The Core of Directed Network Problems with Quotas

Somdeb Lahiri

NOTA DI LAVORO 25.2005

FEBRUARY 2005

CTN – Coalition Theory Network

Somdeb Lahiri, *School of Economics and Business Sciences, University of the Witwatersrand at Johannesburg*

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.htm

Social Science Research Network Electronic Paper Collection:
http://ssrn.com/abstract= 670087

The opinions expressed in this paper do not necessarily reflect the position of
Fondazione Eni Enrico Mattei
Corso Magenta, 63, 20123 Milano (I), web site: www.feem.it, e-mail: working.papers@feem.it

The Core of Directed Network Problems with Quotas

Summary

This paper proves the existence of non-empty cores for directed network problems with quotas and for those combinatorial allocation problems which permit only exclusive allocations.

Keywords: Network problems, Quotas

JEL Classification: C71

Useful comments on this paper by Sergio Currarini are gratefully acknowledged.

Address for correspondence

Somdeb Lahiri
School of Economics and Business Sciences
University of the Witwatersrand at Johannesburg
Private Bag 3
WITS 2050 Johannesburg
South Africa
Phone: +27 11 717 8123
Fax: +27 11 717 8081
E-mail: lahiris@sebs.wits.ac.za

Introduction

Networks among a group of agents, arise very often in society as well as in economic analysis. In a network, pairs of agents are linked to each other in a symmetric relationship. Slikker and van den Nouweland [2001], Dutta and Jackson [2003] and Jackson [2004], study the problem of network formation. In a recent work, Jackson and van den Nouweland [2004] study the existence of networks that are stable against changes in links by any coalition of individuals.

However, not all interactions among individuals are of necessity symmetrical. Thus, for instance, when an agent decides to buy an object from another individual, it is not necessary that the resulting transaction, materializes in a direct exchange of objects. This problem was analyzed rigorously by Shapley and Scarf [1974], where each of a set of individuals was initially endowed with exactly one object and an allocation of the objects which could not be improved upon by any coalition of individuals by redistributing their initial endowments, was sought. An allocation such as this was called core stable and Shapley and Scarf [1974], used Gale's Top Trading Cycle Algorithm to show that a core stable allocation for such a situation would always exist.

In the situation that Shapley and Scarf[1974] analyzed, an allocation did not necessarily correspond to a network. If one agent received the object owned by a second, it did not follow that the second received the object owned by the first in return. An allocation would however correspond to what is known as a directed network. If a link was established from one agent to a second, all that it would imply is that the first agent received the object owned by the second.

The situation studied by Shapley and Scarf[1974] was characterized by two features: (a) each agent consumed exactly one object: (b) excludability in consumption. While, the first feature was perhaps only a simplifying assumption, meant largely to facilitate exposition as subsequent research as well as a later section of our paper reveals, the same cannot be said of the second feature. Excludability in consumption implies that at most one agent can consume a particular item, a characteristic associated with "private goods". There are many situations and objects which do not qualify this property. For instance, an internet server can be linked simultaneously to several other internet servers, not just one. A particular object or facility can be simultaneously used by several users, whose number does not exceed a pre-assigned quota. Such facilities or goods are akin to public goods. It is precisely such goods that we have in mind in the present context.

As in Shapley and Scarf[1974], consider a finite population of agents, each of whom is initially endowed with a single item. Each item has a capacity denoting the number of agents it can simultaneously cater too. The quota of each agent which is assumed equal to the capacity of the item she is initially endowed with, imposes an upper bound on the number of items she can consume. The requirement that the quota of an agent is equal to the capacity of her initial endowment, implies that in any directed network that would be of interest in the present context, the number of links that terminate at any agent is equal to the number of links that emanate from her. In particular a link can be a loop i.e. begin and terminate at the same agent. The problem we are concerned with here, is with the existence of a directed network which

satisfies individual quotas and is core stable in the following sense: there does not exist any coalition of agents who can link up among themselves and do better than at the existing network. We show that a slight modification of the Gale's Top Trading Cycles Algorithm that was used by Shapley and Scarf[1974], proves the existence of a core stable network for every directed network problem with quotas.

A directed network problem is an example of a combinatorial allocation problem (CAP). A CAP is a resource allocation problem, in which a non-empty set of items are to be allocated across a set of agents. Agents are assumed to value bundles of items. The CAP is relevant to many interesting and important real-world applications, including scheduling, logistics and network computation domains. When the set of items is identical to the set of agents, we have a directed network problem.

An allocation of items in a CAP, where each individual is initially endowed with a distinct non-empty set of items is said to be exclusive, if no two items share an item at the allocation.

Assuming that the maximum number of items that each agent can consume at any allocation is equal to the number of items she was initially endowed with, and restricting attention to exclusive allocations, we show that a core stable allocation always exists for such CAP's. The proof of this result is very similar to the proof of the non-emptiness of the core of a directed network problem with quotas.

Through out the analysis reported here, we focus on stability as a solution concept. This clearly rules out the possibility of ex-post re-contracting among the agents.

In the mechanism design literature, strategy-proofness or dominant strategy implementation has often been invoked as the criterion that a mechanism is required to satisfy. Without going into the merits or validity of strategy-proofness for the networks we propose here, it is worth pointing out that whether a resource allocation mechanism is otherwise acceptable or not, if it fails to prevent ex-post re-contracting among agents, then the purpose of decentralization is obviously defeated. Thus, stability in the sense we use, is a minimal requirement that a mechanism ought to satisfy, in order to be credible.

The requirement of stability may sometimes make the additional requirement of strategy-proofness superfluous. The resource allocation obtained via strategic misrepresentation of one or more agent's preference, may lead to the possibility of ex-post re-contracting among the agents. The likelihood of the adverse consequences on oneself arising out instability, should by itself deter an agent from acting strategically.

The Directed Network Problem

Given a non-empty finite set I of agents, a preference relation for agent $i \in I$ is summarized by a linear order R(i) over I.

A directed network is a function A: $I \rightarrow 2^I \setminus \{\phi\}$, where I is a non-empty finite set of agents. A directed network is said to be a network if for all $A \in \Lambda$ and $i,j \in I$: [$j \in A(i)$ implies $i \in A(j)$].

We assume that each agent has a quota which is a natural number less than or equal to the cardinality of I. Hence, a quota function is a function $q: I \rightarrow \{0,\ldots.|I|\}$.

A directed network problem with quotas is the ordered pair E = (Λ(q), <R(i) / i$\in$I>), where Λ(q) = {A/ A is a directed network satisfying [for all i$\in$I: |A(i)| $\leq$ q(i)], |A(i)| < q(i) implies i$\in$A(i), and |A(i)| = q(i) for some i$\in$I}.
A directed network A for E = (Λ(q), <R(i) / i$\in$I>) is said to be a feasible network (or simply "feasible") if A$\in\Lambda$(q).

The reason why there may be no directed network at which all agents exhaust their quota is illustrated by the following examples.

Example 1: Let I = {1,2,3} with q(1) = 1, q(2) = 3 and q(3) = 3. Let A$\in\Lambda$(q) be such that |A(3)| = 3. Then, A(1) = {3}, A(3) = {1,2,3} and 1$\notin$A(2). Thus, |A(2)| < 3. Thus, it is not possible for both 2 and 3 to satisfy their quotas.

Example 2: Let I= {1,2,3,4} with q(1) = 1, q(2) = q(3) = q(4) = 4. Let A $\in\Lambda$(q) be such that for at least i$\in$ {2,3,4}, |A(i)| = 4. Without loss of generality suppose |A(4)| = 4. Thus, A(4) = I and A(1) = {4}. Since q(1) = 1, 1$\notin$A(2) $\cup$A(3). Thus, |A(2)| < 4 and |A(3)| < 4. Thus, at least two agents in {2,3,4} must have unexhausted quotas at any A $\in\Lambda$(q).

A feasible network A is said to be blocked by a coalition (: a non-empty subset of agents) M, if there exists a permutation p: M$\rightarrow$ M and a function y: M $\rightarrow \bigcup_{i\in M} A(i)$ such that for all i$\in$M: (i)p(i) R(i) y(i); (ii) p(i)$\in$I\A(i).
An alternative way of defining the concept of blocking by a coalition would be by using the concept of a unilateral hyper-relation due to Aizerman and Aleskerov [1995]. A unilateral hyper-relation on I is a subset of $2^I\times$I.
For i$\in$I and (S, j) $\in 2^I\times$I, we write S $\geq_i$ j if and only if either j$\in$S or kR(i)j for all k$\in$S. Clearly $\geq_i$ is a unilateral hyper-relation for all i$\in$I.
A feasible network A is said to be blocked by a coalition (: a non-empty subset of agents) M, if there exists a permutation p: M$\rightarrow$ M such that for no i$\in$M is it the case that A(i) $\geq_i$ p(i).
A feasible network A is said to belong to the core of the directed network problem with quotas E, if it is not blocked by any coalition.
The core of E, denoted Core(E) is the set of feasible networks belonging to the core of E.

Given a list of distinct agents $i_1,\ldots,i_k$ we say that a transaction is completed along the cycle ($i_1,\ldots,i_k$) if each $i_j\in\{i_2,\ldots,i_k\}$ receives i_{j-1} and i_1 receives i_k. Thus, if k = 1, then after completion of transaction along the cycle, agent i_1 receives i_1.

The proof of the following theorem, which is a generalization of the one in Shapley and Scarf[1974], relies on a minor variation of the Gale's Top Trading Cycles Algorithm. Our proof itself is a modification of the one in Shapley and Scarf[1974].

Theorem 1: If E is a directed network problem with quotas, then Core(E) is non-empty.

Proof: *Stage 1: Each agent i points to the agent who owns her most preferred object according to the linear order R_i. Since, the number of agents is finite, there exists at least one subset of agents who form a cycle, i.e. there exists a set $i_1,\ldots,i_k$ of agents, such that i_j is the most preferred item of agent i_{j-1} for $i_j \in \{i_2,\ldots,i_k\}$ and i_1 is the most preferred item of agent i_k. Since each agent points to exactly one agent, no two distinct cycles can share an agent. Otherwise, there would exist an agent who points to two different agents, contrary to hypothesis. Complete the transaction along each such cycle.*
Each agent who does not get an object she had pointed to, was not part of a cycle. Each agent who received an object at this stage, strikes that object off from her linear order.
Each agent who received an object up until this stage, reduces her quota by one, to obtain revised quotas. Any agent whose quota has been reduced to zero, withdraws from the procedure. If in the process all agents withdraw from the procedure, the procedure terminates. Otherwise the procedure moves to Stage 2, with participating agents being only those agents who either did not receive an item at Stage 1 or whose revised quota after stage 1 is positive. No agent whose quota is incomplete is removed from the linear order of any participating agent.
Each agent who participate in the subsequent stage removes from her linear order all agents who have exhausted their quota. Each agent who received an object at Stage 1 and proceeds to participate in the subsequent stage, removes from her linear order the (owner of) the item she received at Stage 1.
Stage 2: Repeat Stage 1, among the participating agents. (This may involve an agent pointing to an agent she had at stage 1). Each agent who received an object up until this stage, reduces her quota by one, to obtain revised quotas.
Repeating the process at most a finite number of times, we arrive at a stage where either all agents have filled their quota, or the agents who have not filled there quota, have by now struck all agents off their list.
The procedure terminates now with the directed network A being defined such that for all $i \in I$, $A(i)$ is the set of items currently in the possession of agent i.
We claim that A belongs to the core of E. A is clearly feasible. If for all $i \in I$ it is the case that $|A(i)| < q(i) \leq |I|$, then no agent would have struck all agents off from her list of preferences, and hence the procedure could not have terminated. Thus, there exists $i \in I$, such that $|A(i)| = q(i)$.
Suppose there is a coalition M which blocks A. Thus there exists a permutation p: $M \to M$ and a function y: $M \to \bigcup_{i \in M} A(i)$ such that for all $i \in M$: (i)p(i) R(i) y(i); (ii) $p(i) \in I \setminus A(i)$.
Without loss of generality let an agent in M whose quota was exhausted first among all agents in M, be denoted 1. If agent 1's quota was exhausted at the first stage of the procedure, she clearly got her best item and therefore could not be part of a blocking coalition. Hence no agent whose quota was exhausted at the first stage would be part of a blocking coalition. If agent 1's quota was exhausted at stage 2, then the only

agents that she could form a blocking coalition with, must have exhausted their quota in stage 1. Since agents who exhausted their quota in stage 1 cannot belong to M, it is not possible for agent 1 to belong to M either. Thus, no agent whose quota was exhausted at stage 2 can belong to M. Proceeding thus, we see that if agent 1's quota was exhausted at stage k, then the owners of the items she could form a blocking coalition with must have exhausted their quota at a previous stage. Since agent 1 is assumed to be among the first to exhaust her quota among the agents in M, M cannot be a blocking coalition. This contradiction establishes the non-emptiness of the Core(E). Q.E.D.

The purpose of requiring the termination rule in the above procedure to permit agents whose quota may have remained unexhausted may once again be illustrated by the following example.

Example 3: Let I = {1,2} and suppose q(1) = 1 where as q(2) = 2. Let E be a directed network problem where agent 1 prefers 1 to 2. If A belongs to Core(E), then A(1) = {1}. Thus, whatever be the preference of agent 2, A(2) = {2}. In fact this would be the unique feasible network in Core(E). Clearly, the quota of agent 2 remains unexhausted at A.
However, thee feasible network where agent 1 gets 2 and agent 2 gets both 1 and 2, exhausts the quota of all agents. This network is blocked by agent 1 and hence does not belong to the core.

Note: Suppose the directed network A obtained in the proof of theorem 1 above, was the outcome of a procedure that terminated at stage $K \geq 1$. For all agents $i \in I$, who received item j at stage K, let $p_K = p_i(j) = 1$.
If K > 1, then having defined p_k for stages K, K-1,…, L < 1, define $p_{L-1} = \sum_{k=L}^{K} p_k + 1$.
For all $i \in I$, who receive an item j at stage $k \in \{L-1,\ldots,K\}$, let $p_i(j) = p_k$.
For $i \in I$ and $j \in A(i)$, $p_i(j)$ may be interpreted as a personalized price of item j to agent i.
For all $j \in I$, let $p(j) = \min \{p_i(j) / j \in A(i), i \in I\}$. For $i \in I$ and $j \in I \backslash A(i)$, let $A^{-j}(i) = \{h \in A(i) / jR(i)h\}$.
The pair $(A, \langle p_i(j) / j \in A(i), i \in I\rangle$ satisfies the following property: (i) for all $i \in I$ and $j \in I \backslash A(i)$ with $A^{-j}(i) \neq \phi$: $p(j) > \sum_{h \in A^{-j}(i)} p_i(h)$; (ii) for all $i \in I$, $j \in A(i)$ and $h \in I \backslash A(i)$, [hR(i) j] implies [$p(h) > p_i(j)$]; (iii) for all $i \in I$: $\sum_{\{j / j \in A(i)\}} p_i(j) = \sum_{\{j / i \in A(j)\}} p_j(i)$.
(i) says that for any agent i and any item j not belonging to A(i), the total payment that agent i makes for items she does not prefer to item j, is less than the least personalized price paid for item j. Now, (ii) follows from (i) since all personalized prices computed above, are strictly positive. (iii) says that, given any agent i, the sum of payments made by i is equal to the sum of payments received by i .

A Combinatorial Allocation Problem and Its Non-empty Core

In a combinatorial allocation problem (CAP) there is a non-empty finite set G of discrete items and a non-empty finite set I of agents. Each agent $i \in I$, is initially endowed with a non-empty set of items S(i), such that: (a) $\bigcup_{i \in I} S(i) = G$; (b) for all $i,j \in I$, with $i \neq j$: $S(i) \cap S(j) = \phi$.
A preference relation for agent $i \in I$ is summarized by a linear order R(i) over G.
An allocation is a function A: $I \rightarrow 2^G \backslash \{\phi\}$.
For all $i \in I$, A(i) is the bundle received by agent i.
An allocation A is said to be exclusive if for all $i,j \in I$ with $i \neq j$: $A(i) \cap A(j) = \phi$.
Let q: $I \rightarrow N$(: the set of natural numbers) be such that for all $i \in I$, q(i) = |S(i)|, i.e. the cardinality of S(i).
Let $\Lambda(q) = \{A/ A$ is an exclusive allocation satisfying $|A(i)| = q(i)$ for all $i \in I\}$.
An allocation A is said to be feasible if $A \in \Lambda(q)$.
For $i \in I$ and $(S, a) \in 2^G \times G$, we write $S \geq_i a$ if and only if either $a \in S$ or bR(i)a for all $b \in S$.
Clearly $\geq_i$ is a unilateral hyper-relation for all $i \in I$.
A feasible allocation A is said to be blocked by a coalition (: a non-empty subset of agents) M, if there exists a permutation p: $M \rightarrow M$ and a function x: $M \rightarrow \bigcup_{i \in I} S(i)$ such that for no $i \in M$ is it the case that $A(i) \geq_i x(p(i))$.
A feasible allocation A is said to belong to the core of the CAP, if it is not blocked by any coalition.
The core of the above CAP, denoted C* is the set of feasible networks belonging to its core.

Given a list of distinct agents $i_1,\ldots,i_k$ and a set of items $x(i_1),\ldots, x(i_k)$ with $x(i) \in S(i)$ for all $i \in \{i_1,\ldots,i_k\}$ we say that a transaction is completed along the cycle $(i_1,\ldots,i_k)$ if each $i_j \in \{i_2,\ldots,i_k\}$ receives $x(i_{j-1})$ and i_1 receives $x(i_k)$. Thus, if k = 1, then after completion of transaction along the cycle, agent i_1 receives $x(i_1)$.

The proof of the following theorem, which is again a generalization of the one in Shapley and Scarf[1974], is almost identical to the proof of our Theorem 1.

Theorem 2: Given a CAP as defined above, C* is non-empty.

Proof: *The only respects in which the proof here differs from the proof of Theorem 1, is that every time a transaction is completed along a cycle, all the items involved in the transaction are struck off from the list of all agents who participate in the subsequent stage of the procedure and the procedure stops when the quotas of all agents have been exhausted. Let an allocation A be the outcome of the procedure thus defined.*
We claim that A belongs to the C. A is clearly feasible.*

Suppose there is a coalition M which blocks A. Thus there exists a permutation p: $M \to M$ and functions x: $M \to \bigcup_{i \in I} S(i)$, y: $M \to \bigcup_{i \in M} A(i)$ such that for all $i \in M$:

(i)x(p(i)) R(i) y(i); (ii) $x(p(i)) \in G \backslash A(i)$.

Without loss of generality let an agent in M whose quota was exhausted first among all agents in M, be denoted 1. If agent 1's quota was exhausted at the first stage of the procedure, she clearly got her best item and therefore could not be part of a blocking coalition. Hence no agent whose quota was exhausted at the first stage would be part of a blocking coalition. If agent 1's quota was exhausted at stage 2, then the only agents that she could form a blocking coalition with, must have exhausted their quota in stage 1. Since agents who exhausted their quota in stage 1 cannot belong to M, it is not possible for agent 1 to belong to M either. Thus, no agent whose quota was exhausted at stage 2 can belong to M. Proceeding thus, we see that if agent 1's quota was exhausted at stage k, then the owners of the items she could form a blocking coalition with must have exhausted their quota at a previous stage. Since agent 1 is assumed to be among the first to exhaust her quota among the agents in M, M cannot be a blocking coalition. This contradiction establishes the non-emptiness of C.*

Q.E.D.

References

1. Aizerman, M. and F. Aleskerov [1995]: Theory of Choice. North-Holland, Amsterdam.
2. Dutta, B. and M.O. Jackson [2003]: On the Formation of Networks and Groups. In: Networks and Groups: Models of Strategic Formation, (B.Dutta and M.O. Jackson, Eds.). Springer-Verlag: Heidelberg.
3. Jackson, M.O. and A. van den Nouweland [2004]: Strongly Stable Networks. Forthcoming in: Games and Economic Behavior.
4. Jackson, M.O. [2004]: A Survey of Models of Network Formation: Stability and Efficiency. In: Group Formation in Economics: Networks, Clubs and Coalitions (G. Demange and M. Wooders, Eds.), Cambridge University Press: Cambridge U.K.
5. Shapley, L. and H. Scarf [1974]: On Cores and Indivisibility. Journal of Mathematical Economics. Vol. 1, 23-28.
6. Slikker, M. and A. van den Nouweland [2001]: Social and Economic Networks in Cooperative Game Theory. Kluwer Academic Publishers, Boston, MA.

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

Our Note di Lavoro are available on the Internet at the following addresses:
http://www.feem.it/Feem/Pub/Publications/WPapers/default.html
http://www.ssrn.com/link/feem.html

NOTE DI LAVORO PUBLISHED IN 2004

IEM	1.2004	*Anil MARKANDYA, Suzette PEDROSO and Alexander GOLUB*: Empirical Analysis of National Income and So2 Emissions in Selected European Countries
ETA	2.2004	*Masahisa FUJITA and Shlomo WEBER:* Strategic Immigration Policies and Welfare in Heterogeneous Countries
PRA	3.2004	*Adolfo DI CARLUCCIO, Giovanni FERRI, Cecilia FRALE and Ottavio RICCHI:* Do Privatizations Boost Household Shareholding? Evidence from Italy
ETA	4.2004	*Victor GINSBURGH and Shlomo WEBER:* Languages Disenfranchisement in the European Union
ETA	5.2004	*Romano PIRAS:* Growth, Congestion of Public Goods, and Second-Best Optimal Policy
CCMP	6.2004	*Herman R.J. VOLLEBERGH:* Lessons from the Polder: Is Dutch CO2-Taxation Optimal
PRA	7.2004	*Sandro BRUSCO, Giuseppe LOPOMO and S. VISWANATHAN* (lxv): Merger Mechanisms
PRA	8.2004	*Wolfgang AUSSENEGG, Pegaret PICHLER and Alex STOMPER* (lxv): IPO Pricing with Bookbuilding, and a When-Issued Market
PRA	9.2004	*Pegaret PICHLER and Alex STOMPER* (lxv): Primary Market Design: Direct Mechanisms and Markets
PRA	10.2004	*Florian ENGLMAIER, Pablo GUILLEN, Loreto LLORENTE, Sander ONDERSTAL and Rupert SAUSGRUBER* (lxv): The Chopstick Auction: A Study of the Exposure Problem in Multi-Unit Auctions
PRA	11.2004	*Bjarne BRENDSTRUP and Harry J. PAARSCH* (lxv): Nonparametric Identification and Estimation of Multi-Unit, Sequential, Oral, Ascending-Price Auctions With Asymmetric Bidders
PRA	12.2004	*Ohad KADAN* (lxv): Equilibrium in the Two Player, k-Double Auction with Affiliated Private Values
PRA	13.2004	*Maarten C.W. JANSSEN* (lxv): Auctions as Coordination Devices
PRA	14.2004	*Gadi FIBICH, Arieh GAVIOUS and Aner SELA* (lxv): All-Pay Auctions with Weakly Risk-Averse Buyers
PRA	15.2004	*Orly SADE, Charles SCHNITZLEIN and Jaime F. ZENDER* (lxv): Competition and Cooperation in Divisible Good Auctions: An Experimental Examination
PRA	16.2004	*Marta STRYSZOWSKA* (lxv): Late and Multiple Bidding in Competing Second Price Internet Auctions
CCMP	17.2004	*Slim Ben YOUSSEF:* R&D in Cleaner Technology and International Trade
NRM	18.2004	*Angelo ANTOCI, Simone BORGHESI and Paolo RUSSU* (lxvi): Biodiversity and Economic Growth: Stabilization Versus Preservation of the Ecological Dynamics
SIEV	19.2004	*Anna ALBERINI, Paolo ROSATO, Alberto LONGO and Valentina ZANATTA:* Information and Willingness to Pay in a Contingent Valuation Study: The Value of S. Erasmo in the Lagoon of Venice
NRM	20.2004	*Guido CANDELA and Roberto CELLINI* (lxvii): Investment in Tourism Market: A Dynamic Model of Differentiated Oligopoly
NRM	21.2004	*Jacqueline M. HAMILTON* (lxvii): Climate and the Destination Choice of German Tourists
NRM	22.2004	*Javier Rey-MAQUIEIRA PALMER, Javier LOZANO IBÁÑEZ and Carlos Mario GÓMEZ GÓMEZ* (lxvii): Land, Environmental Externalities and Tourism Development
NRM	23.2004	*Pius ODUNGA and Henk FOLMER* (lxvii): Profiling Tourists for Balanced Utilization of Tourism-Based Resources in Kenya
NRM	24.2004	*Jean-Jacques NOWAK, Mondher SAHLI and Pasquale M. SGRO* (lxvii):Tourism, Trade and Domestic Welfare
NRM	25.2004	*Riaz SHAREEF* (lxvii): Country Risk Ratings of Small Island Tourism Economies
NRM	26.2004	*Juan Luis EUGENIO-MARTÍN, Noelia MARTÍN MORALES and Riccardo SCARPA* (lxvii): Tourism and Economic Growth in Latin American Countries: A Panel Data Approach
NRM	27.2004	*Raúl Hernández MARTÍN* (lxvii): Impact of Tourism Consumption on GDP. The Role of Imports
CSRM	28.2004	*Nicoletta FERRO:* Cross-Country Ethical Dilemmas in Business: A Descriptive Framework
NRM	29.2004	*Marian WEBER* (lxvi): Assessing the Effectiveness of Tradable Landuse Rights for Biodiversity Conservation: an Application to Canada's Boreal Mixedwood Forest
NRM	30.2004	*Trond BJORNDAL, Phoebe KOUNDOURI and Sean PASCOE* (lxvi): Output Substitution in Multi-Species Trawl Fisheries: Implications for Quota Setting
CCMP	31.2004	*Marzio GALEOTTI, Alessandra GORIA, Paolo MOMBRINI and Evi SPANTIDAKI:* Weather Impacts on Natural, Social and Economic Systems (WISE) Part I: Sectoral Analysis of Climate Impacts in Italy
CCMP	32.2004	*Marzio GALEOTTI, Alessandra GORIA ,Paolo MOMBRINI and Evi SPANTIDAKI:* Weather Impacts on Natural, Social and Economic Systems (WISE) Part II: Individual Perception of Climate Extremes in Italy
CTN	33.2004	*Wilson PEREZ:* Divide and Conquer: Noisy Communication in Networks, Power, and Wealth Distribution
KTHC	34.2004	*Gianmarco I.P. OTTAVIANO and Giovanni PERI* (lxviii): The Economic Value of Cultural Diversity: Evidence from US Cities
KTHC	35.2004	*Linda CHAIB* (lxviii): Immigration and Local Urban Participatory Democracy: A Boston-Paris Comparison

KTHC	36.2004	*Franca ECKERT COEN and Claudio ROSSI* (lxviii): Foreigners, Immigrants, Host Cities: The Policies of Multi-Ethnicity in Rome. Reading Governance in a Local Context
KTHC	37.2004	*Kristine CRANE* (lxviii): Governing Migration: Immigrant Groups' Strategies in Three Italian Cities – Rome, Naples and Bari
KTHC	38.2004	*Kiflemariam HAMDE* (lxviii): Mind in Africa, Body in Europe: The Struggle for Maintaining and Transforming Cultural Identity - A Note from the Experience of Eritrean Immigrants in Stockholm
ETA	39.2004	*Alberto CAVALIERE:* Price Competition with Information Disparities in a Vertically Differentiated Duopoly
PRA	40.2004	*Andrea BIGANO and Stef PROOST:* The Opening of the European Electricity Market and Environmental Policy: Does the Degree of Competition Matter?
CCMP	41.2004	*Micheal FINUS* (lxix): International Cooperation to Resolve International Pollution Problems
KTHC	42.2004	*Francesco CRESPI:* Notes on the Determinants of Innovation: A Multi-Perspective Analysis
CTN	43.2004	*Sergio CURRARINI and Marco MARINI:* Coalition Formation in Games without Synergies
CTN	44.2004	*Marc ESCRIHUELA-VILLAR:* Cartel Sustainability and Cartel Stability
NRM	45.2004	*Sebastian BERVOETS and Nicolas GRAVEL* (lxvi): Appraising Diversity with an Ordinal Notion of Similarity: An Axiomatic Approach
NRM	46.2004	*Signe ANTHON and Bo JELLESMARK THORSEN* (lxvi): Optimal Afforestation Contracts with Asymmetric Information on Private Environmental Benefits
NRM	47.2004	*John MBURU* (lxvi)*:* Wildlife Conservation and Management in Kenya: Towards a Co-management Approach
NRM	48.2004	*Ekin BIROL, Ágnes GYOVAI and Melinda SMALE* (lxvi)*:* Using a Choice Experiment to Value Agricultural Biodiversity on Hungarian Small Farms: Agri-Environmental Policies in a Transition al Economy
CCMP	49.2004	*Gernot KLEPPER and Sonja PETERSON:* The EU Emissions Trading Scheme. Allowance Prices, Trade Flows, Competitiveness Effects
GG	50.2004	*Scott BARRETT and Michael HOEL:* Optimal Disease Eradication
CTN	51.2004	*Dinko DIMITROV, Peter BORM, Ruud HENDRICKX and Shao CHIN SUNG:* Simple Priorities and Core Stability in Hedonic Games
SIEV	52.2004	*Francesco RICCI*: Channels of Transmission of Environmental Policy to Economic Growth: A Survey of the Theory
SIEV	53.2004	*Anna ALBERINI, Maureen CROPPER, Alan KRUPNICK and Nathalie B. SIMON:* Willingness to Pay for Mortality Risk Reductions: Does Latency Matter?
NRM	54.2004	*Ingo BRÄUER and Rainer MARGGRAF* (lxvi): Valuation of Ecosystem Services Provided by Biodiversity Conservation: An Integrated Hydrological and Economic Model to Value the Enhanced Nitrogen Retention in Renaturated Streams
NRM	55.2004	*Timo GOESCHL and Tun LIN* (lxvi): Biodiversity Conservation on Private Lands: Information Problems and Regulatory Choices
NRM	56.2004	*Tom DEDEURWAERDERE* (lxvi): Bioprospection: From the Economics of Contracts to Reflexive Governance
CCMP	57.2004	*Katrin REHDANZ and David MADDISON:* The Amenity Value of Climate to German Households
CCMP	58.2004	*Koen SMEKENS and Bob VAN DER ZWAAN:* Environmental Externalities of Geological Carbon Sequestration Effects on Energy Scenarios
NRM	59.2004	*Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA* (lxvii): Using Data Envelopment Analysis to Evaluate Environmentally Conscious Tourism Management
NRM	60.2004	*Timo GOESCHL and Danilo CAMARGO IGLIORI* (lxvi):Property Rights Conservation and Development: An Analysis of Extractive Reserves in the Brazilian Amazon
CCMP	61.2004	*Barbara BUCHNER and Carlo CARRARO*: Economic and Environmental Effectiveness of a Technology-based Climate Protocol
NRM	62.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Resource-Abundance and Economic Growth in the U.S.
NRM	63.2004	*Györgyi BELA, György PATAKI, Melinda SMALE and Mariann HAJDÚ* (lxvi): Conserving Crop Genetic Resources on Smallholder Farms in Hungary: Institutional Analysis
NRM	64.2004	*E.C.M. RUIJGROK and E.E.M. NILLESEN* (lxvi): The Socio-Economic Value of Natural Riverbanks in the Netherlands
NRM	65.2004	*E.C.M. RUIJGROK* (lxvi): Reducing Acidification: The Benefits of Increased Nature Quality. Investigating the Possibilities of the Contingent Valuation Method
ETA	66.2004	*Giannis VARDAS and Anastasios XEPAPADEAS*: Uncertainty Aversion, Robust Control and Asset Holdings
GG	67.2004	*Anastasios XEPAPADEAS and Constadina PASSA*: Participation in and Compliance with Public Voluntary Environmental Programs: An Evolutionary Approach
GG	68.2004	*Michael FINUS*: Modesty Pays: Sometimes!
NRM	69.2004	*Trond BJØRNDAL and Ana BRASÃO*: The Northern Atlantic Bluefin Tuna Fisheries: Management and Policy Implications
CTN	70.2004	*Alejandro CAPARRÓS, Abdelhakim HAMMOUDI and Tarik TAZDAÏT*: On Coalition Formation with Heterogeneous Agents
IEM	71.2004	*Massimo GIOVANNINI, Margherita GRASSO, Alessandro LANZA and Matteo MANERA*: Conditional Correlations in the Returns on Oil Companies Stock Prices and Their Determinants
IEM	72.2004	*Alessandro LANZA, Matteo MANERA and Michael MCALEER*: Modelling Dynamic Conditional Correlations in WTI Oil Forward and Futures Returns
SIEV	73.2004	*Margarita GENIUS and Elisabetta STRAZZERA*: The Copula Approach to Sample Selection Modelling: An Application to the Recreational Value of Forests

CCMP	74.2004	*Rob DELLINK and Ekko van IERLAND*: Pollution Abatement in the Netherlands: A Dynamic Applied General Equilibrium Assessment
ETA	75.2004	*Rosella LEVAGGI and Michele MORETTO*: Investment in Hospital Care Technology under Different Purchasing Rules: A Real Option Approach
CTN	76.2004	*Salvador BARBERÀ and Matthew O. JACKSON* (lxx): On the Weights of Nations: Assigning Voting Weights in a Heterogeneous Union
CTN	77.2004	*Àlex ARENAS, Antonio CABRALES, Albert DÍAZ-GUILERA, Roger GUIMERÀ and Fernando VEGA-REDONDO* (lxx): Optimal Information Transmission in Organizations: Search and Congestion
CTN	78.2004	*Francis BLOCH and Armando GOMES* (lxx): Contracting with Externalities and Outside Options
CTN	79.2004	*Rabah AMIR, Effrosyni DIAMANTOUDI and Licun XUE* (lxx): Merger Performance under Uncertain Efficiency Gains
CTN	80.2004	*Francis BLOCH and Matthew O. JACKSON* (lxx): The Formation of Networks with Transfers among Players
CTN	81.2004	*Daniel DIERMEIER, Hülya ERASLAN and Antonio MERLO* (lxx): Bicameralism and Government Formation
CTN	82.2004	*Rod GARRATT, James E. PARCO, Cheng-ZHONG QIN and Amnon RAPOPORT* (lxx): Potential Maximization and Coalition Government Formation
CTN	83.2004	*Kfir ELIAZ, Debraj RAY and Ronny RAZIN* (lxx): Group Decision-Making in the Shadow of Disagreement
CTN	84.2004	*Sanjeev GOYAL, Marco van der LEIJ and José Luis MORAGA-GONZÁLEZ* (lxx): Economics: An Emerging Small World?
CTN	85.2004	*Edward CARTWRIGHT* (lxx): Learning to Play Approximate Nash Equilibria in Games with Many Players
IEM	86.2004	*Finn R. FØRSUND and Michael HOEL*: Properties of a Non-Competitive Electricity Market Dominated by Hydroelectric Power
KTHC	87.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Natural Resources, Investment and Long-Term Income
CCMP	88.2004	*Marzio GALEOTTI and Claudia KEMFERT*: Interactions between Climate and Trade Policies: A Survey
IEM	89.2004	*A. MARKANDYA, S. PEDROSO and D. STREIMIKIENE*: Energy Efficiency in Transition Economies: Is There Convergence Towards the EU Average?
GG	90.2004	*Rolf GOLOMBEK and Michael HOEL* : Climate Agreements and Technology Policy
PRA	91.2004	*Sergei IZMALKOV* (lxv): Multi-Unit Open Ascending Price Efficient Auction
KTHC	92.2004	*Gianmarco I.P. OTTAVIANO and Giovanni PERI*: Cities and Cultures
KTHC	93.2004	*Massimo DEL GATTO*: Agglomeration, Integration, and Territorial Authority Scale in a System of Trading Cities. Centralisation versus devolution
CCMP	94.2004	*Pierre-André JOUVET, Philippe MICHEL and Gilles ROTILLON*: Equilibrium with a Market of Permits
CCMP	95.2004	*Bob van der ZWAAN and Reyer GERLAGH*: Climate Uncertainty and the Necessity to Transform Global Energy Supply
CCMP	96.2004	*Francesco BOSELLO, Marco LAZZARIN, Roberto ROSON and Richard S.J. TOL*: Economy-Wide Estimates of the Implications of Climate Change: Sea Level Rise
CTN	97.2004	*Gustavo BERGANTIÑOS and Juan J. VIDAL-PUGA*: Defining Rules in Cost Spanning Tree Problems Through the Canonical Form
CTN	98.2004	*Siddhartha BANDYOPADHYAY and Mandar OAK*: Party Formation and Coalitional Bargaining in a Model of Proportional Representation
GG	99.2004	*Hans-Peter WEIKARD, Michael FINUS and Juan-Carlos ALTAMIRANO-CABRERA*: The Impact of Surplus Sharing on the Stability of International Climate Agreements
SIEV	100.2004	*Chiara M. TRAVISI and Peter NIJKAMP*: Willingness to Pay for Agricultural Environmental Safety: Evidence from a Survey of Milan, Italy, Residents
SIEV	101.2004	*Chiara M. TRAVISI, Raymond J. G. M. FLORAX and Peter NIJKAMP*: A Meta-Analysis of the Willingness to Pay for Reductions in Pesticide Risk Exposure
NRM	102.2004	*Valentina BOSETTI and David TOMBERLIN:* Real Options Analysis of Fishing Fleet Dynamics: A Test
CCMP	103.2004	*Alessandra GORIA e Gretel GAMBARELLI:* Economic Evaluation of Climate Change Impacts and Adaptability in Italy
PRA	104.2004	*Massimo FLORIO and Mara GRASSENI*: The Missing Shock: The Macroeconomic Impact of British Privatisation
PRA	105.2004	*John BENNETT, Saul ESTRIN, James MAW and Giovanni URGA*: Privatisation Methods and Economic Growth in Transition Economies
PRA	106.2004	*Kira BÖRNER*: The Political Economy of Privatization: Why Do Governments Want Reforms?
PRA	107.2004	*Pehr-Johan NORBÄCK and Lars PERSSON*: Privatization and Restructuring in Concentrated Markets
SIEV	108.2004	*Angela GRANZOTTO, Fabio PRANOVI, Simone LIBRALATO, Patrizia TORRICELLI and Danilo MAINARDI*: Comparison between Artisanal Fishery and Manila Clam Harvesting in the Venice Lagoon by Using Ecosystem Indicators: An Ecological Economics Perspective
CTN	109.2004	*Somdeb LAHIRI*: The Cooperative Theory of Two Sided Matching Problems: A Re-examination of Some Results
NRM	110.2004	*Giuseppe DI VITA*: Natural Resources Dynamics: Another Look
SIEV	111.2004	*Anna ALBERINI, Alistair HUNT and Anil MARKANDYA*: Willingness to Pay to Reduce Mortality Risks: Evidence from a Three-Country Contingent Valuation Study
KTHC	112.2004	*Valeria PAPPONETTI and Dino PINELLI*: Scientific Advice to Public Policy-Making
SIEV	113.2004	*Paulo A.L.D. NUNES and Laura ONOFRI*: The Economics of Warm Glow: A Note on Consumer's Behavior and Public Policy Implications
IEM	114.2004	*Patrick CAYRADE*: Investments in Gas Pipelines and Liquefied Natural Gas Infrastructure What is the Impact on the Security of Supply?
IEM	115.2004	*Valeria COSTANTINI and Francesco GRACCEVA:* Oil Security. Short- and Long-Term Policies

IEM	116.2004	*Valeria COSTANTINI and Francesco GRACCEVA:* Social Costs of Energy Disruptions
IEM	117.2004	*Christian EGENHOFER, Kyriakos GIALOGLOU, Giacomo LUCIANI, Maroeska BOOTS, Martin SCHEEPERS, Valeria COSTANTINI, Francesco GRACCEVA, Anil MARKANDYA and Giorgio VICINI*: Market-Based Options for Security of Energy Supply
IEM	118.2004	*David FISK*: Transport Energy Security. The Unseen Risk?
IEM	119.2004	*Giacomo LUCIANI*: Security of Supply for Natural Gas Markets. What is it and What is it not?
IEM	120.2004	*L.J. de VRIES and R.A. HAKVOORT*: The Question of Generation Adequacy in Liberalised Electricity Markets
KTHC	121.2004	*Alberto PETRUCCI*: Asset Accumulation, Fertility Choice and Nondegenerate Dynamics in a Small Open Economy
NRM	122.2004	*Carlo GIUPPONI, Jaroslaw MYSIAK and Anita FASSIO*: An Integrated Assessment Framework for Water Resources Management: A DSS Tool and a Pilot Study Application
NRM	123.2004	*Margaretha BREIL, Anita FASSIO, Carlo GIUPPONI and Paolo ROSATO*: Evaluation of Urban Improvement on the Islands of the Venice Lagoon: A Spatially-Distributed Hedonic-Hierarchical Approach
ETA	124.2004	*Paul MENSINK*: Instant Efficient Pollution Abatement Under Non-Linear Taxation and Asymmetric Information: The Differential Tax Revisited
NRM	125.2004	*Mauro FABIANO, Gabriella CAMARSA, Rosanna DURSI, Roberta IVALDI, Valentina MARIN and Francesca PALMISANI*: Integrated Environmental Study for Beach Management:A Methodological Approach
PRA	126.2004	*Irena GROSFELD and Iraj HASHI*: The Emergence of Large Shareholders in Mass Privatized Firms: Evidence from Poland and the Czech Republic
CCMP	127.2004	*Maria BERRITTELLA, Andrea BIGANO, Roberto ROSON and Richard S.J. TOL*: A General Equilibrium Analysis of Climate Change Impacts on Tourism
CCMP	128.2004	*Reyer GERLAGH*: A Climate-Change Policy Induced Shift from Innovations in Energy Production to Energy Savings
NRM	129.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Natural Resources, Innovation, and Growth
PRA	130.2004	*Bernardo BORTOLOTTI and Mara FACCIO*: Reluctant Privatization
SIEV	131.2004	*Riccardo SCARPA and Mara THIENE*: Destination Choice Models for Rock Climbing in the Northeast Alps: A Latent-Class Approach Based on Intensity of Participation
SIEV	132.2004	*Riccardo SCARPA Kenneth G. WILLIS and Melinda ACUTT*: Comparing Individual-Specific Benefit Estimates for Public Goods: Finite Versus Continuous Mixing in Logit Models
IEM	133.2004	*Santiago J. RUBIO*: On Capturing Oil Rents with a National Excise Tax Revisited
ETA	134.2004	*Ascensión ANDINA DÍAZ*: Political Competition when Media Create Candidates' Charisma
SIEV	135.2004	*Anna ALBERINI*: Robustness of VSL Values from Contingent Valuation Surveys
CCMP	136.2004	*Gernot KLEPPER and Sonja PETERSON*: Marginal Abatement Cost Curves in General Equilibrium: The Influence of World Energy Prices
ETA	137.2004	*Herbert DAWID, Christophe DEISSENBERG and Pavel ŠEVČIK*: Cheap Talk, Gullibility, and Welfare in an Environmental Taxation Game
CCMP	138.2004	*ZhongXiang ZHANG*: The World Bank's Prototype Carbon Fund and China
CCMP	139.2004	*Reyer GERLAGH and Marjan W. HOFKES*: Time Profile of Climate Change Stabilization Policy
NRM	140.2004	*Chiara D'ALPAOS and Michele MORETTO*: The Value of Flexibility in the Italian Water Service Sector: A Real Option Analysis
PRA	141.2004	*Patrick BAJARI, Stephanie HOUGHTON and Steven TADELIS* (lxxi): Bidding for Incompete Contracts
PRA	142.2004	*Susan ATHEY, Jonathan LEVIN and Enrique SEIRA* (lxxi): Comparing Open and Sealed Bid Auctions: Theory and Evidence from Timber Auctions
PRA	143.2004	*David GOLDREICH* (lxxi): Behavioral Biases of Dealers in U.S. Treasury Auctions
PRA	144.2004	*Roberto BURGUET* (lxxi): Optimal Procurement Auction for a Buyer with Downward Sloping Demand: More Simple Economics
PRA	145.2004	*Ali HORTACSU and Samita SAREEN* (lxxi): Order Flow and the Formation of Dealer Bids: An Analysis of Information and Strategic Behavior in the Government of Canada Securities Auctions
PRA	146.2004	*Victor GINSBURGH, Patrick LEGROS and Nicolas SAHUGUET* (lxxi): How to Win Twice at an Auction. On the Incidence of Commissions in Auction Markets
PRA	147.2004	*Claudio MEZZETTI, Aleksandar PEKEČ and Ilia TSETLIN* (lxxi): Sequential vs. Single-Round Uniform-Price Auctions
PRA	148.2004	*John ASKER and Estelle CANTILLON* (lxxi): Equilibrium of Scoring Auctions
PRA	149.2004	*Philip A. HAILE, Han HONG and Matthew SHUM* (lxxi): Nonparametric Tests for Common Values in First-Price Sealed-Bid Auctions
PRA	150.2004	*François DEGEORGE, François DERRIEN and Kent L. WOMACK* (lxxi): Quid Pro Quo in IPOs: Why Bookbuilding is Dominating Auctions
CCMP	151.2004	*Barbara BUCHNER and Silvia DALL'OLIO*: Russia: The Long Road to Ratification. Internal Institution and Pressure Groups in the Kyoto Protocol's Adoption Process
CCMP	152.2004	*Carlo CARRARO and Marzio GALEOTTI*: Does Endogenous Technical Change Make a Difference in Climate Policy Analysis? A Robustness Exercise with the FEEM-RICE Model
PRA	153.2004	*Alejandro M. MANELLI and Daniel R. VINCENT* (lxxi): Multidimensional Mechanism Design: Revenue Maximization and the Multiple-Good Monopoly
ETA	154.2004	*Nicola ACOCELLA, Giovanni Di BARTOLOMEO and Wilfried PAUWELS*: Is there any Scope for Corporatism in Stabilization Policies?
CTN	155.2004	*Johan EYCKMANS and Michael FINUS*: An Almost Ideal Sharing Scheme for Coalition Games with Externalities
CCMP	156.2004	*Cesare DOSI and Michele MORETTO*: Environmental Innovation, War of Attrition and Investment Grants

CCMP	157.2004	*Valentina BOSETTI, Marzio GALEOTTI and Alessandro LANZA*: How Consistent are Alternative Short-Term Climate Policies with Long-Term Goals?
ETA	158.2004	*Y. Hossein FARZIN and Ken-Ichi AKAO*: Non-pecuniary Value of Employment and Individual Labor Supply
ETA	159.2004	*William BROCK and Anastasios XEPAPADEAS*: Spatial Analysis: Development of Descriptive and Normative Methods with Applications to Economic-Ecological Modelling
KTHC	160.2004	*Alberto PETRUCCI*: On the Incidence of a Tax on PureRent with Infinite Horizons
IEM	161.2004	*Xavier LABANDEIRA, José M. LABEAGA and Miguel RODRÍGUEZ*: Microsimulating the Effects of Household Energy Price Changes in Spain

NOTE DI LAVORO PUBLISHED IN 2005

CCMP	1.2005	*Stéphane HALLEGATTE*: Accounting for Extreme Events in the Economic Assessment of Climate Change
CCMP	2.2005	*Qiang WU and Paulo Augusto NUNES*: Application of Technological Control Measures on Vehicle Pollution: A Cost-Benefit Analysis in China
CCMP	3.2005	*Andrea BIGANO, Jacqueline M. HAMILTON, Maren LAU, Richard S.J. TOL and Yuan ZHOU*: A Global Database of Domestic and International Tourist Numbers at National and Subnational Level
CCMP	4.2005	*Andrea BIGANO, Jacqueline M. HAMILTON and Richard S.J. TOL*: The Impact of Climate on Holiday Destination Choice
ETA	5.2005	*Hubert KEMPF*: Is Inequality Harmful for the Environment in a Growing Economy?
CCMP	6.2005	*Valentina BOSETTI, Carlo CARRARO and Marzio GALEOTTI*: The Dynamics of Carbon and Energy Intensity in a Model of Endogenous Technical Change
IEM	7.2005	*David CALEF and Robert GOBLE*: The Allure of Technology: How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution
ETA	8.2005	*Lorenzo PELLEGRINI and Reyer GERLAGH*: An Empirical Contribution to the Debate on Corruption Democracy and Environmental Policy
CCMP	9.2005	*Angelo ANTOCI*: Environmental Resources Depletion and Interplay Between Negative and Positive Externalities in a Growth Model
CTN	10.2005	*Frédéric DEROIAN*: Cost-Reducing Alliances and Local Spillovers
NRM	11.2005	*Francesco SINDICO*: The GMO Dispute before the WTO: Legal Implications for the Trade and Environment Debate
KTHC	12.2005	*Carla MASSIDDA*: Estimating the New Keynesian Phillips Curve for Italian Manufacturing Sectors
KTHC	13.2005	*Michele MORETTO and Gianpaolo ROSSINI*: Start-up Entry Strategies: Employer vs. Nonemployer firms
PRCG	14.2005	*Clara GRAZIANO and Annalisa LUPORINI*: Ownership Concentration, Monitoring and Optimal Board Structure
CSRM	15.2005	*Parashar KULKARNI*: Use of Ecolabels in Promoting Exports from Developing Countries to Developed Countries: Lessons from the Indian LeatherFootwear Industry
KTHC	16.2005	*Adriana DI LIBERTO, Roberto MURA and Francesco PIGLIARU*: How to Measure the Unobservable: A Panel Technique for the Analysis of TFP Convergence
KTHC	17.2005	*Alireza NAGHAVI*: Asymmetric Labor Markets, Southern Wages, and the Location of Firms
KTHC	18.2005	*Alireza NAGHAVI*: Strategic Intellectual Property Rights Policy and North-South Technology Transfer
KTHC	19.2005	*Mombert HOPPE*: Technology Transfer Through Trade
PRCG	20.2005	*Roberto ROSON*: Platform Competition with Endogenous Multihoming
CCMP	21.2005	*Barbara BUCHNER and Carlo CARRARO*: Regional and Sub-Global Climate Blocs. A Game Theoretic Perspective on Bottom-up Climate Regimes
IEM	22.2005	*Fausto CAVALLARO*: An Integrated Multi-Criteria System to Assess Sustainable Energy Options: An Application of the Promethee Method
CTN	23.2005	*Michael FINUS, Pierre v. MOUCHE and Bianca RUNDSHAGEN*: Uniqueness of Coalitional Equilibria
IEM	24.2005	*Wietze LISE*: Decomposition of CO2 Emissions over 1980–2003 in Turkey
CTN	25.2005	*Somdeb LAHIRI*: The Core of Directed Network Problems with Quotas

(lxv) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications” organised by Fondazione Eni Enrico Mattei and sponsored by the EU, Milan, September 25-27, 2003

(lxvi) This paper has been presented at the 4th BioEcon Workshop on “Economic Analysis of Policies for Biodiversity Conservation” organised on behalf of the BIOECON Network by Fondazione Eni Enrico Mattei, Venice International University (VIU) and University College London (UCL) , Venice, August 28-29, 2003

(lxvii) This paper has been presented at the international conference on “Tourism and Sustainable Economic Development – Macro and Micro Economic Issues” jointly organised by CRENoS (Università di Cagliari e Sassari, Italy) and Fondazione Eni Enrico Mattei, and supported by the World Bank, Sardinia, September 19-20, 2003

(lxviii) This paper was presented at the ENGIME Workshop on “Governance and Policies in Multicultural Cities”, Rome, June 5-6, 2003

(lxix) This paper was presented at the Fourth EEP Plenary Workshop and EEP Conference “The Future of Climate Policy”, Cagliari, Italy, 27-28 March 2003

(lxx) This paper was presented at the 9th Coalition Theory Workshop on "Collective Decisions and Institutional Design" organised by the Universitat Autònoma de Barcelona and held in Barcelona, Spain, January 30-31, 2004

(lxxi) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications”, organised by Fondazione Eni Enrico Mattei and Consip and sponsored by the EU, Rome, September 23-25, 2004

2004 SERIES	
CCMP	*Climate Change Modelling and Policy* (Editor: Marzio Galeotti)
GG	*Global Governance* (Editor: Carlo Carraro)
SIEV	*Sustainability Indicators and Environmental Valuation* (Editor: Anna Alberini)
NRM	*Natural Resources Management* (Editor: Carlo Giupponi)
KTHC	*Knowledge, Technology, Human Capital* (Editor: Gianmarco Ottaviano)
IEM	*International Energy Markets* (Editor: Anil Markandya)
CSRM	*Corporate Social Responsibility and Sustainable Management* (Editor: Sabina Ratti)
PRA	*Privatisation, Regulation, Antitrust* (Editor: Bernardo Bortolotti)
ETA	*Economic Theory and Applications* (Editor: Carlo Carraro)
CTN	*Coalition Theory Network*

2005 SERIES	
CCMP	*Climate Change Modelling and Policy* (Editor: Marzio Galeotti)
SIEV	*Sustainability Indicators and Environmental Valuation* (Editor: Anna Alberini)
NRM	*Natural Resources Management* (Editor: Carlo Giupponi)
KTHC	*Knowledge, Technology, Human Capital* (Editor: Gianmarco Ottaviano)
IEM	*International Energy Markets* (Editor: Anil Markandya)
CSRM	*Corporate Social Responsibility and Sustainable Management* (Editor: Sabina Ratti)
PRCG	*Privatisation Regulation Corporate Governance* (Editor: Bernardo Bortolotti)
ETA	*Economic Theory and Applications* (Editor: Carlo Carraro)
CTN	*Coalition Theory Network*