



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Dissipation of Knowledge
and the Boundaries of the
Multinational Enterprise**

Valeria Gattai and Corrado Molteni

NOTA DI LAVORO 121.2005

OCTOBER 2005

KTHC - Knowledge, Technology, Human Capital

Valeria Gattai, *Bocconi University and ISESIO*
Corrado Molteni, *Università degli Studi di Milano and ISESIO*

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=840445>

Dissipation of Knowledge and the Boundaries of the Multinational Enterprise

Summary

This paper provides a theoretical formalisation of the joint-venture contract, as an alternative to Foreign Direct Investment (FDI), within a *Dissipation of Intangible Assets* framework. In a two-period model, we discuss how the threat of knowledge spillover shapes the boundaries of a Multinational Enterprise. Similarly to the theoretical findings on the FDI-licensing trade off, we show that the integrated solution is more likely to emerge when know-how easily spills over – i.e. when firms are endowed with more Intangible Assets or they belong to high tech industries. Probit estimates, from a new firm-level dataset, show that Japanese manufacturing operations in Europe are in line with these predictions.

Keywords: Dissipation, Intangible assets, FDI, joint-venture, Internalisation, Japan

JEL Classification: F23, C25, O5

We have benefited from comments from Jenny Corbett, Hiromasa Kubo, Kyoji Fukao, Gianmarco Ottaviano, Dennis Tachiki and participants in seminars at Bocconi University (Milan), Vienna University (Vienna), Hitotsubashi University (Tokyo). We are also grateful to Kentaro Ide of Jetro (Milan) for having provided the data on Japanese Foreign Direct Investment projects in Europe, Miyako Hakuta for precious help in translation, Patrizia Schiatti and Stefan Francini for excellent research assistance. Valeria Gattai acknowledges financial support from Bocconi University (Ricerca di Base). The usual disclaimer applies.

Address for correspondence:

Valeria Gattai
Bocconi University and ISES AO
Via Salasco 5, office 4
20136 Milan
Italy
E-mail: valeria.gattai@unibocconi.it

Valeria Gattai^a * and Corrado Molteni^{b*}

1. Introduction

Multinational Enterprises (MNEs) have become key players in globalised modern economies, raising a vivid debate, among policy makers and academics, about their determinants and effects.

MNEs mainly operate abroad through Foreign Direct Investment (FDI), even though we adopt a broader definition here and call “multinational” a firm that is servicing a foreign market in general; the label FDI is instead restricted to the case of wholly-owned subsidiaries (WOS), as opposed to partial ownership typical of joint-ventures (JV).

^a Bocconi University and ISES AO, Via Salasco 5, office 4, 20136 Milan (Italy).
Corresponding author: valeria.gattai@unibocconi.it

^b Università degli Studi di Milano and ISES AO, Via Mercalli 23, 20100 Milan (Italy).

* We have benefited from comments from Jenny Corbett, Hiromasa Kubo, Kyoji Fukao, Gianmarco Ottaviano, Dennis Tachiki and participants in seminars at Bocconi University (Milan), Vienna University (Vienna), Hitotsubashi University (Tokyo). We are also grateful to Kentaro Ide of Jetro (Milan) for having provided the data on Japanese Foreign Direct Investment projects in Europe, Miyako Hakuta for precious help in translation, Patrizia Schiatti and Stefan Francini for excellent research assistance. Valeria Gattai acknowledges financial support from Bocconi University (Ricerca di Base). The usual disclaimer applies.

Recent years have witnessed a dramatic increase in Foreign Direct Investment and trade in intermediate goods so that, already in the 1990s, more than 40 percent of US imports took place within the boundaries of multinational firms (Zeile 1997), and roughly one third of world trade now occurs intra-firm (Antras 2003).

The terms of “outsourcing”, “slicing up the value chain”, “disintegration of production” have been coined to label the increasing interconnection of production processes in a vertical trading chain that touches many countries, with each country specializing in a particular stage of production (Hummels et al. 2001; Feenstra 1998; Feenstra and Hanson 1996).

Vertical specialisation takes two primary forms since international operations may be organized either “internally” – in wholly-owned subsidiaries – or “externally” – under arm’s length contracts with independent local producers: we call *FDI* or *integration* the first case, while *relying on the market* or *outsourcing* refer to the second one. The decision over the boundaries of the firm – also known as *Internalisation issue* or *entry mode* - concerns the choice between keeping production internal to the firm and relying on the market.

What accounts for a Multinational Enterprise’s choice of integration versus outsourcing?

Firms’ make-or-buy decision is usually explained in terms of costs and benefits of using the market (Coase 1937; Williamson 1985). Internalising typically brings direct cost penalties, in terms of knowledge, expertise and cost advantage; however, relying on the market may be highly risky due to a number of obstacles such as technology transfer (see, among others: Teece 1977, 1986, Rugman 1986), informational asymmetries (Ethier 1986), moral hazard (Rugman 1985, 1986, Horstmann and Markusen 1996), and reputation concerns (Horstmann and Markusen 1987b). This trade off arises in the domestic, as well as in the foreign scenario, but it is likely that operating abroad exacerbates the costs of outsourcing.

Broadly speaking, we should recognize that there exist different ways of servicing a foreign market – from export to FDI, from joint-venture (JV) to licensing – each of them involving a different degree of knowledge transfer from the parent to the local firms.

While many authors mention the JV across the wide array of feasible contracts in a foreign country (see, for instance: Teece 1977, Mansfield et al. 1979; Rugman 1985, 1986; Saggi 2000; Ramachandran 1993; Glass and Saggi 1999, 2002a), to the best of our knowledge, no theoretical formalisation has been offered yet, in assessing the *Internalisation issue*.

This paper provides a first attempt at modelling joint-ventures, as an alternative to Foreign Direct Investment, within the *Dissipation of Intangible Assets* (DIA, see Section 2) framework.

In a two-period model, we discuss how the threat of knowledge spillover shapes the boundaries of the Multinational Enterprise.

Similarly to the findings on the FDI-licensing trade-off (see, among others: Ethier and Markusen 1996; Fosfuri 2000; Mattoo et al. 2001;

Markusen 1998, 2001; Fosfuri et al. 2001; Saggi 1996, 1999; Glass and Saggi 2002a), we show that integration is more likely to emerge when know-how easily spills over – i.e. when firms are endowed with more Intangible Assets (IAs) or they belong to high tech industries.

Notice that the DIA approach mainly accounts for theoretical contributions, due to the lack of firm-level data, which makes it hard to test the relevance of IAs on firm's entry mode decision.

For the purpose of the present work, we have constructed a new firm-level dataset on Japanese manufacturing activities in Europe, covering more than 600 observations of joint-venture and Foreign Direct Investment establishments. Basing on these data, Probit estimates match with our model predictions.

The paper is organized as follows: in Section 2, we provide a literature review on the *Internalisation issue*, with a particular focus on knowledge dissipation; Section 3 presents the theoretical model, while Section 4 is entirely devoted to the empirical analysis – data description, methodology and Probit estimates; Section 5 concludes and sets the future agenda.

2. Literature Review

2.1 A general overview

In the last 20 years, the literature on Multinational Enterprises has basically developed around Dunning's OLI framework, considering *Ownership*, *Location* and *Internalisation* advantages as an explanation of Foreign Direct Investment (Dunning 1993).

If MNEs were exactly identical to domestic firms, they would not find it profitable to enter the domestic market, due to the high cost of doing business abroad; since FDIs indeed exist, it must be the case that multinational firms possess some inherent advantage, easily exploitable through direct investment. *Ownership advantages* refer to some product, know-how, reputation or production process to which other firms do not have access. *Location advantages* arise when it is profitable to produce directly in the domestic market, rather than producing at home and servicing the local market via export. *Internalisation advantages* represent the most abstract concept, and relate to the boundaries of the firm.

The earliest studies on MNEs combined Ownership and Location considerations (see, for instance Helpman 1984, 1985; Markusen 1984; Helpman and Krugman 1985; Horstmann and Markusen 1987a, 1992; Brainard 1993), while the *Internalisation issue*¹ has been treated later.

¹ For extensive surveys, see Markusen (1995), Barba Navaretti and Venables (2004), Saggi (2000).

Theories on the boundaries of the Multinational Enterprise can be grouped according to three strands, namely: a) *Theories of the Firm*; b) *Agency Costs*; c) *Dissipation of Intangible Assets*.

The first approach – which we call *Theories of the Firm* - embraces recent contributions in which the firm's make-or-buy decision, at an international level, is assessed through the opening up of the "black box" - traditionally explored by the theorists of the firm – and the simultaneous endogenization of the market environment – as in the International Economics tradition. In particular, three Archetypes – the Grossman-Hart-Moore (G-H-M) treatment of hold-up and contractual incompleteness (Grossman and Hart 1986; Hart and Moore 1990), the Holmstrom-Milgrom (H-M) view of the firm as an incentive system (Holmstrom and Milgrom 1994) and the Aghion-Tirole (A-T) conceptualisation of formal and real authority in organisations (Aghion and Tirole 1997) – have been embedded in industry and general equilibrium models, offering a complete characterisation of the interactions between ownership and location, although confined to a limited menu of contractual arrangements. The boundaries of the Multinational Enterprise are shaped by a comparison between governance and transaction costs in the G-H-M framework (see, among others: Grossman and Helpman 2002, 2003; Antras and Helpman 2004; Antras 2003; Feenstra and Hanson 2003, 2004; Ottaviano and Turrini 2003), by a trade off between control and initiative in the A-T formalisation (Marin and Verdier 2002, 2003), while in Holmstrom-Milgrom-based contributions outsourcing tends to be characterized by high powered incentives whereas Integration emerges when workers earn a fixed wage and use firms' tools (Grossman and Helpman 2004; Feenstra and Hanson 2003, 2004)².

The second approach to Internalisation focuses on a different set of costs – called *Agency Costs* - incurred by the multinational (the principal) in contracting with an independent local firm (the agent). They are associated with monitoring the employees and motivating the managers in a setting in which a standard principal-agent problem arises, since the agent's actions are not perfectly observable, and the two parties' interests may not be completely aligned. Although an independent local firm may have superior information about the state of the market, it is not necessarily in her interest to reveal it to the MNE; the agent is likely to have different objectives and the imperfect observability of her actions leaves room for shirking. In Horstmann and Markusen (1996) sales are a function of the agent's effort plus a random component, known to the local firm, but not to the principal. Therefore the multinational cannot distinguish whether a low level of sales is related to low effort by the agent or to a bad state of the market. If designing an incentive scheme, to induce appropriate agent's effort, is too costly for the multinational firm, it may opt for an integrated solution.

² For a survey see Gattai (2005).

Another major motive for Internalisation arises from the risk of *Dissipation of Intangible Assets*, while contracting abroad. Intangible Assets may consist either of a stock of goodwill – associated with the *reputation* for product quality – or of superior *knowledge* – related, for instance, to the production process or some managerial techniques.

Suppose that a Multinational Enterprise, renowned for its product quality, has to decide whether to operate abroad via FDI or relying on the market. In Horstmann and Markusen (1987b), exporting, setting up a wholly owned-subsiary and licensing are considered alternative entry modes. The key argument, here, is that a foreign party may have too few incentives to maintain the MNE's *reputation* high, although benefiting from its strong brand image. This implies that any licensing agreement must provide the licensee with the adequate incentives to enhance the multinational's reputation. When providing incentives of this sort becomes too costly for the foreign firm, it decides to internalise production, thus avoiding the risk of dissipating reputation. *Knowledge* is another key resource that a Multinational Enterprise may wish to employ in its foreign activities. This is quite a particular good: some types of knowledge are very difficult to transfer outside the boundaries of the firm in which they originate, while some others easily become available to third parties, once revealed. The first case refers to several forms of know-how that are, to some extent, embodied in the human capital of the employees. Due to its tacit component, it can be difficult to transfer knowledge³ without direct personal contacts between the contracting parties, lengthy demonstrations and constant involvement. The second case relates more specifically to technology, as an Intellectual Property, i.e. an asset covered by Intellectual Property Rights (IPRs) that define the extent to which their owners may exclude others from activities that infringe or damage the property; the need for IPRs arises from the fact that a piece of potentially valuable information would otherwise suffer from overuse - since access to it is free – therefore limiting the incentives to innovate⁴.

Firms' Intangible Assets have a joint-ness or “public good” nature; they can be supplied to additional production facilities at very low costs, thus posing serious questions on the most appropriate mode of foreign production.

Notice that *dissipation*, in this framework, entails different meanings, depending on the asset under consideration: in the case of knowledge – human capital and technology – a spillover mechanism is likely to help the local counterpart in taking over production secrets, copy final

³ The intrinsic costs of knowledge transfer by MNEs have been empirically investigated in Caves (1974), Teece (1977), and further discussed and documented in Teece (1986), Davidson and Mc Fetridge (1984), Ramachandran (1993), Glass and Saggi (1999).

⁴ Under the classical intellectual-property doctrine, we distinguish between two forms of property: industrial property and artistic & literary properties; assets of the first type are usually protected through patents, trademarks, breeder's rights and trade secrets, while artistic & literary properties can be covered by copyrights. For an extensive review of these practices, see Maskus 1998.

goods and eventually start a rival firm on the basis of the “stolen” asset; in the case of reputation, dissipation occurs because the local counterpart benefits from the MNE’s brand image, but puts no effort in maintaining and enhancing it. The risk of dissipating any of the firm’s key assets provides a motive for keeping production internal rather than relying on the market.

For the purpose of the present work, we move within the DIA framework and, while abstracting from any reputation consideration, we focus only on knowledge, as an asset that is likely to be dissipated during foreign operations. Having provided a basic insight on the topic, it is worth going into the details of the existing literature, which we briefly discuss below. This provides the natural introduction to our own contribution.

2.2 Dissipation of knowledge

Ethier and Markusen (1996) develop a two-period model in which a firm decides whether to internalise production in a foreign country or to operate through arm’s length agreements. Working within firm’s boundaries, in a wholly-owned subsidiary, involves a fixed cost of doing business in an unknown market, but guarantees lower manufacturing costs; export entails no fixed cost, but higher manufacturing costs; under a licensing contract, production takes place in the host market but outside the firm’s boundaries, posing the threat of knowledge dissipation to a licensee that might be capable of producing alone in the second period, through the technology learnt in the first one. As a result, MNEs are more likely to emerge, the more important the Intangible Assets, the lower the discount factor between the first and the second period, the larger the wage gap between the source and the host country and the more concentrated the recipient market.

In Fosfuri (2000), a firm endowed with a new technology has to choose an entry mode among export, licensing and direct investment in order to serve a foreign market. The vintage of the transferred technology is endogenized and the model allows for imitation by the licensee, while subsidiary production and exports are assumed to avoid imitation but entail higher costs for the innovating firm. Notice that the MNE can strategically use the vintage of its technology in order to deter imitation by the local firm; as a result, transfers to affiliates might be of later vintage relative to technologies sold to independent local firms.

Mattoo et al. (2001) develop a model of FDI in which a foreign enterprise can choose between direct entry – what we call Integration – and the acquisition of an existing domestic firm. The Internalisation decision has a direct impact on the local market degree of competition: if we assume that there exists only one domestic firm, setting up a wholly-owned subsidiary results in a Cournot duopoly, while partnering with a local enterprise corresponds to a monopoly⁵.

⁵ In the paper, they also make a more general case in which the local market is populated by n firms. Under this assumption, the choice of FDI results in a $n+1$ firms

Production costs are the same for both the foreign and the local firm and technology transfer is assumed to be cost reducing. Prohibitively high or particularly low technology transfer costs generate a divergence between the MNE and the local government most preferred mode of entry, while for intermediate levels, the preferences are aligned and there is no need for policy intervention.

The debate on the effects of Foreign Direct Investments on the host country is at the core of Markusen (1998, 2001)'s two-period model, where contract enforcement – in the form of IPR protection – is shown to influence FDI inflow to developing countries and host countries welfare⁶. While stronger IPR protection leaves the multinational better off, the host country effects are more ambiguous, depending on whether local production would occur even without contract enforcement or not. Differently from the other models in which keeping production within firm's boundaries provides a solution against asset dissipation, here the multinational may find it optimal to export, instead of investing, in order to protect its technology. This result comes from the specific modelling of the FDI case, very close to the licensing contract designed elsewhere.

A similar view is taken in Fosfuri et al. (2001) in analysing the spillover effects of FDI on the whole population of local firms⁷ and their interactions with the entry mode decision of a Multinational Enterprise, endowed with a superior technology. In this model, export comes without any knowledge dissipation, while FDI involves technology transfer – as in Markusen (1998, 2001) - through the training of a local worker.⁸ According to this framework, the MNE and the local firm do not interact by means of a partnership agreement, but in the run for the trained worker. In solving the model, the authors show that technological spillovers do not occur if the joint profit of the MNE plus the local firm is highest when the multinational

Cournot game, while operating with a domestic firm collapses in a n firms Cournot market structure.

⁶ Transferring technology in the absence of patent protection poses notable risks to an innovating firm in also in Vishwasrao (1994). As an assumption of the model, production of final goods can take place only in two countries of the world, denoted by North and South; a Northern firm has invented and patented a new good, which it wants to introduce to the Southern market, via licensing, export or FDI; IPRs are protected in the North, but not in the South; technology transfer may occur, under a licensing agreement, through imitation. Basing on a different set of theoretical tools, Vishwasrao (1994) incorporates this asymmetric information in a screening game where the Northern enterprise attempts to find a contract that provides information about the local firm's ability to imitate. In choosing between licensing and Foreign Direct Investment, foreign firms trade off the benefit of lower costs with the risk of dissipating knowledge through technology transfer.

⁷ This is a notable difference, with the respect to the literature reviewed in this Section, in that it deals with spillover effects to the whole population of domestic firms, rather than on the single firm engaged in the licensing agreement together with the multinational.

⁸ Here they are interested in a particular kind of spillover, based on workers mobility. Other sources of spillover are backward and forward linkages (Lall 1980, Rodriguez-Clare 1996), and demonstration effects from foreign affiliates to local firms (Mansfield and Romeo 1980, Blomstrom 1986).

can use the technology as a monopolist; moreover, they find that a low level of absorptive capability by the local firm reduces the potential for FDI generating spillover⁹.

In Saggi (1996), the choice of integration, relative to licensing, is motivated by the wish to protect the MNE's key resources not only in the domestic market, but in all the markets in which it potentially competes with a local firm, adding an element of novelty to the existing literature. As a result, FDI becomes a more preferable option if competition from a licensee in one market erodes the licensor's profit in other markets, whereas licensing is chosen if competition can be prevented.

This analysis is extended in Saggi (1999)'s two-period duopoly model, in order to study the impact of the entry mode choice on the incentives for innovation. Relative to licensing, Foreign Direct Investment limits technology spillovers, but dissipates more rents. As a result, the domestic firm's technological development receives the strongest boost if the foreign firm were to follow initial licensing and FDI; however, since the foreign firm's profits under FDI vary inversely with the quality of the domestic firm's technology, it does not choose the selected combination of entry modes, leaving room for policy intervention.

A similar point is made in Glass and Saggi (2002a) where the *Internalisation issue* – FDI versus licensing – is shown to play a role in determining the rate and magnitude of innovation. This paper entails an interesting difference, with respect to the related literature, since the licensing contract is characterized by profit sharing between the foreign and the local firm, rather than having the licensee paying a fee to the licensor and retaining total revenues. In taking the Internalisation decision, MNEs thus trade off the cost disadvantage of operating alone, with the profit retention by the local firm. When the mode choice is fixed, a subsidy to multinational production - by reducing the cost disadvantage of producing abroad - increases the rate, but decreases the size of innovation; when the mode can switch, the rate and level of innovation both increase, provided that the subsidy is not too large¹⁰.

To the best of our knowledge, studies on the boundaries of the Multinational Enterprise, inspired by the *Dissipation of Intangible Assets*, basically cover theoretical contributions. The reason for that is

⁹ Technology transfer arising from labour movements is also at the core of Glass and Saggi (1999)' duopoly model. By assumption, all the workers employed by a Multinational Enterprise acquire knowledge of its superior technology; being hired by a local firm, those workers partially dissipate the MNEs intangible assets. In order to prevent workers from leaving the company, the Multinational Enterprise pays a wage premium if local firms are sufficiently disadvantaged and/or there are sufficiently many local firms.

¹⁰ A different result is obtained in Glass and Saggi (2002b)' product cycle model, stronger IPR protection – through the imitation disincentive and resource wasting effects – decreases both innovation and FDI, because multinational firms feel more secure from imitation.

perhaps the difficulty in finding firm-level datasets in order to test the theoretical priors.

A few exceptions are given by Mansfield et al. (1979), Mansfield and Romeo (1980) and Smith (2001), where entry mode and technology transfer decisions by US multinationals are analysed.

Mansfield et al. (1979), Mansfield and Romeo (1980) find that knowledge is more likely to be transferred internally when it is relatively deep and new, since losses from spillover are potentially higher.

In Smith (2001)'s gravity model, the impact of IPR protection is shown to play a role in shaping the servicing choice of US multinationals, within an OLI framework which allows for simultaneity of export, FDI and licensing decisions. As long as IPR protection becomes stronger, by increasing the ownership advantage, it prompts a rise in bilateral exchanges of any kind; moreover, by conferring location advantages, it increases FDI and licensing relative to export, and by strengthening internalisation advantages, it pushes towards licensing.

From the papers reviewed above, it should stand clear that the literature on the *Internalisation issue*, based on the DIA approach, has focused solely on licensing and export, as an alternative to Foreign Direct Investment.

Nonetheless, we should recognize that there exist various ways of servicing a foreign market – export, FDI, joint-venture and licensing – which can be classified according to their knowledge transfer, from the safest arrangement of export, that secures knowledge inside the firm and the country where it originates, to the most risky case of licensing, through which knowledge is transferred both outside the source firm and the source country. Foreign Direct Investment and joint-venture represent two intermediate steps in this continuum, the former having knowledge inside the source firm but transferred outside the source country, the latter being very close to the licensing case, except for the fact that the multinational participates in final good production together with the local partner.

While many authors mention the JV across the wide array of feasible contracts in a foreign country (see, for instance: Teece 1977, Mansfield et al. 1979; Rugman 1985, 1986; Saggi 2000; Ramachandran 1993; Glass and Saggi 1999, 2002a), to the best of our knowledge no theoretical formalisation has been offered yet, in a DIA framework.

In our view, this lack represents one of the main shortcomings of the related literature, given the significant and broadly documented empirical relevance of joint-ventures (see, among others: Andersen and Gatignon 1986; Gomes Casseres 1989; Hennart 1991; Agarwal and Ramaswami 1992; Erramilli 1996; Buckley and Casson 1996; Smarzynska 2000; Desai et al. 2002).

The model presented in Section 3 is an attempt at filling this gap, considering a foreign firm's decision of FDI versus JV, grounded on the risk of dissipating knowledge.

3. The model

In a setting similar to Barba Navaretti and Venables (2004), consider a simple economy in which a multinational firm is willing to produce a final good abroad; the MNE has to decide whether to serve the foreign market via FDI or in joint-venture with a local firm¹¹.

Final good production requires two activities, x and y , which we call *input manufacturing* and *processing* for expositional convenience; technology is linear, i.e. firms employ 1 unit of input to obtain 1 unit of output; x and y are normalized to 1 for simplicity, making sales revenues R constant.

Notice that these activities can be performed either by the multinational (through its subsidiary) or by the local enterprise, but the two firms are not equally efficient, since the MNE has an advantage in processing final goods, while the other party does better in input manufacturing¹².

To capture this idea, we assume that the per unit cost of x is a ($a > 0$) if this activity is performed by the local firm, aa ($a \geq 1$) if it is, instead, due to the multinational, while the per unit cost of processing is c ($c > 0$) or γc ($\gamma \geq 1$) depending on whether the MNE or the local firm acts respectively.

As in (Ethier and Markusen 1996; Saggi 1999; Fosfuri 2000; Markusen 2001), the time horizon covers two periods, which we denote by subscripts 1 and 2; *MNE* and *local* stand for the multinational and the local firm respectively; in principal, we allow for different discount factors for the foreign ($\delta \geq 0$) and the domestic ($\tilde{\delta} \geq 0$) firm.

Operating through Foreign Direct Investment means that the multinational enterprise keeps production within its boundaries, by means of a local subsidiary; in this case it is the same firm that performs both input manufacturing and assembly.

The very essence of a joint-venture agreement lays, instead, in the partners' complementary skills: in this case, each party performs only the activity in which it has a relative advantage, and sales revenues are shared with weights θ ($0 < \theta < 1$) for the MNE and $(1 - \theta)$ for the local firm, in the first period and $\bar{\theta}$ ($0 < \bar{\theta} < 1$), $(1 - \bar{\theta})$ in the second period¹³.

¹¹ In order to keep the formalisation as simple as possible, we do not include set up costs in the foreign market, and we abstract from any matching consideration between the MNE and the local company, taken as given the pair of partners.

¹² This assumption is broadly consistent with the Japanese experience in Europe, presented in Section 4. Empirical evidence shows that Japanese multinationals tend to contribute know-how and technology while relying on their local partner for input supply (Jetro 2004a).

¹³ Our modelling of the joint-venture contract is quite close to Ramachandran (1993), Mattoo et al. (2001), Glass and Saggi (2002a). Notice that the FDI/joint-venture decision does not necessarily coincide with the Greenfield/Acquisition one. In particular joint-ventures differ from Acquisitions because the local firm is not "bought" by the MNE, and the two enterprises do not "merge" into a new economic entity: they simply make a temporary cooperation agreement in order to produce final

Consider, first, the FDI case.

Equation (1) gives the present value of the MNE profit when final good production is internalised.

$$\Pi_{MNE}^{FDI} = R_1 - a\alpha - c + \frac{R_2 - a\alpha - c}{1 + \delta} \quad (1)$$

By operating alone, the Multinational Enterprise benefits from keeping entire revenues R_1 and R_2 in both periods, but it entails higher costs in input manufacturing, with respect to the local firm.

Consider now the present value of the two firms' profits under the JV agreement - namely Π_{MNE}^{JV} for the MNE and Π_{local}^{JV} for the local firm:

$$\Pi_{MNE}^{JV} = \theta R_1 - c + \frac{\bar{\theta} R_2 - c}{1 + \delta} \quad (2)$$

$$\Pi_{local}^{JV} = (1 - \theta) R_1 - a + \frac{(1 - \bar{\theta}) R_2 - a}{1 + \tilde{\delta}} \quad (3)$$

Notice that, in a joint-venture, the two parties operate very close to each other, which allows for a knowledge spillover from the MNE to the local firm during the first period: having access¹⁴ to the multinational intangible assets, the partner learns about the processing procedure so that her cost disadvantage γ drops from a prohibitively high value in the first period to a level $\tilde{\gamma}$ in the second one, with $\gamma > \tilde{\gamma} \geq 1$.

It follows that the local firm has the option of breaking up the JV contract at the beginning of the second period, and start a rival firm, with the “stolen” know-how; such an option does not exist for the Multinational Enterprise, this asymmetry depending on the fact the it has just a poor knowledge of the local market, with respect to the partner¹⁵.

In case of defection – denoted by superscript d - the local firm makes profit:

$$\Pi_{local}^d = (1 - \theta) R_1 - a + \frac{R_2 - a - \tilde{\gamma} c}{1 + \tilde{\delta}} \quad (4)$$

goods together. This is the reason why the local partner may deviate in the second period and eventually start a rival firm, as it is explained below, in Section 3.

¹⁴ Although licensing provides a more direct channel for technology transfer - because the licensor has to provide the licensee with the whole set of production tools – working side by side in a joint-venture similarly allows the local firm to learn from the MNE.

¹⁵ In other DIA papers, this asymmetry is captured by a fixed cost of operating abroad (see, for instance: Ethier and Markusen 1996; Saggi 1996; Fosfuri 2000; Fosfuri et al. 2001).

while the multinational, having no other option, earns zero.

It is clear that the MNE can prevent this defection by setting $\bar{\theta}$ such that the local firm second period profit, under the JV agreement, is not lower than its profit in starting a rival firm, i.e.:

$$(1 - \bar{\theta})R_2 - a \geq R_2 - a - \tilde{\gamma}c \quad (5)$$

This is the Incentive Compatibility Constraint, which yields the following condition:

$$\bar{\theta} \leq \frac{\tilde{\gamma}c}{R_2} \quad (6)$$

The multinational firm chooses to integrate, rather than partnering if its profits Π_{MNE}^{FDI} from (1) are greater than Π_{MNE}^{JV} from (2), evaluated at the incentive compatible value of the second period share $\bar{\theta} = \frac{\tilde{\gamma}c}{R_2}$:

$$\theta R_1 - c + \frac{\bar{\theta}R_2 - c}{1 + \delta} < R_1 - a\alpha - c + \frac{R_2 - a\alpha - c}{1 + \delta} \quad (7)$$

After some re-arranging, equation (7) gives the following condition:

$$R_1(1 - \theta) - a\alpha + \frac{R_2 - a\alpha - \tilde{\gamma}c}{1 + \delta} > 0 \quad (8)$$

where θ is an endogenous variable yet to be determined. Suppose that the multinational invites local firms to bid for the first period share: under this assumption θ results from the Participation Constraint, $\Pi_{local}^{JV} = 0$:

$$(1 - \theta)R_1 - a + \frac{\left(1 - \frac{\tilde{\gamma}c}{R_2}\right)R_2 - a}{1 + \tilde{\delta}} = 0 \quad (9)$$

Solving (9) for $(1 - \theta)$, we obtain:

$$(1 - \theta) = \frac{a}{R_1} - \frac{\left(1 - \frac{\tilde{\gamma}c}{R_2}\right)R_2 - a}{(1 + \tilde{\delta})R_1} \quad (10)$$

By substituting (10) in (8), after some re-arranging, equation (11) gives the condition for the multinational to internalise:

$$(\delta - \tilde{\delta})(R_2 - \tilde{\gamma}c) > a[\alpha(1 + \tilde{\delta})(2 + \delta) - (1 + \delta)(2 + \tilde{\delta})] \quad (11)$$

In choosing between FDI and JV, the multinational trades off the benefits of protecting its Intangible Assets against the threat of dissipation, with the efficiency loss in terms of input manufacturing.

From (11) we see that, if $\delta = \tilde{\delta}$, the MNE always chooses joint-venture rather than FDI. Indeed, it is ready to retain a low share $\bar{\theta}$ of sales revenues in the second period - satisfying the Incentive Compatibility Constraint - because this can be fully recouped by setting a high share θ in the first one - according to the Participation Constraint. Since the multinational is able to extract all surplus from the partner, it chooses to operate in joint-venture, to keep production efficiency high.

There are however circumstances in which the MNE is not able to extract the full surplus. This happens, for instance, when the two firms have different discount factors: if $\delta < \tilde{\delta}$, the multinational puts more weight on the future than the local partner, and FDI may occur. Since the local firm discounts the second period profit more heavily, it is ready to accept a JV contract only if its first period share θ is sufficiently high, which implies a loss for the MNE. Therefore, integration is more likely the larger the difference in discount factors between the actors.

Moreover, from equation (11), we see that the smaller the multinational cost disadvantage α and the smaller $\tilde{\gamma}$ - meaning a higher degree of knowledge spillover from the foreign to the local firm - the more appealing the FDI solution, confirming the empirical evidence of Mansfield et al. (1979), Mansfield and Romeo (1980).

At a broader level, we can conclude that Foreign Direct Investment, induced by the threat of knowledge dissipation, is more likely to emerge when know-how easily spills over - namely in high tech industries - when MNEs are able to borrow on capital markets at a lower cost - i.e. a higher discount factor - and when host countries governments do not provide strong IPR protection or the local counterpart is capable of fast learning.

Notice that these priors are broadly consistent with those derived for licensing (see Section 2) and they match with the empirical evidence on the choice between joint-venture and FDI (see, among others: Andersen and Gatignon 1986; Gomes Casseres 1989; Hennart 1991; Agarwal and Ramaswami 1992; Erramilli 1996; Buckley and Casson 1996; Smarzynska 2000; Desai et al. 2002).

4. Empirical Analysis

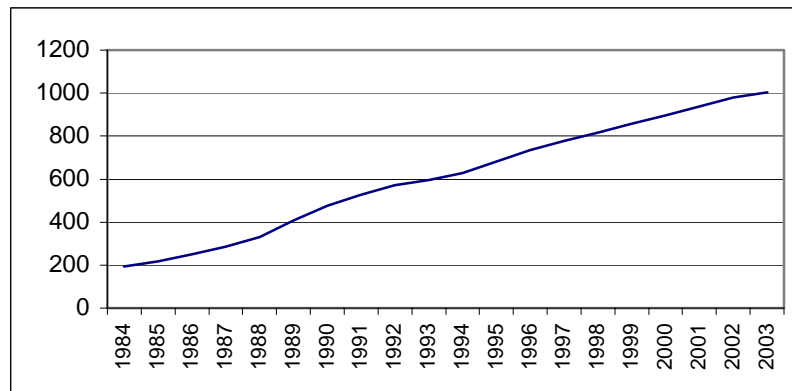
In this Section, we empirically assess the choice of FDI versus joint-venture of Japanese multinational companies in Europe, by means of a new firm-level dataset, constructed by the authors. The discussion is organized in three steps: first we present the data (4.1) and the methodology (4.2), and then we comment the empirical findings (4.3) and their matching with the theoretical predictions, derived in Section 3.

4.1 Data

Since the 1970s, Japanese Foreign Direct Investment has shown a steady trend upwards, driven by limited domestic opportunities and the need to seize openings abroad. The great boost came during the post Plaza agreement bubble period: with the JPY appreciating 46% between 1985 and 1987, FDI almost tripled (Blair and Freeman 2004). Yet, this trend continued even in the 1990s, notwithstanding the collapse of the bubble and the domestic stagnation.

As far as Japanese direct investment to EU15 is concerned, the fiscal year 2003 (April-March) has registered a clear fall in value terms, edging down 20% to 12,034 USD (Jetro 2004b), however the number of manufacturing affiliates in the European region¹⁶ is still growing (see Figure 1).

Figure 1: Number of Japanese manufacturing affiliates in Europe (1984-2003)



Source: Our elaboration from Jetro (2004a)

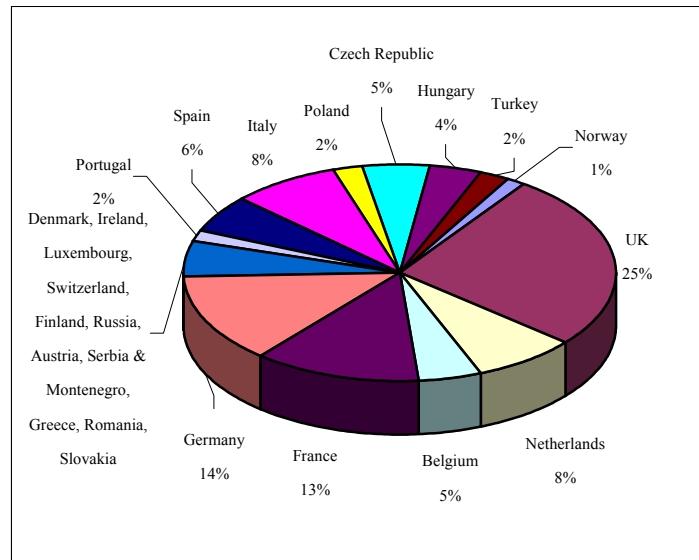
For the purpose of the present work, we have built a new firm-level dataset, covering the whole population of Japanese Multinational Enterprises, engaged in manufacturing activities within Europe - either operating alone (FDI) or in joint-venture with a local partner.

This sample, accounting for more than 600 observations, is the result of a merger between the *Kagai Shinshutsu Kigyō Soran* (2004) – which gives the list of Japanese investors all over the world – and the

¹⁶ By Europe, we mean the countries of interest for our study, namely those depicted in Figure 2.

Kaisha Shikiho (2004) – which provides detailed information on all the Japanese corporations listed on the First Sections of Tokyo, Osaka, and Nagoya stock exchanges. Figure 2 gives the geographical distribution of Japanese activities.

Figure 2: Geographical distribution of Japanese operations in Europe



More than 80% of the operations take place within the EU15 countries, especially across the UK, Germany and France; around 60% of the factories are located in Euro currency-countries.

With respect to our previous discussion on the *Internalisation issue*, it is worth noticing that FDI is the most preferred mode of entry of Japanese companies in Europe, followed by majority joint-ventures (see Figure 3).

Independently of the contractual arrangement, the large majority of the operations were settled in the 1990-2000 period (47%), or between 1980 and 1990 (29%), while investments before 1970 account for a very few cases (see Figure 4).

Figure 3: Japanese share in the European affiliate

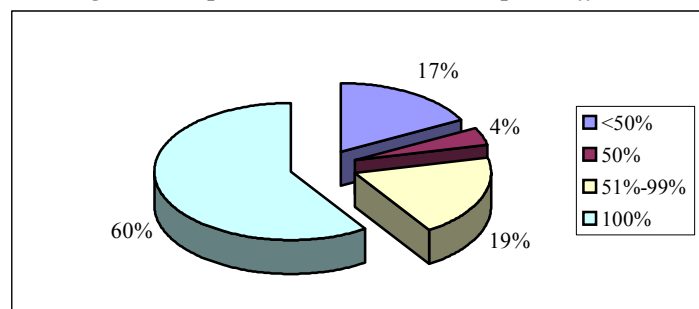
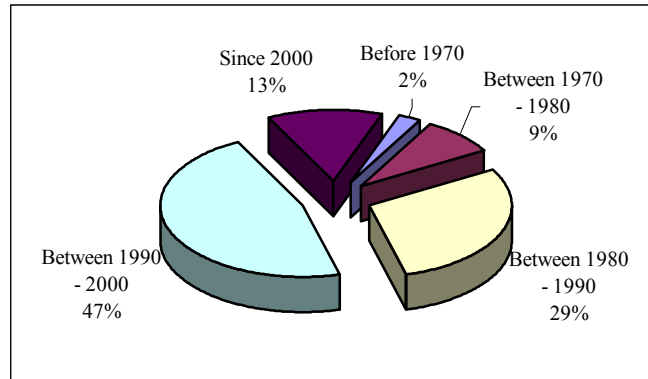


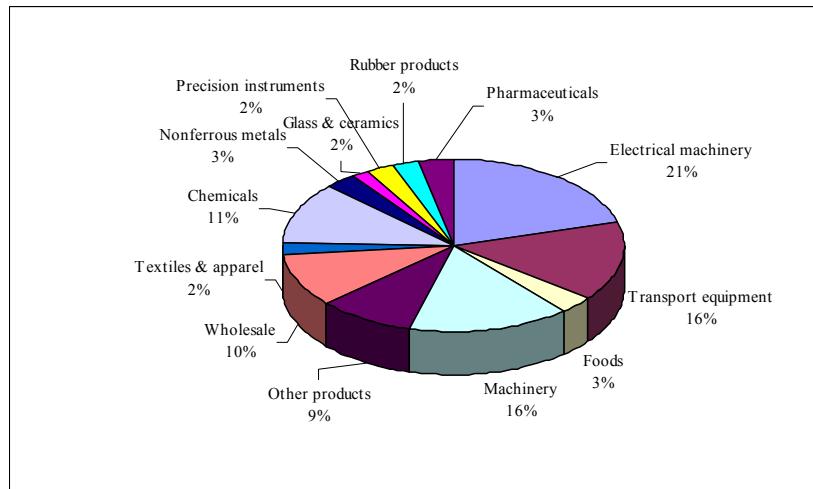
Figure 4: Establishment of the Japanese-invested affiliate in Europe



Japanese companies in our sample are usually large conglomerates, with more than 1000 employees (72%), average sales around 17.400 billions USD and massive investments in Research & Development (R&D)¹⁷.

They belong to the Electrical Machinery (21%), Machinery (16%), and Transport Equipment (16%) industries the most, followed by Chemicals (11%), Wholesale (10%), Pharmaceuticals (3%), Foods (3%), Precision Instruments (2%) and Rubber Products (2%), as depicted in Figure 5¹⁸.

Figure 5: Industry of the Japanese investors



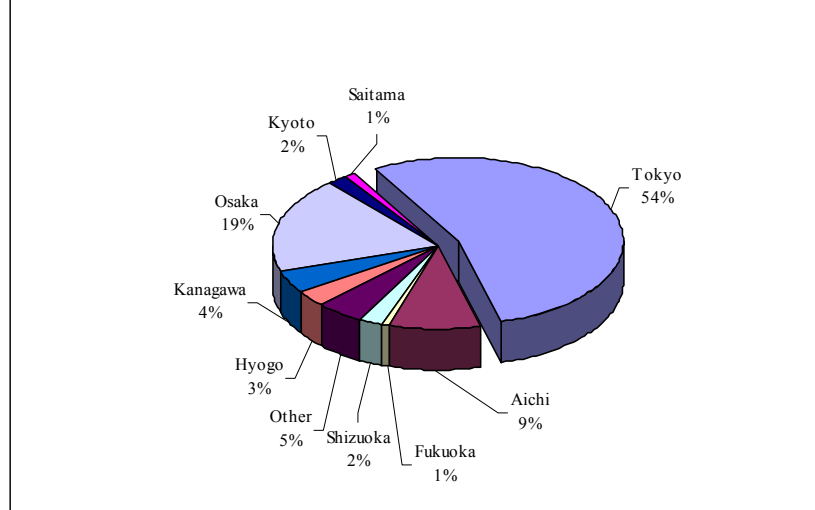
This distribution is not surprising, since Japanese firms are renowned to simply fall back on what they know best when they make an initial investment overseas (Blair and Freeman 2004).

¹⁷ Average R&D expenditure in 2003 was 650 millions USD.

¹⁸ Industries classification is taken from "Kaisha Shikiho" (2004) ("Japan Company Handbook Quarterly").

As far as the Prefecture of origin is concerned, we see from Figure 6 that the large majority comes from Tokyo (54%), followed by Osaka (19%) and Aichi (9%).

Figure 6: Prefecture of origin of the Japanese investors



4.2 Methodology

Based on the data described above, we regress the Internalisation decision – FDI versus joint-venture – of Japanese multinationals in Europe, within the DIA framework sketched in Section 3.

The empirical specification is as follows:

$$FDI = F \alpha + C \sigma + \varepsilon \quad (12)$$

$(nx1) \quad (nxm) (mx1) \quad (nxk) (kx1) \quad (nx1)$

FDI is the $(n \times 1)$ dependent variable vector, whose elements take the value of 1 in case of wholly-owned subsidiary, 0 in case of joint-venture.

Explanatory variables are of two types: F is a (nxm) matrix including of \underline{F} irm-level regressors; C is a (nxk) matrix containing host \underline{C} ountry characteristics; α and σ are the vectors of parameters associated to firm and country variables respectively, and ε denotes the error term.

Notice that, within F , we distinguish between *core* and *control* variables: core variables are those measuring Japanese firms' Intangible Assets¹⁹, over which priors have already been derived; control variables denote other firm-level characteristics that may play a role in shaping the Internalisation decision.

As a proxy for technology, alternative indicators are employed: $R\&D$ refer to the firm's expenses in Research & Development; $R\&D/sales$

¹⁹ Intangible Asset, here, means *knowledge*, as in the model described in Section 3.

gives R&D expenditure as a fraction of the firm's sales; *R&D_average* is the average value of R&D expenditure in the industry; *R&D_relative* measures firm's R&D expenditure relative to the industry mean, to capture technological leaders (as in Smarzynska 2000, 2002; Desai et al. 2002, to mention just a few).

All these variables refer to the consistency of the parent company's Intangible Assets, so we expect a positive sign, basing on the model described before: Internalisation, induced by the threat of knowledge dissipation, is more likely to emerge when know-how easily spills over – i.e. when firms are endowed with more technology or they belong to high tech industries.

Control variables include sales (*SALES*, as in Blomstrom and Zejan 1991; Meyer 1998; Smarzynska 2000, 2002); the average age of the employees in the parent company (*AGE*); the year of the establishment in Europe (*YEAR_EU*), the industry – *TRANSPORT*, *OTHER*, *WHOLESALE*, *NON FERROUS*, *GLASS* and *INSTRUMENTS* are dummy variables taking the value of 1 if the Japanese company belongs to Transport Equipment, Other Products, Wholesale, Non Ferrous Metals, Glass & Ceramics and Precision Instruments, respectively; to account for possible influence by the Prefecture of origin, *KANAGAWA* is a dummy equal to 1 if the parent firm is located in Kanagawa Prefecture, 0 elsewhere.

Table 1: Variables description

<i>Variable</i>	<i>Description</i>
<i>FDI</i>	Dummy variable, 1 if FDI, 0 if JV
<i>R&D</i>	R&D expenditure of the parent company (millions USD)
<i>R&D/SALES</i>	R&D expenditure over sales of the parent company
<i>R&D_average</i>	Mean R&D expenditure in the parent company industry (millions USD)
<i>R&D_relative</i>	R&D expenditure of the parent company over its industry mean
<i>SALES</i>	Sales of the parent company (billions USD)
<i>AGE</i>	Employees average age in the parent company
<i>EU15</i>	Dummy variable, 1 if the destination country belongs to EU15
<i>EURO</i>	Dummy variable, 1 if the destination country currency is Euro
<i>YEAR_EU</i>	Year of establishment in Europe
<i>KANAGAWA</i>	Dummy variable, 1 if the Prefecture of origin is Kanagawa
<i>TRANSPORT</i>	Dummy variable, 1 if the parent company belongs to the Transport Equipment industry
<i>OTHER</i>	Dummy variable, 1 if the parent company belongs to the Other Product industry
<i>WHOLESALE</i>	Dummy variable, 1 if the parent company belongs to the Wholesale industry
<i>NON FERROUS</i>	Dummy variable, 1 if the parent company belongs to the Non Ferrous Metals industry
<i>GLASS</i>	Dummy variable, 1 if the parent company belongs to the Glass & Ceramics industry
<i>INSTRUMENTS</i>	Dummy variable, 1 if the parent company belongs to the Precision Instruments industry
<i>R&D/GDP</i>	R&D as percentage of GDP in the host country
<i>POP</i>	Population of the host country (millions)
<i>CORRUPT</i>	Corruption Index of the host country (Kaufmann et al. 2003), ranging from 0 to 5, higher values meaning more corruption

<i>B&F</i>	Banking & Finance Index of the Host Country, as a variant of the overall Economic Freedom Index (Gwartney and Lawson 2004). It measures the relative openness of a country's banking and finance system. Lower values mean more freedom
<i>TRADE</i>	Degree of openness of the host country, measured by (Import+Export)/GDP (billions, GDP measured in USD)

Table 2: Correlation matrix of the core variables

	<i>R&D</i>	<i>R&D/SALES</i>	<i>R&D_relative</i>	<i>R&D_average</i>
<i>R&D</i>	1.0000			
<i>R&D/SALES</i>	0.2543	1.0000		
<i>R&D_relative</i>	0.4121	0.1641	1.0000	
<i>R&D_average</i>	0.5473	0.4620	0.0155	1.0000

As far as country variables are concerned, we include *TRADE*, as a measure of the host market degree of openness (as in Smith 2001; Smarzynska 2002), *POP*, describing the host country population (as in Smarzynska 2002, Smith 2001); a corruption index *CORRUPT* and a variant of the economic freedom index *B&F* (as in Smarzynska 2002); two dummy variables are also constructed to indicate whether or not the destination country belongs to the EU15 (*EU15*), and whether or not the destination country has Euro as its national currency (*EURO*); *R&D/GDP* expresses R&D as a percentage of the GDP in the host economy.

Table 1 provides a summary description of the variables included in Equation (12), while Table 2 displays the correlation matrix of the core variables.

Given the binary nature of the dependent variable *FDI*, regressions are carried out within a probit framework.

4.3 Results

Probit estimates are shown in Table 3.

Reminding the theoretical priors, it is worth noticing that all the core variables are significant with the expected sign in every specification; this provides quite a good matching between the theory and the data.

In particular, moving from the simplest specifications on the left – where *FDI* is regressed only on core-type variables – to the richer specifications on the right – where control variables are also included – we see that as long as the Japanese firms' Intangible Assets increase, the probability of internalising production, rather than operating in joint-venture, increases as well. *R&D*, *R&D/SALES*, *R&D_average*, *R&D_relative* all display the positive expected sign, meaning that wholly-owned subsidiaries are more likely to be settled by Japanese companies operating in high tech sectors, investing a lot in Research & Development, and being technological leaders in their respective sectors, as in Smarzynska (2000).

As in (Blomstrom and Zejan 1991; Meyer 1998), *SALES* turn out to be significant, with a negative sign, meaning that larger enterprises tend

to share ownership with a European partner, rather than operating alone. Furthermore, we find that investing within the EU15 encourages FDI, while investing in Euro countries pushes towards joint-ventures; more recent establishments are associated with a stronger preference for JV. Among our dummy control variables, *KANAGAWA*, *TRANSPORT*, *WHOLESALE*, *GLASS* and *NON FERROUS* are significant and negative, while *INSTRUMENT* and *OTHER* display a positive sign, providing empirical evidence on the sectors in which FDI are more likely to emerge.

As far as country variables are concerned, Table 3 shows that the larger the *R&D/GDP* ratio, the higher the degree of openness and transparency of the bank and finance sector, and the more corrupted and less populated the host country, the higher the preference for FDI confirming that partners are more useful in countries with less friendly investment climate, in lines with previous studies²⁰.

Table32: Probit estimates²¹

	<i>FDI</i>	<i>FDI</i>	<i>FDI</i>	<i>FDI</i>	<i>FDI</i>
<i>R&D</i>	0.162 (0.010)** [0.060]	0.19 (0.01)** [0.07]	0.19 (0.014)** [0.07]	0.17 (0.014)** [0.06]	0.43 (0.002)** [0.162]
<i>R&D/SALES</i>	0.91 (0.000)** [0.379]	0.71 (0.002)** [0.267]	0.67 (0.004)** [0.252]	0.54 (0.017)** [0.204]	
<i>R&D_average</i>					0.25 (0.07)** [0.093]
<i>R&D_relative</i>	0.253 (0.000)** [0.095]	0.25 (0.001)** [0.094]	0.25 (0.001)** [0.094]	0.2 (0.001)** [0.074]	0.13 (0.02)** [0.048]
<i>SALES</i>					-0.17 (0.005)** [-0.066]
<i>AGE</i>		-0.061 (0.022)** [-0.023]	-0.059 (0.027)** [-0.022]	-0.058 (0.026)** [-0.022]	
<i>EU15</i>			0.57 (0.005)** [0.221]		0.49 (0.013)** [0.191]
<i>EURO</i>			-0.39 (0.014)** [-0.144]		
<i>YEAR_EU</i>		-0.012 (0.072)* [-0.005]	-0.013 (0.074)* [-0.005]		
<i>KANAGAWA</i>			-1.32 (0.099)* [-0.469]		-1.35 (0.071)* [-0.477]

²⁰ A measure of IPR protection was also included, but it did not turn significant in any specification.

²¹ Marginal effects in round brackets, P-value in square brackets. * significant at 10%, ** significant at 5%, *** significant at 1%.

Pseudo R² is a typical measure for goodness of fit in discrete-dependent-variable models. The expression for Pseudo R² is $1 - 1/[1 + 2(\log L_1 - \log L_0)/N]$, where N is the total number of observations, L₁ is the maximum loglikelihood value of the model of interest, and L₀ the maximum value of the loglikelihood function when all the parameters, except the intercept, are set to 0. P-value[^] denotes the P-value of the joint null-hypothesis.

<i>TRANSPORT</i>				-0.34 (0.034)** [-0.133]	
<i>OTHER</i>				0.96 (0.023)** [0.277]	
<i>WHOLESALE</i>	-1.79 (0.001)*** [-0.573]	-1.79 (0.001)*** [-0.573]	-1.98 (0.000)*** [-0.602]		
<i>NON FERROUS</i>			-0.62 (0.050)*** [-0.242]		
<i>GLASS</i>		-0.81 (0.056)* [-0.315]	-0.75 (0.081)* [-0.293]		
<i>INSTRUMENTS</i>				0.96 (0.023)** [0.277]	
<i>R&D/GDP</i>				0.22 (0.087)* [0.084]	
<i>POP</i>				-0.87 (0.002)*** [-0.328]	
<i>CORRUPT</i>	0.32 (0.003)*** [0.120]		0.33 (0.001)*** [0.127]		
<i>B&F</i>	-0.16 (0.029)** [-0.06]		-0.19 (0.009)*** [-0.071]		
<i>TRADE</i>		0.71 (0.014)** [0.268]			
Observations	519	495	495	514	517
P-value [^]	0.000***	0.000***	0.000***	0.000***	0.000***
Pseudo R ²	0.0546	0.1376	0.1395	0.1408	0.0856

5. Conclusion

Multinational Enterprises may wish to serve a foreign market through alternative channels, from export to FDI, from joint-venture to licensing, each of them involving a different degree of knowledge transfer from the parent to the local firms.

While the FDI-licensing trade off has been extensively documented in the theoretical literature based on the *Dissipation of Intangible Assets* (see Section 2), to the best of our knowledge, no theoretical treatment of the JV has been offered yet, within the DIA framework.

This paper makes an attempt at filling this gap, by means of a two-period model that formalises the mechanism through which the threat of knowledge spillover shapes the boundaries of a Multinational Enterprise, between FDI and joint-venture.

In particular, we show that the integrated solution is more likely to emerge when know-how easily spills over – i.e. when firms are endowed with more Intangible Assets or they belong to high tech industries.

Probit estimates, based on a new firm-level dataset of Japanese production activities in Europe, are in line with these priors.

Given these promising results, we believe that it is worth carrying out further research within the DIA field: future steps should include the creation of an industry equilibrium model on the FDI-JV trade off, and

the treatment of the whole array of feasible contractual arrangements - namely joint-venture, licensing, export and FDI – in a single model. Further empirical evidence is also needed to test the relevance of the theoretical findings, in a multiple-home multiple-host perspective to control for possible selection bias.

6. References

- Agarwal S. and S.N. Ramaswami (1992), “Choice of Foreign Direct Market Entry Mode, Impact of Ownership, Location and Internalisation Factors”, *Journal of International Business Studies*, 23, 1-28
- Aghion P. and J. Tirole (1997), “Formal and Real Authority in Organizations”, *Journal of Political Economy*, 105(1), 1-29
- Andersen E. and H. Gatignon (1986), “Modes of Foreign Entry: a Transaction Cost Analysis and Propositions”, *Journal of International Business Studies*, 17(3), 1-26
- Antras P. (2003), “Firms, Contracts, and Trade Structure”, *Quarterly Journal of Economics* 118(4), 1375-1418
- Antras P. and E. Helpman (2004), “Global Sourcing”, *Journal of Political Economy* 112(3), 552-580
- Barba Navaretti G. and A.J. Venables (2004), “*Multinational Firms in the World Economy*”, Princeton University Press
- Blair A. and C. Freeman (2004), “Are Japanese Multinationals Different? Technology Transfer in the Asian Region”, in Haak R. and D. Tachiki (Eds), “*Regional Strategies in a Global Economy – Multinational Corporations in East Asia*”, Iudicium Verlag, Munich
- Blomstrom M. (1986), “Foreign Investment and Productive Efficiency: the Case of Mexico”, *Journal of Industrial Economics*, 15, 97-110
- Blomstrom M. and M. Zejan (1991), “Why Do Multinational Firms Seek Out Joint Ventures?”, *Journal of International Development*, 3 (1), 53-63
- Brainard S.L. (1993), “A Simple Theory of Multinational Corporations and Trade with a Trade-Off Between Proximity and Concentration”, NBER Working Paper 4269

- Buckley P. and M. Casson (1996), "An Economic Model of International Joint Venture Strategy", *Journal of International Business Studies*, 27(5), 849-876
- Caves R. (1974), "Multinational Firms, Competition, and Productivity in Host-Country Industries", *Economica*, 41, 176-193
- Coase R.H. (1937), "The Nature of the Firm", *Economica*, 4, 386-405
- Desai M.A., Foley C.F. and J.R. Hines (2002), "International Joint Ventures and the Boundaries of the Firm", NBER Working Paper 9115
- Davidson W.H. and G. McFetridge (1984), "International Technology Transfer and the Theory of the Firm", *Journal of Industrial Economics*, 32(3), 253-264
- Dunning J.H.(1993), "*Multinational Enterprises and the Global Economy*", Addison Wesley Longman, Inc.
- Erramilli M.K. (1996), "Nationality and Subsidiary Ownership Patterns in Multinational Corporations", *Journal of International Business Studies*, 1, 1-27
- Ethier W. (1986), "The Multinational Firm", *Quarterly Journal of Economics*, 101(4), 805-833
- Ethier W. J. and J. R. Markusen (1996), "Multinational Firms, Technology Diffusion, and Trade", *Journal of International Economics*, 41, 1-28
- Feenstra R..C. (1998), "Integration of Trade and Disintegration of Production in the Global Economy", *Journal of Economic Perspective*, 12:4, 31-50
- Feenstra R.C. and G.H. Hanson (1996), "Globalization, Outsourcing, and Wage Inequality", *American Economic Review*, 86:2, 240-245
- Feenstra R..C. and G.H. Hanson (2003), "Ownership and Control in Outsourcing to China: Estimating the Property-Rights Theory of the Firm", University of California, mimeo
- Feenstra R..C. and G.H. Hanson (2004), "Ownership and Control in Outsourcing to China: Estimating the Property-Rights Theory of the Firm", NBER Working Paper 10198
- Fosfuri A. (2000), "Patent Protection, Imitation and the Mode of Technology Transfer", *International Journal of Industrial Organisation* 18 (7), 1129-1149

- Fosfuri A., Motta M. and T. Ronde (2001), "Foreign Direct Investment and Spillovers through Workers Mobility", *Journal of International Economics*, 53, 205-222
- Gattai V. (2005), "From the Theory of the Firm to FDI and Internalisation: a Survey", Feem Working Paper 51
- Glass A. J. and K. Saggi (1999), "Multinational Firms and Technology Transfer", World Bank Policy Research Working Paper 2067
- Glass A. J. and K. Saggi (2002a), "Licensing versus Direct Investment: Implications for Economic Growth", *Journal of International Economics*, 56, 131-153
- Glass A. J. and K. Saggi (2002b), "Intellectual Property Rights, Foreign Direct Investment and Innovation", *Journal of International Economics*, 56, 387-410
- Gomes Casseres (1989), "Ownership Structures of Foreign Subsidiaries: Theory and Evidence", *Journal of Economic Behaviour and Organization*, 11, 1-25
- Grossman S.J. and O.D. Hart (1986), "The Costs and Benefits of Ownership: a Theory of Vertical and Lateral Integration", *Journal of Political Economy*, 94:4, 691-719
- Grossman G.M. and E. Helpman (2002), "Integration vs Outsourcing in Industry Equilibrium", *Quarterly Journal of Economics*, 117:1, 85-120
- Grossman G.M. and E. Helpman (2003), "Outsourcing vs FDI in Industry Equilibrium", *Journal of the European Economic Association*, 1, 317-327
- Grossman G.M. and E. Helpman (2004b), "Managerial Incentives and the International Organization of Production", *Journal of International Economics* 63, 237-262
- Gwartney J. and R. Lawson (2004), "*Economic Freedom of the World: 2004 Annual Report*", Vancouver: The Fraser Institute
- Hart O.D. and J. Moore (1990), "Property rights & the Nature of the Firms", *Journal of Political Economy*, 98, 1119-1158
- Helpman E. (1984), "A Simple Theory of Multinational Corporations", *Journal of Political Economy*, 92 (3), 451-471

- Helpman E. (1985), "Multinational Corporations and Trade Structure", *Review of Economic Studies*, 52, 443-457
- Helpman E. and P. Krugman (1985), "*Market Structure and Foreign Trade*", Cambridge, MA: MIT Press
- Hennart J.F. (1991), "Control in Multinational Firms: the Role of Price and Hierarchy", *Management International Review*, 31, 71-97
- Holmstrom B. and P. Milgrom (1994), "The Firm as an Incentive System", *American Economic Review*, 84:4, 972-991
- Horstmann I. and J.R. Markusen (1987a), "Strategic Investments and the Development of Multinationals", *International Economic Review*, 28, 109-121
- Horstmann I. and J.R. Markusen (1987b), "Licensing versus Direct Investment: a Model of Internalization by the Multinational Enterprise", *Canadian Journal of Economics*, 20, 464-481
- Horstmann I. and J.R. Markusen (1992), "Endogenous Market Structures in International Trade", *Journal of International Economics*, 32(1/2), 109-129
- Horstmann I. and J.R. Markusen (1996), "Exploring New Markets: Direct Investment, Contractual Relationships, and the Multinational Enterprise", *International Economic Review*, 37, 1-20
- Hummels D., Ishii J. and K. Yi (2001), "The Nature and Growth of Vertical Specialization in World Trade", *Journal of International Economics*, 54(1), 75-96
- JETRO (2004a), "Japanese Manufacturing Affiliates in Europe and Turkey-2003 Survey", Jetro
- JETRO (2004b), "*2004 Jetro White Paper on International Trade and Foreign Direct Investment*", Jetro
- Kaufmann D., Kraay A. and M. Mastruzzi (2003), "Governance Matters III: Governance Indicators for 1996-2002", World Bank, World Bank Policy Research Working Paper 3106
- Lall S. (1980), "Vertical Interfirm Linkages in LDCs: an Empirical Study", *Oxford Bulletin of Economics and Statistics*, 42, 203-226
- Mansfield E., A. Romeo and S. Wagner (1979), "Foreign Trade and US Research and Development", *Review of Economics and Statistics*, 61, 49-57

- Mansfield E. and A. Romeo (1980), "Technology Transfer to Overseas Subsidiaries by US-based Firms", *Quarterly Journal of Economics*, 95(4), 737-750
- Marin D. and T. Verdier (2002), "Power inside the Firm and the Market: A General Equilibrium Approach", CEPR Discussion Paper 3526
- Marin D. and T. Verdier (2003a), "Globalisation and the Empowerment of Talent", CEPR Discussion Paper 4129
- Markusen J.M. (1984), "Multinationals, Multi-plant Economies, and the Gains from Trade", *Journal of International Economics*, 16(3/4), 205-226
- Markusen J.M. (1995), "The Boundaries of Multinational Enterprises and the Theory of International Trade", *Journal of Economic Perspectives*, 9, 169-189
- Markusen J. R. (1998), "Contracts, Intellectual Property Rights, and Multinational Investment in developing Countries", NBER Working Paper 6448
- Markusen J. R. (2001), "Contracts, Intellectual Property Rights, and Multinational Investment in Developing Countries", *Journal of International Economics*, 53, 189-204
- Markusen J.R., Melvin J.R., Kaempfer W.H. and K.E. Maskus (1995), "*International Trade*", McGrawHill
- Maskus K.E. (1998), "The International Regulation of Intellectual Property", *Welwirtschaftliches Archiv*, 134, 186-208
- Mattoo A., Olarreaga M. and K. Saggi (2001), "Mode of Foreign Entry, Technology Transfer, and Foreign Direct Investment Policy", World Bank Policy Research Working Paper 2737
- Meyer K. (1998), "*Direct Investment in Economies in Transition*", Edward Elgar: Cheltenham, UK and Northampton, MA
- Ottaviano G.I.P. and A. Turrini (2003), "Distance and FDI when Contracts are Incomplete", CEPR Discussion Paper 4041
- Ramachandram V. (1993), "Technology Transfer, Firm Ownership, and Investment in Human Capital", *Review of Economics and Statistics* 75, 664-670
- Rodriguez-Clare A. (1996), "Multinationals, Linkages, and Economic Development", *American Economic Review*, 86(4), 851-873

- Rugman A. (1985), "Internalisation is still a General Theory of Foreign Direct Investment. A Reappraisal of the Literature", *Welwirtschaftliches Archiv*, 116, 365-739
- Rugman A. (1986), "New Theories of the Multinational Enterprise: an Assessment of Internalisation Theory", *Bulletin of Economic Research*, 38, 101-118
- Saggi K. (1996), "Entry into a Foreign Market: Foreign Direct Investment versus Licensing", *Review of International Economics*, 4, 99-104
- Saggi K. (1999), "Foreign Direct Investment, Licensing and Incentives for Innovation", *Review of International Economics*, 7, 699-714
- Saggi K. (2000), "Trade, Foreign Direct Investment, and International Technology Transfer. A Survey", World Bank Policy Research Working Paper 2329
- Smarzynska B.K. (2000), "Technological Leadership and the Choice of Entry Mode by Foreign Investors: Evidence from Transition Economies", World Bank Policy Research Working Paper 2314
- Smith P. (2001), "Patent Rights and Bilateral Exchange: a Cross-Country Analysis of US exports, FDI, and Licensing", *Journal of International Economics*, 55, 411-440
- Teece D. (1977), "Technology Transfer by Multinational Firms: the Resource Cost of Transferring Technological Know-How", *Economic Journal*, 87, 242-261
- Teece D.(1986), "*Multinational Corporation and the Resource Cost of International Technology Transfer*", Cambridge, Ballinger 1986
- Toyo Keizai Inc. (2004), "*Kagai Shinshutsu Kigyo Soran*" ("*Comprehensive List of Companies Abroad*"), Toyo Keizai Inc.
- Toyo Keizai Inc. (2004), "*Kaisha Shikiho*" ("*Japan Company Handbook Quarterly*"), Volume 1, 2, Toyo Keizai Inc.
- Vishwasrao S. (1994), "Intellectual Property Rights and the Mode of Technology Transfer", *Journal of Development Economics*, 44, 381-402
- Williamson O.E. (1985), "*The Economic Institution of Capitalism*", New York, Free Press

Zeile W.J. (1997), "US Intrafirm Trade in Goods", *Survey of Current Business*, 77(2), 23-38

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>

<http://www.repec.org>

NOTE DI LAVORO PUBLISHED IN 2004

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

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

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

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

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

NOTE DI LAVORO PUBLISHED IN 2005

CCMP	1.2005	<i>Stéphane HALLEGATTE: <u>Accounting for Extreme Events in the Economic Assessment of Climate Change</u></i>
CCMP	2.2005	<i>Qiang WU and Paulo Augusto NUNES: <u>Application of Technological Control Measures on Vehicle Pollution: A Cost-Benefit Analysis in China</u></i>
CCMP	3.2005	<i>Andrea BIGANO, Jacqueline M. HAMILTON, Maren LAU, Richard S.J. TOL and Yuan ZHOU: <u>A Global Database of Domestic and International Tourist Numbers at National and Subnational Level</u></i>
CCMP	4.2005	<i>Andrea BIGANO, Jacqueline M. HAMILTON and Richard S.J. TOL: <u>The Impact of Climate on Holiday Destination Choice</u></i>
ETA	5.2005	<i>Hubert KEMPF: <u>Is Inequality Harmful for the Environment in a Growing Economy?</u></i>
CCMP	6.2005	<i>Valentina BOSETTI, Carlo CARRARO and Marzio GALEOTTI: <u>The Dynamics of Carbon and Energy Intensity in a Model of Endogenous Technical Change</u></i>
IEM	7.2005	<i>David CALEF and Robert GOBLE: <u>The Allure of Technology: How France and California Promoted Electric Vehicles to Reduce Urban Air Pollution</u></i>
ETA	8.2005	<i>Lorenzo PELLEGRINI and Reyer GERLAGH: <u>An Empirical Contribution to the Debate on Corruption Democracy and Environmental Policy</u></i>
CCMP	9.2005	<i>Angelo ANTOCI: <u>Environmental Resources Depletion and Interplay Between Negative and Positive Externalities in a Growth Model</u></i>
CTN	10.2005	<i>Frédéric DEROLAN: <u>Cost-Reducing Alliances and Local Spillovers</u></i>
NRM	11.2005	<i>Francesco SINDICO: <u>The GMO Dispute before the WTO: Legal Implications for the Trade and Environment Debate</u></i>
KTHC	12.2005	<i>Carla MASSIDDA: <u>Estimating the New Keynesian Phillips Curve for Italian Manufacturing Sectors</u></i>
KTHC	13.2005	<i>Michele MORETTO and Gianpaolo ROSSINI: <u>Start-up Entry Strategies: Employer vs. Nonemployer firms</u></i>
PRCG	14.2005	<i>Clara GRAZIANO and Annalisa LUPORINI: <u>Ownership Concentration, Monitoring and Optimal Board Structure</u></i>
CSRM	15.2005	<i>Parashar KULKARNI: <u>Use of Ecolabels in Promoting Exports from Developing Countries to Developed Countries: Lessons from the Indian LeatherFootwear Industry</u></i>
KTHC	16.2005	<i>Adriana DI LIBERTO, Roberto MURA and Francesco PIGLIARU: <u>How to Measure the Unobservable: A Panel Technique for the Analysis of TFP Convergence</u></i>
KTHC	17.2005	<i>Alireza NAGHAVI: <u>Asymmetric Labor Markets, Southern Wages, and the Location of Firms</u></i>
KTHC	18.2005	<i>Alireza NAGHAVI: <u>Strategic Intellectual Property Rights Policy and North-South Technology Transfer</u></i>
KTHC	19.2005	<i>Mombert HOPPE: <u>Technology Transfer Through Trade</u></i>
PRCG	20.2005	<i>Roberto ROSON: <u>Platform Competition with Endogenous Multihoming</u></i>
CCMP	21.2005	<i>Barbara BUCHNER and Carlo CARRARO: <u>Regional and Sub-Global Climate Blocs. A Game Theoretic Perspective on Bottom-up Climate Regimes</u></i>
IEM	22.2005	<i>Fausto CAVALLARO: <u>An Integrated Multi-Criteria System to Assess Sustainable Energy Options: An Application of the Promethee Method</u></i>
CTN	23.2005	<i>Michael FINUS, Pierre v. MOUCHE and Bianca RUNDSHAGEN: <u>Uniqueness of Coalitional Equilibria</u></i>
IEM	24.2005	<i>Wietze LISE: <u>Decomposition of CO2 Emissions over 1980–2003 in Turkey</u></i>
CTN	25.2005	<i>Somdeb LAHIRI: <u>The Core of Directed Network Problems with Quotas</u></i>
SIEV	26.2005	<i>Susanne MENZEL and Riccardo SCARPA: <u>Protection Motivation Theory and Contingent Valuation: Perceived Realism, Threat and WTP Estimates for Biodiversity Protection</u></i>
NRM	27.2005	<i>Massimiliano MAZZANTI and Anna MONTINI: <u>The Determinants of Residential Water Demand Empirical Evidence for a Panel of Italian Municipalities</u></i>
CCMP	28.2005	<i>Laurent GILOTTE and Michel de LARA: <u>Precautionary Effect and Variations of the Value of Information</u></i>
NRM	29.2005	<i>Paul SARFO-MENSAH: <u>Exportation of Timber in Ghana: The Menace of Illegal Logging Operations</u></i>
CCMP	30.2005	<i>Andrea BIGANO, Alessandra GORIA, Jacqueline HAMILTON and Richard S.J. TOL: <u>The Effect of Climate Change and Extreme Weather Events on Tourism</u></i>
NRM	31.2005	<i>Maria Angeles GARCIA-VALIÑAS: <u>Decentralization and Environment: An Application to Water Policies</u></i>
NRM	32.2005	<i>Chiara D'ALPAOS, Cesare DOSI and Michele MORETTO: <u>Concession Length and Investment Timing Flexibility</u></i>
CCMP	33.2005	<i>Joseph HUBER: <u>Key Environmental Innovations</u></i>
CTN	34.2005	<i>Antoni CALVÓ-ARMENGOL and Rahmi İLKILIÇ (Ixxii): <u>Pairwise-Stability and Nash Equilibria in Network Formation</u></i>
CTN	35.2005	<i>Francesco FERI (Ixxii): <u>Network Formation with Endogenous Decay</u></i>
CTN	36.2005	<i>Frank H. PAGE, Jr. and Myrna H. WOODERS (Ixxii): <u>Strategic Basins of Attraction, the Farsighted Core, and Network Formation Games</u></i>

CTN	37.2005	<i>Alessandra CASELLA and Nobuyuki HANAOKI</i> (lxxii): <u>Information Channels in Labor Markets. On the Resilience of Referral Hiring</u>
CTN	38.2005	<i>Matthew O. JACKSON and Alison WATTS</i> (lxxii): <u>Social Games: Matching and the Play of Finitely Repeated Games</u>
CTN	39.2005	<i>Anna BOGOMOLNAIA, Michel LE BRETON, Alexei SAVVATEEV and Shlomo WEBER</i> (lxxii): <u>The Egalitarian Sharing Rule in Provision of Public Projects</u>
CTN	40.2005	<i>Francesco FERI</i> : <u>Stochastic Stability in Network with Decay</u>
CTN	41.2005	<i>Aart de ZEEUW</i> (lxxii): <u>Dynamic Effects on the Stability of International Environmental Agreements</u>
NRM	42.2005	<i>C. Martijn van der HEIDE, Jeroen C.J.M. van den BERGH, Ekko C. van IERLAND and Paulo A.L.D. NUNES</i> : <u>Measuring the Economic Value of Two Habitat Defragmentation Policy Scenarios for the Veluwe, The Netherlands</u>
PRCG	43.2005	<i>Carla VIEIRA and Ana Paula SERRA</i> : <u>Abnormal Returns in Privatization Public Offerings: The Case of Portuguese Firms</u>
SIEV	44.2005	<i>Anna ALBERINI, Valentina ZANATTA and Paolo ROSATO</i> : <u>Combining Actual and Contingent Behavior to Estimate the Value of Sports Fishing in the Lagoon of Venice</u>
CTN	45.2005	<i>Michael FINUS and Bianca RUNDSHAGEN</i> : <u>Participation in International Environmental Agreements: The Role of Timing and Regulation</u>
CCMP	46.2005	<i>Lorenzo PELLEGRINI and Reyer GERLAGH</i> : <u>Are EU Environmental Policies Too Demanding for New Members States?</u>
IEM	47.2005	<i>Matteo MANERA</i> : <u>Modeling Factor Demands with SEM and VAR: An Empirical Comparison</u>
CTN	48.2005	<i>Olivier TERCIEUX and Vincent VANNETELBOSCH</i> (lxx): <u>A Characterization of Stochastically Stable Networks</u>
CTN	49.2005	<i>Ana MAULEON, José SEMPERE-MONERRIS and Vincent J. VANNETELBOSCH</i> (lxxii): <u>R&D Networks Among Unionized Firms</u>
CTN	50.2005	<i>Carlo CARRARO, Johan EYCKMANS and Michael FINUS</i> : <u>Optimal Transfers and Participation Decisions in International Environmental Agreements</u>
KTHC	51.2005	<i>Valeria GATTAI</i> : <u>From the Theory of the Firm to FDI and Internalisation: A Survey</u>
CCMP	52.2005	<i>Alireza NAGHAVI</i> : <u>Multilateral Environmental Agreements and Trade Obligations: A Theoretical Analysis of the Doha Proposal</u>
SIEV	53.2005	<i>Margaretha BREIL, Gretel GAMBARELLI and Paulo A.L.D. NUNES</i> : <u>Economic Valuation of On Site Material Damages of High Water on Economic Activities based in the City of Venice: Results from a Dose-Response-Expert-Based Valuation Approach</u>
ETA	54.2005	<i>Alessandra del BOCA, Marzio GALEOTTI, Charles P. HIMMELBERG and Paola ROTA</i> : <u>Investment and Time to Plan: A Comparison of Structures vs. Equipment in a Panel of Italian Firms</u>
CCMP	55.2005	<i>Gernot KLEPPER and Sonja PETERSON</i> : <u>Emissions Trading, CDM, JI, and More – The Climate Strategy of the EU</u>
ETA	56.2005	<i>Maia DAVID and Bernard SINCLAIR-DESGAGNÉ</i> : <u>Environmental Regulation and the Eco-Industry</u>
ETA	57.2005	<i>Alain-Désiré NIMUBONA and Bernard SINCLAIR-DESGAGNÉ</i> : <u>The Pigouvian Tax Rule in the Presence of an Eco-Industry</u>
NRM	58.2005	<i>Helmut KARL, Antje MÖLLER, Ximena MATUS, Edgar GRANDE and Robert KAISER</i> : <u>Environmental Innovations: Institutional Impacts on Co-operations for Sustainable Development</u>
SIEV	59.2005	<i>Dimitra VOUVAKI and Anastasios XEPAPADEAS</i> (lxxiii): <u>Criteria for Assessing Sustainable Development: Theoretical Issues and Empirical Evidence for the Case of Greece</u>
CCMP	60.2005	<i>Andreas LÖSCHEL and Dirk T.G. RÜBBELKE</i> : <u>Impure Public Goods and Technological Interdependencies</u>
PRCG	61.2005	<i>Christoph A. SCHALTEGGER and Benno TORGLER</i> : <u>Trust and Fiscal Performance: A Panel Analysis with Swiss Data</u>
ETA	62.2005	<i>Irene VALSECCHI</i> : <u>A Role for Instructions</u>
NRM	63.2005	<i>Valentina BOSETTI and Gianni LOCATELLI</i> : <u>A Data Envelopment Analysis Approach to the Assessment of Natural Parks' Economic Efficiency and Sustainability. The Case of Italian National Parks</u>
SIEV	64.2005	<i>Arianne T. de BLAEIJ, Paulo A.L.D. NUNES and Jeroen C.J.M. van den BERGH</i> : <u>Modeling 'No-choice' Responses in Attribute Based Valuation Surveys</u>
CTN	65.2005	<i>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</i> : <u>Applications of Negotiation Theory to Water Issues</u>
CTN	66.2005	<i>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</i> : <u>Advances in Negotiation Theory: Bargaining, Coalitions and Fairness</u>
KTHC	67.2005	<i>Sandra WALLMAN</i> (lxxiv): <u>Network Capital and Social Trust: Pre-Conditions for 'Good' Diversity?</u>
KTHC	68.2005	<i>Asimina CHRISTOFOROU</i> (lxxiv): <u>On the Determinants of Social Capital in Greece Compared to Countries of the European Union</u>
KTHC	69.2005	<i>Eric M. USLANER</i> (lxxiv): <u>Varieties of Trust</u>
KTHC	70.2005	<i>Thomas P. LYON</i> (lxxiv): <u>Making Capitalism Work: Social Capital and Economic Growth in Italy, 1970-1995</u>
KTHC	71.2005	<i>Graziella BERTOCCHI and Chiara STROZZI</i> (lxxv): <u>Citizenship Laws and International Migration in Historical Perspective</u>
KTHC	72.2005	<i>Elsbeth van HYLCKAMA Vlieg</i> (lxxv): <u>Accommodating Differences</u>
KTHC	73.2005	<i>Renato SANSA and Ercole SORI</i> (lxxv): <u>Governance of Diversity Between Social Dynamics and Conflicts in Multicultural Cities. A Selected Survey on Historical Bibliography</u>
IEM	74.2005	<i>Alberto LONGO and Anil MARKANDYA</i> : <u>Identification of Options and Policy Instruments for the Internalisation of External Costs of Electricity Generation. Dissemination of External Costs of Electricity Supply Making Electricity External Costs Known to Policy-Makers</u> <u>MAXIMA</u>

IEM	75.2005	<i>Margherita GRASSO and Matteo MANERA: <u>Asymmetric Error Correction Models for the Oil-Gasoline Price Relationship</u></i>
ETA	76.2005	<i>Umberto CHERUBINI and Matteo MANERA: <u>Hunting the Living Dead A “Peso Problem” in Corporate Liabilities Data</u></i>
CTN	77.2005	<i>Hans-Peter WEIKARD: <u>Cartel Stability under an Optimal Sharing Rule</u></i>
ETA	78.2005	<i>Joëlle NOAILLY, Jeroen C.J.M. van den BERGH and Cees A. WITHAGEN (lxxvi): <u>Local and Global Interactions in an Evolutionary Resource Game</u></i>
ETA	79.2005	<i>Joëlle NOAILLY, Cees A. WITHAGEN and Jeroen C.J.M. van den BERGH (lxxvi): <u>Spatial Evolution of Social Norms in a Common-Pool Resource Game</u></i>
CCMP	80.2005	<i>Massimiliano MAZZANTI and Roberto ZOBOLI: <u>Economic Instruments and Induced Innovation: The Case of End-of-Life Vehicles European Policies</u></i>
NRM	81.2005	<i>Anna LASUT: <u>Creative Thinking and Modelling for the Decision Support in Water Management</u></i>
CCMP	82.2005	<i>Valentina BOSETTI and Barbara BUCHNER: <u>Using Data Envelopment Analysis to Assess the Relative Efficiency of Different Climate Policy Portfolios</u></i>
ETA	83.2005	<i>Ignazio MUSU: <u>Intellectual Property Rights and Biotechnology: How to Improve the Present Patent System</u></i>
KTHC	84.2005	<i>Giulio CAINELLI, Susanna MANCINELLI and Massimiliano MAZZANTI: <u>Social Capital, R&D and Industrial Districts</u></i>
ETA	85.2005	<i>Rosella LEVAGGI, Michele MORETTO and Vincenzo REBBA: <u>Quality and Investment Decisions in Hospital Care when Physicians are Devoted Workers</u></i>
CCMP	86.2005	<i>Valentina BOSETTI and Laurent GILOTTE: <u>Carbon Capture and Sequestration: How Much Does this Uncertain Option Affect Near-Term Policy Choices?</u></i>
CSRM	87.2005	<i>Nicoletta FERRO: <u>Value Through Diversity: Microfinance and Islamic Finance and Global Banking</u></i>
ETA	88.2005	<i>A. MARKANDYA and S. PEDROSO: <u>How Substitutable is Natural Capital?</u></i>
IEM	89.2005	<i>Anil MARKANDYA, Valeria COSTANTINI, Francesco GRACCEVA and Giorgio VICINI: <u>Security of Energy Supply: Comparing Scenarios From a European Perspective</u></i>
CCMP	90.2005	<i>Vincent M. OTTO, Andreas LÖSCHEL and Rob DELLINK: <u>Energy Biased Technical Change: A CGE Analysis</u></i>
PRCG	91.2005	<i>Carlo CAPUANO: <u>Abuse of Competitive Fringe</u></i>
PRCG	92.2005	<i>Ulrich BINDSEIL, Kjell G. NYBORG and Ilya A. STREBULAEV (lxv): <u>Bidding and Performance in Repo Auctions: Evidence from ECB Open Market Operations</u></i>
CCMP	93.2005	<i>Sabrina AUCI and Leonardo BECCHETTI: <u>The Stability of the Adjusted and Unadjusted Environmental Kuznets Curve</u></i>
CCMP	94.2005	<i>Francesco BOSELLO and Jian ZHANG: <u>Assessing Climate Change Impacts: Agriculture</u></i>
CTN	95.2005	<i>Alejandro CAPARRÓS, Jean-Christophe PEREAU and Tarik TAZDAÏT: <u>Bargaining with Non-Monolithic Players</u></i>
ETA	96.2005	<i>William BROCK and Anastasios XEPAPADEAS (lxxvi): <u>Optimal Control and Spatial Heterogeneity: Pattern Formation in Economic-Ecological Models</u></i>
CCMP	97.2005	<i>Francesco BOSELLO, Roberto ROSON and Richard S.J. TOL (lxxvii): <u>Economy-Wide Estimates of the Implications of Climate Change: Human Health</u></i>
CCMP	98.2005	<i>Rob DELLINK, Michael FINUS and Niels OLIEMAN: <u>Coalition Formation under Uncertainty: The Stability Likelihood of an International Climate Agreement</u></i>
CTN	99.2005	<i>Valeria COSTANTINI, Riccardo CRESCENZI, Fabrizio De FILIPPIS, and Luca SALVATICI: <u>Bargaining Coalitions in the Agricultural Negotiations of the Doha Round: Similarity of Interests or Strategic Choices? An Empirical Assessment</u></i>
IEM	100.2005	<i>Giliola FREY and Matteo MANERA: <u>Econometric Models of Asymmetric Price Transmission</u></i>
IEM	101.2005	<i>Alessandro COLOGNI and Matteo MANERA: <u>Oil Prices, Inflation and Interest Rates in a Structural Cointegrated VAR Model for the G-7 Countries</u></i>
KTHC	102.2005	<i>Chiara M. TRAVISI and Roberto CAMAGNI: <u>Sustainability of Urban Sprawl: Environmental-Economic Indicators for the Analysis of Mobility Impact in Italy</u></i>
ETA	103.2005	<i>Livingstone S. LUBOOBI and Joseph Y.T. MUGISHA: <u>HIV/AIDS Pandemic in Africa: Trends and Challenges</u></i>
SIEV	104.2005	<i>Anna ALBERINI, Erik LICHTENBERG, Dominic MANCINI, and Gregmar I. GALINATO: <u>Was It Something I Ate? Implementation of the FDA Seafood HACCP Program</u></i>
SIEV	105.2005	<i>Anna ALBERINI and Aline CHIABAI: <u>Urban Environmental Health and Sensitive Populations: How Much are the Italians Willing to Pay to Reduce Their Risks?</u></i>
SIEV	106.2005	<i>Anna ALBERINI, Aline CHIABAI and Lucija MUEHLENBACHS: <u>Using Expert Judgment to Assess Adaptive Capacity to Climate Change: Evidence from a Conjoint Choice Survey</u></i>
CTN	107.2005	<i>Michele BERNASCONI and Matteo GALIZZI: <u>Coordination in Networks Formation: Experimental Evidence on Learning and Saliency</u></i>
KTHC	108.2005	<i>Michele MORETTO and Sergio VERGALLI: <u>Migration Dynamics</u></i>
NRM	109.2005	<i>Antonio MUSOLESI and Mario NOSVELLI: <u>Water Consumption and Long-Run Urban Development: The Case of Milan</u></i>
SIEV	110.2005	<i>Benno TORGLER and Maria A. GARCIA-VALIÑAS: <u>Attitudes Towards Preventing Environmental Damage</u></i>
SIEV	111.2005	<i>Alberto LONGO and Anna ALBERINI: <u>What are the Effects of Contamination Risks on Commercial and Industrial Properties? Evidence from Baltimore, Maryland</u></i>
SIEV	112.2005	<i>Anna ALBERINI and Alberto LONGO: <u>The Value of Cultural Heritage Sites in Armenia: Evidence from a Travel Cost Method Study</u></i>
CCMP	113.2005	<i>Mikel GONZÁLEZ and Rob DELLINK: <u>Impact of Climate Policy on the Basque Economy</u></i>
NRM	114.2005	<i>Gilles LAFFORGUE and Walid OUESLATI: <u>Optimal Soil Management and Environmental Policy</u></i>

NRM	115.2005	<i>Martin D. SMITH and Larry B. CROWDER</i> (Ixxvi): <u>Valuing Ecosystem Services with Fishery Rents: A Lumped-Parameter Approach to Hypoxia in the Neuse River Estuary</u>
NRM	116.2005	<i>Dan HOLLAND and Kurt SCHNIER</i> (Ixxvi): <u>Protecting Marine Biodiversity: A Comparison of Individual Habitat Quotas (IHQs) and Marine Protected Areas</u>
PRCG	117.2005	<i>John NELLIS</i> : <u>The Evolution of Enterprise Reform in Africa: From State-owned Enterprises to Private Participation in Infrastructure — and Back?</u>
PRCG	118.2005	<i>Bernardo BORTOLOTTI</i> : <u>Italy's Privatization Process and Its Implications for China</u>
SIEV	119.2005	<i>Anna ALBERINI, Marcella VERONESI and Joseph C. COOPER</i> : <u>Detecting Starting Point Bias in Dichotomous-Choice Contingent Valuation Surveys</u>
CTN	120.2005	<i>Federico ECHENIQUE and Mehmet B. YENMEZ</i> : <u>A Solution to Matching with Preferences over Colleagues</u>
KTHC	121.2005	<i>Valeria GATTAI and Corrado MOLTENI</i> : <u>Dissipation of Knowledge and the Boundaries of the Multinational Enterprise</u>

- (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
- (lxxii) This paper was presented at the 10th Coalition Theory Network Workshop held in Paris, France on 28-29 January 2005 and organised by EUREQua.
- (lxxiii) This paper was presented at the 2nd Workshop on "Inclusive Wealth and Accounting Prices" held in Trieste, Italy on 13-15 April 2005 and organised by the Ecological and Environmental Economics - EEE Programme, a joint three-year programme of ICTP - The Abdus Salam International Centre for Theoretical Physics, FEEM - Fondazione Eni Enrico Mattei, and The Beijer International Institute of Ecological Economics
- (lxxiv) This paper was presented at the ENGIME Workshop on “Trust and social capital in multicultural cities” Athens, January 19-20, 2004
- (lxxv) This paper was presented at the ENGIME Workshop on “Diversity as a source of growth” Rome November 18-19, 2004
- (lxxvi) This paper was presented at the 3rd Workshop on Spatial-Dynamic Models of Economics and Ecosystems held in Trieste on 11-13 April 2005 and organised by the Ecological and Environmental Economics - EEE Programme, a joint three-year programme of ICTP - The Abdus Salam International Centre for Theoretical Physics, FEEM - Fondazione Eni Enrico Mattei, and The Beijer International Institute of Ecological Economics
- (lxxvii) This paper was presented at the Workshop on Infectious Diseases: Ecological and Economic Approaches held in Trieste on 13-15 April 2005 and organised by the Ecological and Environmental Economics - EEE Programme, a joint three-year programme of ICTP - The Abdus Salam International Centre for Theoretical Physics, FEEM - Fondazione Eni Enrico Mattei, and The Beijer International Institute of Ecological Economics.

2004 SERIES

CCMP	<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)
KTHC	<i>Knowledge, Technology, Human Capital</i> (Editor: Gianmarco Ottaviano)
IEM	<i>International Energy Markets</i> (Editor: Anil Markandya)
CSRM	<i>Corporate Social Responsibility and Sustainable Management</i> (Editor: Sabina Ratti)
PRA	<i>Privatisation, Regulation, Antitrust</i> (Editor: Bernardo Bortolotti)
ETA	<i>Economic Theory and Applications</i> (Editor: Carlo Carraro)
CTN	<i>Coalition Theory Network</i>

2005 SERIES

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