>
CLIM	6.2002	<i>Marzio GALEOTTI, Alessandro LANZA and Matteo MANERA: <u>Rockets and Feathers Revisited: An International Comparison on European Gasoline Markets</u></i>
ETA	7.2002	<i>Effrosyni DIAMANTOUDI and Efthios S. SARTZETAKIS: <u>Stable International Environmental Agreements: An Analytical Approach</u></i>
KNOW	8.2002	<i>Alain DESDOIGTS: <u>Neoclassical Convergence Versus Technological Catch-up: A Contribution for Reaching a Consensus</u></i>
NRM	9.2002	<i>Giuseppe DI VITA: <u>Renewable Resources and Waste Recycling</u></i>
KNOW	10.2002	<i>Giorgio BRUNELLO: <u>Is Training More Frequent when Wage Compression is Higher? Evidence from 11 European Countries</u></i>
ETA	11.2002	<i>Mordecai KURZ, Hehui JIN and Maurizio MOTOLESE: <u>Endogenous Fluctuations and the Role of Monetary Policy</u></i>
KNOW	12.2002	<i>Reyer GERLAGH and Marjan W. HOFKES: <u>Escaping Lock-in: The Scope for a Transition towards Sustainable Growth?</u></i>
NRM	13.2002	<i>Michele MORETTO and Paolo ROSATO: <u>The Use of Common Property Resources: A Dynamic Model</u></i>
CLIM	14.2002	<i>Philippe QUIRION: <u>Macroeconomic Effects of an Energy Saving Policy in the Public Sector</u></i>
CLIM	15.2002	<i>Roberto ROSON: <u>Dynamic and Distributional Effects of Environmental Revenue Recycling Schemes: Simulations with a General Equilibrium Model of the Italian Economy</u></i>
CLIM	16.2002	<i>Francesco RICCI (I): <u>Environmental Policy Growth when Inputs are Differentiated in Pollution Intensity</u></i>
ETA	17.2002	<i>Alberto PETRUCCI: <u>Devaluation (Levels versus Rates) and Balance of Payments in a Cash-in-Advance Economy</u></i>
Coalition Theory Network	18.2002	<i>László Á. KÓCZY (liv): <u>The Core in the Presence of Externalities</u></i>
Coalition Theory Network	19.2002	<i>Steven J. BRAMS, Michael A. JONES and D. Marc KILGOUR (liv): <u>Single-Peakedness and Disconnected Coalitions</u></i>
Coalition Theory Network	20.2002	<i>Guillaume HAERINGER (liv): <u>On the Stability of Cooperation Structures</u></i>
NRM	21.2002	<i>Fausto CAVALLARO and Luigi CIRAULO: <u>Economic and Environmental Sustainability: A Dynamic Approach in Insular Systems</u></i>
CLIM	22.2002	<i>Barbara BUCHNER, Carlo CARRARO, Igor CERSOSIMO and Carmen MARCHIORI: <u>Back to Kyoto? US Participation and the Linkage between R&D and Climate Cooperation</u></i>
CLIM	23.2002	<i>Andreas LÖSCHEL and ZhongXIANG ZHANG: <u>The Economic and Environmental Implications of the US Repudiation of the Kyoto Protocol and the Subsequent Deals in Bonn and Marrakech</u></i>
ETA	24.2002	<i>Marzio GALEOTTI, Louis J. MACCINI and Fabio SCHIANTARELLI: <u>Inventories, Employment and Hours</u></i>
CLIM	25.2002	<i>Hannes EGLI: <u>Are Cross-Country Studies of the Environmental Kuznets Curve Misleading? New Evidence from Time Series Data for Germany</u></i>
ETA	26.2002	<i>Adam B. JAFFE, Richard G. NEWELL and Robert N. STAVINS: <u>Environmental Policy and Technological Change</u></i>
SUST	27.2002	<i>Joseph C. COOPER and Giovanni SIGNORELLO: <u>Farmer Premiums for the Voluntary Adoption of Conservation Plans</u></i>
SUST	28.2002	<i><u>The ANSEA Network: Towards An Analytical Strategic Environmental Assessment</u></i>
KNOW	29.2002	<i>Paolo SURICO: <u>Geographic Concentration and Increasing Returns: a Survey of Evidence</u></i>
ETA	30.2002	<i>Robert N. STAVINS: <u>Lessons from the American Experiment with Market-Based Environmental Policies</u></i>

NRM	31.2002	<i>Carlo GIUPPONI and Paolo ROSATO: <u>Multi-Criteria Analysis and Decision-Support for Water Management at the Catchment Scale: An Application to Diffuse Pollution Control in the Venice Lagoon</u></i>
NRM	32.2002	<i>Robert N. STAVINS: <u>National Environmental Policy During the Clinton Years</u></i>
KNOW	33.2002	<i>A. SOUBEYRAN and H. STAHN : <u>Do Investments in Specialized Knowledge Lead to Composite Good Industries?</u></i>
KNOW	34.2002	<i>G. BRUNELLO, M.L. PARISI and Daniela SONEDDA: <u>Labor Taxes, Wage Setting and the Relative Wage Effect</u></i>
CLIM	35.2002	<i>C. BOEMARE and P. QUIRION (lv): <u>Implementing Greenhouse Gas Trading in Europe: Lessons from Economic Theory and International Experiences</u></i>
CLIM	36.2002	<i>T. TIETENBERG (lv): <u>The Tradable Permits Approach to Protecting the Commons: What Have We Learned?</u></i>
CLIM	37.2002	<i>K. REHDANZ and R.J.S. TOL (lv): <u>On National and International Trade in Greenhouse Gas Emission Permits</u></i>
CLIM	38.2002	<i>C. FISCHER (lv): <u>Multinational Taxation and International Emissions Trading</u></i>
SUST	39.2002	<i>G. SIGNORELLO and G. PAPPALARDO: <u>Farm Animal Biodiversity Conservation Activities in Europe under the Framework of Agenda 2000</u></i>
NRM	40.2002	<i>S.M. CAVANAGH, W. M. HANEMANN and R. N. STAVINS: <u>Muffled Price Signals: Household Water Demand under Increasing-Block Prices</u></i>
NRM	41.2002	<i>A. J. PLANTINGA, R. N. LUBOWSKI and R. N. STAVINS: <u>The Effects of Potential Land Development on Agricultural Land Prices</u></i>
CLIM	42.2002	<i>C. OHL (lvi): <u>Inducing Environmental Co-operation by the Design of Emission Permits</u></i>
CLIM	43.2002	<i>J. EYCKMANS, D. VAN REGEMORTER and V. VAN STEENBERGHE (lvi): <u>Is Kyoto Fatally Flawed? An Analysis with MacGEM</u></i>
CLIM	44.2002	<i>A. ANTOCI and S. BORGHESI (lvi): <u>Working Too Much in a Polluted World: A North-South Evolutionary Model</u></i>
ETA	45.2002	<i>P. G. FREDRIKSSON, Johan A. LIST and Daniel MILLIMET (lvi): <u>Chasing the Smokestack: Strategic Policymaking with Multiple Instruments</u></i>
ETA	46.2002	<i>Z. YU (lvi): <u>A Theory of Strategic Vertical DFI and the Missing Pollution-Haven Effect</u></i>
SUST	47.2002	<i>Y. H. FARZIN: <u>Can an Exhaustible Resource Economy Be Sustainable?</u></i>
SUST	48.2002	<i>Y. H. FARZIN: <u>Sustainability and Hamiltonian Value</u></i>
KNOW	49.2002	<i>C. PIGA and M. VIVARELLI: <u>Cooperation in R&D and Sample Selection</u></i>
Coalition	50.2002	<i>M. SERTEL and A. SLINKO (liv): <u>Ranking Committees, Words or Multisets</u></i>
Theory		
Network		
Coalition	51.2002	<i>Sergio CURRARINI (liv): <u>Stable Organizations with Externalities</u></i>
Theory		
Network		
ETA	52.2002	<i>Robert N. STAVINS: <u>Experience with Market-Based Policy Instruments</u></i>
ETA	53.2002	<i>C.C. JAEGER, M. LEIMBACH, C. CARRARO, K. HASSELMANN, J.C. HOURCADE, A. KEELER and R. KLEIN (liii): <u>Integrated Assessment Modeling: Modules for Cooperation</u></i>
CLIM	54.2002	<i>Scott BARRETT (liii): <u>Towards a Better Climate Treaty</u></i>
ETA	55.2002	<i>Richard G. NEWELL and Robert N. STAVINS: <u>Cost Heterogeneity and the Potential Savings from Market-Based Policies</u></i>
SUST	56.2002	<i>Paolo ROSATO and Edi DEFRANCESCO: <u>Individual Travel Cost Method and Flow Fixed Costs</u></i>
SUST	57.2002	<i>Vladimir KOTOV and Elena NIKITINA (lvii): <u>Reorganisation of Environmental Policy in Russia: The Decade of Success and Failures in Implementation of Perspective Quests</u></i>
SUST	58.2002	<i>Vladimir KOTOV (lvii): <u>Policy in Transition: New Framework for Russia's Climate Policy</u></i>
SUST	59.2002	<i>Fanny MISSELDT and Arturo VILLAVICENCO (lvii): <u>How Can Economies in Transition Pursue Emissions Trading or Joint Implementation?</u></i>
VOL	60.2002	<i>Giovanni DI BARTOLOMEO, Jacob ENGWERDA, Joseph PLASMANS and Bas VAN AARLE: <u>Staying Together or Breaking Apart: Policy-Makers' Endogenous Coalitions Formation in the European Economic and Monetary Union</u></i>
ETA	61.2002	<i>Robert N. STAVINS, Alexander F. WAGNER and Gernot WAGNER: <u>Interpreting Sustainability in Economic Terms: Dynamic Efficiency Plus Intergenerational Equity</u></i>
PRIV	62.2002	<i>Carlo CAPUANO: <u>Demand Growth, Entry and Collusion Sustainability</u></i>
PRIV	63.2002	<i>Federico MUNARI and Raffaele ORIANI: <u>Privatization and R&D Performance: An Empirical Analysis Based on Tobin's Q</u></i>
PRIV	64.2002	<i>Federico MUNARI and Maurizio SOBRERO: <u>The Effects of Privatization on R&D Investments and Patent Productivity</u></i>
SUST	65.2002	<i>Orley ASHENFELTER and Michael GREENSTONE: <u>Using Mandated Speed Limits to Measure the Value of a Statistical Life</u></i>
ETA	66.2002	<i>Paolo SURICO: <u>US Monetary Policy Rules: the Case for Asymmetric Preferences</u></i>
PRIV	67.2002	<i>Rinaldo BRAU and Massimo FLORIO: <u>Privatisations as Price Reforms: Evaluating Consumers' Welfare Changes in the U.K.</u></i>
CLIM	68.2002	<i>Barbara K. BUCHNER and Roberto ROSON: <u>Conflicting Perspectives in Trade and Environmental Negotiations</u></i>
CLIM	69.2002	<i>Philippe QUIRION: <u>Complying with the Kyoto Protocol under Uncertainty: Taxes or Tradable Permits?</u></i>
SUST	70.2002	<i>Anna ALBERINI, Patrizia RIGANTI and Alberto LONGO: <u>Can People Value the Aesthetic and Use Services of Urban Sites? Evidence from a Survey of Belfast Residents</u></i>
SUST	71.2002	<i>Marco PERCOCO: <u>Discounting Environmental Effects in Project Appraisal</u></i>

NRM	72.2002	<i>Philippe BONTEMS and Pascal FAVARD: <u>Input Use and Capacity Constraint under Uncertainty: The Case of Irrigation</u></i>
PRIV	73.2002	<i>Mohammed OMRAN: <u>The Performance of State-Owned Enterprises and Newly Privatized Firms: Empirical Evidence from Egypt</u></i>
PRIV	74.2002	<i>Mike BURKART, Fausto PANUNZI and Andrei SHLEIFER: <u>Family Firms</u></i>
PRIV	75.2002	<i>Emmanuelle AURIOL, Pierre M. PICARD: <u>Privatizations in Developing Countries and the Government Budget Constraint</u></i>
PRIV	76.2002	<i>Nichole M. CASTATER: <u>Privatization as a Means to Societal Transformation: An Empirical Study of Privatization in Central and Eastern Europe and the Former Soviet Union</u></i>
PRIV	77.2002	<i>Christoph LÜLSFESMANN: <u>Benevolent Government, Managerial Incentives, and the Virtues of Privatization</u></i>
PRIV	78.2002	<i>Kate BISHOP, Igor FILATOTCHEV and Tomasz MICKIEWICZ: <u>Endogenous Ownership Structure: Factors Affecting the Post-Privatisation Equity in Largest Hungarian Firms</u></i>
PRIV	79.2002	<i>Theodora WELCH and Rick MOLZ: <u>How Does Trade Sale Privatization Work? Evidence from the Fixed-Line Telecommunications Sector in Developing Economies</u></i>
PRIV	80.2002	<i>Alberto R. PETRUCCI: <u>Government Debt, Agent Heterogeneity and Wealth Displacement in a Small Open Economy</u></i>
CLIM	81.2002	<i>Timothy SWANSON and Robin MASON (Iv): <u>The Impact of International Environmental Agreements: The Case of the Montreal Protocol</u></i>
PRIV	82.2002	<i>George R.G. CLARKE and Lixin Colin XU: <u>Privatization, Competition and Corruption: How Characteristics of Bribe Takers and Payers Affect Bribe Payments to Utilities</u></i>
PRIV	83.2002	<i>Massimo FLORIO and Katuscia MANZONI: <u>The Abnormal Returns of UK Privatisations: From Underpricing to Outperformance</u></i>
NRM	84.2002	<i>Nelson LOURENÇO, Carlos RUSSO MACHADO, Maria do ROSÁRIO JORGE and Luís RODRIGUES: <u>An Integrated Approach to Understand Territory Dynamics. The Coastal Alentejo (Portugal)</u></i>
CLIM	85.2002	<i>Peter ZAPFEL and Matti VAINIO (Iv): <u>Pathways to European Greenhouse Gas Emissions Trading History and Misconceptions</u></i>
CLIM	86.2002	<i>Pierre COURTOIS: <u>Influence Processes in Climate Change Negotiations: Modelling the Rounds</u></i>
ETA	87.2002	<i>Vito FRAGNELLI and Maria Erminia MARINA (Iviii): <u>Environmental Pollution Risk and Insurance</u></i>
ETA	88.2002	<i>Laurent FRANCKX (Iviii): <u>Environmental Enforcement with Endogenous Ambient Monitoring</u></i>
ETA	89.2002	<i>Timo GOESCHL and Timothy M. SWANSON (Iviii): <u>Lost Horizons. The noncooperative management of an evolutionary biological system.</u></i>
ETA	90.2002	<i>Hans KEIDING (Iviii): <u>Environmental Effects of Consumption: An Approach Using DEA and Cost Sharing</u></i>
ETA	91.2002	<i>Wietze LISE (Iviii): <u>A Game Model of People's Participation in Forest Management in Northern India</u></i>
CLIM	92.2002	<i>Jens HORBACH: <u>Structural Change and Environmental Kuznets Curves</u></i>
ETA	93.2002	<i>Martin P. GROSSKOPF: <u>Towards a More Appropriate Method for Determining the Optimal Scale of Production Units</u></i>
VOL	94.2002	<i>Scott BARRETT and Robert STAVINS: <u>Increasing Participation and Compliance in International Climate Change Agreements</u></i>
CLIM	95.2002	<i>Banu BAYRAMOGLU LISE and Wietze LISE: <u>Climate Change, Environmental NGOs and Public Awareness in the Netherlands: Perceptions and Reality</u></i>
CLIM	96.2002	<i>Matthieu GLACHANT: <u>The Political Economy of Emission Tax Design in Environmental Policy</u></i>
KNOW	97.2002	<i>Kenn ARIGA and Giorgio BRUNELLO: <u>Are the More Educated Receiving More Training? Evidence from Thailand</u></i>
ETA	98.2002	<i>Gianfranco FORTE and Matteo MANERA: <u>Forecasting Volatility in European Stock Markets with Non-linear GARCH Models</u></i>
ETA	99.2002	<i>Geoffrey HEAL: <u>Bundling Biodiversity</u></i>
ETA	100.2002	<i>Geoffrey HEAL, Brian WALKER, Simon LEVIN, Kenneth ARROW, Partha DASGUPTA, Gretchen DAILY, Paul EHRLICH, Karl-Goran MALER, Nils KAUTSKY, Jane LUBCHENCO, Steve SCHNEIDER and David STARRETT: <u>Genetic Diversity and Interdependent Crop Choices in Agriculture</u></i>
ETA	101.2002	<i>Geoffrey HEAL: <u>Biodiversity and Globalization</u></i>
VOL	102.2002	<i>Andreas LANGE: <u>Heterogeneous International Agreements – If per capita emission levels matter</u></i>
ETA	103.2002	<i>Pierre-André JOUVET and Walid OUESLATI: <u>Tax Reform and Public Spending Trade-offs in an Endogenous Growth Model with Environmental Externalities</u></i>
ETA	104.2002	<i>Anna BOTTASSO and Alessandro SEMBENELLI: <u>Does Ownership Affect Firms' Efficiency? Panel Data Evidence on Italy</u></i>
PRIV	105.2002	<i>Bernardo BORTOLOTTI, Frank DE JONG, Giovanna NICODANO and Ibolya SCHINDELE: <u>Privatization and Stock Market Liquidity</u></i>
ETA	106.2002	<i>Haruo IMAI and Mayumi HORIE (Iviii): <u>Pre-Negotiation for an International Emission Reduction Game</u></i>
PRIV	107.2002	<i>Sudeshna GHOSH BANERJEE and Michael C. MUNGER: <u>Move to Markets? An Empirical Analysis of Privatisation in Developing Countries</u></i>
PRIV	108.2002	<i>Guillaume GIRMENS and Michel GUILLARD: <u>Privatization and Investment: Crowding-Out Effect vs Financial Diversification</u></i>
PRIV	109.2002	<i>Alberto CHONG and Florencio LÓPEZ-DE-SILANES: <u>Privatization and Labor Force Restructuring Around the World</u></i>
PRIV	110.2002	<i>Nandini GUPTA: <u>Partial Privatization and Firm Performance</u></i>
PRIV	111.2002	<i>François DEGEORGE, Dirk JENTER, Alberto MOEL and Peter TUFANO: <u>Selling Company Shares to Reluctant Employees: France Telecom's Experience</u></i>

PRIV	112.2002	<i>Isaac OTCHERE</i> : <u>Intra-Industry Effects of Privatization Announcements: Evidence from Developed and Developing Countries</u>
PRIV	113.2002	<i>Yannis KATSOULAKOS and Elissavet LIKOYANNI</i> : <u>Fiscal and Other Macroeconomic Effects of Privatization</u>
PRIV	114.2002	<i>Guillaume GIRMENS</i> : <u>Privatization, International Asset Trade and Financial Markets</u>
PRIV	115.2002	<i>D. Teja FLOTHO</i> : <u>A Note on Consumption Correlations and European Financial Integration</u>
PRIV	116.2002	<i>Ibolya SCHINDELE and Enrico C. PEROTTI</i> : <u>Pricing Initial Public Offerings in Premature Capital Markets: The Case of Hungary</u>
PRIV	1.2003	<i>Gabriella CHIESA and Giovanna NICODANO</i> : <u>Privatization and Financial Market Development: Theoretical Issues</u>
PRIV	2.2003	<i>Ibolya SCHINDELE</i> : <u>Theory of Privatization in Eastern Europe: Literature Review</u>
PRIV	3.2003	<i>Wietze LISE, Claudia KEMFERT and Richard S.J. TOL</i> : <u>Strategic Action in the Liberalised German Electricity Market</u>
CLIM	4.2003	<i>Laura MARSILLANI and Thomas I. RENSTRÖM</i> : <u>Environmental Policy and Capital Movements: The Role of Government Commitment</u>
KNOW	5.2003	<i>Reyer GERLAGH</i> : <u>Induced Technological Change under Technological Competition</u>
ETA	6.2003	<i>Efrem CASTELNUOVO</i> : <u>Squeezing the Interest Rate Smoothing Weight with a Hybrid Expectations Model</u>
SIEV	7.2003	<i>Anna ALBERINI, Alberto LONGO, Stefania TONIN, Francesco TROMBETTA and Margherita TURVANI</i> : <u>The Role of Liability, Regulation and Economic Incentives in Brownfield Remediation and Redevelopment: Evidence from Surveys of Developers</u>
NRM	8.2003	<i>Elissaios PAPYRAKIS and Reyner GERLAGH</i> : <u>Natural Resources: A Blessing or a Curse?</u>
CLIM	9.2003	<i>A. CAPARRÓS, J.-C. PEREAU and T. TAZDAÏT</i> : <u>North-South Climate Change Negotiations: a Sequential Game with Asymmetric Information</u>
KNOW	10.2003	<i>Giorgio BRUNELLO and Daniele CHECCHI</i> : <u>School Quality and Family Background in Italy</u>
CLIM	11.2003	<i>Efrem CASTELNUOVO and Marzio GALEOTTI</i> : <u>Learning By Doing vs Learning By Researching in a Model of Climate Change Policy Analysis</u>
KNOW	12.2003	<i>Carole MAIGNAN, Gianmarco OTTAVIANO and Dino PINELLI (eds.)</i> : <u>Economic Growth, Innovation, Cultural Diversity: What are we all talking about? A critical survey of the state-of-the-art</u>
KNOW	13.2003	<i>Carole MAIGNAN, Gianmarco OTTAVIANO, Dino PINELLI and Francesco RULLANI (lix)</i> : <u>Bio-Ecological Diversity vs. Socio-Economic Diversity. A Comparison of Existing Measures</u>
KNOW	14.2003	<i>Maddy JANSSENS and Chris STEYAERT (lix)</i> : <u>Theories of Diversity within Organisation Studies: Debates and Future Trajectories</u>
KNOW	15.2003	<i>Tuzin BAYCAN LEVENT, Enno MASUREL and Peter NIJKAMP (lix)</i> : <u>Diversity in Entrepreneurship: Ethnic and Female Roles in Urban Economic Life</u>
KNOW	16.2003	<i>Alexandra BITUSIKOVA (lix)</i> : <u>Post-Communist City on its Way from Grey to Colourful: The Case Study from Slovakia</u>
KNOW	17.2003	<i>Billy E. VAUGHN and Katarina MLEKOV (lix)</i> : <u>A Stage Model of Developing an Inclusive Community</u>
KNOW	18.2003	<i>Selma van LONDEN and Arie de RUIJTER (lix)</i> : <u>Managing Diversity in a Globalizing World</u>
Coalition Theory Network	19.2003	<i>Sergio CURRARINI</i> : <u>On the Stability of Hierarchies in Games with Externalities</u>
PRIV	20.2003	<i>Giacomo CALZOLARI and Alessandro PAVAN (lx)</i> : <u>Monopoly with Resale</u>
PRIV	21.2003	<i>Claudio MEZZETTI (lx)</i> : <u>Auction Design with Interdependent Valuations: The Generalized Revelation Principle, Efficiency, Full Surplus Extraction and Information Acquisition</u>
PRIV	22.2003	<i>Marco LiCalzi and Alessandro PAVAN (lx)</i> : <u>Tilting the Supply Schedule to Enhance Competition in Uniform-Price Auctions</u>
PRIV	23.2003	<i>David ETTINGER (lx)</i> : <u>Bidding among Friends and Enemies</u>
PRIV	24.2003	<i>Hannu VARTIAINEN (lx)</i> : <u>Auction Design without Commitment</u>
PRIV	25.2003	<i>Matti KELOHARJU, Kjell G. NYBORG and Kristian RYDQVIST (lx)</i> : <u>Strategic Behavior and Underpricing in Uniform Price Auctions: Evidence from Finnish Treasury Auctions</u>
PRIV	26.2003	<i>Christine A. PARLOUR and Uday RAJAN (lx)</i> : <u>Rationing in IPOs</u>
PRIV	27.2003	<i>Kjell G. NYBORG and Ilya A. STREBULAIEV (lx)</i> : <u>Multiple Unit Auctions and Short Squeezes</u>
PRIV	28.2003	<i>Anders LUNANDER and Jan-Eric NILSSON (lx)</i> : <u>Taking the Lab to the Field: Experimental Tests of Alternative Mechanisms to Procure Multiple Contracts</u>
PRIV	29.2003	<i>TangaMcDANIEL and Karsten NEUHOFF (lx)</i> : <u>Use of Long-term Auctions for Network Investment</u>
PRIV	30.2003	<i>Emiel MAASLAND and Sander ONDERSTAL (lx)</i> : <u>Auctions with Financial Externalities</u>
ETA	31.2003	<i>Michael FINUS and Bianca RUNDSHAGEN</i> : <u>A Non-cooperative Foundation of Core-Stability in Positive Externality NTU-Coalition Games</u>
KNOW	32.2003	<i>Michele MORETTO</i> : <u>Competition and Irreversible Investments under Uncertainty</u>
PRIV	33.2003	<i>Philippe QUIRION</i> : <u>Relative Quotas: Correct Answer to Uncertainty or Case of Regulatory Capture?</u>
KNOW	34.2003	<i>Giuseppe MEDA, Claudio PIGA and Donald SIEGEL</i> : <u>On the Relationship between R&D and Productivity: A Treatment Effect Analysis</u>
ETA	35.2003	<i>Alessandra DEL BOCA, Marzio GALEOTTI and Paola ROTA</i> : <u>Non-convexities in the Adjustment of Different Capital Inputs: A Firm-level Investigation</u>

GG	36.2003	<i>Matthieu GLACHANT</i> : <u>Voluntary Agreements under Endogenous Legislative Threats</u>
PRIV	37.2003	<i>Narjess BOUBAKRI, Jean-Claude COSSET and Omrane GUEDHAMI</i> : <u>Postprivatization Corporate Governance: the Role of Ownership Structure and Investor Protection</u>
CLIM	38.2003	<i>Rolf GOLOMBEK and Michael HOEL</i> : <u>Climate Policy under Technology Spillovers</u>
KNOW	39.2003	<i>Slim BEN YOUSSEF</i> : <u>Transboundary Pollution, R&D Spillovers and International Trade</u>
CTN	40.2003	<i>Carlo CARRARO and Carmen MARCHIORI</i> : <u>Endogenous Strategic Issue Linkage in International Negotiations</u>
KNOW	41.2003	<i>Sonia OREFFICE</i> : <u>Abortion and Female Power in the Household: Evidence from Labor Supply</u>
KNOW	42.2003	<i>Timo GOESCHL and Timothy SWANSON</i> : <u>On Biology and Technology: The Economics of Managing Biotechnologies</u>
ETA	43.2003	<i>Giorgio Busetti and Matteo MANERA</i> : <u>STAR-GARCH Models for Stock Market Interactions in the Pacific Basin Region, Japan and US</u>
CLIM	44.2003	<i>Katrin MILLOCK and Céline NAUGES</i> : <u>The French Tax on Air Pollution: Some Preliminary Results on its Effectiveness</u>
PRIV	45.2003	<i>Bernardo BORTOLOTTI and Paolo PINOTTI</i> : <u>The Political Economy of Privatization</u>
SIEV	46.2003	<i>Elbert DIJKGRAAF and Herman R.J. VOLLEBERGH</i> : <u>Burn or Bury? A Social Cost Comparison of Final Waste Disposal Methods</u>
ETA	47.2003	<i>Jens HORBACH</i> : <u>Employment and Innovations in the Environmental Sector: Determinants and Econometrical Results for Germany</u>
CLIM	48.2003	<i>Lori SNYDER, Nolan MILLER and Robert STAVINS</i> : <u>The Effects of Environmental Regulation on Technology Diffusion: The Case of Chlorine Manufacturing</u>
CLIM	49.2003	<i>Lori SNYDER, Robert STAVINS and Alexander F. WAGNER</i> : <u>Private Options to Use Public Goods. Exploiting Revealed Preferences to Estimate Environmental Benefits</u>
CTN	50.2003	<i>László Á. KÓCZY and Luc LAUWERS (Ixi)</i> : <u>The Minimal Dominant Set is a Non-Empty Core-Extension</u>
CTN	51.2003	<i>Matthew O. JACKSON (Ixi)</i> : <u>Allocation Rules for Network Games</u>
CTN	52.2003	<i>Ana MAULEON and Vincent VANNETELBOSCH (Ixi)</i> : <u>Farsightedness and Cautiousness in Coalition Formation</u>
CTN	53.2003	<i>Fernando VEGA-REDONDO (Ixi)</i> : <u>Building Up Social Capital in a Changing World: a network approach</u>
CTN	54.2003	<i>Matthew HAAG and Roger LAGUNOFF (Ixi)</i> : <u>On the Size and Structure of Group Cooperation</u>
CTN	55.2003	<i>Taiji FURUSAWA and Hideo KONISHI (Ixi)</i> : <u>Free Trade Networks</u>
CTN	56.2003	<i>Halis Murat YILDIZ (Ixi)</i> : <u>National Versus International Mergers and Trade Liberalization</u>
CTN	57.2003	<i>Santiago RUBIO and Alistair ULPH (Ixi)</i> : <u>An Infinite-Horizon Model of Dynamic Membership of International Environmental Agreements</u>
KNOW	58.2003	<i>Carole MAIGNAN, Dino PINELLI and Gianmarco I.P. OTTAVIANO</i> : <u>ICT, Clusters and Regional Cohesion: A Summary of Theoretical and Empirical Research</u>
KNOW	59.2003	<i>Giorgio BELLETTINI and Gianmarco I.P. OTTAVIANO</i> : <u>Special Interests and Technological Change</u>
ETA	60.2003	<i>Ronnie SCHÖB</i> : <u>The Double Dividend Hypothesis of Environmental Taxes: A Survey</u>
CLIM	61.2003	<i>Michael FINUS, Ekko van IERLAND and Robert DELLINK</i> : <u>Stability of Climate Coalitions in a Cartel Formation Game</u>
GG	62.2003	<i>Michael FINUS and Bianca RUNDSHAGEN</i> : <u>How the Rules of Coalition Formation Affect Stability of International Environmental Agreements</u>
SIEV	63.2003	<i>Alberto PETRUCCI</i> : <u>Taxing Land Rent in an Open Economy</u>
CLIM	64.2003	<i>Joseph E. ALDY, Scott BARRETT and Robert N. STAVINS</i> : <u>Thirteen Plus One: A Comparison of Global Climate Policy Architectures</u>
SIEV	65.2003	<i>Edi DEFRANCESCO</i> : <u>The Beginning of Organic Fish Farming in Italy</u>
SIEV	66.2003	<i>Klaus CONRAD</i> : <u>Price Competition and Product Differentiation when Consumers Care for the Environment</u>
SIEV	67.2003	<i>Paulo A.L.D. NUNES, Luca ROSSETTO, Arianne DE BLAEIJ</i> : <u>Monetary Value Assessment of Clam Fishing Management Practices in the Venice Lagoon: Results from a Stated Choice Exercise</u>

- (l) This paper was presented at the Workshop “Growth, Environmental Policies and Sustainability” organised by the Fondazione Eni Enrico Mattei, Venice, June 1, 2001
- (li) This paper was presented at the Fourth Toulouse Conference on Environment and Resource Economics on “Property Rights, Institutions and Management of Environmental and Natural Resources”, organised by Fondazione Eni Enrico Mattei, IDEI and INRA and sponsored by MATE, Toulouse, May 3-4, 2001
- (lii) This paper was presented at the International Conference on “Economic Valuation of Environmental Goods”, organised by Fondazione Eni Enrico Mattei in cooperation with CORILA, Venice, May 11, 2001
- (liii) This paper was circulated at the International Conference on “Climate Policy – Do We Need a New Approach?”, jointly organised by Fondazione Eni Enrico Mattei, Stanford University and Venice International University, Isola di San Servolo, Venice, September 6-8, 2001
- (liv) This paper was presented at the Seventh Meeting of the Coalition Theory Network organised by the Fondazione Eni Enrico Mattei and the CORE, Université Catholique de Louvain, Venice, Italy, January 11-12, 2002
- (lv) This paper was presented at the First Workshop of the Concerted Action on Tradable Emission Permits (CATEP) organised by the Fondazione Eni Enrico Mattei, Venice, Italy, December 3-4, 2001
- (lvi) This paper was presented at the ESF EURESCO Conference on Environmental Policy in a Global Economy “The International Dimension of Environmental Policy”, organised with the collaboration of the Fondazione Eni Enrico Mattei, Acquafredda di Maratea, October 6-11, 2001
- (lvii) This paper was presented at the First Workshop of “CFEWE – Carbon Flows between Eastern and Western Europe”, organised by the Fondazione Eni Enrico Mattei and Zentrum für Europäische Integrationsforschung (ZEI), Milan, July 5-6, 2001
- (lviii) This paper was presented at the Workshop on “Game Practice and the Environment”, jointly organised by Università del Piemonte Orientale and Fondazione Eni Enrico Mattei, Alessandria, April 12-13, 2002
- (lix) This paper was presented at the ENGIME Workshop on “Mapping Diversity”, Leuven, May 16-17, 2002
- (lx) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications”, organised by the Fondazione Eni Enrico Mattei, Milan, September 26-28, 2002
- (lxi) This paper was presented at the Eighth Meeting of the Coalition Theory Network organised by the GREQAM, Aix-en-Provence, France, January 24-25, 2003

2002 SERIES

CLIM	<i>Climate Change Modelling and Policy</i> (Editor: Marzio Galeotti)
VOL	<i>Voluntary and International Agreements</i> (Editor: Carlo Carraro)
SUST	<i>Sustainability Indicators and Environmental Valuation</i> (Editor: Carlo Carraro)
NRM	<i>Natural Resources Management</i> (Editor: Carlo Giupponi)
KNOW	<i>Knowledge, Technology, Human Capital</i> (Editor: Dino Pinelli)
MGMT	<i>Corporate Sustainable Management</i> (Editor: Andrea Marsanich)
PRIV	<i>Privatisation, Regulation, Antitrust</i> (Editor: Bernardo Bortolotti)
ETA	<i>Economic Theory and Applications</i> (Editor: Carlo Carraro)

2003 SERIES

CLIM	<i>Climate Change Modelling and Policy</i> (Editor: Marzio Galeotti)
GG	<i>Global Governance</i> (Editor: Carlo Carraro)
SIEV	<i>Sustainability Indicators and Environmental Valuation</i> (Editor: Anna Alberini)
NRM	<i>Natural Resources Management</i> (Editor: Carlo Giupponi)
KNOW	<i>Knowledge, Technology, Human Capital</i> (Editor: Gianmarco Ottaviano)
IEM	<i>International Energy Markets</i> (Editor: Anil Markandya)
CSRM	<i>Corporate Social Responsibility and Management</i> (Editor: Sabina Ratti)
PRIV	<i>Privatisation, Regulation, Antitrust</i> (Editor: Bernardo Bortolotti)
ETA	<i>Economic Theory and Applications</i> (Editor: Carlo Carraro)
CTN	<i>Coalition Theory Network</i>