

Bella, Giovanni

Working Paper

Transitional Dynamics Towards Sustainability: Reconsidering the EKC Hypothesis

Nota di Lavoro, No. 129.2006

Provided in Cooperation with:

Fondazione Eni Enrico Mattei (FEEM)

Suggested Citation: Bella, Giovanni (2006) : Transitional Dynamics Towards Sustainability: Reconsidering the EKC Hypothesis, Nota di Lavoro, No. 129.2006, Fondazione Eni Enrico Mattei (FEEM), Milano

This Version is available at:

<https://hdl.handle.net/10419/73960>

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.

**Transitional Dynamics Towards
Sustainability:
Reconsidering the EKC Hypothesis**
Giovanni Bella

NOTA DI LAVORO 129.2006

OCTOBER 2006

CCMP – Climate Change Modelling and Policy

Giovanni Bella, *Department of Economics, University of Cagliari*

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=938927>

Transitional Dynamics Towards Sustainability: Reconsidering The EKC Hypothesis

Summary

The Environmental Kuznets Curve (EKC) hypothesis is one of the most debated economic issues. Despite its fascinating appeal for any policy maker, neither theoretical nor certain empirical evidence has been found to clean up all doubt. The aim of this paper is to present an economy where environmental quality and polluting emissions do enter the maximisation problem, and provide a transitional dynamics analysis to pursue a new different version of the EKC, depending on the level of development finally achieved.

Keywords: Environmental Quality, Endogenous Economic Growth, Sustainable Development.

JEL Classification: O41, Q01, Q32

Address for correspondence:

Giovanni Bella
Department of Economics
University of Cagliari
Viale Sant.Ignazio, 84
09123 Cagliari
Italy
Phone: +39 070 675 3405
E-mail: bella@unica.it

1 Introduction

A key problem environmental economists are always concerned with is to determine whether pollution loads do necessarily decrease as nations develop, and societies demand that more attention be paid to environmental issues.

The bulk of literature on this field has attempted to find an empirical justification to this thesis by means of the so-called “Environmental Kuznets Curve” (EKC, henceforth).¹ Although this intriguing hypothesis has immediately had great success amongst researchers and policy-makers, many authors still seriously doubt on the evidence in favour of it.

The EKC is a hypothetical relationship between some measures of environmental degradation and per capita income. In the first stages of economic growth, degradation and pollution are supposed to increase, but beyond some turning-point level of income, to be determined for each environmental indicator, this trend reverses, such that economic growth might lead to environmental improvement, and depict the so-common inverted U-shaped function.

Basically, the EKC concept first emerged in the early 1990s with Grossman and Krueger’s (1991) seminal study, which encouraged folks of economists and policy-makers not to take so serious consideration of the recurrent alarmist environmental cries, as future development would necessarily “clear” the problem afterwards. In this light, the EKC has been always seen as an essentially empirical phenomenon to deal with, despite the need of a robust

¹The EKC is so named after the Nobel Prize economist Simon Kuznets (1955) who first argued that income inequality first rises and then falls as economies develop.

theoretical support cannot be ignored.

Moreover, empirical evidence has never shown that the EKC hypothesis can be applied to all pollutants, thus forcing recent contributions to consider the theory itself somewhat doubtful. For example, river-basins' quality unambiguously worsen with increasing income, or rather both concentration of municipal waste and carbon dioxide emissions tend to increase when income rises (see, for example, Perman and Stern, 2003; Day and Grafton, 2003).² The problem is that, as countries develop, they never become completely clean, despite more stringent environmental regulations might be adopted. In fact, as the older pollutants are cleaned up, new ones emerge, such that the environmental impact as a whole is not reduced. And even when an inverted U-shaped curve is empirically observed, the quarrel turns on the turning-point income level at which the concentration of pollutants starts decreasing.

As a matter of fact, the new EKC scenario does not reject the inverted U-shaped curve at all, but does find evidence of an N-shaped curve instead for some indicators, such that as income grows environmental degradation increases in a first stage, then decreases, and finally rises again (see, for example, Grossman and Krueger, 1991; Shafik, 1994; Grossman, 1995). In this light, the inverted-U function does simply represent the first stage of a more complex behaviour.

²Lopez (1994) points out that in the EKC studies local pollutants are more likely to display an inverted U-shape relation with income, while global impacts such as carbon dioxide emissions do not.

It is then commonly assumed nowadays that the classic EKC hypothesis is neither theoretically nor empirically adequate to model the existence of a relationship between pollution and per capita income (see, for example, Copeland-Taylor, 2004). In other words, the new economic literature is moving beyond the usual EKC.

The aim of this paper is to provide a theoretical support to a new version of the EKC hypothesis to better explain why may economic systems still perform differently when environmental concerns are taken into account. To do so, we consider an economy populated by infinitely-lived agents of two types: families of consumers and producing firms. The former are supposed to care about the environment they live in, though the latter do not. We assume also that households own both physical and human capital they provide to the producing sector, and are always willing to pay something to overcome a potential loss in environmental quality. On the contrary, firms aim only at producing final output, despite the damages and consequences could possibly arise therefrom.

What does really matter for converging to optimality is the different perception of pollution amongst agents. In other words, public intervention equalises the firms' welfare loss to the families welfare gains due to polluting emissions. Or better, the former are paying a tax directly to the latter to compensate for any harmful emitted pollutant. We are saying that the government fixes a tax h on current emissions, and families do receive the entire revenue. The same as if we assign to families the property rights on some

pollution permits that firms have to buy to pollute “legally”. Of course, according to the Coase theorem this immediately leads to the optimal efficient allocation of resources, since no one has an incentive to “free ride” anymore.

To this end, we formalise the problem and organise the rest of the paper as follows. In section 2, we analyse a centralised economy, and derive the growth rate of a system where the social planner (representative household) intervenes to maximise the welfare in a let us say “sustainable” way. In section 3, we concentrate instead on the transitional dynamics of this economy around the steady state, and give a possible interpretation of our findings in the light of the literature concerning the EKC hypothesis. The final section concludes, and a subsequent Appendix provides all the necessary proofs.

2 The maximisation problem

Let us consider a centralised economy where the representative household maximises the following CIES utility function³

$$\int_0^\infty \frac{(CE)^{1-\sigma} - 1}{1-\sigma} e^{-\rho t} dt$$

³The utility function we are going to deal with possesses the useful property of unitarian *green preferences*. To this end, if we define $\phi(C, E)$ as the relative preference for the environment, or rather the ratio of the values of environmental quality and consumption, both evaluated at their marginal utilities, it follows that

$$\phi(C, E) = \frac{E \cdot U_E}{C \cdot U_C} = 1$$

(see, Ayong Le Kama-Schubert, 2004).

where both consumption, C , and environmental quality, E , do enter the utility function as two substitute goods;⁴ subject to the following constraints on physical capital (K),

$$\dot{K} = rK + hP - C \tag{1}$$

and environmental quality (E),

$$\dot{E} = \theta E - P \tag{2}$$

The budget constraint in Eq. (1) assumes that households own the entire amount of capital K in the economy, being r the gain from renting it to producing firms, and consume a number of goods named C .⁵ Moreover, they receive the tax (h) being paid by all producing firms on each unit of emitted pollution (P), as a compensation for any damage being caused to the quality of the environment they live in.⁶ On the other hand, following Musu (1995),

⁴Necessary condition for C and E to be substitutes requires that

$$\frac{\partial^2 U}{\partial C \partial E} = \frac{1 - \sigma}{(CE)^\sigma} < 0$$

and consequently, $\sigma > 1$.

⁵To simplify the analysis, we assume hereafter capital K to be the only producing input, as commonly found in the so-called AK-model literature.

⁶Obviously, since pollution and environmental quality are seen as external by firms and households, market failures arise thus driving a wedge between the optimal and the decentralised growth paths of the economy. As no incentives to invest in pollution abatement or prevention arise, governmental intervention is called for to induce firms and households to make less extractive use of the environment, and maximise the social welfare by internalising the externality due to polluting emissions. That is to say, if firms act in an unregulated production market, and there is no fixed limit to polluting emissions, they feel

we constrain environmental quality to improve over time, $\frac{\partial \dot{E}}{\partial E} = \theta > 0$, being θ the speed at which nature regenerates, and to decay as pollution loads (P) increase, $\frac{\partial \dot{E}}{\partial P} = -1 < 0$, as in Eq. (2).

Therefore, Pontryagin's maximisation rule yields the following current Hamiltonian function

$$H_C = \frac{(CE)^{1-\sigma} - 1}{1-\sigma} + \lambda [rK + hP - C] + \mu [\theta E - P]$$

which is linear in P . This implies that the problem could not be well defined without imposing an upper bound of P , \bar{P} , which possibly depends on K , $\bar{P} = \bar{P}(K)$. Therefore, given $g_x = \dot{x}/x$ for a function of time $x(t)$, the Maximum Principle suggests the following

Proposition 1 *A sustainable steady state solution requires*

$$C(t) = \varepsilon E(t), \quad \varepsilon = h(r - \theta) > 0$$

to hold on every interior optimal path.

Proof. See the Appendix ■

Basically, along a sustainable balanced growth path the economy evolves free to produce (and, conversely, to pollute) as far as economic growth is possible. On the contrary, a public intervention fixing a tax on each polluting emission being realised, may slow down any *dirty* production activities, and drive the system back along the socially optimal balanced growth path.

according to

$$g_C = g_E = \frac{r - \rho}{2\sigma - 1} \quad (3)$$

that is, any increase in consumption is allowed only if environmental quality does grow accordingly. But this constrain pollution P to the same growth rate, as if we allow polluting emissions to raise only when compensated by a proportional environmental improvement due, for example, to a recycling programme,

$$g_E = g_P \quad (4)$$

or rather

$$\frac{P}{E} = \gamma, \quad \gamma > 0 \text{ (constant)} \quad (5)$$

where, for simplicity, we assume hereafter $\gamma = \theta - \frac{r-\rho}{2\sigma-1}$.

Remark 2 *A weak sustainability rule of thumb allows environmental quality to grow constantly over time.*

The assumption of weak sustainability permits to overcome the environmental constraints, by considering Nature as part of the total amount of capital, which is finally held constant.⁷ Both natural and physical capital are therefore seen as substitutable, thanks to technological progress that allows agents to extract more and more value from a declining amount of natural resources.

⁷“Weak sustainability requires that the amount of natural capital necessary for the life-supporting system of the Earth is non-decreasing, and the sum of man-made and non-critical natural capital is constant,” (Pearce and Turner, 1990).

On the other hand, neither we underestimate the limits nor we neglect the biophysical laws that characterise the use of a natural resource.⁸ Notwithstanding, we justify the assumption given so far about sustainability, as environmental quality is supposed to constantly improve over time ($g_E > 0$). In fact, although a technological sector is left out from our analysis, it is not difficult to think of it as an economy where new technologically clean products to preserve the environment are continuously introduced whether new pollutants may on the contrary emerge (see also Musu, 1995).

The problem we have been dealing with so far has shown the way a social planner has to follow to determine the optimal allocation of pollution and make a sustainable growth consequently feasible, given a constraint on environmental quality and physical capital. However, a deeper investigation on the evolution of this economy in the neighbourhood of the steady state needs to be conducted. We dedicate the next section to this end.

3 Equilibrium dynamics along the BGP

Perturbing a system to check for the behaviour of its solution when approaching the steady state can be noteworthy, and might help the policy maker to better understand the appropriate decisions that drive the system towards the long run equilibrium. The analysis conducted so far in section 2 allows

⁸Above all, the second law of thermodynamics states that every system always tends to move from order to disorder, and its energy tends to be progressively transformed into lower levels of availability, until no more availability for further processes is reached

us to rewrite the problem in a more suitable fashion, and consequently derive the following

Proposition 3 *The motion generated by a sustainable decentralised solution implies the following two-dimensional system of first-order differential equations:*

$$\begin{aligned}\dot{K} &= rK + \left(h - \frac{\varepsilon}{\gamma}\right)P \\ \dot{P} &= (\theta - \gamma)P\end{aligned}$$

given constancy of environmental quality's growth rate, g_E . The system possesses an unstable interior steady-state.

Proof. See the Appendix. ■

Our scope is to finally interpret our findings in the light of the EKC literature, and eventually determine the way polluting emissions react at changes in physical capital. To this end, we shall adopt the following convenient variable substitution, $x = \frac{P}{K}$, and finally come to the subsequent equation of motion

$$\dot{x} = \left[\frac{2r(1 - \sigma) - \rho}{2\sigma - 1}\right]x - \left(h - \frac{\varepsilon}{\gamma}\right)x^2 \quad (6)$$

Graphic representation of Eq. (6) is more direct and straightforward, and yields the following Figure 1⁹

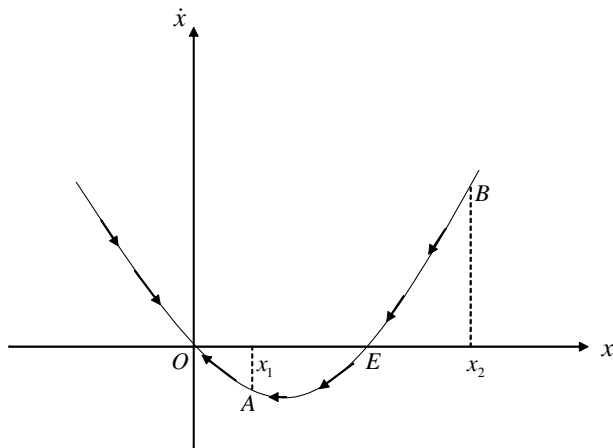


Figure 1: Dynamics of the system

To summarise, a dynamic behavioural analysis permits to understand the appropriate policy intervention that should be made to attain the steady-state, given the initial level of our state-like and control-like variables. Moreover, thorough analysis of equilibrium coordinates provides some interesting findings. To begin with, we may consider an economy which starts up at point A with endowment x_1 . This resembles the case of a *clean* society starting with a high natural regeneration rate (i.e., low level of pollution), gradually changing its production processes to abate the associated polluting emissions.

⁹Note that \dot{x} can be interpreted as the speed at which the pollution to capital share evolves over time.

The system does finally converge to O , with pollution being finally weeded out. Conversely, if we consider a *dirty* economy with a very high pollution to capital share, starting, for example, at point B with endowment x_2 , the system approaches equilibrium from the right-hand side, passing through E , and constantly reducing the amount of polluting emissions, until the system collapses again to O . Finally, it seems that an economy will “naturally” converge to the *virgin state* of nature. Nevertheless, the speed at which a society decides to change its production processes, and reduce pollution loads, might be slightly different. Whereas the rich economy in B starts decreasing its pollution at a very high speed, once a minimum threshold is reached, it becomes more difficult to get rid of a *dirty* production process, and convergence to the stable virgin state O starts lessening.

It is also easy to interpret these findings according to the classic EKC (Environmental Kuznets Curve) hypothesis, that associates increasing pollution with increasing levels of income at a starting phase of development, though pollution is assumed to slow down instead when a turning point is reached at some high levels of national income.

In our case, nonetheless, a starting point at B resembles the assumption of high income societies that are more devoted to environmental concerns, and start reducing their emission levels. It can basically depict a situation where polluting emissions are very high. Then, the engine of development and growth either increases the amount of physical capital available to the economy or progressively abates polluting emissions, thus reducing the pollu-

tion/capital share, and thus finally drive the system towards the equilibrium point, E .

Unfortunately, equilibrium E is not stable, that is either the system lies on it from the beginning, or it is unavoidably pushed back to the stable solution in O . It seems then theoretically plausible that the EKC hypothesis fails at representing a sustainable economic development as depicted in this paper. Indeed, we can expect that whenever a society has reached a sustained level of development, and its citizens beg for more environmental care policies, it might very well happen that they continue to ask for a reduction of polluting emissions, until the system collapses to the stable solution, where pollution definitely disappears.

4 Concluding remarks

Nowadays pollution is still considered a *dirty* word. The main question is whether continued environmental degradation might be considered a necessary part of the process of industrialisation. In other words, we ought to investigate whether or not polluting emissions do continue to increase without bound as more and more countries develop. The problem is that a clear relationship between growth and environmental quality is particularly complex: some indicators appear to improve with growth; others worsen; still others exhibit a somewhat doubtful trend.

Basically, the concern that environmental issues may limit current growth

opportunities is not new. The problem of sustainable development was firstly debated during the 1970s, but strongly fostered during the last decade. This is probably due to the recent political quarrels on climate change and the Kyoto Protocol effectiveness, but also to the emergence of a vast literature on the so-called “Environmental Kuznets Curve hypothesis” (EKC), where the relationship between pollution and income is assumed to have the shape of an inverted U , that is pollution might increase only in the first stage of economic development, while it necessarily decreases when developed societies seek a less polluted environment to live in, and become more willing to invest in new technologies that clean-up the production processes of their economic activities. Unfortunately, lots of criticisms have been raised against this theory, since polluting problems seem to be nowadays an unavoidable burden that developed societies have to deal with.

It seems from our analysis that behaving sustainably is not a concept that economists might easily agree upon, as we noticed instead that a sustainable steady state outcome mainly represents a knife-edge solution to be achieved when the economy collapses, and Nature goes back to its Virgin state. Basically, we are assuming that whenever a sustainable policy be implemented to allow polluting emissions grow at the same rate of consumption, this might cause an awkward effect that might drive the system back to a situation where solutions annihilate. On the contrary, a positive solution may be achieved, but only if the economy starts from the beginning, and stays forever, with endowment x_2 .

To summarise, this paper has presented an economy where environmental concerns affecting the welfare of future generations enter the decision making problem of a *green* social planner. To this end, some interesting results arise when studying the transitional dynamics of this economy. In fact, the type of equilibrium that characterises our economy allows us to give a new contribution to the still controversial EKC hypothesis. It seems to be confirmed that, as nations or regions experience greater prosperity, their citizens demand that more attention be paid to the noneconomic aspects of their living conditions. The richer countries which tend to have relatively cleaner urban air and river basins, also have relatively more tightening environmental standards and stricter enforcement of their environmental laws than the middle-income and poorer countries, many of which still have pressing environmental problems to address. However, instead of a possible downward sloping and inverted *U*-shaped pattern, we noticed that as countries develop, they always cease to produce certain pollution-intensive goods, no matter their starting level of development. Nevertheless, it might very well happen that the speed at which rich societies start changing the composition of pollutants in their production processes be higher than the pace less developed economies do experiment when moving towards a sustainable solution.

A Appendix

Given the current Hamiltonian function

$$H_C = \frac{(CE)^{1-\sigma} - 1}{1-\sigma} + \lambda[rK + hP - C] + \mu[\theta E - P]$$

and assuming that $g_x = \dot{x}/x$ for a function of time $x(t)$, and $U_C = \partial U/\partial C$, the Maximum Principle suggests

$$\frac{\partial H_C}{\partial C} = U_C - \lambda = 0 \implies (1-\sigma)g_E - \sigma g_C = g_\lambda \quad (\text{A.1})$$

$$\frac{\partial H_C}{\partial P} = \lambda h - \mu = 0 \implies g_\lambda = g_\mu \quad (\text{A.2})$$

$$\dot{\lambda} = -\frac{\partial H_C}{\partial K} + \lambda\rho = -\lambda r + \lambda\rho \implies g_\lambda = \rho - r < 0 \quad (\text{A.3})$$

$$\dot{\mu} = -\frac{\partial H_C}{\partial E} + \mu\rho = -U_E - \mu\theta + \mu\rho \implies g_\mu = (\rho - \theta) - \frac{U_E}{\mu} \quad (\text{A.4})$$

Since $g_\lambda = g_\mu$ is constant from (A.2) and (A.3), (A.4) implies

$$g_\mu = \frac{d \ln U_E}{dt} = (1-\sigma)g_C - \sigma g_E \quad (\text{A.5})$$

From (A.1), (A.2) and (A.5),

$$(1-\sigma)g_E - \sigma g_C = (1-\sigma)g_C - \sigma g_E \implies g_C = g_E \quad (\text{A.6})$$

and thus,

$$g_C = g_E = \frac{r - \rho}{2\sigma - 1} \quad (\text{A.7})$$

from (A.1) and (A.3). Also, we have

$$C^*(t) = \varepsilon E^*(t), \quad \varepsilon > 0 \text{ (constant)}, \quad (\text{A.8})$$

on an interior optimal path. Since $U_E/U_C = C/E = \varepsilon$, (A.4) yields

$$g_\mu = (\rho - \theta) - \frac{U_E}{\mu} = g_\mu = (\rho - \theta) - \varepsilon \frac{\lambda}{\mu} = g_\mu = (\rho - \theta) - \frac{\varepsilon}{h}. \quad (\text{A.9})$$

From (A.9), (A.2) and (A.3), it follows that

$$\varepsilon = h(r - \theta) \quad (\text{A.10})$$

Note that constant g_E implies

$$g_E = g_P, \text{ and } \frac{P}{E} = \theta - \frac{r - \rho}{2\sigma - 1} = \gamma \quad (\text{A.11})$$

for $g_E = \theta - P/E$. The initial values C_0 and P_0 are finally obtained as

$$C_0 = h(r - \theta)E_0, \text{ and } P_0 = \left(\theta - \frac{r - \rho}{2\sigma - 1} \right) E_0. \quad (\text{A.12})$$

Finally, (A.8) is obtained without any assumption of BGP, and thus holds on *every* interior optimal path. In fact, since ε is constant not only on an

optimal BGP, but also on any interior optimal path, one cannot perturb the system by varying ε for a local analysis around the steady state.

In any case, nonnegativity conditions impose some restrictions on the parameters:

$$r > \theta \text{ for } C > 0 \tag{A.13}$$

and

$$\theta(2\sigma - 1) + \rho > r \text{ for } P > 0 \tag{A.14}$$

As another restriction, the objective functional is well defined iff $2g_E(1 - \sigma) - \rho < 0$. Or, equivalently,

$$\rho > 2(1 - \sigma)r. \tag{A.15}$$

References

- [1] Ayong Le Kama, A.; Schubert, K. “The consequences of an endogenous discounting depending on environmental quality”. *Environmental and Resource Economics* (2004), vol. 28 (1), p. 31-53.
- [2] Copeland, B.R.; Taylor, M.S. “Trade, growth and the environment”. *Journal of Economic Literature* (2004), vol. 42, p. 7-71.
- [3] Day, K.M.; Grafton, R.Q. “Growth and the environment in Canada: An empirical analysis”. *Canadian Journal of Agricultural Economics* (2003), vol. 51, p. 197-216.
- [4] Grossman, G.M. “Pollution and growth: What do we know?”. In Goldin, I.; Winters, L.A. (eds), *The Economics of sustainable Development*. Cambridge: Cambridge University Press (1995), p. 19-47.
- [5] Grossman, G.M.; Krueger, A.B. *Environmental impacts of a North American Free Trade Agreement*. NBER Working Paper 3914. Cambridge MA (1991).
- [6] Lopez, R. “The environment as a factor of production: The effects of economic growth and trade liberalization”. *Journal of Environmental Economics and Management* (1994), vol. 27, p. 163-184
- [7] Musu, I. *Transitional Dynamics to Optimal Sustainable Growth*. Fondazione ENI Enrico Mattei (1995), Working Paper n. 50.95.

- [8] Pearce, D.W.; Turner, R.K. *Economics of Natural Resources and the Environment*, Baltimore, Johns Hopkins University Press, 1990.
- [9] Perman, R.; Stern, D.I. "Evidence from panel unit root and cointegration tests that the environmental Kuznets curve does not exist". *Australian Journal of Agricultural and Resource Economics* (2003), vol. 47, p. 325-347.
- [10] Shafik, N. "Economic development and environmental quality: An econometric analysis". *Oxford Economic Papers* (1994), vol. 46, p. 757-773.

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

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>
PRIV	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>

(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.

2006 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: 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>