

Moretto, Michele; Rossini, Gianpaolo

Working Paper

Start-up Entry Strategies: Employer vs. Nonemployer firms

Nota di Lavoro, No. 13.2005

Provided in Cooperation with:

Fondazione Eni Enrico Mattei (FEEM)

Suggested Citation: Moretto, Michele; Rossini, Gianpaolo (2005) : Start-up Entry Strategies: Employer vs. Nonemployer firms, Nota di Lavoro, No. 13.2005, Fondazione Eni Enrico Mattei (FEEM), Milano

This Version is available at:

<https://hdl.handle.net/10419/74204>

Standard-Nutzungsbedingungen:

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

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

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

Terms of use:

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

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

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

**Start-up Entry Strategies:
Employer vs. Nonemployer firms**

Michele Moretto and Gianpaolo Rossini

NOTA DI LAVORO 13.2005

JANUARY 2005

KTHC - Knowledge, Technology, Human Capital

Michele Moretto, *Department of Economics, University of Brescia*
Gianpaolo Rossini, *Department of Economics, University of Bologna*

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=657162>

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

Start-up Entry Strategies: Employer vs. Nonemployer firms

Summary

From 1997 to 2001 we observe in the Usa a faster growth in the number of Nonemployer firms (NF) vis à vis Employer firms (EF). The diverse speed of net entry may be due to particular internal organisation of the two types of firms and the effect that this has on the reactions to market uncertainty. However, the set of internal organizations of firms is larger than that made up simply by EFs and NFs, in particular among newborn firms, since we observe corporate start-ups with employees, firms owned and managed by their founders who are simultaneously the employees and, finally, non corporate enterprises. The second class of firms mostly belongs to the category of NFs, according to US nomenclature, while non corporate firms may belong to either category. Our curiosity is attracted by different entry patterns of NFs and EFs and our aim is to interpret them. According to recent literature, firms carry out an irreversible investment, such as entry, only if market prices are strictly larger than average total costs (Marshallian point). However, the trigger price that makes firms become active is affected by institutional rules, the existence of profit sharing, efficiency wages, exit options - i.e. partial reversibility -, financial constraints. Then, the internal organization of a newborn firm may make the difference. In a continuous time stochastic environment, where firms bear a sunk cost, we model entry as a growth option. On the trace of distinct objective functions we show that NFs and EFs have specific entry patterns in terms of output price and/or size. Why? Simply because they react in diverse fashions to market price volatility. In this sense we are able to show that, in most cases, the NF is locally less risky. This makes the NF better suited to enter under conditions of higher volatility. This exactly corresponds to what happened during the years between 1997-2001.

Keywords: Entry strategies, Uncertainty, Nonemployer, Employer firms

JEL Classification: L21, L3, J54, G13

We acknowledge the financial support by the Universities of Brescia and Bologna under the 60% scheme.

Address for correspondence:

Michele Moretto
Department of Economics
University of Brescia
Via S.Faustino 74/b
Brescia
Italy
E-mail: moretto@eco.unibs.it

1 Introduction

From 1997 to 2001 in the Usa we observe a faster growth in the number of Nonemployer firms (*NF*) vis à vis Employer firms (*EF*). This diverse speed of net entry may at first appear quite odd. However, to a closer scrutiny it seems to be caused by distinct internal organizations that generate different reactions to market uncertainty, quite high in those years of end of millennium.

To validate this statement and better understand the phenomenon considered we have to go through the internal organization of firms according to the category they belong and their infant history.

Start-up firms (*SUFs*) are the most dynamic part of the economy with their active development of new goods and technological endeavors. Yet, most of their operating modes are heterogeneous with respect to incumbent consolidated firms. Often their actions do not adhere to the traditional market canons of Marshallian enterprise and their internal organization departs, in many respects, from that of a purely profit-value maximizing firm (*PMF*). The inner structure and the governance of *SUFs* show a large variety of organization modes. Most of them appear to be quite far from those pertaining either to the *publicly owned corporate*,¹ run on behalf of shareholders, or to the *private corporate*, whose control is in the hands of a family or an individual owner. By limiting the variety of organizational forms, we may distinguish at least two kinds of *SUFs*.

The *first* corresponds to newborn firms made up of few people who are simultaneously the owners and the employees of the venture they have cre-

¹By the US definition of *corporate* we mean a firm with limited liability of the owners. According to UK nomenclature this firm is either a public limited company (PLC) or a private limited company (LTD).

ated. This kind of firm mostly belongs to the *Nonemployer (NF)* category comprising enterprises of three distinct legal and/or organizational forms: *Individual Proprietorship*,² *Partnerships*, *Corporations*, all without employees. (according to the US Bureau of Census nomenclature; US Census Bureau, 2003a). The most common are the first two.³

The *second* kind of *SUF* belongs to the traditional *Employer (EF)* category, whose governance replicates that of a *PMF*, with separation between employers and shareholders.

SUFs quickly grow or disappear. In the first case they often undergo thorough transformation. Some become public or private *corporate* after an initial period of *noncorporate*.⁴ Others are taken over by consolidated firms. Sometimes the transformation is more radical than what the pure change of the legal status may hint. But before undergoing dimensional, financial, legal

²These firms are close to the *self-employed* category of the European nomenclature. See for instance Parker, Barmby and Belghitar (2004).

³Here follows the US Bureau of Census definition: “*Individual proprietorship*....is an unincorporated business owned by an individual”. Self-employed persons are included in this category. “*Partnership*is an unincorporated business owned by two or more persons having a shared financial interest in the business”, i.e. sharing profits and losses and responsibilities having a general or limited liability. “*NF Corporation* is a legally incorporated business under state laws”, without employees. See: <http://www.census.gov/epcd/nonemployer/view/define.html>

⁴See Steingold (1999). In addition see the advice of a large Bank like NatWest of UK to *SUFs* as to the choice of their Legal status, with a particular emphasis on the Unincorporated Partnership mode of organization.

http://www.natwest.com/smallbusiness/guides/startingup/index.asp?navid=SBS/FINANCIAL_GUIDES/STARTING_UP/LEGAL_STATUS&pid=2

and governance metamorphosis, turning a baby firm into a mature corporate enterprise, a *SUF* is a strange animal whose behavior may be at odds with standard modelization of *PMFs*. Why? And in which sense?

The answer may come from the very existence of a large bulk of *NFs* and in particular *Partnerships*. If we confine to the internal organization of the newborn *NFs*, we may find that *Partnerships* closely replicate Labor Managed firms (*LMF*) and individual *Proprietorship* resemble *LMFs*, even though in the limit due the single member structure. A similar proposition may be stated for *NF Corporations*. In *LMFs*,⁵ owners and employees coincide while sharing the governing power of the firm on an equal foot. Surprisingly enough, this is something that can be found in most *NFs*, whose market behavior should then be expected to replicate fairly closely that of a *LMF*. The question then boils down to what are the implications for entry strategies of this odd similarity between *NFs*, one of the most dynamic form of modern baby production, and *LMFs*, that most analysts regard as a sort of bulky legacy of socialism.⁶

Here, we analyze entry strategies of firms belonging either to the *NFs*

⁵See the canonical models of Ward (1958), Vanek (1970), the refinements of Pestieau and Thisse (1979), the empirical scrutiny of Pencavel and Craig (1994), the analysis of *LMF* oligopolies in Delbono and Rossini (1992), workers' enterprises in Sertel (1993), just to mention few contributions.

⁶The theory of the *LMF* has evolved quite a lot in parallel with the growing success of market economies vis à socialist economies. Literature has shown the long run affinities between a competitive *LMF* and its corresponding *PMF*, despite heterogeneous behavior in the short run. However, some of the problems concerning both the perverse response of the short run supply and the difficulty of *LMFs* to get credit are assumed away once we introduce tradeability of memberships - i.e.: workers' enterprises (Sertel, 1982; 1997) - or we assume that credit provided by members of the *LMF* is *subordinate* with respect to the credit by banks or by any third agent (Jossa and Cuomo, 1997).

or to the *EFs*. Our setting is a dynamic and uncertain one, where a new venture is defined as a project that can be carried out at different points of time and at different entry-trigger market prices.

Most differences among the two kinds of firms come from the existence of uncertainty coupled to sunk costs. Thanks to the proximity between the *NF* and the *LMF* we show that, in an uncertain dynamic environment, there are circumstances where the *NF* enters at less favorable conditions becoming the swiftest start-up, while in other circumstances the *EF* is smarter. Moreover, we analyze the entry strategies and the size of firms and interpret the recent growth of *NFs* in the US during a period of intense financial volatility. Our aim is to see how market price volatility may favor one particular firm organization.

A by-product of this investigation is that the entry trigger price increases in distinct fashions for the two kinds of firms. A larger variance makes the investment return more volatile. The value of the option grows but there is a larger incentive to delay entry⁷. In the *NF* each member shares this option with colleagues. Therefore, he has to bear only a fraction of the entry cost. If so, the outcome is a higher value of the option without any increase in the incentive to delay entry.

In the next section some data about *NFs* and *EFs* are shown. In the third section we present the basic set up. In section four we investigate different entry policies. In the fifth some comparisons are carried out. In the final section concluding remarks are drawn.

⁷This effect follows from the "bad news principle of irreversible investment" (Bernanke, 1983).

2 Employer and Nonemployer businesses in the US

When considering size we soon discover that many firms are very small and often made up just by the proprietor (*Individual Proprietorship*) or by few guys who own the firm in a *Partnership* mode. US Census data say that the number of these firms belonging to the *NF* category is rather high. Look at Table 1. The establishments (EST) of *NFs* are more than twice those of *EFs*. Between the Censuses of 1997 and 2001 the number of *NFs* grew by 10%, while *EFs* just by 3%. If establishments are a proxy of the number of firms and *NFs* do not live, on average, longer than *EFs*⁸, we may conclude that, during the period 1997-2001, the entry of *NFs* is more likely and easier than that of *EFs*. Nonetheless, the weight of *NFs* in terms of the share of income produced is lower, as we can see by comparing the receipts (RE) of *NFs* and the payrolls (PA) of *EFs*⁹. This proves that usually the *NFs* are much smaller than the corresponding *EFs*.

⁸See Parker (2004) and Taylor (1999).

⁹Of course these two magnitudes are quite heterogeneous, yet we compare them just qualitatively, without any measuring purpose.

TABLE 1

Employer (*EF*), Nonemployer (*NF*) businesses in all US industries^{10, 11}

	<i>NF</i>			<i>EF</i>		
			Δ			Δ
1997	EST	15,438,609	w: 10%	EST	6,894,869	w: 3%
1998		15,708,727	1.7%		6,941,822	0.7%
1999		16,152,604	2.8%		7,008,444	0.9%
2000		16,529,955	2.3%		7,070,048	0.9%
2001		16,979,498 ¹²	2.7%		7,095,302	0.3%
1997	RE	586,315,757	w: 24%	PA	3,047,907,469	w: 30%
1998		643,720,460	9.7%		3,309,405,533	7.4%
1999		667,219,733	3.7%		3,554,692,909	9.1%
2000		709,378,836	6.3%		3,879,430,052	9.1%
2001		729,922,063 ¹³	2.8%		3,989,086,323	2.8%

From Table 1 we calculate in 2001 the average receipts (RE) for the *NF* that was 43,000 dollars while the average payroll (PA) for the *EF* was 442,000 dollars. The two magnitudes (receipts and payrolls) provide proxy measures of relative size of the two categories of firms. As for the percentage variation (Δ) over the entire period (w), for *NFs* is larger when considering the number of establishments (10% versus 3%), rather than receipts and payrolls

¹⁰Payrolls (PA) and receipts (RE) are in thousands dollars.

¹¹w means percentage variation on the whole period 2001/1997. For *NFs* we have only receipts. For *EFs* we have payrolls in thousands of current dollars.

¹²2002 figure is 17,646,062. and variation (w) over the period 1997-02 is 14.3%.

¹³2002 figure is 770,032,328 and variation over the period (w) 1997-02 is 31.3%.

(24% versus 30%). Over the same period the number of establishments of *Partnerships* increased by 26%, the largest rate of growth among all categories. The average size of establishment in 2001 is 123,000 dollars, larger than the average of *NFs*, but still lower than *EFs*. Receipts of *Partnerships* increased over the same time span by 39%.

3 The basic set up

Here is the basic framework drawing the borders of the environment where we wish to compare the behavior of two *SUFs*: a *NF* and an *EF*.

We assume that:

- 1) Firms undertake a project of finite size, corresponding to the start-up decision. We consider a firm in isolation, even though there are scanty differences with respect to a competitive market (Leahy, 1993).
- 2) The investment is irreversibly sunk. It can neither be changed, nor temporarily stopped, nor shut down. Other operating options are neglected for the sake of simplicity of comparisons¹⁴. The commitment is equal to K .
- 3) When the firm is operative the instantaneous short run revenue is

$$R(p_t; L_t) \equiv p_t Q(L_t) \tag{1}$$

¹⁴This avoids the analysis of operating options which differ between the two kinds of firms. The most relevant one is due to the ability of the firm to reduce output or even shut down, thereby eschewing variable costs. Operating options increase the value of the firm. See, among others, MacDonald and Siegel (1986) and, for a thorough discussion, Dixit and Pindyck (1994, chs. 6 and 7).

where p_t is the market output price, L_t is labor input, $Q(L_t)$ is the short run Marshallian production function, with $Q(0) = 0$, $Q'(L_t) > 0$, $Q''(L_t) < 0$.

- 4) The market price is uncertain and evolves over time according to the following trendless stochastic differential equation:

$$dp_t = \sigma p_t dB_t \quad \text{with } \sigma > 0 \text{ and } p_0 = p, \quad (2)$$

where dB_t is the increment of a standard Wiener process and the volatility parameter (σ) is constant over time.

- 5) The market wage for unit of labor w is constant.
- 6) The investment is financed either by founding employee-members, in the case of the NF ,¹⁵ or by shareholders, in the case of the EF .

3.1 The Nonemployer Firm (NF)

We investigate the NF decision to start-up a new venture and assume that: (i) the number of employees-members is held fixed after entry¹⁶; (ii) each member investing in the project maximizes the discounted value of expected individual net dividends; (iii) each member receives the sum of the accounting dividends plus the contractual wage w .

We solve this problem backwards. First, for any size of the NF (level of L) we evaluate the member option value to enter. Subsequently, we choose L that maximizes the individual option value.

¹⁵This is consistent with the assumption of the existence of a market for NF memberships, operating according to standard financial canons (Sertel, 1993, 1997).

¹⁶In this sense the NF faces a kind of constraint since it cannot change L and it must decide the optimal entry time.

To evaluate the individual option we calculate the discounted value of expected net individual dividend:

$$\begin{aligned} y(p; L) - \frac{w}{\rho} &= \frac{E_0 \left\{ \int_0^\infty e^{-\rho t} R(p_t; L) dt \mid p_0 = p \right\} - K}{L} - \frac{w}{\rho} \\ &= \frac{\frac{pQ(L)}{\rho} - K}{L} - \frac{w}{\rho} \end{aligned} \quad (3)$$

where $E_0(\cdot)$ is the expectation operator, with the information available at time zero, ρ the riskless interest rate,¹⁷ and $\frac{w}{\rho}$ the discounted flow of the market wage, which corresponds to the minimum the NF grants its employee-members, i.e., a participation constraint.

The employee-member belonging to a NF of size L decides whether and when to start the project by solving an optimal stopping time problem, i.e. choosing the investment timing which maximizes:

$$f_{NF}(p; L) = \max_T E_0 \left[\left(y(p_T; L) - \frac{w}{\rho} \right) e^{-\rho T} \mid p_0 = p \right] \quad (4)$$

Members of the NF are homogeneous. Each one holds an option to invest corresponding to (4) and has an interest to exercise cooperatively its option at the same time.¹⁸ The option value comes from solving (4). The value of (4), prior to investment, (see McDonald and Siegel, 1986; Dixit and Pindyck, 1994), is:

$$f_{NF}(p; L) = \left(\frac{p_{NF}Q(L)}{\rho L} - \frac{w}{\rho} - \frac{K}{L} \right) \left(\frac{p}{p_{NF}} \right)^\beta \quad \text{for } p < p_{NF}(L) \quad (5)$$

¹⁷Introducing risk aversion does not change the results since the analysis can be developed under a risk neutral probability measure (Cox and Ross, 1976; Harrison and Kreps, 1979).

¹⁸Members have just founded the firm of the optimal size and they have no incentive to behave noncooperatively from the beginning.

where $1 < \beta < \infty$ is the positive root of the auxiliary quadratic equation $\Psi(\beta) = \frac{1}{2}\sigma^2\beta(\beta - 1) - \rho = 0$ and p_{NF} is the critical price that makes the L th employee-member indifferent between investing right away or waiting. Maximizing (5) with respect to p_{NF} we obtain the candidate policy for optimal NF start-up as:

Lemma 1 *The employee-member's optimal strategy requires investing as soon as the market price exceeds the break-even threshold p_{NF} , where:*

$$p_{NF}(L) \equiv \frac{\beta}{\beta - 1} \rho AC(L) \quad \text{with} \quad \frac{\beta}{\beta - 1} > 1 \quad (6)$$

where $AC(L) \equiv \frac{\frac{w}{\rho}L + K}{Q(L)}$ is long-run average total cost.

Substituting (6) into (5) and rearranging we write, in reduced form, the L th employee-member's value of the project prior to invest:

$$f_{NF}(p; L) = A(L)p^\beta \quad \text{for } p < p_{NF}(L), \quad (7)$$

where the constant $A(L)$ is given by:

$$\begin{aligned} A(L) &\equiv \frac{(\beta - 1)^{\beta-1}}{(\rho\beta)^\beta} a(L) \\ &= \frac{(\beta - 1)^{\beta-1}}{(\rho\beta)^\beta} \frac{[Q(L)]^\beta}{L[\frac{w}{\rho}L + K]^{\beta-1}} > 0 \end{aligned} \quad (8)$$

What is the optimal NF dimension? By (7) the optimum requires choosing the L for which $A(L)$ is the largest. Moreover, by (8), the optimum dimension maximizes $a(L)$, which yields the first order condition (FOC)¹⁹:

¹⁹Taking logs of $a(L)$ we have $\beta \log Q(L) - (\beta - 1) \log(\frac{w}{\rho}L + K) - \log L$, or equivalently $\log Q(L) - \frac{(\beta-1)}{\beta} \log(\frac{w}{\rho}L + K) - \frac{1}{\beta} \log L$.

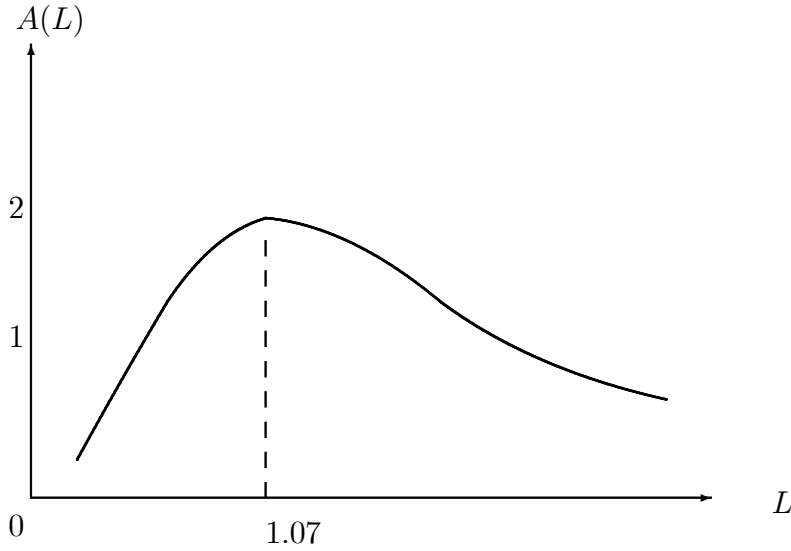
Lemma 2 *The optimal size of the NF can be obtained from:*

$$\frac{L_{NF}Q'(L_{NF})}{Q(L_{NF})} = 1 - \frac{(\beta - 1)}{\beta} \frac{K}{(\frac{w}{\rho}L_{NF} + K)} \quad (9)$$

Since the r.h.s. of (9) is less than one, a necessary condition for an optimal solution is an output elasticity $\varepsilon_{QL} \equiv \frac{LQ'(L)}{Q(L)} < 1$, i.e. if the average productivity $\frac{Q(L)}{L}$ is a decreasing function of labor (as from Assumption 3).

Although we cannot prove the second order condition (SOC) on a general basis, we can provide examples of functions that are locally concave, such as the following calibrated version of $a(L)$, i.e.: $Q = \log \lambda L$. We mostly follow suggestions from other studies (Dixit and Pindyck, 1994) and calibrate $\rho = 0.04$, $\sigma = 0.2$, $w = 3$, $\lambda = 2.7$, and $K = 10$. Figure 1 below shows a local maximum, the interior solution, that occurs between $L = 1$ and 2 at $L = 1.07$.

Figure 1 : Function $A(L)$ - NF case



3.2 The Employer Firm (EF)

When does an EF enter the market? Entry is a project of infinite life and the firm has to properly tune the input L over time. To ease comparisons we make a simplifying hypothesis that parallels assumption (i) on the NF : labor is variable only ex-ante. The EF selects its project among a set of ventures with the same K , but distinct levels of labor.²⁰ The market value of a project of dimension L turns out to be:

$$V(p) = E \left\{ \int_0^\infty e^{-\rho t} (R(p_t, L) - wL) dt \right\} \equiv \left(\frac{pQ(L)}{\rho} - \frac{wL}{\rho} \right).$$

²⁰This means a putty-clay technology.

Whether and when to ignite the project is the solution of a standard optimal stopping time problem:²¹

$$F_{EF}(p; L) = \max_T E_0 \left[\left(\frac{pQ(L)}{\rho} - \frac{wL}{\rho} - K \right) e^{-\rho T} \mid p_0 = p \right] \quad (10)$$

Owing to the homogeneity of (3), we have:

$$F_{EF}(p; L) = f_{NF}(p; L)L \quad (11)$$

where $f_{NF}(p; L)$ is the value of the project for the L th member of the NF , given by (4). By analogy with (5), and, as a result of the above arguments, we obtain:

Lemma 3 *The EF optimal strategy dictates investing as soon as the price exceeds the break-even level p_{EF} , where:*

$$p_{EF}(L) \equiv \frac{\beta}{\beta - 1} \rho AC(L) \quad \text{with} \quad \frac{\beta}{\beta - 1} > 1. \quad (12)$$

Then, substituting (12) into (11), the value of the option for an EF is:

$$F_{EF}(p; L) = B(L)p^\beta, \quad \text{for } p < p_{EF}(L) \quad (13)$$

where the constant $B(L) = LA(L)$ is:

$$\begin{aligned} B(L) &\equiv \frac{(\beta - 1)^{\beta-1}}{(\rho\beta)^\beta} b(L) \\ &= \frac{(\beta - 1)^{\beta-1}}{(\rho\beta)^\beta} \frac{[Q(L)]^\beta}{[\frac{w}{\rho}L + K]^{\beta-1}} > 0 \end{aligned} \quad (14)$$

Again, by (13), the optimum requires finding the L for which $B(L)$ is the largest. Moreover, by (14), efficient size maximizes $b(L)$ yielding the following FOC:²²

²¹This framework is similar to that of Dixit (1993), even though here we consider a continuum of projects with total costs, $\frac{w}{\rho}L + K$, which are linear in the labor input.

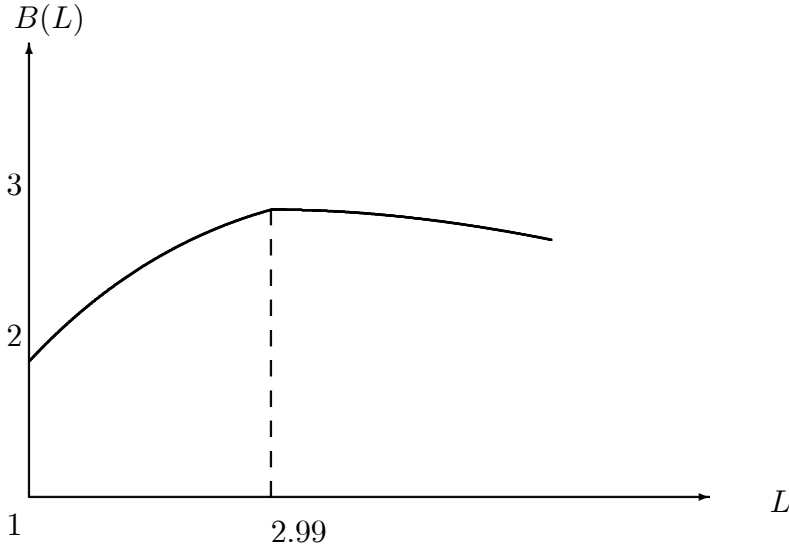
²²Taking logs of $b(L)$ we get $\beta \log Q(L) - (\beta - 1) \log(\frac{w}{\rho}L + K)$, or

Lemma 4 *The optimal dimension of the EF is given by:*

$$\frac{L_{EF}Q'(L_{EF})}{Q(L_{EF})} = \frac{(\beta - 1)}{\beta} \left(1 - \frac{K}{(\frac{w}{\rho}L_{EF} + K)} \right) \quad (15)$$

As for the NF , since the r.h.s. of (15) is less than one, a necessary condition is a production elasticity $\varepsilon_{QL} < 1$.²³ Going through the same calibration of the NF , we get a function $B(L)$ depicted in Figure 2.

Figure 2 : Function $B(L)$ - EF case



$\log Q(L) - \frac{(\beta-1)}{\beta} \log(\frac{wL}{\rho} + K)$.

²³It goes without saying that if entry costs are nul, condition (15) reduces to: $\frac{LQ'(L)}{Q(L)} = \frac{(\beta_1-1)}{\beta_1} < 1$. This is equivalent to the condition proposed by Dixit (1993) for an EF firm that has to choose among alternative investment project of different dimension. See also Moretto (2003) for an analogous condition for an EF firm that can incrementally contract its capacity.

A maximum for L lies between 2 and 3. If we compare the two firms, we see that the optimal size of the EF is 2.99 ($\simeq 3$)²⁴ while for the NF is 1.06 ($\simeq 1$).²⁵

4 NF versus EF entry strategies

On the basis of Lemma 2 and 4, we are able to show that:

Proposition 1 *a) Over the range where the second order condition holds, the EF is operating with a higher dimension than the NF , i.e.:*

$$L_{NF} < \hat{L} < L_{EF},$$

*where $\hat{L} = \arg \min AC(L)$ is the minimum efficient scale.*²⁶

b) The entry trigger prices react in distinct ways according to the firm's organization, i.e.:

$$\frac{\partial p_{EF}}{\partial L_{EF}} > 0 \quad \frac{\partial p_{NF}}{\partial L_{NF}} < 0.$$

Proof. See Appendix.

The first part of the proposition confirms the above numerical calculations shown in Figure 1 and 2 and it is consistent with the empirical finding that NFs are smaller than corresponding EFs .²⁷

²⁴The number in brackets is the closest integer, since we do not use integer programming.

²⁵The two triggers $p_{NF}(L)$ and $p_{EF}(L)$ are, respectively, 63.11 and 44.83.

²⁶With the above calibration $\hat{L} = 1.13$.

²⁷This is also consistent with literature on *LMFs*. "Labor-managed firms will be smaller than their capitalist counterparts in the short-run when profit are positive" (Bonin and Putterman, 1987, p.15). The same applies to the long run if profits are strictly positive (ibidem, p.57).

To appreciate the intuition behind this result we go back to Lemmas 1- 4 and rewrite the FOCs for the optimal dimension (9) and (15) at entry. For the *EF*, by multiplying both sides of (15) by $p_{EF}(L_{EF})$ and simplifying we get:

$$p_{EF}(L_{EF})Q'(L_{EF}) = w \quad (16)$$

Then, the *EF*, at entry, decides the optimal dimension equating the value marginal product to the market wage w . The *EF* is using L efficiently.

By analogous procedure for the *NF* we obtain:

$$p_{NF}(L_{NF})Q'(L_{NF}) = w + \frac{1}{\beta - 1}(w + \rho \frac{K}{L_{NF}}) > w. \quad (17)$$

Unlike the *EF*, the *NF* chooses the optimal size equating the value marginal product to the full wage, which exceeds the market wage w . The Marshallian full cost of the investment imputed to each employee-member is $w + \rho \frac{K}{L_{NF}}$, larger than w since members of the *NF* possess an option (to delay entry), not owned by employees of an *EF*. Would-be employee-members are special workers endowed with an option to give rise to a kind of *Partnership* and are therefore “more skillful” deserving a compensation larger than w . By the decreasing marginal product of labor, at entry the *NF* will have a smaller size than its twin mate *EF*, i.e. $L_{NF} < L_{EF}$.

The conclusion that the *NF* and the *EF* have different dimensions opens the way to further questions about the entry price as size changes. However, as the second part of Proposition 1 suggests, we cannot tell which one enters first, even though the *NF* and the *EF* operate at different scales (*NF* to the left of the minimum efficient scale \hat{L} , while *EF* to the right).

Both the *NF* and the *EF* undertake the entry investment when the market price equals the average total cost $AC(L) \equiv \frac{\frac{wL}{\rho} + K}{Q(L)}$ multiplied by a

coefficient $\frac{\beta}{\beta-1}\rho$. Then, by the U-shaped $AC(L)$ function we may observe, at the same market price, small NF s and larger EF s entering the market, as data show in section 2.

4.1 A local study of the entry strategies

For more fleshy intuition on entry triggers we do some comparative statics on the effect of uncertainty. The first important result is:

Proposition 2 *If $\sigma = 0$ the EF and NF operate at the minimum efficient scale, i.e.:*

$$L_{NF} = \hat{L} = L_{EF}$$

and the entry strategy is the same, i.e.:

$$p_{EF}(\hat{L}) = p_{NF}(\hat{L}).$$

Proof. See Appendix.

If $\sigma \rightarrow 0$, uncertainty disappears, $\beta = +\infty$ and $\frac{\beta-1}{\beta} = 1$. As volatility vanishes, entry sizes converge to the minimum efficient scale and entry strategies coincide.²⁸

A second result is:

Proposition 3 *As market price volatility increases the entry price increases for both firms:*

$$\frac{\partial p_{NF}}{\partial \sigma} > 0 \text{ and } \frac{\partial p_{EF}}{\partial \sigma} > 0.$$

while the gap between sizes widens, i.e.

$$\frac{\partial(L_{EF} - L_{NF})}{\partial \sigma} > 0$$

²⁸If the market price has a positive drift $\alpha > 0$, then $\beta = \rho/\alpha$ and $\frac{\beta-1}{\beta} = \frac{\rho-\alpha}{\rho}$. Therefore the deterministic results conform to those of the uncertainty case.

Proof. See Appendix.

As the real option theory predicts, we show that increasing risk puts off investment timing, i.e. the entry price increases with uncertainty. This follows from the "bad news principle of irreversible investment". A larger market variance makes the investment return more volatile with positive effect on the option to invest. However, the net marginal benefit of waiting, arising from the avoidance of an investment in the bad state, increases with uncertainty. This induces an entry delay (Bernanke, 1983).

TABLE 3

$\rho = 0.04$	$L_{EF};$	p_{EF}	$L_{NF};$	p_{NF}
$\sigma = 0.00 - > \beta = \infty$	(\hat{L}) 1.13;	$p(\hat{L})$ 3.40	(\hat{L}) 1.13;	$p(\hat{L})$ 3.40
$\sigma = 0.08 - > \beta = 4.05$	1.57;	9.84	1.10;	5.36
$\sigma = 0.20 - > \beta = 2.00$	2.99;	39.14	1.07;	7.66
$\sigma = 0.33 - > \beta = 1.50$	7.83;	218.67	1.05;	11.10

Furthermore, as uncertainty increases, the NF gets larger and the EF smaller, making for a wider gap.

The intuition behind such a result may be better grasped referring to conditions (16) and (17). As usual, for the EF , the higher entry price makes the firm react by increasing the optimal size so as to keep the value marginal product in pace with the market wage.

For the NF , the full wage imputed to each employee-member goes up with σ , and the firm may desire to reduce its size to adjust the value marginal product. The calibrated comparison is in Table 3.

Proposition 3 states the impossibility of a global rank in terms of entry prices for the two distinct firms. Nonetheless, for small values of price volatility the above asymmetry of behavior benefits the NF . In particular, by Proposition 2, we may derive the following:

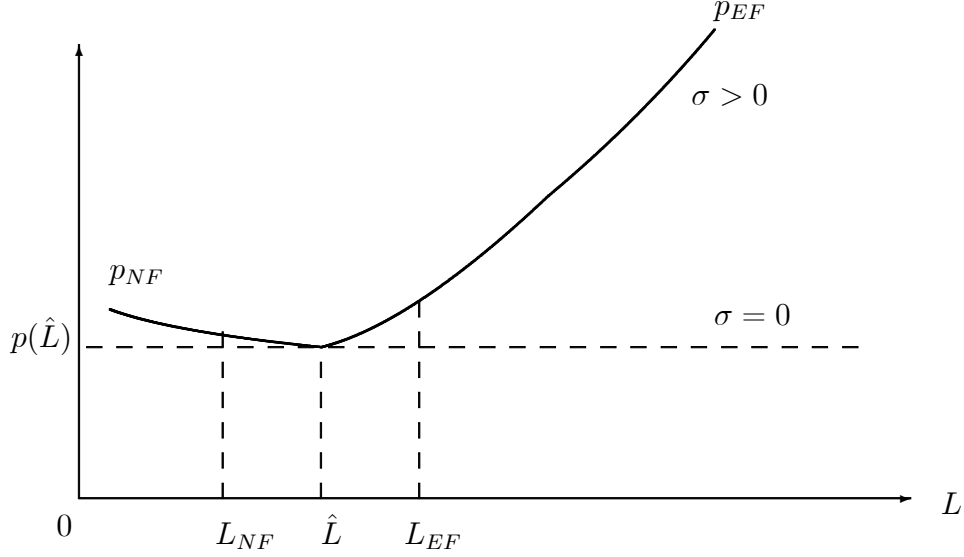
Corollary 1 *In terms of entry strategies, the NF is locally less risky than the EF .*

Proof. See Appendix.

The most striking result springs from local analysis around $\sigma = 0$. For low price volatility, the NF is locally less risky than the EF , since the NF 's set of entry prices is “less convex” than that of the EF . As it can be seen in Figure 3, the entry boundary increases in different fashions for the two kinds of firms.

Since the employee-members of a NF share equally the option to invest, they may demand a higher reward and require a smaller dimension to compensate for the increased risk. This lowers the net marginal benefit of waiting of each individual member, reducing the incentive to delay entry.

Figure 3 : Entry sizes, trigger prices and volatility



4.2 Discussion

Proposition 3 maintains that the lower is the volatility of the market price, the narrower is the gap between price and average total cost required to make the irreversible investment to enter. The vanishing of uncertainty makes the size of the two firms converge to a unique level, one from above (the EF) and the other from below (the NF) since one increases its size with uncertainty, while the other does the opposite. In the deterministic case, EF s and NF s perform the same way and share the same optimal entry strategy (Proposition 2).

The employee-members receive a “salary” that is the sum of w plus the

option to invest, whose value grows with uncertainty and makes entry strategies diverge. In the case of the *EF* the option is held by shareholders. While, the option to start-up in the hands of employee-members reflects their skill to set up a firm. This difference is the one that commands a higher reward as uncertainty and sunk costs enter the picture. All these considerations are independent of the market structure in which the *SUF* is embedded (see Leahy, 1993).

From the three Propositions the *NF* appears a more suitable entrepreneurial organization in times of high volatility, as the 1997 - 2001 period was. After all, as shown in Pastor and Veronesi (2004), volatility boosts the value of a firm even if there is no bubble.

5 Conclusions

We have gone through entry policies of two kinds of firms, *EFs* and *NFs*, to partially explain why, during the years between 1997 and 2001, we have observed a faster growth in the number of *NFs* vis à vis *EFs*.

We have seen that the main differences between the two firms are their size at entry and their way to react to uncertainty. The *NF* enters at a smaller size while the *EF* at a larger size. Moreover the *EF* is more risky around the entry price than the *NF*. Both statements may explain:

1. why there are so many entries of *NFs* during a period of high volatility such as the years between 97-2001
2. the smaller operation scale of *NFs*.

Evidence coming from US Census data is definitely consistent with the theoretical observation that *NFs* are smaller than *EFs*.

The divergence between the two entry policies is due to the irreversible

commitment that is associated with entry decision under uncertainty.

Employee-members of the NF hold an option to enter whose value increases with market volatility. The option adds to the market wage making the total "salary" paid higher with respect to the EF . Under decreasing marginal productivity of labor, the NF enters at a smaller scale whenever there is price volatility. Employee-members of a NF hold an option that is the signal of a special ability to set up a firm of their own. The option value increases with uncertainty and the size of the irreversible commitment, making the reward for employee-members differ from the sheer market wage even in the long run equilibrium of the firm. All these considerations are consistent with the conclusion that the NF is less risky.

6 Appendix

6.1 Proof of Proposition 1

Let start proving the first part of the proposition. To do this let's us recall that the EF 's optimal dimension is given by:

$$\max_L b(L) = \max_L La(L).$$

The FOC is:

$$b'(L) = a(L) + La'(L) = 0,$$

while the SOC is:

$$\begin{aligned} b''(L) &= a'(L) + a'(L) + La''(L) \\ &= 2a'(L) + La''(L) < 0. \end{aligned}$$

In general $a''(L) < 0$ does not imply that $b''(L) < 0$: the two regions, where the SOC holds, overlap only partially. Therefore, we confine to their overlap-

ping set. That is, over the range where the SOC holds, since L_{NF} is such that $a'(L_{NF}) = 0$, we have that $b'(L_{NF}) = a(L_{NF}) > 0$. Then, if there exists a L_{EF} such that $b'(L_{EF}) = 0$, this will necessarily be

$$L_{NF} < L_{EF}.$$

For the second part let's define the average cost function $AC(L) \equiv \frac{\frac{w}{\rho}L + K}{Q(L)}$. By the concavity of $Q(L)$ it is easy to show that $\lim_{L \rightarrow 0} AC(L) = +\infty$ and $\lim_{L \rightarrow +\infty} AC(L) = +\infty$. Further, taking the derivative with respect to L , we get:

$$\frac{\partial AC}{\partial L} = \frac{\frac{w}{\rho}Q(L) - (\frac{w}{\rho}L + K)Q'(L)}{Q(L)^2},$$

or:

$$\frac{\partial AC}{\partial L} = \begin{cases} < 0 & \text{if } \varepsilon_{QL} = \frac{LQ'(L)}{Q(L)} > 1 - \frac{K}{(\frac{w}{\rho}L + K)} \\ > 0 & \text{if } \varepsilon_{QL} = \frac{LQ'(L)}{Q(L)} < 1 - \frac{K}{(\frac{w}{\rho}L + K)} \end{cases} \quad (18)$$

So there exists a value $\hat{L} > 0$ such that $\frac{\partial AC}{\partial L} = 0$. This is given by:

$$\frac{\hat{L}Q'(\hat{L})}{Q(\hat{L})} = \left(1 - \frac{K}{(\frac{w}{\rho}\hat{L} + K)}\right). \quad (19)$$

The second order derivative is:

$$\frac{\partial AC}{\partial L}(\hat{L}) = -(\frac{w}{\rho}\hat{L} + K)Q''(\hat{L}) > 0,$$

which confirms that $AC(L)$ is a convex function with a minimum represented by \hat{L} .

Since $\frac{(\beta-1)}{\beta} < 1$, from the comparison between (19) and (15), we have that:

$$\frac{(\beta-1)}{\beta} \left(1 - \frac{K}{(\frac{w}{\rho}L + K)}\right) < 1 - \frac{K}{(\frac{w}{\rho}L + K)},$$

which, in the range where the SOC holds, implies that $\hat{L} < L_{EF}$.

On the contrary, from the comparison between (19) and (9), we notice that the NF operates only in the descending branch of the curve to the left of the minimum. That is, we get:

$$\begin{aligned}
1 - \frac{(\beta - 1)}{\beta} \frac{K}{(\frac{w}{\rho}L + K)} &> 1 - \frac{K}{(\frac{w}{\rho}L + K)} \\
-\frac{(\beta - 1)}{\beta} \frac{K}{(\frac{w}{\rho}L + K)} + \frac{K}{(\frac{w}{\rho}L + K)} &> 0 \\
(1 - \frac{(\beta - 1)}{\beta}) \frac{K}{(\frac{w}{\rho}L + K)} &> 0 \\
\frac{1}{\beta} \frac{K}{(\frac{w}{\rho}L + K)} &> 0,
\end{aligned}$$

which implies that $\hat{L} > L_{NF}$. Then, the second part follows by convexity of $AC(L)$ around \hat{L} .

QED

6.2 Proof of proposition 2

If $\sigma \rightarrow 0$ we get $\beta \rightarrow +\infty$ and $\frac{\beta-1}{\beta} \rightarrow 1$. By direct inspections of (16) and (17) (or equivalently (9) and (15)), we get the first part.

6.3 Proof of proposition 3

By applying the implicit function theorem to (15) and (9), it can be shown that $\partial L_{EF}/\partial\beta \leq 0 \leq \partial L_{NF}/\partial\beta$. Then, since $\frac{\partial\beta}{\partial\sigma} < 0$, $\frac{\beta-1}{\beta}$ decreases and the opposite effect on optimal dimension follows. Moreover, totally differentiating (6) and (12) yields:

$$\frac{\partial p_{EF}}{\partial\sigma} = \frac{\partial(\frac{\beta}{\beta-1})}{\partial\sigma} AC + \frac{\beta}{\beta-1} \frac{\partial AC}{\partial L_{EF}} \frac{\partial L_{EF}}{\partial\sigma} > 0 \quad \text{for } L_{EF} > \hat{L} \quad (20)$$

$$\frac{\partial p_{NF}}{\partial \sigma} = \frac{\partial(\frac{\beta}{\beta-1})}{\partial \sigma} AC + \frac{\beta}{\beta-1} \frac{\partial AC}{\partial L_{NF}} \frac{\partial L_{NF}}{\partial \sigma} > 0 \quad \text{for } L_{NF} < \hat{L} \quad (21)$$

By the above result and (18) it is easy to ascertain the positivity of both. In particular, if $\sigma \rightarrow \infty$ we have that $\beta \rightarrow 1$ and $\frac{\beta-1}{\beta} \rightarrow 0$ and no type of firm will enter in the market.

QED

6.4 Proof of Corollary 1

The slope of the entry price at $\sigma = 0$ can be found by evaluating (20) and (21) at $L_{EF} = L_{NF} = \hat{L}$. Since $AC'(\hat{L}) = 0$ we get:

$$\frac{\partial p_{EF}}{\partial \sigma} \Big|_{\sigma=0} = \frac{\partial(\frac{\beta}{\beta-1})}{\partial \sigma} \Big|_{\sigma=0} AC(\hat{L}) > 0$$

$$\frac{\partial p_{NF}}{\partial \sigma} \Big|_{\sigma=0} = \frac{\partial(\frac{\beta}{\beta-1})}{\partial \sigma} \Big|_{\sigma=0} AC(\hat{L}) > 0$$

Then, both firms have the same slope of entry price at $\sigma = 0$. Differentiating (20) and (21) once more with respect to σ and evaluating the result at zero yields:

$$\frac{\partial^2 p_{EF}}{\partial \sigma^2} \Big|_{\sigma=0} = \frac{\partial^2(\frac{\beta}{\beta-1})}{\partial \sigma^2} \Big|_{\sigma=0} AC(\hat{L}) + \frac{\beta}{\beta-1} AC''(\hat{L}) \frac{\partial L_{EF}}{\partial \sigma} \Big|_{\sigma=0}$$

$$\frac{\partial^2 p_{NF}}{\partial \sigma^2} \Big|_{\sigma=0} = \frac{\partial^2(\frac{\beta}{\beta-1})}{\partial \sigma^2} \Big|_{\sigma=0} AC(\hat{L}) + \frac{\beta}{\beta-1} AC''(\hat{L}) \frac{\partial L_{NF}}{\partial \sigma} \Big|_{\sigma=0}$$

Since $\frac{\partial L_{EF}}{\partial \sigma} \Big|_{\sigma=0} > 0$ and $\frac{\partial L_{NF}}{\partial \sigma} \Big|_{\sigma=0} < 0$ we may conclude that $\frac{\partial^2 p_{EF}}{\partial \sigma^2} \Big|_{\sigma=0} > \frac{\partial^2 p_{NF}}{\partial \sigma^2} \Big|_{\sigma=0}$

QED

References

- [1] Bernanke, B.S. (1983), “Irreversibility, Uncertainty and Cyclical Investment”, *Quarterly Journal of Economics*, **98**, 85-106.
- [2] Bonin, J. and Putterman, L. (1987), *Economics of Cooperation and the Labor-Managed Economy*, New York, Harwood Academic Publishers.
- [3] Cox, J.C. and Ross, S.A. (1976), “The Valuation of Options for Alternative Stochastic Processes”. *Journal of Financial Economics*, **3**, 145-166.
- [4] Delbono, F. and Rossini, G. (1992), “Competition Policy vs. Horizontal Merger with Public, Entrepreneurial and Labor-Managed Firms”, *Journal of Comparative Economics*, **16**, 226-40.
- [5] Dixit A., (1993), *The Art of Smooth Pasting*, Harwood Academic Publishers: Chur CH.
- [6] Dixit A., and R. Pindyck, (1994), *Investment under Uncertainty*, Princeton University Press: Princeton.
- [7] Harrison, J.M. and Kreps, D. (1979), “Martingales and Arbitrage in Multiperiod Securities Markets”. *Journal of Economic Theory*, **20**, 381-408.
- [8] Jossa, B. and Cuomo, G. (1997), *The Economic Theory of Socialism and the Labour Managed Firm. Markets, Socialism and Labour Management*. Edward Elgar, Cheltenham, UK.
- [9] Leahy, J. (1993), “Optimality of myopic behavior in a competitive model of entry and exit”, *Quarterly Journal of Economics*, **108**, 1105-33.

- [10] McDonald, R. and Siegel, D. (1986), “The Value of Waiting to Invest”, *Quarterly Journal of Economics*, **101**, 707-28.
- [11] Moretto, M. (2003), “A Note on the Optimal Capacity Reduction by a Multiplant Firm: a Real Option Approach”, *Rivista Internazionale di Scienze Economiche e Commerciali*, **50**, 401-413.
- [12] Parker, S.C. (2004), *The Economics of Self-Employment and Entrepreneurship*. Cambridge University Press, Cambridge.
- [13] Parker, S.C., Barmby, T. and Belghitar, Y. (2004), “Wage uncertainty and the labor supply of self-employed workers”, *Paper presented at the EEA Annual Conference*, Madrid, 20-24 August.
- [14] Pastor, L. and Veronesi, P. (2004), “Was there a Nasdaq Bubble in the late 1990’s?”, *CEPR Discussion paper* n. 4485.
- [15] Pencavel, J. and B. Craig (1994), “The Empirical Performance of Orthodox Models of the Conventional Firms and Workers Cooperatives”, *Journal of Political Economy*, **102**, 718-44.
- [16] Pestieau, P. and J.F. Thisse, (1979), “On market imperfections and labor management”, *Economics Letters*, **3**, 353-6.
- [17] Sertel, M. (1982), *Workers and Incentives*. North Holland, Amsterdam.
- [18] Sertel, M. (1993), “Workers enterprises in Imperfect competition”, *Journal of Comparative Economics*, **15**, 698-710.
- [19] Sertel, M. (1997), “Workers’ enterprises are not perverse”, *European Economic Review*, **31**, 1619-25.

- [20] Steingold, F.S., (1999), *Legal Guide to Starting and Running a Small Business*, Vol.1, Nolo Press, Berkeley.
- [21] Taylor, M.P. (1999), “Survival of the fittest? An analysis of self-employment duration in Britain”, *Economic Journal*, **109**, C140 - C155.
- [22] US Census Bureau (2003a), *Nonemployer Statistics: 2001* (and for years from 1997), www.census.gov
- [23] US Census Bureau (2003b), *Statistics of US Businesses: 2001: All Industries* (and for years from 1997), www.census.gov
- [24] Vanek J., 1970, *The General Theory of Labor Managed Market Economies*. Cornell University Press, Ithaca, N.Y..
- [25] Ward, B. (1958) “The Firm in Illyria: Market Syndacalism”, *American Economic Review*, **48**, 566-89.

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

Our Note di Lavoro are available on the Internet at the following addresses:

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

<http://www.ssrn.com/link/feem.html>

NOTE DI LAVORO PUBLISHED IN 2004

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

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

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 (lxx)</i> : <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 GUIMERÀ and Fernando VEGA-REDONDO (lxx)</i> : <u>Optimal Information Transmission in Organizations: Search and Congestion</u>
CTN	78.2004	<i>Francis BLOCH and Armando GOMES (lxx)</i> : <u>Contracting with Externalities and Outside Options</u>
CTN	79.2004	<i>Rabah AMIR, Effrosyni DIAMANTOUDI and Licun XUE (lxx)</i> : <u>Merger Performance under Uncertain Efficiency Gains</u>
CTN	80.2004	<i>Francis BLOCH and Matthew O. JACKSON (lxx)</i> : <u>The Formation of Networks with Transfers among Players</u>
CTN	81.2004	<i>Daniel DIERMEIER, Hülya ERASLAN and Antonio MERLO (lxx)</i> : <u>Bicameralism and Government Formation</u>
CTN	82.2004	<i>Rod GARRATT, James E. PARCO, Cheng-ZHONG QIN and Amnon RAPOPORT (lxx)</i> : <u>Potential Maximization and Coalition Government Formation</u>
CTN	83.2004	<i>Kfir ELIAZ, Debraj RAY and Ronny RAZIN (lxx)</i> : <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 (lxx)</i> : <u>Economics: An Emerging Small World?</u>
CTN	85.2004	<i>Edward CARTWRIGHT (lxx)</i> : <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 PAPYRAKIS 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 (lxxv)</i> : <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 URG</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>

ITEM	116.2004	<i>Valeria COSTANTINI and Francesco GRACCEVA: <u>Social Costs of Energy Disruptions</u></i>
ITEM	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>
ITEM	118.2004	<i>David FISK: <u>Transport Energy Security. The Unseen Risk?</u></i>
ITEM	119.2004	<i>Giacomo LUCIANI: <u>Security of Supply for Natural Gas Markets. What is it and What is it not?</u></i>
ITEM	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, Jaroslav 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 PAPYRAKIS and Reyner 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>
ITEM	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 BURGUET (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 DEROIAN: <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>

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

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

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

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

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

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

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

2004 SERIES

CCMP	<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>