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.*

**A Tale of Three Countries:
Italian, Spanish and Swiss
Manufacturing Operations in China**

Valeria Gattai

NOTA DI LAVORO 150.2006

DECEMBER 2006

KTHC – Knowledge, Technology, Human Capital

Valeria Gattai, *Bocconi University 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=951459>

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

A Tale of Three Countries: Italian, Spanish and Swiss Manufacturing Operations in China

Summary

In this paper we investigate the choice of FDI versus joint-venture, made by Italian, Spanish and Swiss multinationals in China, as shaped by the risk of *Dissipation of Intangible Assets*. Probit estimates, based on an entirely new firm-level dataset, constructed by the author, show that FDI is more likely to emerge when know-how easily spills over - namely for firms endowed with more Intangible Assets or belonging to high tech sectors - in line with the theoretical expectations.

Keywords: Intangible Assets, Internalisation, FDI, Joint-venture, China

JEL Classification: F23, C25, O53

I am grateful to Luisella Balestra, Carlo Filippini, Andrea Fosfuri, Gianmarco Ottaviano, Stefan Francini and Sara Ugolini, for helpful comments and assistance in data collection. This paper is part of the project “FDI and Internalisation in Asia: Evidence from Italy and Spain”; financial support from Bocconi University (Ricerca di Base) is gratefully acknowledged. All remaining errors are mine.

Address for correspondence:

Valeria Gattai
Bocconi University and ISESIO
Via Salasco 5, stanza 4
20136 Milano
Italy
Phone: +39 02 5836 3313
E-mail: valeria.gattai@unibocconi.it

1. Introduction

GDP growth rate above 8%, huge market dimension, low cost labour force and a population close to one billion and three hundred thousand inhabitants are just some of the reasons that make the People's Republic of China (PRC) enormously attractive for production de-localization.

China has grown quite fast since 1978, when the *Open Door Policy*, promoted by Deng Xiaoping, ushered in a new era of modernization and growth. The transition from a planned to a market economy has resulted in fast development, structural changes and lifestyle improvements, which created new opportunities for Foreign Direct Investment (FDI), and made China the largest recipient of FDI since 2003.

This paper tells the tale of three countries - Italy, Spain and Switzerland – and analyses the manufacturing operations of their multinational enterprises (MNEs) in the PRC. For the purpose of the present work, we have built an entirely new *firm-level* dataset, through survey interviews; indeed a multiple choice questionnaire has been sent to the whole population of Italian, Spanish and Swiss MNEs with manufacturing affiliates in China. With a reply rate around 80% of the total, our database documents the experience of 165 parent companies with more than 200 FDI¹ and joint-ventures in the PRC.

The aim of this study is twofold: first, we provide the reader with a basic overview of the survey, to draw a detailed profile of the actors and comment on their strategic choices; second, we focus more specifically on the entry mode decision of Italian, Spanish and Swiss multinationals in China and regress the joint-venture / FDI trade-off on a number of firm, industry and country characteristics, explored through the questionnaire. In particular, we are interested in showing whether the risk of *Dissipation of Intangible Asset* (DIA) plays any role in orienting such a trade-off.

Intangible Assets (IAs) may consist either in product quality *reputation* or superior *knowledge*; compared to physical assets, they are more likely to give rise to FDI because they can be easily transferred back and forth and they enjoy a “public good” nature, being available to additional production facilities at relatively low costs (Markusen 1995). Nevertheless, the same joint-ness feature that makes it easy to employ IAs abroad, exposes the MNE to the risk of *dissipating* its crucial resources, if shared with local firms. So, the *Internalisation issue* - namely the choice of FDI versus relying on a local supplier – has been explained by a trade-off between preventing IAs spillover - through FDI, since production takes place in a wholly-owned subsidiary (WOS) – and benefiting from the local firms’ familiarity with their own country, achieved through a partnership (Ethier and Markusen 1996; Markusen 1998, 2001; Saggi 1996, 1999; Fosfuri 2000; Mattoo et al. 2001; Fosfuri et al. 2001; Glass and Saggi 2002a).

Our empirical findings are in line with these theoretical predictions: Italian, Spanish and Swiss multinationals are more likely to invest directly in China, the higher their level of precious resources.

¹ Notice that, throughout paper, we restrict the label of Foreign Direct Investment to wholly-owned subsidiaries, to denote the case of total ownership, as opposed to the partial one, typical of joint-ventures; the term MNE is instead referred to firms engaged in international operations of any kind, from FDI to licensing and joint-venture.

The rest of the paper is organised as follows: in Section 2 we present a brief literature review regarding the theoretical background; Section 3 is entirely dedicated to the empirical analysis: data description (3.1), methodology (3.2) and Probit estimates (3.3); Section 4 concludes and sets future lines of research.

2. Literature Review

In the last 20 years, the economic 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; since FDI indeed exist, it must be the case that multinational firms possess some kind of 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* crop up when producing locally implies fewer costs than servicing the domestic market via export. *Internalisation advantages* arise when key resources are better exploited if kept within the boundaries of the multinational firm.

For the purpose of the present paper, we are particularly interested in the *Internalisation issue*²; economic theories about it can be grouped into three different approaches, which we call: 1) *Theory of the Firm*; 2) *Agency Costs* and 3) *Dissipation of Intangible Asset*.

The first view embraces recent contributions in which the boundaries of a Multinational Enterprise are 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 (see, among others: Grossman and Helpman 2002, 2003, 2004; Antras and Helpman 2004; Antras 2003; Feenstra and Hanson 2003, 2004; Ottaviano and Turrini 2003, Marin and Verdier 2002, 2003).

The second approach - called *Agency-Costs* - focuses on the principal (MNE) / agent (local firm) problem deriving from potential diverging goals between the two parties. When designing an appropriate incentive scheme, to induce agent's effort, becomes too costly for the multinational firm, it may opt for a wholly-owned subsidiary rather than relying on a local company (Horstmann and Markusen 1996).

² For a survey, see Markusen 1995, Barba Navaretti and Venables 2004, Saggi 2000.

The third explanation stems from the risk of *Dissipation of Intangible Assets*, namely *reputation*, related to the product quality and *knowledge*, characterized by some technology or managerial techniques.

The term *dissipation* thus entails a different meaning, depending on the asset under consideration: in the case of knowledge, a spillover mechanism is likely to operate, making the local counterpart appropriate production secrets, copy final goods and eventually start a rival firm on the basis of the “stolen” asset; in the case of reputation, dissipation comes because the local counterpart benefits from the MNE’s brand image, but may not put any effort in maintaining and enhancing it.

Irrespective of the asset involved, the main message that comes out from the DIA approach is that the risk of losing any of the firm’s key resources provides a motive for keeping production internal (FDI) rather than partnering with a local firm.

In particular, Ethier and Markusen (1996) show, in a two-period model, that MNEs are more likely to choose Foreign Direct Investment, the more important the Intangible Assets, the lower the discount factor, 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 among export, licensing and direct investment in order to serve a foreign market. 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) set up a model in which a foreign enterprise can choose between FDI and the acquisition of an existing domestic firm. 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 welfare. Differently from the other models, in which operating within firm’s boundaries provides a solution against asset dissipation, here the multinational may find it optimal to export, in order to protect its technology.

A similar view is taken in Fosfuri et al. (2001), where export comes without any knowledge dissipation, while FDI involves technology transfer through the training of a local worker. In particular, technological spillovers do not occur if the joint profit of the MNE plus the local firm is highest when the multinational can use the technology as a monopolist; moreover, a low level of absorptive capability by the local firm is shown to reduce the potential for FDI generating spillover.

In Saggi (1996, 1999), 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 Glass and Saggi (2002a) where the *Internalisation issue* is shown to play a role in determining the rate and magnitude of innovation. Notice that the licensing contract, here, 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 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 large³.

To the best of our knowledge, theoretical studies on the boundaries of the Multinational Enterprise, inspired by the *Dissipation of Intangible Asset*, only consider export and licensing as an alternative to Foreign Direct Investment.

However, given the broadly documented relevance of joint-ventures in China (see, for instance, Luo 2000; Li and Li 1999), in this paper we are rather interested in the comparison between total (FDI) and partial (JV) ownership, based on the risk of knowledge spillover.

We believe that an extension of the DIA approach, to incorporate the joint-venture case, is quite reasonable: although licensing implies a more direct channel for technology transfer - because the licensor has to provide the licensee with the whole set of production

³ 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.

tools – working side by side in a joint-venture similarly allows the local firm to learn from the MNE, thus exposing it to the risk of losing key resources. A similar approach is followed in many empirical studies on the *Internalisation issue* (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) in which integrated production is shown to prevail, compared to JV, when the threat of spillover is high, namely for firms endowed with superior technology or operating in high tech sectors, resembling the theoretical findings on the FDI/licensing trade-off.

3. Empirical analysis

In this Section, we empirically assess the choice of FDI versus joint-venture made by Italian, Spanish and Swiss multinationals in China.

The discussion is organized in three steps: first we present the data (3.1) and the specification (3.2), and then we comment the econometric estimates (3.3) and their matching with the theoretical priors from Section 2.

3.1 Data

The empirical analysis, conducted between 2001 and 2005, builds on a survey questionnaire, exploring the international choices of 165 Italian, Spanish and Swiss manufacturing companies with 265 production affiliates in China.

Although relatively small, we believe that this sample is highly representative, since it accounts for 80% of all Italian, Spanish and Swiss investors in the region of interest⁴.

The questionnaire, based on multiple choice responses, consists of two sections: first we ask background information to derive a general profile of the parent company; then we investigate the *Internalisation issue* and the major challenges faced in the destination country, for more than 40 questions overall.

Additional balance sheet or industry-level data are derived from AIDA (Analisi Informatizzata delle Aziende), ISTAT (Istituto Nazionale di Statistica), and AMADEUS. The experiences of European MNEs in the PRC are very diverse. An initial look at the survey results suggests that it is impossible to draw a single profile, because investors differ in many regards.

⁴ The complete list of investors was obtained through intersection of all the available sources: ICE (Istituto Commercio Estero), Reprint-Politecnico, Italian, Spanish and Swiss Embassies and Chambers of Commerce in China. In lines with the theoretical specification, attention was restricted to manufacturing operations.

Figure 1 displays the composition of the sample: Italy has a predominant position in China, with 78% of total affiliates, followed by Switzerland (13%) and Spain (9%).

Figure 1: Composition of the sample

According to their size, Swiss companies tend to be very large, with more than 500 employees, while the Italian and Spanish investors are mainly small – 11-99 employees - and medium - 100-499 employees - enterprises (Figure 2).

As far as sales are concerned, 45% top 50 million Euros, 15% is between 25 and 50 million Euros and 21% below 10 million.

Figure 2: Size of the parent companies, by number of employees

Based on the acquisition of technology, firms can be grouped in four categories of technological development (Bell and Pavitt 1993): in traditional “supplier dominated” industries – like textile, leather, shoes, furniture, potteries etc. – technical change comes from supplier of inputs, while technology is transferred in the form of capital goods and components; in “scale intensive” industries – like automobile and chemicals – technical change is generated by the design and operation of complex production systems; in “science based” high-tech industries, technology emerges from corporate R&D and it is heavily dependant on academic research; finally, “specialized supplier dominated” firms

provide high performance equipment in the form of components, instruments or software to advance users.

Figure 3: Sector of the parent company

From Figure 3, we see that the specialized supplier dominated sector is the most important for all the three nationalities, followed by the scale intensive in Switzerland, the supplier dominated in Italy and the science based in Spain.

Interviews reveal that firms pay large attention at the human capital of their employees, as a key IA: many of them require English (70%) and computer (97%) skills to be held by the entire workforce of the parent company, while the percentage of employees holding a degree is higher than 25% in almost half of the cases. As far as training courses are concerned, we found out that they are organized for all the employees by 80% of the Swiss, 60% of the Spanish and 40% of the Italian companies.

The international experience of European MNEs seems to be similar throughout the sample and noticeably elevated. Around 80% has had business activities – from import-export to FDI and joint-venture, from licensing to franchising (2%) - in more than five countries, for longer then 10 years (76%), before the present involvement in the PRC.

The decision to operate in China can be driven by a lot of purposes, from the huge market dimension to the low cost labour force, from the need to avoid tight competition or constrictive laws at home, to the wish to establish a commercial platform in Asia or to take a good chance⁵. According to Figure 4, market seeking considerations played the major role, followed by a good chance for Spanish companies, and the low cost labour force for the Italian ones, while Swiss firms seemed to be equally interested in both dimensions.

⁵ A typical example of “good chance” is the event in which the European firm accidentally meets a partner for a joint-venture during international expositions.

Figure 4: Investor's purpose in establishing in China

Adding to this, it is worth considering the destination of the goods produced in China: while Swiss firms export most of their production (87%), Spanish companies mainly attempt at satisfying local demand (57%)⁶ and Italian enterprises locate middle way between the two extremes, both producing for the Chinese market (48%) and to export abroad (52%).

Figure 5: Major problems crossed by our European investors in China

Figure 5 summarizes the main problems faced by European MNEs in China, showing a good deal of variation across countries: while Italian investors have mostly suffered from cultural distance (25%), the Swiss have complained about the lack of good infrastructures (25%) and the Spanish about the complicity of bureaucracy (31%). Linguistic difficulties and the absence of a clear and transparent legal system have been met quite often by all

⁶ Using the terminology of the *Knowledge Capital Model* (see Markusen and Maskus 2001 for a survey), we call *vertical* purpose the first case, aimed at saving on production costs – i.e. MNEs produce in the local market, because it is cheaper, but they sell abroad - and *horizontal* purpose the second one, aimed at accessing the local market – i.e. MNEs produce and sell within the local market.

the three. Notice that only a small percentage of enterprises have not complained at all, suggesting that operating in China is still far away from being simple and straight forward, from a Western perspective.

For the purpose of the present work, it is particularly interesting to consider the mode of entry, selected by European respondents. Figure 6 displays our main findings: while Italian (66%) and Swiss (58%) dominating choice falls on the joint-venture option, the Spanish seem to have a strong preference towards total ownership (78%).

Figure 6: Internalisation choice in China

Basing on the survey answers, the reasons to engage in a partnership, rather than operating in wholly-owned subsidiaries, range from gaining local support to risks and costs sharing, from achieving the optimal size to skills and competitive position enhancing (Figure 7). China is still perceived as a difficult and faraway destination, so that operating in a joint-venture seems to be the easiest way to survive and succeed there. Indeed, the need to find a partner, well acquainted with the domestic context, able to speak and negotiate with the Chinese suppliers and customers, and good in dialoguing with the local authorities is particularly stressed by Italian and Swiss respondents.

Among the firms that operate in a WOS, a large majority chooses this mode in order to achieve strong control over technology transfer and high flexibility standards (see Figure 8), in lines with our theoretical expectations: especially high tech companies are very reluctant to invest in developing countries since they do not want to share know-how with a lower skilled partner. Foreign Direct Investment seems the most natural way to avoid this risk, as MNEs simply work alone and they do not need to consult with a local counterpart on management decisions. For about 30%, the wholly-owned subsidiary

represents the evolution from a former JV⁷, while 3% chooses to operate alone due to the lack of an appropriate local partner. This evidence seems to be consistent with our extension of the *Dissipation of Intangible Assets* framework: the wish to preserve technology and managerial techniques is stressed as a key driver of FDI, by European firms with manufacturing operations in China.

Figure 7: Reasons to choice joint-venture over FDI

Figure 8: Reasons to choice FDI over JV

3.2 Specification

Based on the data, briefly presented in 3.1, we regress the Internalisation decision – FDI versus joint-venture – of Italian, Spanish and Swiss multinationals in China, within the DIA framework reviewed in Section 2.

Our unit of analysis is the production affiliate in China. The econometric specification is as follows:

$$FDI = F \alpha + I \tau + C \sigma + \varepsilon$$

$(nx1) \quad (nxm)(mx1) \quad (nxl)(lx1) \quad (nxk)(kx1) \quad (nx1)$

⁷ Historically, the joint-venture represents the first contractual agreement that allows foreign property of Chinese firms (the Law on Equity Joint-Venture was approved in 1979). Wholly Foreign-Owned Enterprises were introduced only in the 1980s, making MNEs free to choose between partial and total ownership when investing in the PRC. Restrictions to such a choice, depending on the desired business or the sector have been completely abolished year by year (Cavalieri 2003).

FDI is the dependent variable vector, whose elements take value 1 in case of wholly-owned subsidiary, 0 in case of joint-venture.

Explanatory variables are of three types: F is a matrix of Firm-level regressors; I and C are, respectively, a matrix of Industry and Country characteristics; α , τ and σ are the parametric vectors associated to firm, industry and country variables and ε denotes the error term.

Notice that, within F , it is worth distinguishing between *core* and *control* regressors: core variables are those measuring MNEs' Intangible Assets, over which we have some expectations (see Section 2); control variables denote other firm-level characteristics that may play a role in shaping the Internalisation decision.

Recall from our previous discussion (Sections 1 and 2) that *knowledge* covers both *human capital* and *technological* aspects, so our *core* regressors refer to *both* types. This is an important novelty, compared to the previous empirical literature: although human capital is often mentioned as a key asset, likely to orient multinational activity, it is rarely included in econometric tests, due to the lack of firm-level information. Here, as a proxy for *human capital*, two different indicators are adopted, such as the extent of the training courses, organized by the parent company, for its employees (*TRAINING*), and their level of education (*GRADUATE*).

As far as *technology* is concerned, our measures include: the value of patents (*PATENT*); the ratio of patents over sales (*PATENT/SALES*) and, similarly to (Blomstrom et al. 1989; Smarzynska 2000), whether or not the parent firm belongs to a high tech sector (*HIGHTECH*), with a particular focus on the *TELECOM* one⁸; $PATENT * HIGHTECH$ is a measure the value of patent, for firms belonging to *HIGHTECH* sectors.

These variables strictly refer to the MNE's Intangible Assets and therefore, based on the DIA framework, we expect an overall positive sign: FDI, 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 and human capital or they belong to high tech industries.

Firm-level controls include: sales (*SALES*, as in Blomstrom and Zejan 1991; Meyer 1998; Smarzynska 2000); the number of employees (*EMPLOY*) and the destination of the goods produced in China (*HFDI*) – which allows us to distinguish between horizontal and

⁸ Notice that in earlier studies (see, among others: Desai et al. 2002; Smarzynska 2000) R&D expenditure is also employed as a proxy for technology. Due to data missing we preferred to base on patents, at firm-level, while the R&D expenditure, at country-level, is included as a control (*RDE*).

vertical purposes; similarly to (Herrmann and Datta 2002; Guillen 2003), *COUNTRIES* is a proxy for the MNE's experience in running foreign operations.

Matrix *I* contains a few industry controls - such as *METAL*, *PRECISION*, *SCALE INTENSIVE* and *HT SUPPLIER DOMINATED* – while matrix *C* covers both home and host country characteristics. In particular, it includes the location of the affiliate in China (*SHANGAI*, *JIANGSU*, *GUANGDONG* and *ZEHIJANG*) - to capture the high degree of variation within the destination market; the location of the parent company in Europe (*SPAIN*); the level of Research & Development expenditure (*RDE*); the high tech exports, as percentage of total merchandise exports (*HTE*); and the dimension of the population (*POP*) in the home country, to take into account potential differences across Italian, Spanish and Swiss investors.

Table 1 summarizes all the information about the variables described above.

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

Table 1: Variable description

<i>Variable</i>	<i>Description</i>
<i>FDI</i>	Dummy variable, 1 if FDI, 0 if JV. Type: regressand. Source: interviews.
<i>GRADUATE</i>	Dummy variable, 1 if the percentage of employees with a degree is larger than 25%, 0 otherwise. Type: firm-level <i>core</i> regressor; it is a proxy for the human capital of the parent firm. Source: interviews.
<i>TRAINING</i>	Dummy variable, 1 if the parent firm organizes training courses for the employees longer than 6 months, 0 otherwise. Type: firm-level <i>core</i> regressor; it is a proxy for the human capital of the parent firm. Source: interviews.
<i>HIGHTECH</i>	Dummy variable, 1 if the parent firm belongs to a “high tech” sector, i.e. a sector in which the average R&D expenditure is more than 500,000 Euro. Type: firm-level <i>core</i> regressor; it is an indicator of technology of the parent firm. Source: personal elaborations from ISTAT (Istituto Nazionale di Statistica) data.
<i>TELECOM</i>	Dummy variable, 1 if the parent firm belongs to the TELECOM (NACE REV 1.1, 32) sector, 0 otherwise. Type: firm-level <i>core</i> regressor; it is an indicator of the level of technology of the parent firm. Source: personal elaborations from ISTAT data.

<i>PATENT</i>	<p>Patents of the parent firm (millions Euro).</p> <p>Type: firm-level <i>core</i> regressor; it is an indicator of technology of the parent firm.</p> <p>Source: AIDA (Analisi Informatizzata delle Aziende, it is a dataset that comprises balance sheet information of more than 200,000 Italian companies with sales larger than 500,000 Euro) and AMADEUS.</p>
<i>PATENT/SALES</i>	<p>Patent over sales of the parent firm.</p> <p>Type: firm-level <i>core</i> regressor; it is an indicator of technology of the parent firm.</p> <p>Source: personal elaborations from ISTAT, AIDA and AMADEUS.</p>
<i>PATENT*HIGHTECH</i>	<p>Patents of the parent firm (millions Euro), belonging to HIGHTECH sectors.</p> <p>Type: firm-level <i>core</i> regressor; it is an indicator of technology of the parent firm.</p> <p>Source: Interviews, AIDA and AMADEUS.</p>
<i>SALES</i>	<p>Sales of the parent company (billions Euro).</p> <p>Type: firm-level <i>control</i> regressor.</p> <p>Source: AIDA and AMADEUS.</p>
<i>EMPLOY</i>	<p>Number of employees of the parent company.</p> <p>Type: firm-level <i>control</i> regressor.</p> <p>Source: AIDA and AMADEUS.</p>
<i>HFDI</i>	<p>Dummy variable, 1 in case of horizontal purpose – i.e. the goods produced in China are addressed to the local market – 0 in case of vertical purpose – i.e. the goods produced in China are exported elsewhere.</p> <p>Type: firm-level <i>control</i> regressor.</p> <p>Source: interviews.</p>
<i>COUNTRIES</i>	<p>Dummy variable, 1 if the parent firm was engaged in international operations with more than 5 foreign countries before the FDI in Asia, 0 otherwise. It is a proxy for the firm's experience in running foreign operations.</p> <p>Type: firm-level <i>control</i> regressor.</p> <p>Source: interviews.</p>
<i>METAL</i>	<p>Dummy variable, 1 if the parent firm belongs to the METAL (NACE REV 1.1, 28) sector, 0 otherwise.</p> <p>Type: industry-level <i>control</i> regressor.</p> <p>Source: personal elaborations from ISTAT data.</p>
<i>PRECISION</i>	<p>Dummy variable, 1 if the parent firm belongs to the PRECISION (NACE REV 1.1, 33) sector, 0 otherwise.</p> <p>Type: industry-level <i>control</i> regressor.</p> <p>Source: personal elaborations from ISTAT data.</p>
<i>SCALE INTENSIVE</i>	<p>Dummy variable, 1 if the parent firm is engaged in the scale-intensive sector, 0 otherwise (Bell and Pavitt 1993).</p> <p>Type: industry-level <i>control</i> regressor</p> <p>Source: interviews.</p>
<i>HT SUPPLY DOMINATED</i>	<p>Dummy variable, 1 if the parent firm is a HIGHTECH company (see above definition) in supply dominated sector, 0 otherwise (Bell and Pavitt 1993).</p> <p>Type: industry-level <i>control</i> regressor</p> <p>Source: interviews.</p>
<i>SPAIN</i>	<p>Dummy variable, 1 if the parent firm's headquarter is located in Spain, 0 otherwise.</p> <p>Type: country-level <i>control</i> regressor.</p> <p>Source: interviews.</p>
<i>SHANGHAI</i>	<p>Dummy variable, 1 if the subsidiary is located in Shanghai, 0 otherwise.</p> <p>Type: country-level <i>control</i> regressor.</p>

	Source: interviews.
<i>JIANGSU</i>	Dummy variable, 1 if the subsidiary is located in Jiangsu, 0 otherwise. Type: country-level <i>control</i> regressor. Source: interviews.
<i>GUANGDONG</i>	Dummy variable, 1 if the subsidiary is located in Guangdong, 0 otherwise. Type: country-level <i>control</i> regressor. Source: interviews.
<i>ZEJIJIANG</i>	Dummy variable, 1 if the subsidiary is located in Zehijang, 0 otherwise. Type: country-level <i>control</i> regressor. Source: interviews.
<i>POP</i>	Population of the home country (millions of inhabitants). Type: country-level <i>control</i> regressor. Source: http://humandevlopment.bu.edu/
<i>RDE</i>	National Research and Development Expenditure of the home country, as a percentage of Gross National Income. Type: country-level <i>control</i> regressor. Source: personal elaborations from http://humandevlopment.bu.edu/
<i>HTE</i>	High Tech exports as a percentage of total merchandise exports of the European country. Type: country-level <i>control</i> regressor. Source: personal elaborations from http://humandevlopment.bu.edu/

3.3 Results

Probit estimates are shown in Table 2.

Reminding the theoretical priors, summarized in Section 2, it is worth noticing that all the core variables are significant with the expected sign and they remain so across different specifications; this provides a first important result and suggests quite a good matching between the theory and the data, making sense of our DIA extension to the case of joint-venture.

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 controls are also included - we see that with an increase in the European firms' Intangible Assets, the probability of internalising production, rather than operating in joint-venture, increases as well.

These results are broadly consistent with the existing empirical literature (see, among others, Smarzyska 2000; Desai et al. 2001; Brouthers 2002; Chen and Hu 2002) and they add precious information about the role of human capital, as a key resource driving the *Internalisation* choice of Italian, Swiss and Spanish companies in China.

The size of the parent company – measured by *EMPLOY* and *SALES* – does not turn significant in any specification.

Moreover, from Table 2, it seems that investors coming from Spain (*SPAIN*) are more prone to operate in wholly-owned subsidiaries, while experience in running foreign operations (*COUNTRIES*) and horizontal purpose (*HFDI*) push towards joint-venture establishment. Indeed, being used to manage foreign operations might help to protect Intangible Assets more effectively and to avoid the risk of knowledge dissipation. At the same time, it is clear that investors wishing to penetrate the local market – horizontal purpose - are more eager to do so in joint-venture, to take advantage of the partner knowledge of her own country.

As far as industry variables are concerned, *METAL* and *PRECISION* turn out to be significant, with a positive sign, meaning that parent firms engaged with production of metal goods or precision instruments, watches and optical appliances have higher probability to operate through FDI. At a broader level, we can observe that scale intensive multinationals (*SCALE INTENSIVE*) prefer the JV contract, while technological leaders in the supplier oriented sector (*HIGHTECH SUPPLIER DOMINATED*) have a clear propensity for the integrated solution. This is not surprising, since scale economies are often associated with large companies, characterized by strong bargaining power, whereas supplier dominated firms are generally smaller and might have problems avoiding IAs spillover.

Among the country variables included in our regressions⁹, it is interesting to see that manufacturing operations in Shanghai (*SHANGHAI*) tend to be conducted via FDI, while the opposite is true for *JIANGSU*, *GUANGDONG* and *ZHEJIANG*. No evidence has been found related to the dimension of the home country (*POP*), while the level of national R&D Expenditure (*RDE*) and the percentage of high tech exports (*HTE*) proved to play some role, the former pushing towards FDI, the latter towards JV, although the marginal effect is very low, compared to core variables¹⁰.

⁹ Other country variables (not shown) were included in our econometric tests but, given the geographical proximity and the economic similarity of Italy, Spain and Switzerland, they resulted insignificant, because of the lack of cross country variation.

¹⁰ Notice that Spain is the country with the lowest level of high tech exports as a percentage of total merchandise exports, in our sample, and indeed it shows the wicker tendency towards joint-venture establishment.

Table 2: Probit estimates¹¹

	FDI	FDI	FDI	FDI	FDI	FDI	FDI	FDI
GRADUATE	0,181 (0,022)**	0,166 (0,034)**	0,161 (0,048)**	0,152 (0,071)*	0,155 (0,069)*	0,170 (0,050)*	0,159 (0,062)*	0,159 (0,070)*
TRAINING	0,333 (0,007)***	0,337 (0,006)***	0,271 (0,039)**	0,291 (0,035)**		0,395 (0,004)***	0,319 (0,022)**	0,351 (0,017)**
HIGHTECH			0,119 (0,090)*					
TELECOM				0,382 (0,060)**	0,354 (0,085)*			0,405 (0,043)**
PATENT	0,070 (0,045)**		0,054 (0,098)*		0,118 (0,029)**			0,125 (0,032)**
PATENT*HIGHTECH				0,127 (0,026)**				
PATENT/SALES		0,454 (0,002)***					0,406 (0,013)**	
EMPLOY			0,026 (0,683)				-0,009 (0,176)	
SALES			-0,020 (0,449)			-0,003 (0,288)		
HFDI			-0,129 (0,051)*	-0,122 (0,099)*	-0,148 (0,039)**		-0,138 (0,051)*	
COUNTRIES							-0,312 (0,002)***	
METAL			0,220 (0,082)*	0,281 (0,022)**	0,289 (0,018)**		0,305 (0,017)**	0,279 (0,022)**
PRECISION					0,346 (0,073)*			
SCALE INTENSIVE			-0,217 (0,078)*			-0,238 (0,096)*		-0,234 (0,073)*
HT SUPPLY DOMINATED						0,456 (0,001)***		0,437 (0,001)***
SPAIN						0,500 (0,001)***		
SHANGHAI				0,370 (0,000)***	0,351 (0,000)***		0,382 (0,000)***	0,347 (0,000)***
JIANGSU						-0,361 (0,000)***		-0,232 (0,080)*
GUANGDONG						-0,228 (0,011)**		
ZHEJIANG					-0,244 (0,081)*	-0,274 (0,048)**	-0,268 (0,046)***	
POP								0,034 (0,282)
RDE						0,046 (0,019)**		
HTE				-0,051 (0,085)**	-0,057 (0,057)*			
Obs	236	234	234	236	236	257	234	236
p-value	0,000***	0,000***	0,000***	0,000***	0,000***	0,000***	0,000***	0,000***
Pseudo R ²	0.0916	0.0708	0.1586	0.1962	0.1981	0.2116	0.2117	0.2405

4. Conclusion

This paper is an attempt to explore the FDI/joint-venture choice of Italian, Spanish and Swiss multinationals in China, as shaped by the risk of dissipating their Intangible Assets.

¹¹ Marginal effects and P-value in round brackets shown. * significant at 10%, ** significant at 5%, *** significant at 1%.

By telling the tale of these countries, we intended to document their experience in the PRC, and discuss to what extent the DIA approach can be applied to the FDI/JV trade-off, adding to the traditional FDI/licensing one.

Basing on survey data, our estimates show that Foreign Direct Investment is the most preferred mode of entry for European firms endowed with superior technology and higher skilled employees, meaning that the threat of knowledge spillover not only drives their choice of total versus partial ownership, but it also plays a major role in orienting such a decision, compared to home country characteristics. Put another way, irrespective of their origin, parent firms characterized by a higher degree of IAs show a clearer preference for total ownership, to secure their resources against a potential Chinese partner. These results are completely aligned with the theoretical predictions derived for the standard comparison between FDI and licensing (Ethier and Markusen 1996; Markusen 1998, 2001; Saggi 1996, 1999; Fosfuri 2000; Mattoo et al. 2001; Fosfuri et al. 2001; Glass and Saggi 2002a).

We believe that these findings, although preliminary, are promising enough to encourage further research on joint-ventures within the DIA field: in theoretical terms, future steps should include the creation of a model to incorporate the JV among the contractual arrangements that MNEs can sign when entering into a foreign market; in empirical terms, further evidence is also needed to add a multiple-host country perspective and control for possible selection bias.

5. 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
- 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
- Bell M. and K. Pavitt (1993), "Accumulating Technological Capability in Developing Countries", *World Bank Economic Review*, Supplement, 257-281
- Blomstrom M., Lipsey R.E. and L. Ohlsson (1989), "What do Rich Countries Trade with Each Other? R&D and the Composition of US and Sweden Trade", NBER Working Paper 3140
- Blomstrom M. and M. Zejan (1991), "Why Do Multinational Firms Seek Out Joint Ventures?", *Journal of International Development*, 3 (1), 53-63
- Brouthers K.D. (2002), "Institutional, Cultural and Transaction Cost Influences on Entry Mode Choice and Performance", *Journal of International Business Studies* n. 33, 203-221
- Buckley P. and M. Casson (1996), "An Economic Model of International Joint Venture Strategy", *Journal of International Business Studies*, 27(5), 849-876
- Cavalieri (2003), "C'era una volta la joint-venture...evoluzione degli strumenti di investimento estero in Cina", *Economia & Management*, 6, 44-46
- Chen H. and Hu M. Y. (2002), "An Analysis of Determinants of Entry Mode and its Impact on Performance", *International Business Review* n. 11, 193-210
- Desai M.A., Foley C.F. and J.R. Hines (2002), "International Joint Ventures and the Boundaries of the Firm", NBER Working Paper 9115
- 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. J. and J. R. Markusen (1996), "Multinational Firms, Technology Diffusion, and Trade", *Journal of International Economics*, 41, 1-28

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. National Bureau of Economic Research, Cambridge, Mass.

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

Glass A. J. and K. Saggi (2002a), "Licensing versus Direct Investment: Implications for Economic Growth", *Journal of International Economics*, 56, 131-153

Glass and Saggi (2002b), "Intellectual Property Rights and Foreign Direct Investment", *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, 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 (2004). Managerial Incentives and the International Organization of Production. *Journal of International Economics* 63: 237-262.

Guillen M. F. (2003), "Experience, Imitation, and the Sequence of Foreign Entry: Wholly Owned and Joint Venture Manufacturing by South Korean Firms and Business Groups in China, 1987-1995", *Journal of International Business Studies* n. 34, 185-198

Hennart J.F. (1991), "Control in Multinational Firms: the Role of Price and Hierarchy", *Management International Review*, 31, 71-97

Herrmann P. and Datta D. K. (2002), "CEO Successor Characteristics and the Choice of Foreign Market Entry Mode: an Empirical Study", *Journal of International Business Studies* n. 33, 551-569

Horstmann I. and J.R. Markusen (1996), "Exploring New Markets: Direct Investment, Contractual Relationships, and the Multinational Enterprise", *International Economic Review*, 37, 1-20

- Li F. and J. Li (1999). *Foreign Direct Investment in China*. London: MacMillan.
- Luo Y. (2000). *Partnering with Chinese Firms*. Aldershot: Ashgate Publishing Company
- 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. (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. and K. Maskus (2001), “General Equilibrium Approaches to the Multinational Firm: A Review of Theory and Evidence”, NBER Working Paper 8334
- 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.
- 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

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>

<http://agecon.lib.umn.edu>

NOTE DI LAVORO PUBLISHED IN 2006

SIEV	1.2006	<i>Anna ALBERINI</i> : <u>Determinants and Effects on Property Values of Participation in Voluntary Cleanup Programs: The Case of Colorado</u>
CCMP	2.2006	<i>Valentina BOSETTI, Carlo CARRARO and Marzio GALEOTTI</i> : <u>Stabilisation Targets, Technical Change and the Macroeconomic Costs of Climate Change Control</u>
CCMP	3.2006	<i>Roberto ROSON</i> : <u>Introducing Imperfect Competition in CGE Models: Technical Aspects and Implications</u>
KTHC	4.2006	<i>Sergio VERGALLI</i> : <u>The Role of Community in Migration Dynamics</u>
SIEV	5.2006	<i>Fabio GRAZI, Jeroen C.J.M. van den BERGH and Piet RIETVELD</i> : <u>Modeling Spatial Sustainability: Spatial Welfare Economics versus Ecological Footprint</u>
CCMP	6.2006	<i>Olivier DESCHENES and Michael GREENSTONE</i> : <u>The Economic Impacts of Climate Change: Evidence from Agricultural Profits and Random Fluctuations in Weather</u>
PRCG	7.2006	<i>Michele MORETTO and Paola VALBONESE</i> : <u>Firm Regulation and Profit-Sharing: A Real Option Approach</u>
SIEV	8.2006	<i>Anna ALBERINI and Aline CHIABAI</i> : <u>Discount Rates in Risk v. Money and Money v. Money Tradeoffs</u>
CTN	9.2006	<i>Jon X. EGUIA</i> : <u>United We Vote</u>
CTN	10.2006	<i>Shao CHIN SUNG and Dinko DIMITRO</i> : <u>A Taxonomy of Myopic Stability Concepts for Hedonic Games</u>
NRM	11.2006	<i>Fabio CERINA</i> (lxxviii): <u>Tourism Specialization and Sustainability: A Long-Run Policy Analysis</u>
NRM	12.2006	<i>Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA</i> (lxxviii): <u>Benchmarking in Tourism Destination, Keeping in Mind the Sustainable Paradigm</u>
CCMP	13.2006	<i>Jens HORBACH</i> : <u>Determinants of Environmental Innovation – New Evidence from German Panel Data Sources</u>
KTHC	14.2006	<i>Fabio SABATINI</i> : <u>Social Capital, Public Spending and the Quality of Economic Development: The Case of Italy</u>
KTHC	15.2006	<i>Fabio SABATINI</i> : <u>The Empirics of Social Capital and Economic Development: A Critical Perspective</u>
CSRM	16.2006	<i>Giuseppe DI VITA</i> : <u>Corruption, Exogenous Changes in Incentives and Deterrence</u>
CCMP	17.2006	<i>Rob B. DELLINK and Marjan W. HOFKES</i> : <u>The Timing of National Greenhouse Gas Emission Reductions in the Presence of Other Environmental Policies</u>
IEM	18.2006	<i>Philippe QUIRION</i> : <u>Distributional Impacts of Energy-Efficiency Certificates Vs. Taxes and Standards</u>
CTN	19.2006	<i>Somdeb LAHIRI</i> : <u>A Weak Bargaining Set for Contract Choice Problems</u>
CCMP	20.2006	<i>Massimiliano MAZZANTI and Roberto ZOBOLI</i> : <u>Examining the Factors Influencing Environmental Innovations</u>
SIEV	21.2006	<i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>Non-pecuniary Work Incentive and Labor Supply</u>
CCMP	22.2006	<i>Marzio GALEOTTI, Matteo MANERA and Alessandro LANZA</i> : <u>On the Robustness of Robustness Checks of the Environmental Kuznets Curve</u>
NRM	23.2006	<i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>When is it Optimal to Exhaust a Resource in a Finite Time?</u>
NRM	24.2006	<i>Y. Hossein FARZIN and Ken-ICHI AKAO</i> : <u>Non-pecuniary Value of Employment and Natural Resource Extinction</u>
SIEV	25.2006	<i>Lucia VERGANO and Paulo A.L.D. NUNES</i> : <u>Analysis and Evaluation of Ecosystem Resilience: An Economic Perspective</u>
SIEV	26.2006	<i>Danny CAMPBELL, W. George HUTCHINSON and Riccardo SCARPA</i> : <u>Using Discrete Choice Experiments to Derive Individual-Specific WTP Estimates for Landscape Improvements under Agri-Environmental Schemes: Evidence from the Rural Environment Protection Scheme in Ireland</u>
KTHC	27.2006	<i>Vincent M. OTTO, Timo KUOSMANEN and Ekko C. van IERLAND</i> : <u>Estimating Feedback Effect in Technical Change: A Frontier Approach</u>
CCMP	28.2006	<i>Giovanni BELLA</i> : <u>Uniqueness and Indeterminacy of Equilibria in a Model with Polluting Emissions</u>
IEM	29.2006	<i>Alessandro COLOGNI and Matteo MANERA</i> : <u>The Asymmetric Effects of Oil Shocks on Output Growth: A Markov-Switching Analysis for the G-7 Countries</u>
KTHC	30.2006	<i>Fabio SABATINI</i> : <u>Social Capital and Labour Productivity in Italy</u>
ETA	31.2006	<i>Andrea GALLICE</i> (lxxix): <u>Predicting one Shot Play in 2x2 Games Using Beliefs Based on Minimax Regret</u>
IEM	32.2006	<i>Andrea BIGANO and Paul SHEEHAN</i> : <u>Assessing the Risk of Oil Spills in the Mediterranean: the Case of the Route from the Black Sea to Italy</u>
NRM	33.2006	<i>Rinaldo BRAU and Davide CAO</i> (lxxviii): <u>Uncovering the Macrostructure of Tourists' Preferences. A Choice Experiment Analysis of Tourism Demand to Sardinia</u>
CTN	34.2006	<i>Parkash CHANDER and Henry TULKENS</i> : <u>Cooperation, Stability and Self-Enforcement in International Environmental Agreements: A Conceptual Discussion</u>
IEM	35.2006	<i>Valeria COSTANTINI and Salvatore MONNI</i> : <u>Environment, Human Development and Economic Growth</u>
ETA	36.2006	<i>Ariel RUBINSTEIN</i> (lxxix): <u>Instinctive and Cognitive Reasoning: A Study of Response Times</u>

ETA	37.2006	<i>Maria SALGADEO</i> (lxxx): <u>Choosing to Have Less Choice</u>
ETA	38.2006	<i>Justina A.V. FISCHER and Benno TORGLER</i> : <u>Does Envy Destroy Social Fundamentals? The Impact of Relative Income Position on Social Capital</u>
ETA	39.2006	<i>Benno TORGLER, Sascha L. SCHMIDT and Bruno S. FREY</i> : <u>Relative Income Position and Performance: An Empirical Panel Analysis</u>
CCMP	40.2006	<i>Alberto GAGO, Xavier LABANDEIRA, Fidel PICOS And Miguel RODRÍGUEZ</i> : <u>Taxing Tourism In Spain: Results and Recommendations</u>
IEM	41.2006	<i>Karl van BIERVLIET, Dirk Le ROY and Paulo A.L.D. NUNES</i> : <u>An Accidental Oil Spill Along the Belgian Coast: Results from a CV Study</u>
CCMP	42.2006	<i>Rolf GOLOMBEK and Michael HOEL</i> : <u>Endogenous Technology and Tradable Emission Quotas</u>
KTHC	43.2006	<i>Giulio CAINELLI and Donato IACOBUCCI</i> : <u>The Role of Agglomeration and Technology in Shaping Firm Strategy and Organization</u>
CCMP	44.2006	<i>Alvaro CALZADILLA, Francesco PAULI and Roberto ROSON</i> : <u>Climate Change and Extreme Events: An Assessment of Economic Implications</u>
SIEV	45.2006	<i>M.E. KRAGT, P.C. ROEBELING and A. RUIJS</i> : <u>Effects of Great Barrier Reef Degradation on Recreational Demand: A Contingent Behaviour Approach</u>
NRM	46.2006	<i>C. GIUPPONI, R. CAMERA, A. FASSIO, A. LASUT, J. MYSLIAK and A. SGOBBI</i> : <u>Network Analysis, Creative System Modelling and DecisionSupport: The NetSyMoD Approach</u>
KTHC	47.2006	<i>Walter F. LALICH</i> (lxxx): <u>Measurement and Spatial Effects of the Immigrant Created Cultural Diversity in Sydney</u>
KTHC	48.2006	<i>Elena PASPALANOVA</i> (lxxx): <u>Cultural Diversity Determining the Memory of a Controversial Social Event</u>
KTHC	49.2006	<i>Ugo GASPARINO, Barbara DEL CORPO and Dino PINELLI</i> (lxxx): <u>Perceived Diversity of Complex Environmental Systems: Multidimensional Measurement and Synthetic Indicators</u>
KTHC	50.2006	<i>Aleksandra HAUKE</i> (lxxx): <u>Impact of Cultural Differences on Knowledge Transfer in British, Hungarian and Polish Enterprises</u>
KTHC	51.2006	<i>Katherine MARQUAND FORSYTH and Vanja M. K. STENIUS</i> (lxxx): <u>The Challenges of Data Comparison and Varied European Concepts of Diversity</u>
KTHC	52.2006	<i>Gianmarco I.P. OTTAVIANO and Giovanni PERI</i> (lxxx): <u>Rethinking the Gains from Immigration: Theory and Evidence from the U.S.</u>
KTHC	53.2006	<i>Monica BARNI</i> (lxxx): <u>From Statistical to Geolinguistic Data: Mapping and Measuring Linguistic Diversity</u>
KTHC	54.2006	<i>Lucia TAJOLI and Luca DE BENEDICTIS</i> (lxxx): <u>Economic Integration and Similarity in Trade Structures</u>
KTHC	55.2006	<i>Suzanna CHAN</i> (lxxx): <u>"God's Little Acre" and "Belfast Chinatown": Diversity and Ethnic Place Identity in Belfast</u>
KTHC	56.2006	<i>Diana PETKOVA</i> (lxxx): <u>Cultural Diversity in People's Attitudes and Perceptions</u>
KTHC	57.2006	<i>John J. BETANCUR</i> (lxxx): <u>From Outsiders to On-Paper Equals to Cultural Curiosities? The Trajectory of Diversity in the USA</u>
KTHC	58.2006	<i>Kiflemariam HAMDE</i> (lxxx): <u>Cultural Diversity A Glimpse Over the Current Debate in Sweden</u>
KTHC	59.2006	<i>Emilio GREGORI</i> (lxxx): <u>Indicators of Migrants' Socio-Professional Integration</u>
KTHC	60.2006	<i>Christa-Maria LERM HAYES</i> (lxxx): <u>Unity in Diversity Through Art? Joseph Beuys' Models of Cultural Dialogue</u>
KTHC	61.2006	<i>Sara VERTOMMEN and Albert MARTENS</i> (lxxx): <u>Ethnic Minorities Rewarded: Ethnostratification on the Wage Market in Belgium</u>
KTHC	62.2006	<i>Nicola GENOVESE and Maria Grazia LA SPADA</i> (lxxx): <u>Diversity and Pluralism: An Economist's View</u>
KTHC	63.2006	<i>Carla BAGNA</i> (lxxx): <u>Italian Schools and New Linguistic Minorities: Nationality Vs. Plurilingualism. Which Ways and Methodologies for Mapping these Contexts?</u>
KTHC	64.2006	<i>Vedran OMANOVIĆ</i> (lxxx): <u>Understanding "Diversity in Organizations" Paradigmatically and Methodologically</u>
KTHC	65.2006	<i>Mila PASPALANOVA</i> (lxxx): <u>Identifying and Assessing the Development of Populations of Undocumented Migrants: The Case of Undocumented Poles and Bulgarians in Brussels</u>
KTHC	66.2006	<i>Roberto ALZETTA</i> (lxxx): <u>Diversities in Diversity: Exploring Moroccan Migrants' Livelihood in Genoa</u>
KTHC	67.2006	<i>Monika SEDENKOVA and Jiri HORAK</i> (lxxx): <u>Multivariate and Multicriteria Evaluation of Labour Market Situation</u>
KTHC	68.2006	<i>Dirk JACOBS and Andrea REA</i> (lxxx): <u>Construction and Import of Ethnic Categorisations: "Allochthones" in The Netherlands and Belgium</u>
KTHC	69.2006	<i>Eric M. USLANER</i> (lxxx): <u>Does Diversity Drive Down Trust?</u>
KTHC	70.2006	<i>Paula MOTA SANTOS and João BORGES DE SOUSA</i> (lxxx): <u>Visibility & Invisibility of Communities in Urban Systems</u>
ETA	71.2006	<i>Rinaldo BRAU and Matteo LIPPI BRUNI</i> : <u>Eliciting the Demand for Long Term Care Coverage: A Discrete Choice Modelling Analysis</u>
CTN	72.2006	<i>Dinko DIMITROV and Claus-JOCHEN HAAKE</i> : <u>Coalition Formation in Simple Games: The Semistrict Core</u>
CTN	73.2006	<i>Ottorino CHILLEM, Benedetto GUI and Lorenzo ROCCO</i> : <u>On The Economic Value of Repeated Interactions Under Adverse Selection</u>
CTN	74.2006	<i>Sylvain BEAL and Nicolas QUÉROU</i> : <u>Bounded Rationality and Repeated Network Formation</u>
CTN	75.2006	<i>Sophie BADE, Guillaume HAERINGER and Ludovic RENOU</i> : <u>Bilateral Commitment</u>
CTN	76.2006	<i>Andranik TANGIAN</i> : <u>Evaluation of Parties and Coalitions After Parliamentary Elections</u>
CTN	77.2006	<i>Rudolf BERGHAMMER, Agnieszka RUSINOWSKA and Harrie de SWART</i> : <u>Applications of Relations and Graphs to Coalition Formation</u>
CTN	78.2006	<i>Paolo PIN</i> : <u>Eight Degrees of Separation</u>
CTN	79.2006	<i>Roland AMANN and Thomas GALL</i> : <u>How (not) to Choose Peers in Studying Groups</u>

CTN	80.2006	<i>Maria MONTERO: <u>Inequity Aversion May Increase Inequity</u></i>
CCMP	81.2006	<i>Vincent M. OTTO, Andreas LÖSCHEL and John REILLY: <u>Directed Technical Change and Climate Policy</u></i>
CSRM	82.2006	<i>Nicoletta FERRO: <u>Riding the Waves of Reforms in Corporate Law, an Overview of Recent Improvements in Italian Corporate Codes of Conduct</u></i>
CTN	83.2006	<i>Siddhartha BANDYOPADHYAY and Mandar OAK: <u>Coalition Governments in a Model of Parliamentary Democracy</u></i>
PRCG	84.2006	<i>Raphaël SOUBEYRAN: <u>Valence Advantages and Public Goods Consumption: Does a Disadvantaged Candidate Choose an Extremist Position?</u></i>
CCMP	85.2006	<i>Eduardo L. GIMÉNEZ and Miguel RODRÍGUEZ: <u>Pigou's Dividend versus Ramsey's Dividend in the Double Dividend Literature</u></i>
CCMP	86.2006	<i>Andrea BIGANO, Jacqueline M. HAMILTON and Richard S.J. TOL: <u>The Impact of Climate Change on Domestic and International Tourism: A Simulation Study</u></i>
KTHC	87.2006	<i>Fabio SABATINI: <u>Educational Qualification, Work Status and Entrepreneurship in Italy an Exploratory Analysis</u></i>
CCMP	88.2006	<i>Richard S.J. TOL: <u>The Polluter Pays Principle and Cost-Benefit Analysis of Climate Change: An Application of Fund</u></i>
CCMP	89.2006	<i>Philippe TULKENS and Henry TULKENS: <u>The White House and The Kyoto Protocol: Double Standards on Uncertainties and Their Consequences</u></i>
SIEV	90.2006	<i>Andrea M. LEITER and Gerald J. PRUCKNER: <u>Proportionality of Willingness to Pay to Small Risk Changes – The Impact of Attitudinal Factors in Scope Tests</u></i>
PRCG	91.2006	<i>Raphaël SOUBEYRAN: <u>When Inertia Generates Political Cycles</u></i>
CCMP	92.2006	<i>Alireza NAGHAVI: <u>Can R&D-Inducing Green Tariffs Replace International Environmental Regulations?</u></i>
CCMP	93.2006	<i>Xavier PAUTREL: <u>Reconsidering The Impact of Environment on Long-Run Growth When Pollution Influences Health and Agents Have Finite-Lifetime</u></i>
CCMP	94.2006	<i>Corrado Di MARIA and Edwin van der WERF: <u>Carbon Leakage Revisited: Unilateral Climate Policy with Directed Technical Change</u></i>
CCMP	95.2006	<i>Paulo A.L.D. NUNES and Chiara M. TRAVISI: <u>Comparing Tax and Tax Reallocations Payments in Financing Rail Noise Abatement Programs: Results from a CE valuation study in Italy</u></i>
CCMP	96.2006	<i>Timo KUOSMANEN and Mika KORTELAJINEN: <u>Valuing Environmental Factors in Cost-Benefit Analysis Using Data Envelopment Analysis</u></i>
KTHC	97.2006	<i>Dermot LEAHY and Alireza NAGHAVI: <u>Intellectual Property Rights and Entry into a Foreign Market: FDI vs. Joint Ventures</u></i>
CCMP	98.2006	<i>Inmaculada MARTÍNEZ-ZARZOSO, Aurelia BENGOCHEA-MORANCHO and Rafael MORALES LAGE: <u>The Impact of Population on CO2 Emissions: Evidence from European Countries</u></i>
PRCG	99.2006	<i>Alberto CAVALIERE and Simona SCABROSETTI: <u>Privatization and Efficiency: From Principals and Agents to Political Economy</u></i>
NRM	100.2006	<i>Khaled ABU-ZEID and Sameh AFIFI: <u>Multi-Sectoral Uses of Water & Approaches to DSS in Water Management in the NOSTRUM Partner Countries of the Mediterranean</u></i>
NRM	101.2006	<i>Carlo GIUPPONI, Jaroslav MYSLAK and Jacopo CRIMI: <u>Participatory Approach in Decision Making Processes for Water Resources Management in the Mediterranean Basin</u></i>
CCMP	102.2006	<i>Kerstin RONNEBERGER, Maria BERRITTELLA, Francesco BOSELLO and Richard S.J. TOL: <u>Klum@Gtap: Introducing Biophysical Aspects of Land-Use Decisions Into a General Equilibrium Model A Coupling Experiment</u></i>
KTHC	103.2006	<i>Avner BEN-NER, Brian P. McCALL, Massoud STEPHANE, and Hua WANG: <u>Identity and Self-Other Differentiation in Work and Giving Behaviors: Experimental Evidence</u></i>
SIEV	104.2006	<i>Aline CHIABAI and Paulo A.L.D. NUNES: <u>Economic Valuation of Oceanographic Forecasting Services: A Cost-Benefit Exercise</u></i>
NRM	105.2006	<i>Paola MINOIA and Anna BRUSAROSCO: <u>Water Infrastructures Facing Sustainable Development Challenges: Integrated Evaluation of Impacts of Dams on Regional Development in Morocco</u></i>
PRCG	106.2006	<i>Carmine GUERRIERO: <u>Endogenous Price Mechanisms, Capture and Accountability Rules: Theory and Evidence</u></i>
CCMP	107.2006	<i>Richard S.J. TOL, Stephen W. PACALA and Robert SOCOLOW: <u>Understanding Long-Term Energy Use and Carbon Dioxide Emissions in the Usa</u></i>
NRM	108.2006	<i>Carles MANERA and Jaume GARAU TABERNER: <u>The Recent Evolution and Impact of Tourism in the Mediterranean: The Case of Island Regions, 1990-2002</u></i>
PRCG	109.2006	<i>Carmine GUERRIERO: <u>Dependent Controllers and Regulation Policies: Theory and Evidence</u></i>
KTHC	110.2006	<i>John FOOT (lxxx): <u>Mapping Diversity in Milan. Historical Approaches to Urban Immigration</u></i>
KTHC	111.2006	<i>Donatella CALABI: <u>Foreigners and the City: An Historiographical Exploration for the Early Modern Period</u></i>
IEM	112.2006	<i>Andrea BIGANO, Francesco BOSELLO and Giuseppe MARANO: <u>Energy Demand and Temperature: A Dynamic Panel Analysis</u></i>
SIEV	113.2006	<i>Anna ALBERINI, Stefania TONIN, Margherita TURVANI and Aline CHIABAI: <u>Paying for Permanence: Public Preferences for Contaminated Site Cleanup</u></i>
CCMP	114.2006	<i>Vivekananda MUKHERJEE and Dirk T.G. RÜBBELKE: <u>Global Climate Change, Technology Transfer and Trade with Complete Specialization</u></i>
NRM	115.2006	<i>Clive LIPCHIN: <u>A Future for the Dead Sea Basin: Water Culture among Israelis, Palestinians and Jordanians</u></i>
CCMP	116.2006	<i>Barbara BUCHNER, Carlo CARRARO and A. Denny ELLERMAN: <u>The Allocation of European Union Allowances: Lessons, Unifying Themes and General Principles</u></i>
CCMP	117.2006	<i>Richard S.J. TOL: <u>Carbon Dioxide Emission Scenarios for the Usa</u></i>

NRM	118.2006	<i>Isabel CORTÉS-JIMÉNEZ and Manuela PULINA: <u>A further step into the ELGH and TLGH for Spain and Italy</u></i>
SIEV	119.2006	<i>Beat HINTERMANN, Anna ALBERINI and Anil MARKANDYA: <u>Estimating the Value of Safety with Labor Market Data: Are the Results Trustworthy?</u></i>
SIEV	120.2006	<i>Elena STRUKOVA, Alexander GOLUB and Anil MARKANDYA: <u>Air Pollution Costs in Ukraine</u></i>
CCMP	121.2006	<i>Massimiliano MAZZANTI, Antonio MUSOLESI and Roberto ZOBOLI: <u>A Bayesian Approach to the Estimation of Environmental Kuznets Curves for CO₂ Emissions</u></i>
ETA	122.2006	<i>Jean-Marie GRETHER, Nicole A. MATHYS, and Jaime DE MELO: <u>Unraveling the World-Wide Pollution Haven Effect</u></i>
KTHC	123.2006	<i>Sergio VERGALLI: <u>Entry and Exit Strategies in Migration Dynamics</u></i>
PRCG	124.2006	<i>Bernardo BORTOLOTTI and Valentina MILELLA: <u>Privatization in Western Europe Stylized Facts, Outcomes and Open Issues</u></i>
SIEV	125.2006	<i>Pietro CARATTI, Ludovico FERRAGUTO and Chiara RIBOLDI: <u>Sustainable Development Data Availability on the Internet</u></i>
SIEV	126.2006	<i>S. SILVESTRI, M PELLIZZATO and V. BOATTO: <u>Fishing Across the Centuries: What Prospects for the Venice Lagoon?</u></i>
CTN	127.2006	<i>Alison WATTS: <u>Formation of Segregated and Integrated Groups</u></i>
SIEV	128.2006	<i>Danny CAMPBELL, W. George HUTCHINSON and Riccardo SCARPA: <u>Lexicographic Preferences in Discrete Choice Experiments: Consequences on Individual-Specific Willingness to Pay Estimates</u></i>
CCMP	129.2006	<i>Giovanni BELLA: <u>Transitional Dynamics Towards Sustainability: Reconsidering the EKC Hypothesis</u></i>
IEM	130.2006	<i>Elisa SCARPA and Matteo MANERA: <u>Pricing and Hedging Illiquid Energy Derivatives: an Application to the JCC Index</u></i>
PRCG	131.2006	<i>Andrea BELTRATTI and Bernardo BORTOLOTTI: <u>The Nontradable Share Reform in the Chinese Stock Market</u></i>
IEM	132.2006	<i>Alberto LONGO, Anil MARKANDYA and Marta PETRUCCI: <u>The Internalization of Externalities in The Production of Electricity: Willingness to Pay for the Attributes of a Policy for Renewable Energy</u></i>
ETA	133.2006	<i>Brighita BERCEA and Sonia OREFFICE: <u>Quality of Available Mates, Education and Intra-Household Bargaining Power</u></i>
KTHC	134.2006	<i>Antonia R. GURRIERI and Luca PETRUZZELLIS: <u>Local Networks to Compete in the Global Era. The Italian SMEs Experience</u></i>
CCMP	135.2006	<i>Andrea BIGANO, Francesco BOSELLO, Roberto ROSON and Richard S.J. TOL: <u>Economy-Wide Estimates of the Implications of Climate Change: A Joint Analysis for Sea Level Rise and Tourism</u></i>
CCMP	136.2006	<i>Richard S.J. TOL: <u>Why Worry About Climate Change? A Research Agenda</u></i>
SIEV	137.2006	<i>Anna ALBERINI, Alberto LONGO and Patrizia RIGANTI: <u>Using Surveys to Compare the Public's and Decisionmakers' Preferences for Urban Regeneration: The Venice Arsenale</u></i>
ETA	138.2006	<i>Y. Hossein FARZIN and Ken-Ichi AKAO: <u>Environmental Quality in a Differentiated Duopoly</u></i>
CCMP	139.2006	<i>Denny ELLERMAN and Barbara BUCHNER: <u>Over-Allocation or Abatement? A Preliminary Analysis of the Ets Based on the 2005 Emissions Data</u></i>
CCMP	140.2006	<i>Horățiu A. RUS (lxxx): <u>Renewable Resources, Pollution and Trade in a Small Open Economy</u></i>
CCMP	141.2006	<i>Enrica DE CIAN (lxxx): <u>International Technology Spillovers in Climate-Economy Models: Two Possible Approaches</u></i>
CCMP	142.2006	<i>Tao WANG (lxxx): <u>Cost Effectiveness in River Management: Evaluation of Integrated River Policy System in Tidal Ouse</u></i>
CCMP	143.2006	<i>Gregory F. NEMET (lxxx): <u>How well does Learning-by-doing Explain Cost Reductions in a Carbon-free Energy Technology?</u></i>
CCMP	144.2006	<i>Anne BRIAND (lxxx): <u>Marginal Cost Versus Average Cost Pricing with Climatic Shocks in Senegal: A Dynamic Computable General Equilibrium Model Applied to Water</u></i>
CCMP	145.2006	<i>Thomas ARONSSON, Kenneth BACKLUND and Linda SAHLÉN (lxxx): <u>Technology Transfers and the Clean Development Mechanism in a North-South General Equilibrium Model</u></i>
IEM	146.2006	<i>Theocharis N. GRIGORIADIS and Benno TORGLER: <u>Energy Regulation, Roll Call Votes and Regional Resources: Evidence from Russia</u></i>
CCMP	147.2006	<i>Manish GUPTA: <u>Costs of Reducing Greenhouse Gas Emissions: A Case Study of India's Power Generation Sector</u></i>
CCMP	148.2006	<i>Valeria COSTANTINI: <u>A Modified Environmental Kuznets Curve for Sustainable Development Assessment Using Panel Data</u></i>
IEM	149.2006	<i>Andrea BIGANO, Mariaester CASSINELLI, Anil MARKANDYA and Fabio SFERRA: <u>The Role of Risk Aversion and Lay Risk in the Probabilistic Externality Assessment for Oil Tanker Routes to Europe</u></i>
KTHC	150.2006	<i>Valeria GATTAI: <u>A Tale of Three Countries: Italian, Spanish and Swiss Manufacturing Operations in China</u></i>

(lxxviii) This paper was presented at the Second International Conference on "Tourism and Sustainable Economic Development - Macro and Micro Economic Issues" jointly organised by CRENoS (Università di Cagliari and Sassari, Italy) and Fondazione Eni Enrico Mattei, Italy, and supported by the World Bank, Chia, Italy, 16-17 September 2005.

(lxxix) This paper was presented at the International Workshop on "Economic Theory and Experimental Economics" jointly organised by SET (Center for advanced Studies in Economic Theory, University of Milano-Bicocca) and Fondazione Eni Enrico Mattei, Italy, Milan, 20-23 November 2005. The Workshop was co-sponsored by CISEPS (Center for Interdisciplinary Studies in Economics and Social Sciences, University of Milan-Bicocca).

(lxxx) This paper was presented at the First EURODIV Conference "Understanding diversity: Mapping and measuring", held in Milan on 26-27 January 2006 and supported by the Marie Curie Series of Conferences "Cultural Diversity in Europe: a Series of Conferences.

(lxxxi) This paper was presented at the EAERE-FEEM-VIU Summer School on "Computable General Equilibrium Modeling in Environmental and Resource Economics", held in Venice from June 25th to July 1st, 2006 and supported by the Marie Curie Series of Conferences "European Summer School in Resource and Environmental Economics".

2006 SERIES

CCMP	<i>Climate Change Modelling and Policy</i> (Editor: Marzio Galeotti)
SIEV	<i>Sustainability Indicators and Environmental Valuation</i> (Editor: Anil Markandya)
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: Matteo Manera)
CSRM	<i>Corporate Social Responsibility and Sustainable Management</i> (Editor: Giulio Sapelli)
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>