Gautier, Pascal; Soubeyran, Raphael

Working Paper
Political Cycles : The Opposition Advantage

Nota di Lavoro, No. 129.2005

Provided in Cooperation with:
Fondazione Eni Enrico Mattei (FEEM)

Suggested Citation: Gautier, Pascal; Soubeyran, Raphael (2005) : Political Cycles : The Opposition Advantage, Nota di Lavoro, No. 129.2005, Fondazione Eni Enrico Mattei (FEEM), Milano

This Version is available at:
http://hdl.handle.net/10419/74243

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.
Political Cycles : The Opposition Advantage
Pascal Gautier and Raphaël Soubeyran

NOTA DI LAVORO 129.2005

OCTOBER 2005
PRCG – Privatisation, Regulation, Corporate Governance

Pascal Gautier and Raphaël Soubeyran, GREQAM, Université d’Aix-Marseille II

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=847604

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
Political Cycles: The Opposition Advantage

Summary
We propose a two dimensional infinite horizon model of public consumption in which investments are decided by a winner-take-all election. Investments in the two public goods create a linkage across periods and parties have different specialities. We show that the incumbent party vote share decreases the longer it stays in power. Parties chances of winning do not converge and, when the median voter is moderate enough, no party can maintain itself in power for ever. Finally, the more parties are specialized and the more public policies have long-term effects, the more political cycles are likely to occur.

Keywords: Cycles, Alternation, Public goods, Advantage, Opposition

JEL Classification: D72, H41, C72

This is a revised version of “Political Cycles: a suggested interpretation”, GREQAM WP 12-2005. The authors thank Francis Bloch, Guillaume Girmens, Didier Laussel and Thierry Mayer as well as many seminars and congresses participants at Aix-en-provence, Beijing, Dublin, Lille, Marseille and New York for their helpful comments. We are also grateful to CORE members and staff for their hospitality during our time in Belgium.

Address for correspondence:
Pascal Gautier
GREQAM, Université d’Aix-Marseille II
Château Lafarge, Route des Milles
13290 Les Milles
France
Phone: +33 0 442935980
Fax: +33 0 442930968
E.mail: pgautier@univaix
In modern democracies, the alternation of political parties in power is a frequent phenomenon. Why isn’t there a greater persistence of parties in power? How can one explain the turnover of parties in government? How can one explain political cycles? We propose a theoretical model of political cycles, where the share of a party’s vote decreases with the time it controls government. This effect, that we call “the opposition advantage”, is different from the well known incumbent effect. Indeed, the incumbency effect measures the advantage given to the incumbent candidate competing with a challenger. The opposition effect measures the advantage of a candidate affiliated to the opposition party, when he competes against a candidate of the party in power, who is not necessarily the incumbent politician.

We propose an explanation of the opposition advantage and show that it can be a cause for political and policy cycles. We propose an infinite horizon model of repeated elections with two parties built on two main assumptions: policies have long-term effects, but are not irreversible, and parties have comparative advantages for the provision of two public goods. The two goods are imperfectly substitutable for voters. For example, citizens need good education and security at the same time. When voters are moderate, they may wish that both parties govern, but they can only elect one of them at a time. In this context, the opposition party can offer more moderate policies. Indeed, the opposition can propose to keep the incumbent party policy long-term effect and satisfy voters in focusing on the public good that it has a comparative advantage upon. On the contrary, the party in power cannot benefit from the comparative advantage of the opposition party. These two arguments suggest that the opposition party may be advantaged.

Our analysis has to be distinguished from studies focusing on politicians’ careers and swings in their popularity. A large strand of this literature deals with the “Incumbency advantage”. This theory is supported by overwhelming evidence, both in Senate elections and in elections to the House of representatives. Some of the major factors of the incumbency advantage are

---

1 Many public goods have long-term effect. Important examples are national defense activities, welfare programs, environmental clean-up, building states schools, roads ....

2 Ansolabehere and Snyder (2002) provide an excellent survey of the incumbency advantage literature, and an empirical contribution on state and federal elections in U.S. for the period 1942-2000. They find strong support for the incumbency advantage in state executives elections and conclude that explanations specific to the legislators incumbency advantage are not convincing.
redistricting\textsuperscript{3}, seniority systems\textsuperscript{4}, and the lack of collective responsibility\textsuperscript{5}.

Scholars explain political cycles with psychological arguments\textsuperscript{6}, the main one being disappointment. The “Negativity effect” theory\textsuperscript{7} is built on the following remark: voters’ decisions are based on the incumbent’s past performance and negative pieces of information have a greater impact than positive pieces of information. There exist two different explanations for this observation, the first one suggests that voters have a high esteem for powerful figures and are more easily disappointed than positively surprised by the government performance; the second (Abelson and Levy, 1985) states that the electorate has a strong risk aversion for potential costs of re-electing a politician who has demonstrated his bad performance. In the light of the negativity effect, Aragones (1997) obtains a result of systematic alternation of the two parties implementing different policies. In our analysis, there is no uncertainty and electorate decisions are not based on past performance, but as usually in political models, for their preferred party at each election. Finally, the negativity and incumbency effects affect the election outcome in opposing directions. The first one leads to the defeat of the incumbent, whereas the second one leads to the re-election of the incumbent. Both theories focus on individual politicians. Differently, our study does not deal with politicians but with parties.

In our model, political cycles emerge as a consequence of the opposition effect. There exists very few models considering this determinant of political cycles. Kramer (1977) and Bendor, Mookherjee and Ray (2005), study dynamic models of electoral competition between two parties with myopic behavior. Kramer (1977) suppose that the incumbent cannot change his policy whereas the challenger can locate anywhere in the policy space. He shows that candidates systematically alternate in power. Bendor, Mookherjee and

\textsuperscript{3}Cox and Katz (2002) state that redistricting caused the rise of legislators incumbency advantage after the 60s.

\textsuperscript{4}McKelvey and Riezman (1992) argue that seniority tends to create a disencentive to vote for challengers.

\textsuperscript{5}See Persson and Tabellini (2000, chapter 4) for a survey of the incumbents accountability literature.

\textsuperscript{6}See Goertzel (2005) for a review of the american voters mood changes literature. Schlesinger (1949, 1986, 1992) consider that the electorate is inevitably disappointed by the party or the ideology that is in power. Klinberg (1952) suggests that American mood in public opinion balances between introversion and extroversion. This could explain why domestic and foreign concerns alternate through time and parties turnover in power.

\textsuperscript{7}See Aragones (1997) for a survey.
Ray (2005) propose a model based on a satisfying behavior of the incumbent and a search behavior of the challenger. If the winning candidate is satisfied, then he does not change his policy until he loses the election, whereas the challenger is not satisfied, then he searches a policy that can defeat the incumbent. In our study, parties, once elected, are not constrained to keep their policy the next election. Parties behave strategically, they try to win the present election in selecting their platforms and their behavior do not change whether they are in power or not.

Another topic related to our analysis are policy cycles. Many scholars argue that policy cycles are generated by economic cycles\textsuperscript{8}. We propose a different explanation; in our model, policy cycles are not generated by economic shocks but by the political structure. Since parties implement different policies\textsuperscript{9}, political turnover and policy changes are clearly related. In a very different framework, Roemer (1995) shows that policy cycles arise because of stochastic changes in voters preferences in a model with policy motivated candidates with uncertainty. Our approach is different in many aspects. We suppose that parties are only office motivated and the non-convergence of platforms does not result from uncertainty but from parties multidimensional heterogeneity. Furthermore, we show that perpetual cycles (but not necessarily periodic) appear in a context with no uncertainty.

In considering an infinite number of successive elections and a dynamic link coming from public policies long-term effects, our work contributes to the literature of infinite horizon models of repeated elections. This literature is mainly focused on the dynamic inefficiency of government\textsuperscript{10}. Battaglini and Coate (2005) consider an infinite horizon model of collective spending and taxation. Public decisions are determined through a legislative bargaining process. Agents are forward looking, they take decisions in anticipating the

\textsuperscript{8}A huge litterature studies political business cycles. See Berry (1991) for a survey.

\textsuperscript{9}Hibbs (1977), Beck (1982), and Chappel and Keech (1986) show that Democrat and Republican governments have different influences on the unemployment rate. Alesina and Sachs (1988) and Tabellini and La Via (1989) show that parties are associated with different monetary policies.

\textsuperscript{10}Baron (1996) studies a dynamic model of pork barrel policies. Gomes and Jehiel (2004) analyze the persistence of inefficiencies in a general framework of social and economic interactions that can be applied to legislative bargaining, coalition formation or exchange economies. Hassler, Storesletten and Zilibotti (2003) study public good provision in an OLG model, where an age-dependant taxation creates distortions in human capital investment. Azzimonti, Sarte and Soares (2003) focus on the role of commitment in a dynamic public spending and taxation model.
outcomes of futures elections. The authors objective is very different from ours, because they concentrate on long-term government inefficiencies\textsuperscript{11}. We do not analyze taxation and debt problems, then we suppose that the tax rate is fixed and that there is no saving and no debt.

Finally, in considering parties with different competences, our work contributes to the literature on valence in politics. A growing literature deals with models where policy and quality are orthogonal dimensions\textsuperscript{12}. Here, we suppose that parties’ competences are different according to the different policies\textsuperscript{13}. Other authors analyze agency problems\textsuperscript{14}, where politicians are associated to a policy-dependent competence level and voters have incomplete information on politicians type and/or actions\textsuperscript{15}. We extend the assumption of heterogeneous competences to the case of two dimensions, but we suppose that they are common knowledge.

The paper is organized as follows. In section 1, we present voters behavior and parties constraints. In section 2, we derive the multiple possible outcomes of the electoral competition. In section 3, we show that the opposition party is advantaged. In section 4, we present our main results: the probability of winning cannot converge; when the median voter is extremist, a party can stay in power for ever, whereas when he is moderate, no party can keep power for ever; and we show that cycles are more likely to occur when the depreciation rate is low and when parties are strongly specialized. In section

\textsuperscript{11}In a close study, Azzimonti-Renzo (2005) analyzes government long-term inefficiencies when the decision maker is atomistic.

\textsuperscript{12}This literature, initiated by Stokes (1992) focus on the problem of equilibrium existence and platforms location in spatial models when candidates have different “scores” on the quality dimension. Ansolabehere and Snyder (2000) study the unidimensional model in a world of certainty; Aragones and Palfrey (2002) analyze the case where candidates maximize their share of votes and overcome the pure strategy equilibrium non-existence problem in studying mixed strategy equilibrium for small advantage levels. Groseclose (1999) and Aragones and Palfrey (2004) add candidates policy concerns.

\textsuperscript{13}As noticed by Prat (2002): “One may doubt that [voters] utility is separable in policy and valence. A left wing voter may prefer an inept right-wing politician to an effective right-wing politician because the latter is more likely to live up to his or promises and pass right-wing legislation. Still, an inept politician creates pure inefficiencies which are costly to all citizens.”

\textsuperscript{14}See again Persson and Tabellini (2000, chapter 4, section 4.7) for a review of this literature.

\textsuperscript{15}Rogoff and Siebert (1988) propose a model of adverse selection and Rogoff and Sundaram (1993, 1996) study politician accountability in models with moral hazard and adverse selection.
6, we discuss two candidates objectives (re-election concerns and rent-seeker candidates). Finally, we conclude in section 7.

1 The model

We consider an infinite horizon model of repeated elections with two opportunistic parties $A$ and $B$. Each period, voters elect a party and the new government implements his platform. Then, another election takes place, and so on. The government provides two durable public goods, $a$ and $b$, that depreciate each period with a constant rate $\delta$ in $[0, 1]$, and the government ’s budget is normalized to 1 at any period. A new government can either keep the existing stocks or transform one of the public good into the other. Specifically, if the level of public good $g$ ($g = a, b$) after election $t$ is $g_t$ and $I_{g,t+1}$ new units are produced by the government in period $t + 1$, then the level in period $t + 1$ is\(^{16}\):

$$g_{t+1} = (1 - \delta) g_t + I_{g,t+1},$$

where $g = a, b$. The level $g_{t+1}$ can be either greater or smaller than $g_t$. When $g_{t+1} \geq g_t$, this means that the government at time $t + 1$ chooses to keep the stock of public good $g$. If $g_{t+1} < g_t$, the government either undoes or does not invest enough in good $g$ to maintain its level. A policy $z_t$ is a couple of public goods quantities $(a_t, b_t)$.

Voters:

Voters differ in the weight they place on the two public goods. Voter $i$’s weight for the first public good is denoted by $\alpha_i$, belonging to the unit interval $[0, 1]$. The preferences of voter $i$ are represented by:

$$W_i(a_t, b_t) = \alpha_i \ln (a_t) + (1 - \alpha_i) \ln (b_t),$$

where $a_t$ and $b_t$ are the public goods stocks after date $t$. The policy after election $t$ is noticed $z_t = (a_t, b_t)$.

This kind of preferences, introduced by Tabellini and Alesina (1990), allows voters to disagree about which quantities of public goods to consume.\(^{16}\) Azzimonti-Renzo (2005) and Battaglini and Coate (2005) make the same assumption on the long-term effect of public spending.
Furthermore, these preferences belong to the class of ”intermediate preferences” defined by Grandmont (1978), and verify the single crossing property (Grandmont, 1978). The median voter theorem applies, i.e. the median voter’s preferred policy is the unique Condorcet winner. The preferred policy of the median voter, characterized by $\alpha_m$, is thus the Condorcet winner in our context.

It is important to notice that the identity of the median voter $\alpha_m$, does not depend on the date, i.e. is independent of the dynamics of the model.

**Parties:**

At each period, both parties propose credible platforms in order to win the election. The government’s budget constraint is:

$$I_{a,t} + I_{b,t} \leq 1,$$

We define a party as a stable organization, which can provide the two public goods. We suppose that the two parties are specialized: party $A$ has a comparative advantage in providing good $a$ and party $B$ a comparative advantage in providing good $b$. This advantage will be captured by two constants, $\eta^A \in ]1, \overline{\eta}]$ and $\eta^B \in ]1, \overline{\eta}]$ which are inversely related to the marginal cost of providing the public goods. Finally, we suppose that the technology for providing both public goods has constant returns to scale, with marginal costs of $1/\eta^A$ and 1 for party $A$ and 1 and $1/\eta^B$ for party $B$. With these specifications in mind, we write the budget constraints of the two parties at an election at date $t$ as:

**Party A:**

$$\frac{a_t - (1 - \delta) a_{t-1}}{\eta^A} + b_t - (1 - \delta) b_{t-1} \leq 1,$$

**Party B:**

$$a_t - (1 - \delta) a_{t-1} + \frac{b_t - (1 - \delta) b_{t-1}}{\eta^B} \leq 1,$$

where stocks of the two public goods must be positive, i.e., $a_t, b_t \geq 0$. Inequality (A) defines party $A$’s set of policy $A(t)$ and inequality (B) define party $B$’s set of policy $B(t)$.  

7
2 Political Equilibria

2.1 The median voter choice

The median voter selects the winning party, and her choice drives the dynamics of successive elections. We start the analysis by deriving her preferred platform over the set of credible platforms. The median voter’s preferred policy over $A(t)$, denoted $m_t^A$, is the solution to:

$$\begin{align*}
\text{Max}_{(a_t,b_t)} [W_i(a_t,b_t)] \\
\text{s.t. } (a_t,b_t) \in A(t)
\end{align*}$$

and her preferred platform over $B(t)$, denoted $m_t^B$ is the solution to:

$$\begin{align*}
\text{Max}_{(a_t,b_t)} [W_i(a_t,b_t)] \\
\text{s.t. } (a_t,b_t) \in B(t)
\end{align*}$$

Straightforward calculations allow us to characterize the median voters’ preferred policies:

$$m_t^A = (\eta^A a_m s_{t-1}^A, (1 - \alpha_m) s_{t-1}^A)$$

$$m_t^B = (\alpha_m s_{t-1}^B, \eta^B (1 - \alpha_m) s_{t-1}^B)$$

where $s_{t-1}^A = 1 + (1 - \delta) \left( b_{t-1} + \frac{a_{t-1}}{\eta^A} \right)$ and $s_{t-1}^B = 1 + (1 - \delta) \left( a_{t-1} + \frac{b_{t-1}}{\eta^B} \right)$.

Hence, the derivation of the median voter’s preferred platform depends on the public goods stocks $a_{t-1}$ and $b_{t-1}$. She has to compare $m_t^A$ and $m_t^B$. Let $\Lambda_t(.)$ be such that:

$$\Lambda_t(\alpha_m) = \frac{s_{t-1}^A}{s_{t-1}^B} \left( \frac{\eta^A}{\eta^B} \right)^{\alpha_m}$$

The median voter weakly prefers $m_t^A$ to $m_t^B$ if and only if $W_i(m_t^A) \geq W_i(m_t^B)$. With simple computations, one can show that the median voter weakly prefers $m_t^A$ to $m_t^B$ if and only if $\Lambda_t(\alpha_m) \geq 1$. Not surprisingly, the more $A$ is competent, the less $B$ is competent, and the more $\alpha_m$ is high, the higher the likelihood that the median voter chooses a policy in $A$’s policy set.
2.2 Equilibria

Parties select their platforms in order to win the election. Party $A$ (respectively party $B$) maximizes its probability of victory $\pi^A_t$ (respectively $\pi^B_t$). In the case where the median voter is indifferent between the two programs, we suppose that each party is equally likely to win the election. We denote by $z^A_t$ party $A$’s platform and by $z^B_t$ party $B$’s platform in the election at date $t$. Let $M^A(t)$ (respectively $M^B(t)$) be the set of party $A$ platforms strictly preferred to $m^B_t$ (respectively to $m^A_t$). Formally:

$$M^A(t) = \{ z_t \in A(t) : W_m(z_t) > W_m(m^B_t) \} ,$$

$$M^B(t) = \{ z_t \in B(t) : W_m(z_t) > W_m(m^A_t) \} ,$$

Since parties are only interested in winning the election, a platform that the rival cannot defeat is an equilibrium strategy. This leads to a multiplicity of Nash equilibria, summarized in the following proposition:

**Proposition 1** The set of Nash equilibrium is always non empty and is:

(i) $M^A(t) \times B(t)$ if $\Lambda_t > 1$, and $A$ is elected,
(ii) $A(t) \times M^B(t)$ if $\Lambda_t < 1$, and $B$ is elected,
(iii) $(m^A_t, m^B_t)$ if $\Lambda_t = 1$, and $A$ and $B$ are elected with probability $\frac{1}{2}$.

(Proofs are reported in the appendix.)

These results lead to several observations. First, because parties only want to win the election and the information is complete, one party is in general certain to be elected (in cases (i) and (ii)). This party can propose many winning platforms, whereas the loser locates anywhere in his policy set. Figure 2 illustrates this kind of equilibrium:

Second, in very specific circumstances (in case (iii)), the median voter is indifferent between the two parties (see Figure 3). If this event occurs, it will dramatically change the dynamics of elections, as we discuss section 4.1.
Figure 1: Candidate A winning strategies when $\Lambda_t > 1$

Figure 2: Equilibrium strategies when $\Lambda_t = 1$

3 The opposition advantage

In this section, we discuss about the advantage conferred to the party in the opposition. Consider two elections at dates $t$ and $t + 1$, and suppose that $B$ wins the election at date $t$. Then $B$ implements his policy $z_t^B = (a_t^B, b_t^B) \in$
$M^B(t)$, one of his equilibrium platform for election $t$. Since $B$ is the winner, it is necessarily true that $\Lambda_t \leq 1$. First remark that $z^B_t \notin A(t)$ because of the definitions of $M^B(t)$ and $m^A_t$, so that $z^B_t$ must satisfy

$$a^B_t - (1 - \delta) a_{t-1} + b^B_t - (1 - \delta) b_{t-1} > 1,$$

This simply means that if $A$ would try to imitate $B$ at election $t$, then he would violate his budget constraint. Furthermore, since $B$ wins at $t$, then $(a_t, b_t) = (a^B_t, b^B_t)$. This last equation can be then rewritten as follows:

$$s^A_t - 1 > (1 - \delta) s^A_{t-1}. \tag{1}$$

By definition, $z^B_t \in B(t)$, so that:

$$a^B_t - (1 - \delta) a_{t-1} + \frac{b^B_t - (1 - \delta) b_{t-1}}{\eta^B} \leq 1,$$

or, equivalently,

$$s^B_t - 1 \leq (1 - \delta) s^B_{t-1}. \tag{2}$$

Using equations 1 and 2, we obtain:

$$\frac{s^A_{t-1}}{s^B_{t-1}} < \frac{s^A_t - 1}{s^B_t - 1},$$

Furthermore, it is easy to check that $\frac{s^A_t}{s^B_t} \geq \frac{s^A_{t-1}}{s^B_{t-1}}$, only because $s^A_t$ and $s^B_t$ are strictly greater than 1. Finally, the relative advantage of party $A$ is strictly greater at election $t + 1$ than at election $t$. This result is summarized in the next proposition:

**Proposition 2** At each election, the relative advantage of the opposition party increases: for all $t$ where $A$ is the opposition party, $\Lambda_{t+1} > \Lambda_t$.

(Proof: see the reasoning above.)

This result states that the share of votes of the opposition party generally increases from one election to the next. The intuition of this result is that when a party is elected, since he must implement his promises, he gives the opposition party the opportunity to propose a more satisfactory platform on both dimensions. This effect drives the dynamics of elections and, when it is sufficiently large, can lead to a switch in power between the majority and the minority.
4 Political Cycles

In this section, we study the dynamics of elections and public good provision. The questions arising at this point are: What is the long run behavior of the dynamics of elections? Does the parties’ probability of winning converge to one half? How do cycles depend on the median voter preferences? On the parties competences? On the durability of public goods?

4.1 Do parties’ winning probabilities converge?

We focus on the special case (iii), where each candidate has one half chance of winning election \( k \). We have shown that the sequence \( (\Lambda_t)_t \) is decreasing when \( A \) is not in power, and, by symmetry, is increasing when \( A \) is in power. Then, the sequence is either always increasing and then for all \( t \), \( \Lambda_t \leq 1 \), always decreasing and for all \( t \), \( \Lambda_t \geq 1 \), or follows a cycle.

This sequence can not converge to 1. Indeed, suppose that there exists an election \( k \) such that \( \Lambda_k = 1 \). Then each party has one half chance of being elected in \( k \). Without loss of generality, suppose that \( A \) is elected, then \( \Lambda_{k+1} < \Lambda_k = 1 \), and party \( B \) is elected for sure in \( k + 1 \). The following corollary of proposition 2 summarizes this result:

Corollary 1 If \( \Lambda_k = 1 \), the elected party in \( k \) is defeated in \( k + 1 \).

(The proof relies on the simple argument above.)

The intuition of this result is that, when the median voter is indifferent between both platforms \( (\Lambda_k = 1) \), he would indeed like both platforms to be implemented in turn\(^{17}\). But only one party is elected, and provides a polarized platform. At the next election, the opposition party will provide a policy which uses the stock of public goods implemented by the majority, but is closer to the median voter’s preferences.

4.2 Stable power

The following proposition provides sufficient conditions for a party to constantly remain in power.

\(^{17}\)The intuition is close to Alesina and Rosenthal (1996) at the difference that, in our model, voters cannot mix policies during a unique mandate, but they get mixed policies through successive mandates with parties turnover.
Proposition 3  There exists $0 < \underline{\alpha} < \bar{\alpha} < 1$ such that, for all \((\alpha_m, \delta, \eta^A, \eta^B, a_0, b_0) \in [0, 1]^2 \times [1, \bar{\eta}]^2 \times \mathbb{R}_+^2:\)

(i) If \(\alpha_m \in [0, \underline{\alpha}]\), then party B wins all elections,
(ii) If \(\alpha_m \in [\bar{\alpha}, 1]\), then party A wins all elections.

(Proof: see the appendix)

The intuition of this result is straightforward. If the median voter has extreme tastes, then one of the two parties is able to keep power forever by exploiting its comparative advantage in providing one of the two policies.

4.3 Cycles

We now analyze cycles where parties alternate in power. We wish to know when these cycles are not conjunctural, namely, when they are independent of the initial stocks of public good, \(a_0\) and \(b_0\). We define political cycles in the following way:

**Definition 1** A set of parameters \((\alpha_m, \delta, \eta^A, \eta^B, a_0, b_0) \in [0, 1]^2 \times [1, \bar{\eta}]^2 \times \mathbb{R}_+^2\), exhibits political cycles if and only if no party wins an infinite number of consecutive elections.

Formally, we study the case where the sequence \((\Lambda_t)\), does not converge and does not diverge. Unfortunately, because there exist many equilibria at each election, we cannot give necessary and sufficient conditions on the set of parameters such that it exhibits political cycles. However, we propose a sufficient condition for the existence of political cycles:

**Proposition 4** For all \((\delta, \eta^A, \eta^B, a_0, b_0) \in [0, 1] \times [1, \bar{\eta}]^2 \times \mathbb{R}_+^2\), there exist \(\alpha_1 < \alpha_2\) both in \([0, 1]\), such that: if \(\alpha_m \in [\alpha_1, \alpha_2]\) no party can maintain itself indefinitely in power.

4.4 Comparative statics

Since there exist many equilibria, it seems complicated to provide general comparative statics. To give an insight into the influence of the depreciation rate and the candidates competences on political cycles we suppose, for simplicity, that the winning candidate always implements the median voter
preferred platform\textsuperscript{18}, that is \( m_t^A \) (respectively \( m_t^B \)) when candidate A (respectively candidate B) wins the election \( t \). Furthermore, we consider the simple case where \( \eta^A = \eta^B = \eta \), i.e. when candidates are equally competent in their respective specialities. Under these assumptions, we obtain the following comparative statics results:

**Proposition 5** The interval \([\alpha_1, \alpha_2]\) defined in Proposition 4 is unique and,

\[
\frac{\partial (\alpha_2 - \alpha_1)}{\partial \eta} > 0,
\]

and,

\[
\frac{\partial (\alpha_2 - \alpha_1)}{\partial \delta} < 0.
\]

The higher the specialization of parties, the larger the parameter range for which political cycles occur. When parties become more specialized, they implement more extreme policies and the median voter is more willing to switch in order to see the other good provided. When the depreciation rate increases, goods have shorter effects and voters need less power turnover.

## 5 Extensions: parties’ lexicographic preferences

The results presented in the precedent sections hold without specifying the choice of an elected party among the generally large set of winning policies. We now allow parties to select one policy in order to maximize a sub-objective function. In other words, parties of lexicographic preferences: they first want to be elected, and select among the winning platforms that platform which maximizes their subobjective. Formally, party A’s program becomes:

\[
\max_{z_t^A \in \mathcal{A}(t)} \Pi_t^A \left( z_t^{A*}, z_t^B \right),
\]

s.t. \( \forall z_t^A \in \mathcal{A}(t), \quad \pi_t^A \left( z_t^{A*}, z_t^B \right) \geq \pi_t^A \left( z_t^A, z_t^{B*} \right) \),

\textsuperscript{18}The median voter preferred platform is always an equilibrium platform for the winning candidate.
and candidate B’s program is:

$$\text{Max}_{z^B_t \in B(t)} \Pi^B_t \left( z^A_t, z^B_t^* \right),$$

s.t. : \( \forall z^B_t \in B(t), \pi^B_t \left( z^A_t, z^B_t \right) \geq \pi^B_t \left( z^A_t, z^B_t^* \right) \),

### 5.1 Re-election concerns

Suppose that parties want to be re-elected, and consider the following reduced form for a long-run, non myopic behavior of political parties. At the election at date \( t \), the winning party’s subobjective is to maximize his relative advantage in the next election, that is \( \Lambda_{t+1} \) for party \( A \), and \( \frac{1}{\Lambda_{t+1}} \) for party \( B \). A party first wishes to be elected, and then to create the most favorable conditions for its re-election. If \( \Lambda_t = 1 \), then equilibrium programs are derived from their first objective of victory and they play \( (m_t^A, m_t^B) \). But, if \( \Lambda_t \neq 1 \), for example \( \Lambda_t > 1 \), then party \( A \) can choose many winning programs. In this case, it chooses a platform \( z^A_t = (a^A_t, b^A_t) \in M^A(t) \). Hence, its relative advantage for the next election is \( \Lambda_{t+1} = \frac{1+\delta}{1+(1-\delta)(a_t+\frac{a_t}{\eta_A}) (\eta_A)^{\alpha m}} \). Intuitively, since \( \Lambda_{t+1} \) is decreasing in \( a_t \) and increasing in \( b_t \), party \( A \) will choose a program with a minimum of good \( a \) and a maximum of good \( b \). Unfortunately, \( \Lambda_{t+1} \) has no maximum in \( M^A(t) \), but it has a supremum value:

**Proposition 6** \( \Lambda_{t+1} \) admits a supremum over \( M^A(t) \) and there exists a unique corresponding program with a minimum quantity of \( a \) and a maximum quantity of \( b \).

(The Proof is in the appendix)

This result suggests that parties seeking re-election choose very inefficient platforms, because they do not fully exploit their comparative advantage. The intuition is that a party has to provide some of the public good that he is not competent at producing, in order to induce voters to reelect him next period. Figure 4 illustrates this inefficient platform, denoted \( z^A_t \), when \( A \) wins the election:
5.2 Rent-seeker candidates

The results of previous sections also hold when the candidates’ sub-objective is to extract rents from power. Formally, if $A$ wins the election, he chooses to maximize his rent from power:

$$Max_{r_t^A} [r_t^A]$$

s.t. : $$\frac{a_t^A}{\eta_A^A} + b_t^A + r_t^A \leq s_{t-1}^A$$

and, $$(a_t^A, b_t^A) \in M_A^A(t)$$

As in the case of re-election concerns, the problem has no maximum in $M_A^A(t)$, but a supremum exists:

**Proposition 7** (i) If $\Lambda_t \geq 1$, $r_t^{A*} = (1 - \frac{1}{\Lambda_t}) s_{t-1}^A$ is the supremum of $r_t^A$ over $M_A^A(t)$.

(ii) If $\Lambda_t \leq 1$, $r_t^{B*} = (1 - \Lambda_t) s_{t-1}^B$ is the supremum of $r_t^B$ over $M_B^B(t)$.

One can approximate the maximization program in supposing that the winning candidate $P$ chooses to extract $r_t^{P*} - \varepsilon$, with $\varepsilon$ being an infinitesimal positive real number. Then, the higher the relative advantage of candidate
A ($\Lambda_t$), the higher the rents he can extract. Figure 5 illustrates this result, where candidate $A$’s equilibrium platform is denoted $z^A_t$.

Furthermore, notice that we know from Proposition 2, that $\Lambda_{t+1} > \Lambda_t$. Hence, if $A$ wins the election at $t$ and $t + 1$, we obtain that $r^A_{t+1} > r^A_t$. This would suggest that the longer a party is in power, the smaller the rents he can extract. We have to be cautious with this observation because of problems of enforceability. Indeed, if parties cannot be forced to implement their promises, an incumbent who is certain to lose the next election will extract all the rents from power. Persson and Tabellini (2000, chapter 4) discusses this issue and provides a survey of the relevant literature.

6 Conclusion

We have considered an infinite horizon dynamic model of public consumption with durable public goods. We have shown that the longer a party keeps power, the more the opposition is likely to come back to power. Therefore, we have been able to show that policy and political cycles can occur, when
the median voter preferences are balanced enough between the public goods provided by the two parties. This result holds when the parties’ main objective is to win the election and is compatible with a large range of candidates sub-objectives, that may change from one election to the next. In particular, we have shown that a candidate seeking re-election will choose a very inefficient platform, providing the minimal quantity of the public good in which he has a comparative advantage.
7 Appendix

Proof of Proposition 1:
(i) If \( \Lambda_t > 1 \), by definition, the median voter strictly prefers \( m_i^A \) than \( m_i^B \). Hence, \( m_i^A \in M^A(t) \neq \emptyset \). Let \( z^A_t \in M^A(t) \) and \( z^B_t \in B(t) \), then \( W_m(z^A_t) > W_m(z^B_t) \). Then \( (\pi^A_t, \pi^B_t) = (1, 0) \) and no party has an incentive to deviate. This implies that \( M^A(t) \times B(t) \subset E(t) \). Now, choose \( z^A_t \notin M^A(t) \), then \( W_m(m_i^A) \geq W_m(z_t^A) \). In this case \( \pi^A_t < 1 \), then party \( A \) has an incentive to move and play, for example, \( m_i^A \).
(ii) The proof is the symmetric reasoning of case (i).
(iii) If \( \Lambda_t = 1 \), by definition, \( W_m(m_i^A) = W_m(m_i^B) \). Suppose that party \( A \) plays \( m_i^A \) and party \( B \) chooses \( z^B_t \notin m_i^B \). Since \( m_i^B \) is the unique preferred program of the median voter in \( B(t) \), we have that \( W_m(m_i^B) > W_m(z^B_t) \), and \( \pi^B_t(m_i^A, z^B_t) = 0 < \pi^B_t(m_i^A, m_i^B) = \frac{1}{2} \). The same is true concerning party \( A \), then \( (m_i^A, m_i^B) \) is the unique equilibrium.

Proof of Proposition 3:
Let us consider an election at date \( t \). Public goods stocks are \( ((1 - \delta) a_{t-1}, (1 - \delta) b_{t-1}) \), and:

\[
\Lambda_t(\alpha_m) = \frac{1 + (1 - \delta) \left( b_{t-1} + \frac{a_{t-1}}{\eta^A} \right)}{1 + (1 - \delta) \left( a_{t-1} + \frac{b_{t-1}}{\eta^B} \right)} (\eta^A)^{\alpha_m}.
\]

This is a continuous and strictly increasing function of \( \alpha_m \). Its value is \( \frac{1 + (1 - \delta) \left( b_{t-1} + \frac{a_{t-1}}{\eta^A} \right)}{1 + (1 - \delta) \left( a_{t-1} + \frac{b_{t-1}}{\eta^B} \right)} < 1 \), and \( \frac{1 + (1 - \delta) \left( \eta^A b_{t-1} + a_{t-1} \right)}{1 + (1 - \delta) \left( \eta^B a_{t-1} + b_{t-1} \right)} > 1 \) when \( \alpha_m = 1 \). Then, there exists a unique value of \( \alpha_m \), denoted \( \tilde{\alpha}_t \), such that \( \Lambda_t = 1 \):

\[
0 < \tilde{\alpha}_t = \frac{\ln \left( \frac{\eta^B b_{t-1}}{\eta^A a_{t-1}} \right)}{\ln \left( \frac{\eta^A}{\eta^B} \right)} < 1,
\]

Since this is true for all \( t \), there exist \( 0 < \alpha < \tilde{\alpha} < 1 \), such that for all \( t \):

\[
\alpha < \tilde{\alpha}_t < \tilde{\alpha},
\]

Finally, if \( 0 \leq \alpha_m \leq \alpha \), then, for all \( t \), \( \Lambda_t < 1 \), and \( B \) wins. If \( \tilde{\alpha} \leq \alpha_m \leq 1 \), then, for all \( t \), \( \Lambda_t > 1 \), then \( A \) wins.
Proof of Proposition 4:

In section 3, we have shown that, when $B$ wins the election $t$, the two following inequalities hold:

$$s^A_t > (1 - \delta) s^A_{t-1} + 1,$$

and,

$$s^B_t \leq (1 - \delta) s^B_{t-1} + 1.$$  \hspace{1cm} (3)

Claim 1: We claim that there exists $k$ such that for all $t \geq k$, $B$ wins the election $t$. Then the two precedent inequalities hold for all $t \geq k$, then, for all $t > k$:

$$s^A_t > (1 - \delta)^{t-k} s^A_k + t - k,$$

$$s^B_t \leq (1 - \delta)^{t-k} s^B_k + t - k.$$  \hspace{1cm} (4)

Combining Inequalities 5 and 6 leads to the following inequality:

$$\frac{s^A_t}{s^B_t} > \frac{(1 - \delta)^{t-k} s^A_k + t - k}{(1 - \delta)^{t-k} s^B_k + t - k}.$$  \hspace{1cm} (5)

Since $B$ wins forever after $k$, then for all $t > k$, $\Lambda_t \leq 1$. Furthermore $(\Lambda_t)_t$ is increasing, then it converges to a value $\tilde{\Lambda}$. Remember that $\Lambda_{t+1} = \frac{s^A_t}{s^B_t} \left( \eta^A \right)^{\alpha_m}$. Hence, since $(1 - \delta) < 1$,

$$\tilde{\Lambda} > \left( \frac{\eta^A}{\eta^B} \right)^{1-\alpha_m}. \hspace{1cm} (6)$$

Then, there exists a real number $0 < \varepsilon_1 < 1$, such that a necessary condition for Claim 1 is:

$$\tilde{\Lambda} > \left( \frac{\eta^A}{\eta^B} \right)^{1-\alpha_m} + \varepsilon_1 > \left( \frac{\eta^A}{\eta^B} \right)^{1-\alpha_m}.$$  \hspace{1cm} (7)

Claim 2: We claim that there exists $k$ such that for all $t \geq k$, $A$ wins the election $t$. Then for all $t > k$, $\Lambda_t \geq 1$. By an argument symmetric to that of Claim 1, $(\Lambda_t)_t$ converges to $\hat{\Lambda}$, and there exists a real number $0 < \varepsilon_2 < 1$, such that a necessary condition for Claim 2 is:

$$\hat{\Lambda} < \left( \frac{\eta^A}{\eta^B} \right)^{1-\alpha_m} - \varepsilon_2 < \left( \frac{\eta^A}{\eta^B} \right)^{1-\alpha_m}.$$  \hspace{1cm} (8)
Finally, if,
\[
\frac{\ln (\eta^B) + \ln (1 - \varepsilon_1)}{\ln (\eta^A\eta^B)} \leq \alpha_m \leq \frac{\ln (\eta^B) + \ln (1 + \varepsilon_2)}{\ln (\eta^A\eta^B)},
\]
then \(\hat{\Lambda} < 1 < \tilde{\Lambda}\), and Claim 1 and 2 are contradictory, so that no party can win an infinite number of consecutive elections. Then there exist \(\alpha_1 < \alpha_2\) such that no party can win an infinite number of consecutive elections.

**Proof of Proposition 6:**

First we prove that \(\overline{a}_t = \arg\min_{a_t \in [0, \eta^A s_{t-1}^A]} \left(W_m \left(a_t, s_{t-1}^A - \frac{a_t}{\eta^A}\right) = W_m (m_t^B)\right)\) exists and is unique. This equation is equivalent to:
\[
\left(\frac{\mu}{\alpha_m}\right)^{\alpha_m} \left(1 - \frac{\mu}{1 - \alpha_m}\right)^{1-\alpha_m} = \frac{1}{\Lambda_t(\alpha_m)},
\]
where \(\mu = \frac{a_t}{\eta^A s_{t-1}^A} \in [0,1]\). Here \(\Lambda_t > 1\), and, by proposition 3, \(\alpha_m > 0\). The right-hand side of (7) is null when \(\mu = 0\) and equal to 1 when \(\mu = \alpha_m\). Thus 7 admits a solution. If \(\alpha_m = 1\), then the right-hand side is strictly decreasing in \(\mu\), and the solution is unique. If \(\alpha_m < 1\), then the right-hand side is concave in \(\mu\), is null when \(\mu = 0\) or 1, and maximal when \(\mu = \alpha_m\). Thus 7 has two different solutions. Hence, the set of solutions is finite, then the argmin exists and is unique. Now, consider the following maximization program:
\[
\max_{z_t^A \in \Lambda(t)} \Lambda_{t+1},
\]
subject to:
\[
W_m \left(z_t^A\right) \geq W_m \left(m_t^B\right).
\]
Since \(\Lambda_{t+1}\) is strictly decreasing in \(a_t\) and strictly increasing in \(b_t\), \(z_t = (\overline{a}_t, s_{t-1}^A - \frac{\overline{a}_t}{\eta^A})\) is the unique solution to this maximization problem, and the optimal value of \(\Lambda_{t+1}\) is a supremum of \(\Lambda_{t+1}\) over \(M^A (t)\).

**Proof of Proposition 7:** (i) It is simple to verify that the median voter’s preferred program in \(A (t)\) when candidate \(A\) extracts a rent \(r_t^A\) is \(\hat{z}_t^A = (\eta^A \alpha_m \left(s_{t-1}^A - r_t^A\right), (1 - \alpha_m) \left(s_{t-1}^A - r_t^A\right))\). Then, the median voter weakly prefers \(\hat{z}_t^A\) to \(m_t^B\) if and only if:
\[
r_t^A \leq \left(1 - \frac{1}{\Lambda_t}\right) s_{t-1}^A.
\]
(ii) Symmetrically, the median voter preferred platform in $B(t)$, when candidate $B$ extracts a rent $r^B_t$, is $z^B_t = \left(\alpha_m \left(s^B_{t-1} - r^B_t\right), \eta^B (1 - \alpha_m) \left(s^B_{t-1} - r^B_t\right)\right)$. Then, the median voter weakly prefers $z^B_t$ to $m^A_t$ if and only if:

$$r^B_t \leq (1 - \Lambda_t) s^B_{t-1}.$$

**Proof of Proposition 5:**

**Claim 1:** There exists $k$ such that for all $t \geq k$, $B$ wins the election $t$. Then at $t + 1$, he implements $m^B_{t+1} = (\alpha_m s^B_t, \eta (1 - \alpha_m) s^B_t)$ and:

$$s^A_{t+1} = 1 + (1 - \delta) \left(\eta (1 - \alpha_m) + \frac{\alpha_m}{\eta}\right) s^B_t,$$

and,

$$s^B_{t+1} = 1 + (1 - \delta) s^B_t.$$

Since $\delta > 0$, then $s^B_t$ converges to $\frac{1}{\delta}$, and $s^A_t$ to $1 + \frac{1 - \delta}{\delta} \left(\eta (1 - \alpha_m) + \frac{\alpha_m}{\eta}\right)$. Hence, $\Lambda_t$ converges to:

$$\Lambda_t = \left(\tilde{\Lambda} = \frac{1}{\delta + (1 - \delta) \left(\eta (1 - \alpha_m) + \frac{\alpha_m}{\eta}\right)}(\eta)^{2\alpha_m - 1},

By Proposition 2, $(\Lambda_t)_t$ increases and we obtain that Claim 1 is equivalent to $\Lambda_t(\alpha_m) \leq 1$. The inequality is weak, because by Corollary 2 $\Lambda_t$ cannot attain its limit when $\Lambda(\alpha_m) = 1$. Let $f^B(\alpha_m) = \Lambda(\alpha_m) - 1$, then Claim 1 is equivalent to $f^B(\alpha_m) \leq 0$. Now we turn to the symmetric Claim for party $A$:

**Claim 2:** There exists $k$ such that for all $t \geq k$, $A$ wins the election $t$.

With the same arguments as those of Claim 1, we obtain that $(\Lambda_t)_t$, which is now decreasing, converges to:

$$\tilde{\Lambda}(\alpha_m) = \frac{1}{\frac{1 - \alpha_m}{\eta} + \eta \alpha_m}(\eta)^{2\alpha_m - 1},$$

And Claim 2 is equivalent to $\tilde{\Lambda}(\alpha_m) \geq 1$. Let $f^A(\alpha_m) = \frac{1}{\tilde{\Lambda}(\alpha_m)} - 1$, then Claim 2 is equivalent to $f^A(\alpha_m) \leq 0$. Furthermore,

$$f^A(\alpha_m) \propto \delta + (1 - \delta) \left(\frac{1 - \alpha_m}{\eta} + \eta \alpha_m\right) - (\eta)^{2\alpha_m - 1},$$

22
The right-hand term is clearly strictly concave in \( \alpha_m \) and is equal to \( \delta \left( 1 - \frac{1}{\eta} \right) > 0 \) when \( \alpha_m = 0 \) and \( \delta (1 - \eta) < 0 \) when \( \alpha_m = 1 \). Hence, \( f^A (\alpha_m) \) as a unique root in \([0, 1]\), denoted \( \alpha_2 \). Furthermore, \( f^A \left( \frac{1}{2} \right) = \delta + \left( \frac{1 - \delta}{2} \right) \left( \frac{1}{\eta} + \eta \right) > 0 \), then \( \alpha_2 > \frac{1}{2} \). Observe that \( f^A (1 - \alpha_m) = f^B (\alpha_m) \), then \( f^B (\alpha_m) \) has a unique root \( \alpha_1 < \alpha_2 \). Finally, Claim 1 and Claim 2 are both contradicted if and only if \( \alpha_m \in [\alpha_1, \alpha_2] \).

Now we can turn to the comparative statics. \( \alpha_2 \) is implicitly defined as a function of \( \delta \) and \( \eta \) by:

\[
\delta \eta + (1 - \delta) \left( 1 - \alpha_2 + \eta^2 \alpha_2 \right) - (\eta)^{2\alpha_2} = 0,
\]

(8)

Then, differentiating this equation with respect to \( \eta \) leads to \( \frac{\partial \alpha_2}{\partial \eta} = \frac{N(\delta, \cdot)}{D(\delta, \cdot)} \) with,

\[
N = 2\alpha_2 (\eta)^{2\alpha_2 - 1} - \delta - 2\alpha_2 (1 - \delta) \eta,
\]

and,

\[
D = (1 - \delta) (\eta^2 - 1) - 2 (\eta)^{2\alpha_2} \ln \eta,
\]

It is easy to verify that \( \frac{\partial N}{\partial \delta} = 2 \alpha_2 \eta - 1 > 0 \) because \( \alpha_2 > \frac{1}{2} \). Since \( \eta > 1 \), we obtain:

\[
N \leq 2 \alpha_2 \left( (\eta)^{2\alpha_2 - 1} - \eta \right) < 0,
\]

Furthermore,

\[
\frac{\partial D}{\partial \eta} \propto (1 - \delta) (\eta)^{2(1 - \alpha_2)} - (1 + 2 \alpha_2 \ln \eta),
\]

Let \( g(\alpha_2) = (1 - \delta) (\eta)^{2(1 - \alpha_2)} - (1 + 2 \alpha_2 \ln \eta) \), then \( g'(\alpha_2) < 0 \). Since \( g(1) = -\delta - 2 \alpha_2 \ln \eta \), then \( \frac{\partial D}{\partial \eta} < 0 \). Furthermore, when \( \eta = 1, D = 0, \) then,

\[
D < 0,
\]

Finally,

\[
\frac{\partial \alpha_2}{\partial \eta} > 0.
\]

Concerning the depreciation rate, differentiating 8 with respect to \( \delta \) leads to:

\[
\frac{\partial \alpha_2}{\partial \delta} = \frac{1 + (\eta^2 - 1) \alpha_2 - \eta}{D},
\]

23
Here, the numerator of the right-hand side is increasing in $\alpha_2$ and is equal to $(\eta - 1)^2$ when $\alpha_2 = \frac{1}{2}$, then it is always positive, hence:

$$\frac{\partial \alpha_2}{\partial \delta} < 0.$$


References


| 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.repec.org

**NOTE DI LAVORO PUBLISHED IN 2004**

<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ETA 2.2004: Masahisa FUJITA and Shlomo WEBER: Strategic Immigration Policies and Welfare in Heterogeneous Countries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 3.2004: Adolfo DI CARLUCCIO, Giovanni FERRI, Cecilia FRALE and Ottavio RICCHI: Do Privatizations Boost Household Shareholding? Evidence from Italy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ETA 4.2004: Victor GINSBURGH and Shlomo WEBER: Languages Disenfranchisement in the European Union</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 8.2004: Wolfgang AUSSENEGG, Pegaret PICHLER and Alex STOMP (lxv): IPO Pricing with Bookbuilding, and a When-Issued Market</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 11.2004: Bjarne BRENDSTRUP and Harry J. PAARSCH (lxv): Nonparametric Identification and Estimation of Multi-Unit, Sequential, Oral, Ascending-Price Auctions With Asymmetric Bidders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 12.2004: Ohad KADAN (lxv): Equilibrium in the Two Player, k-Double Auction with Affiliated Private Values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 13.2004: Maarten C.W. JANSSEN (lxv): Auctions as Coordination Devices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 14.2004: Gadi FIBICH, Arieh GAVIOS and Aner SELA (lxv): All-Pay Auctions with Weakly Risk-Averse Buyers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 15.2004: Orly SADE, Charles SCHNITZLEIN and Jaime F. ZENDER (lxv): Competition and Cooperation in Divisible Good Auctions: An Experimental Examination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRA 16.2004: Marta STRYSZOWSKA (lxv): Late and Multiple Bidding in Competing Second Price Internet Auctions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CCMP 17.2004: Slim Ben YOUSSEF: R&amp;D in Cleaner Technology and International Trade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SIEV 19.2004: Anna ALBERNI, Paolo ROSATO, Alberto LONSO and Valentina ZANATTA: Information and Willingness to Pay in a Contingent Valuation Study: The Value of S. Erasmo in the Lagoon of Venice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 21.2004: Jacqueline M. HAMILTON (lxvii): Climate and the Destination Choice of German Tourists</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 23.2004: Pius ODUNGA and Henk FOLMER (lxvii): Profiling Tourists for Balanced Utilization of Tourism-Based Resources in Kenya</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 26.2004: Juan Luis EUGENIO-MARTÍN, Noelia MARTÍN MORALES and Riccardo SCARPA (lxvii): Tourism and Economic Growth in Latin American Countries: A Panel Data Approach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 27.2004: Raúl Hernández MARTÍN (lxvii): Impact of Tourism Consumption on GDP. The Role of Imports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 29.2004: Marian WEBER (lxvii): Assessing the Effectiveness of Tradable Landuse Rights for Biodiversity Conservation: an Application to Canada’s Boreal Mixedwood Forest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NRM 30.2004: Trond BJORNDAAL, Phoebe KOUNDOURI and Sean PASCOE (lxvii): Output Substitution in Multi-Species Trawl Fisheries: Implications for Quota Setting</td>
<td></td>
</tr>
</tbody>
</table>
An Application to the Recreational Value of Forests
Gernot KLEPPER and Sonja PETERSON:
Andrea BIGANO and Stef PROOST:
Timo GOESCHL and Tun LIN

Biodiversity Conservation on Private Lands: Information Problems and
Signe ANTHON and Bo JELLESMARK THORSEN
Francesco RICCI
Ingo BRÄUER and Rainer MARGGRAF
Dinko DIMITROV, Peter BORM, Ruud HENDRICKX and Shao CHIN SUNG:
Participation in and Compliance with Public Voluntary
Anastasios XEPAPADEAS and Constadina PASSA
Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA
in WTI Oil Forward and Futures Returns
Heterogeneous Agents
Implications
Environmental Programs: An Evolutionary Approach
Optimal Afforestation Contracts with Asymmetric
Information on Private Environmental Benefits
Wildlife Conservation and Management in Kenya: Towards a Co-management Approach
Using a Choice Experiment to Value Agricultural
Biodiversity on Hungarian Small Farms: Agri-Environmental Policies in a Transition al Economy
The EU Emissions Trading Scheme: Allowance Prices, Trade Flows, Competitiveness Effects
Optimal Disease Eradication
Simple Priorities and Core Stability in Hedonic Games

Francesco RICCI: Channels of Transmission of Environmental Policy to Economic Growth: A Survey of the
Theory
Anna ALBERINI, Maureen CROPPER, Alan KRUPNICK and Nathalie B. SIMON: Willingness to Pay for
Mortality Risk Reductions: Does Latency Matter?
Ingo BRÄUER and Rainer MARGGRAF (lxvi): Valuation of Ecosystem Services Provided by Biodiversity
Conservation: An Integrated Hydrological and Economic Model to Value the Enhanced Nitrogen Retention in
Renaturated Streams

Timo GOESCHL and Tun LIN (lxvi): Biodiversity Conservation on Private Lands: Information Problems and
Regulatory Choices
Tom DEDEURWAERDERE (lxvi): Bioprospection: From the Economics of Contracts to Reflexive Governance
Koen SMEKENS and Bob VAN DER ZWAAN: Environmental Externalities of Geological Carbon Sequestration
Effects on Energy Scenarios

Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA (lxvii): Using Data Envelopment
Analysis to Evaluate Environmentally Conscious Tourism Management
Timo GOESCHL and Danilo CAMARGO IGLIORI (lxvi): Property Rights Conservation and Development: An
Analysis of Extractive Reserves in the Brazilian Amazon
Barbara BUCHNER and Carlo CARRARO: Economic and Environmental Effectiveness of a
Technology-based Climate Protocol
Elissaios PAPYRAKIS and Reyer GERLAGH: Resource-Abundance and Economic Growth in the U.S.
Györgyi BELA, György PATAKI, Melinda SMALLE and Mariann HAJDÚ (lxvi): Conserving Crop Genetic
Resources on Smallholder Farms in Hungary: Institutional Analysis

E.C.M. RUIJGROK and E.E.M. NILLESEN (lxvi): The Socio-Economic Value of Natural Riverbanks in the
Netherlands
E.C.M. RUIJGROK (lxvi): Reducing Acidification: The Benefits of Increased Nature Quality. Investigating the
Possibilities of the Contingent Valuation Method
Gianmits VARDAS and Anastasios XEPAPADEAS: Uncertainty Aversion, Robust Control and Asset Holdings
Anastasios XEPAPADEAS and Constadina PASSA: Participation in and Compliance with Public Voluntary
Environmental Programs: An Evolutionary Approach

Michael FINUS: Modesty Pays: Sometimes!

Trond BJØRNDAL and Ana BRASÃO: The Northern Atlantic Bluefin Tuna Fisheries: Management and Policy
Implications
Alejandro CAPARRÓS, Abdelhamik HAMMOUDI and Tarik TAZDAÏT: On Coalition Formation with
Heterogeneous Agents
Massimo GIOVANNINI, Margherita GRASSO, Alessandro LANZA and Matteo MANERA: Conditional
Correlations in the Returns on Oil Companies Stock Prices and Their Determinants
Alessandro LANZA, Matteo MANERA and Michael MCALEER: Modelling Dynamic Conditional Correlations
in WTI Oil Forward and Futures Returns
Margherita GENIUS and Elisabetta STRAZZERA: The Copula Approach to Sample Selection Modelling:
An Application to the Recreational Value of Forests
CCMP 74.2004  Rob DELLINK and Ekko van IERLAND: Pollution Abatement in the Netherlands: A Dynamic Applied General Equilibrium Assessment

ETA 75.2004  Rosella LEVAGGI and Michele MORETTO: Investment in Hospital Care Technology under Different Purchasing Rules: A Real Option Approach


CTN 77.2004  Alex ARENAS, Antonio CABRALES, Albert DÍAZ-GUILERA, Roger GUIMERÁ and Fernando VEGA-REDONDO (lx): Optimal Information Transmission in Organizations: Search and Congestion

CTN 78.2004  Francis BLOCHE and Armando GOMES (lx): Contracting with Externalities and Outside Options

CTN 79.2004  Rabah AMIR, Efrasyni DIAMANTOUDI and Licun XUE (lx): Merger Performance under Uncertain Efficiency Gains

CTN 80.2004  Francis BLOCHE and Matthew O. JACKSON (lx): The Formation of Networks with Transfers among Players

CTN 81.2004  Daniel DIERMEIER, Hiliya ERASLAN and Antonio MERLO (lx): Bicameralism and Government Formation

CTN 82.2004  Rod GARRETT, James E. PARCO, Cheng-ZHONG QIN and Amnon RAPOPORT (lx): Potential Maximization and Coalition Government Formation

CTN 83.2004  Kfir ELIAZ, Debraj RAY and Ronny RAZIN (lx): Group Decision-Making in the Shadow of Disagreement

CTN 84.2004  Sanjeev GOTAL, Marco van der LEIJ and José Luis MORAGA-GONZÁLEZ (lx): Economics: An Emerging Small World?

CTN 85.2004  Edward CARTWRIGHT (lx): Learning to Play Approximate Nash Equilibria in Games with Many Players

IEEM 86.2004  Finn R. FØRUND and Michael HOEL: Properties of a Non-Competitive Electricity Market Dominated by Hydroelectric Power

KTHC 87.2004  Elisio PAPYRAKIS and Reyer GERLAGH: Natural Resources, Investment and Long-Term Income


IEEM 89.2004  A. MARKANDYA, S. PEDROSO and D. STREIMIKIENE: Energy Efficiency in Transition Economies: Is There Convergence Towards the EU Average?

GG 90.2004  Rolf GOLOMBEK and Michael HOEL: Climate Agreements and Technology Policy

PRA 91.2004  Sergei IZMALKOV (lx): Multi-Unit Open Ascending Price Efficient Auction

KTHC 92.2004  Gianmarco I.P. OTTAVIANO and Giovanni PERI: Cities and Cultures

KTHC 93.2004  Massimo DEL GAITTO: Agglomeration, Integration, and Territorial Authority Scale in a System of Trading Cities: Centralisation versus devolution

CCMP 94.2004  Pierre-André JOUVEY, Philippe MICHEL and Gilles ROTILLON: Equilibrium with a Market of Permits

CCMP 95.2004  Bob van der ZWAAN and Reyer GERLAGH: Climate Uncertainty and the Necessity to Transform Global Energy Supply


CTN 97.2004  Gustavo BERGANTINOS and Juan J. VIDAL-PUGA: Defining Rules in Cost Spanning Tree Problems Through the Canonical Form

CTN 98.2004  Siddhartha BANDYOPADHYAY and Mandar OAK: Party Formation and Coalitional Bargaining in a Model of Proportional Representation

GG 99.2004  Hans-Peter WEIKARD, Michael FINUS and Juan-Carlos ALTAMIRANO-CABRERA: The Impact of Surplus Sharing on the Stability of International Climate Agreements

SIEV 100.2004  Chiara M. TRAVISI and Peter NJIKAMP: Willingness to Pay for Agricultural Environmental Safety: Evidence from a Survey of Milan, Italy, Residents


NRM 102.2004  Valentino BOSETTI and David TOMBERLIN: Real Options Analysis of Fishing Fleet Dynamics: A Test

CCMP 103.2004  Alessandra GORIA e Gretel GAMBARELLI: Economic Evaluation of Climate Change Impacts and Adaptability in Italy


PRA 106.2004  Kira BÖRNER: The Political Economy of Privatization: Why Do Governments Want Reforms?

PRA 107.2004  Pehr-Johan NORBACK and Lars PERSSON: Privatization and Restructuring in Concentrated Markets

SIEV 108.2004  Angela GRANZOTTO, Fabio PRANOVI, Simone LIBRALATO, Patrizia TORRICELLI and Danilo MAINARDI: Comparison between Artisanal Fishery and Manila Clam Harvesting in the Venice Lagoon by Using Ecosystem Indicators: An Ecological Economics Perspective

CTN 109.2004  Somdeb LAHIRI: The Cooperative Theory of Two Sided Matching Problems: A Re-examination of Some Results

NRM 110.2004  Giuseppe DI VITA: Natural Resources Dynamics: Another Look

SIEV 111.2004  Anna ALBERINI, Alistair HUNT and Anil MARKANDYA: Willingness to Pay to Reduce Mortality Risks: Evidence from a Three-Country Contingent Valuation Study

KTHC 112.2004  Valeria PAPPONETTI and Dino PINELLI: Scientific Advice to Public Policy-Making

SIEV 113.2004  Paolo A.L.D. NUNES and Laura ONOFRI: The Economics of Warm Glow: A Note on Consumer’s Behavior and Public Policy Implications

IEM 114.2004  Patrick CAYRADE: Investments in Gas Pipelines and Liquefied Natural Gas Infrastructure What is the Impact on the Security of Supply?

IEM 115.2004  Valeria COSTANTINI and Francesco GRACCEVA: Oil Security, Short- and Long-Term Policies
NOTE DI LAVORO PUBLISHED IN 2005

CCMP 1.2005 Stéphane HALLEGATTE: Accounting for Extreme Events in the Economic Assessment of Climate Change
CCMP 2.2005 Qiang WU and Paulo Augusto NUNES: Application of Technological Control Measures on Vehicle Pollution: A Cost-Benefit Analysis in China
CCMP 3.2005 Andrea BIGANO, Jacqueline M. HAMILTON, Maren LAU, Richard S.J. TOL and Yuan ZHOU: A Global Database of Domestic and International Tourist Numbers at National and Subnational Level
CCMP 4.2005 Andrea BIGANO, Jacqueline M. HAMILTON and Richard S.J. TOL: The Impact of Climate on Holiday Destination Choice
ETA 5.2005 Hubert KEMPF: Is Inequality Harmful for the Environment in a Growing Economy?
CCMP 9.2005 Angelo ANTOCI: Environmental Resources Depletion and Interplay Between Negative and Positive Externalities in a Growth Model
CTN 10.2005 Frédéric DEROIAN: Cost-Reducing Alliances and Local Spillovers
NRM 11.2005 Francesco SINDICO: The GMO Dispute before the WTO: Legal Implications for the Trade and Environment
PRCG 14.2005 Clara GRAZIANO and Annalisa LUPORINI: Ownership Concentration, Monitoring and Optimal Board Structure
CSRM 15.2005 Parashar KULKARNI: Use of Ecolabels in Promoting Exports from Developing Countries to Developed Countries: Lessons from the Indian LeatherFootwear Industry
KTHC 16.2005 Adriana DI LIBERTO, Roberto MURA and Francesco PIGLIARU: How to Measure the Unobservable: A Panel Technique for the Analysis of TFP Convergence
KTHC 17.2005 Alireza NAGHAVI: Asymmetric Labor Markets, Southern Wages, and the Location of Firms
KTHC 18.2005 Alireza NAGHAVI: Strategic Intellectual Property Rights Policy and North-South Technology Transfer
KTHC 19.2005 Mombert HOPPE: Technology Transfer Through Trade
PRCG 20.2005 Roberto ROSON: Platform Competition with Endogenous Multihoming
CCMP 21.2005 Barbara BUCHNER and Carlo CARRARO: Regional and Sub-Global Climate Blocs. A Game Theoretic Perspective on Bottom-up Climate Regimes
CTN 23.2005 Michael FINUS, Pierre v. MOUCHE and Bianca RUNDSHAGEN: Uniqueness of Coalitional Equilibria
CTN 25.2005 Somdeh LAHRI: The Core of Directed Network Problems with Quotas
NRM 27.2005 Massimiliano MAZZANTI and Anna MONTINI: The Determinants of Residential Water Demand Empirical Evidence for a Panel of Italian Municipalities
CCMP 28.2005 Laurent GILLOTTE and Michel de LARA: Precautionary Effect and Variations of the Value of Information
NRM 29.2005 Paul SARFO-MENSAH: Exportation of Timber in Ghana: The Menace of Illegal Logging Operations
CCMP 30.2005 Andrea BIGANO, Alessandra GORIA, Jacqueline HAMILTON and Richard S.J. TOL: The Effect of Climate Change and Extreme Weather Events on Tourism
NRM 31.2005 Maria Angeles GARCIA-VALINAS: Decentralization and Environment: An Application to Water Policies
NRM 32.2005 Chiara D’ALPAOS, Cesare DOSI and Michele MORETTO: Concession Length and Investment Timing Flexibility
CCMP 33.2005 Joseph HUBER: Key Environmental Innovations
CTN 34.2005 Antoni CALVÓ-ARMENGOL and Rahimi ILKILIÇ (lxxii): Pairwise-Stability and Nash Equilibria in Network Formation
CTN 35.2005 Francesco FERI (lxxii): Network Formation with Endogenous Decay
CTN 36.2005 Frank H. PAGE, Jr. and Myrna H. WOODERS (lxxii): Strategic Basins of Attraction, the Farsighted Core, and Network Formation Games
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>37.2005</td>
<td>Applications of Negotiation Theory to Water Issues</td>
<td>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</td>
</tr>
<tr>
<td>38.2005</td>
<td>Advances in Negotiation Theory: Bargaining, Coalitions and Fairness</td>
<td>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</td>
</tr>
<tr>
<td>39.2005</td>
<td>Applications of Negotiation Theory to Water Issues</td>
<td>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</td>
</tr>
<tr>
<td>40.2005</td>
<td>Optimal Transfers and Participation Decisions in International Environmental Agreements</td>
<td>Carlo CARRARO, Johan EYCKMANS and Michael FINUS</td>
</tr>
<tr>
<td>41.2005</td>
<td>Environmental Valuation of On Site Material</td>
<td>Margaretha BREIL, Gretel GAMBARELLI and Paulo A.L.D. NUNES</td>
</tr>
<tr>
<td>42.2005</td>
<td>Network Capital and Social Trust: Pre-Conditions for ‘Good’ Diversity?</td>
<td>Valentina BOSETTI and Gianni LOCATELLI</td>
</tr>
<tr>
<td>43.2005</td>
<td>From the Theory of the Firm to FDI and Internationalisation: A Survey</td>
<td>Valeria GATTAI</td>
</tr>
<tr>
<td>44.2005</td>
<td>Valuing Natural Parks’ Economic Efficiency and Sustainability. The Case of Italian National Parks</td>
<td>Valentina BOSETTI and Gianni LOCATELLI</td>
</tr>
<tr>
<td>45.2005</td>
<td>Trust and Fiscal Performance: A Panel Analysis with Swiss Data</td>
<td>Christoph A. SCHALTEGGER and Benno TORGLER</td>
</tr>
<tr>
<td>46.2005</td>
<td>Resilience of Referral Hiring</td>
<td>Alessandra CASELLA and Nobuyuki HANAKI</td>
</tr>
<tr>
<td>47.2005</td>
<td>Abnormal Returns in Privatization Public Offerings: The Case of Portuguese Firms</td>
<td>Carla VIEIRA and Ana Paula SERRA</td>
</tr>
<tr>
<td>49.2005</td>
<td>Abnormal Returns in Privatization Public Offerings: The Case of Portuguese Firms</td>
<td>Carla VIEIRA and Ana Paula SERRA</td>
</tr>
<tr>
<td>50.2005</td>
<td>Environmental Valuation of On Site Material</td>
<td>Margaretha BREIL, Gretel GAMBARELLI and Paulo A.L.D. NUNES</td>
</tr>
<tr>
<td>52.2005</td>
<td>R&amp;D Networks</td>
<td>Among Unionized Firms</td>
</tr>
<tr>
<td>53.2005</td>
<td>R&amp;D Networks</td>
<td>Among Unionized Firms</td>
</tr>
<tr>
<td>54.2005</td>
<td>Investment and Time to Plan: A Comparison of Structures vs. Equipment in a Panel of Italian Firms</td>
<td>Alessandra della BOCA, Marzio GALEOTTI, Charles P. HIMMELBERG and Paola ROTA</td>
</tr>
<tr>
<td>55.2005</td>
<td>Optimal Transfers and Participation Decisions in International Environmental Agreements</td>
<td>Carlo CARRARO, Johan EYCKMANS and Michael FINUS</td>
</tr>
<tr>
<td>56.2005</td>
<td>Environmental Regulation and the Eco-Industry</td>
<td>Aline-Désiré NIMUBONA and Bernard SINCLAIR-DESIGNÉ</td>
</tr>
<tr>
<td>57.2005</td>
<td>The Pigouvian Tax Rule in the Presence of an Eco-Industry</td>
<td>Aline-Désiré NIMUBONA and Bernard SINCLAIR-DESIGNÉ</td>
</tr>
<tr>
<td>58.2005</td>
<td>A Role for Instructions</td>
<td>Irene VALSECCHI</td>
</tr>
<tr>
<td>59.2005</td>
<td>A Data Envelopment Analysis Approach to the Assessment of Natural Parks’ Economic Efficiency and Sustainability. The Case of Italian National Parks</td>
<td>Valentina BOSETTI and Gianni LOCATELLI</td>
</tr>
<tr>
<td>60.2005</td>
<td>Emissions Trading, CDM, JI, and More – The Climate Strategy of the EU</td>
<td>Gernot KLEPPER and Sonja PETERSON</td>
</tr>
<tr>
<td>61.2005</td>
<td>Trust and Fiscal Performance: A Panel Analysis with Swiss Data</td>
<td>Christoph A. SCHALTEGGER and Benno TORGLER</td>
</tr>
<tr>
<td>62.2005</td>
<td>Improving Government and Technological Interdependencies</td>
<td>Andreas LÖSCHEL and Dirk T.G. RÜBBELKE</td>
</tr>
<tr>
<td>63.2005</td>
<td>Natural Parks’ Economic Efficiency and Sustainability. The Case of Italian National Parks</td>
<td>Andreas LÖSCHEL and Dirk T.G. RÜBBELKE</td>
</tr>
<tr>
<td>64.2005</td>
<td>Modeling ‘No-choice’ Responses in Attribute Based Valuation Surveys</td>
<td>Arianne T. de BLAEIJ, Paulo A.L.D. NUNES and Jeroen C.J.M. van den BERGH</td>
</tr>
<tr>
<td>66.2005</td>
<td>Applications of Negotiation Theory to Water Issues</td>
<td>Carlo CARRARO, Carmen MARCHIORI and Alessandra SGOBBI</td>
</tr>
<tr>
<td>67.2005</td>
<td>Network Capital and Social Trust: Pre-Conditions for ‘Good’ Diversity?</td>
<td>Asimina CHRISTOFOROU</td>
</tr>
<tr>
<td>68.2005</td>
<td>The Pigouvian Tax Rule in the Presence of an Eco-Industry</td>
<td>Aline-Désiré NIMUBONA and Bernard SINCLAIR-DESIGNÉ</td>
</tr>
<tr>
<td>69.2005</td>
<td>Varieties of Trust</td>
<td>Eric M. USLANER</td>
</tr>
<tr>
<td>71.2005</td>
<td>Citizenship Laws and International Migration in Historical Perspective</td>
<td>Graziella BERTOCCHI and Chiara STROZZI</td>
</tr>
<tr>
<td>72.2005</td>
<td>Accommodating Differences</td>
<td>Elizabeth van HYLCCKAMA VLIJG</td>
</tr>
<tr>
<td>73.2005</td>
<td>Governance of Diversity Between Social Dynamics and Conflicts in Multicultural Cities, A Selected Survey on Historical Bibliography</td>
<td>Renato SANSA and Ercole SORI</td>
</tr>
<tr>
<td>74.2005</td>
<td>Identification of Options and Policy Instruments for the Internalisation of External Costs of Electricity Generation, Dissemination of External Costs of Electricity Supply Making Electricity External Costs Known to Policy-Makers MAXIMA</td>
<td>Alberto LONGO and Anil MARKANDYA</td>
</tr>
</tbody>
</table>
Margherita GRASSO and Matteo MANERA: Asymmetric Error Correction Models for the Oil-Gasoline Price Relationship

Umberto CHERUBINI and Matteo MANERA: Hunting the Living Dead A “Peso Problem” in Corporate Liabilities Data

Hans-Peter WEIKARD: Cartel Stability under an Optimal Sharing Rule

Joëlle NOAILLY, Jeroen C.J.M. van den BERGH and Cees A. WITTHAGEN (lxxvi): Local and Global Interactions in an Evolutionary Resource Game

Joëlle NOAILLY, Cees A. WITTHAGEN and Jeroen C.J.M. van den BERGH (lxxvi): Spatial Evolution of Social Norms in a Common-Pool Resource Game

Massimiliano MAZZANTI and Roberto ZOBOLI: Economic Instruments and Induced Innovation: The Case of End-of-Life Vehicles European Policies

Anna LASUT: Creative Thinking and Modelling for the Decision Support in Water Management

Valentina BOSETTI and Barbara BUCHNER: Using Data Envelopment Analysis to Assess the Relative Efficiency of Different Climate Policy Portfolios

Ignazio MUSU: Intellectual Property Rights and Biotechnology: How to Improve the Present Patent System

Giulio CAINELLI, Susanna MANCI NELLI and Massimiliano MAZZANTI: Social Capital, R&D and Industrial Districts

Rosella LEVAGGI, Michele MORETTO and Vincenzo REBBA: Quality and Investment Decisions in Hospital Care when Physicians are Devoted Workers

Valentina BOSETTI and Laurent GILOTTE: Carbon Capture and Sequestration: How Much Does this Uncertain Option Affect Near-Term Policy Choices?

Nicoletta FERRO: Value Through Diversity: Microfinance and Islamic Finance and Global Banking

A. MARKANDYA and S. PEDROSO: How Substitutable is Natural Capital?

Valentina BOSETTI and Laurent GILOTTE: Carbon Capture and Sequestration: How Much Does this Uncertain Option Affect Near-Term Policy Choices?

Anil MARKANDYA, Valeria COSTANTINI, Francesco GRACCEVA and Giorgio VICINI: Security of Energy Supply: Comparing Scenarios From a European Perspective

Vincent M. OTTO, Andreas LÖSCHEL and Rob DELLINK: Energy Biased Technical Change: A CGE Analysis

Carlo CAPUANO: Abuse of Competitive Fringe


Francesco BOSELLO and Jian ZHANG: Assessing Climate Change Impacts: Agriculture

Alessandro CAPRAROS, Jean-Christophe PEREAU and Tarik TAZDAÏT: Bargaining with Non-Monolithic Players


Rob DELLINK, Michael FINUS and Niels OLIEMAN: Coalition Formation under Uncertainty: The Stability of an International Climate Agreement

Valeria COSTANTINI, Riccardo CRESCENZI, Fabrizio De FILIPPIS, and Luca SALVATICI: Bargaining in the Agricultural Negotiations of the Doha Round: Similarity of Interests or Strategic Choices?

Anna ALBERINI and Alberto LONGO: What are the Effects of Contamination Risks on Commercial and Industrial Properties? Evidence from Baltimore, Maryland

Rob DELLINK, Michael FINUS and Niels OLIEMAN: Econometric Models of Asymmetric Price Transmission

Alessandro COLOGNI and Matteo MANERA: Oil Prices, Inflation and Interest Rates in a Structural Cointegrated VAR Model for the G-7 Countries

Chiara M. TRAVISI and Roberto CAMAGNI: Attitudes Towards Preventing Environmental Damage

Anna ALBERINI and Alme CHIABAI: Urban Environmental Health and Sensitive Populations: How Much are the Italians Willing to Pay to Reduce Their Risks?

Anna ALBERINI, Erik LICHTENBERG, Jean-Marie MANCINI, and Gregmar I. GALINATO: Was It Something I Ate? Implementation of the FDA Seafood HACCP Program

Michele BERNASCONI and Matteo GALIZZI: Coordination in Networks Formation: Experimental Evidence on Learning and Salience

Michele MORETTO and Sergio VERGALLI: Migration Dynamics

Antonio MUSOLESI and Mario NOSVELLI: Water Consumption and Long-Run Urban Development: The Case of Milan

Benno TORGLER and Maria A. GARCIA-VALIÑAS: Attitudes Towards Preventing Environmental Damage

Alberto LONGO and Anna ALBERINI: What are the Effects of Contamination Risks on Commercial and Industrial Properties? Evidence from Baltimore, Maryland

Anna ALBERINI and Alberto LONGO: The Value of Cultural Heritage Sites in Armenia: Evidence from a Travel Cost Method Study

Mikel GONZÁLEZ and Rob DELLINK: Impact of Climate Policy on the Basque Economy

Gilles LAFFORGUE and Walid OUESLATI: Optimal Soil Management and Environmental Policy
### 2004 SERIES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Editor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCMP</td>
<td>Climate Change Modelling and Policy</td>
<td>Marzio Galeotti</td>
</tr>
<tr>
<td>GG</td>
<td>Global Governance</td>
<td>Carlo Carraro</td>
</tr>
<tr>
<td>SIEV</td>
<td>Sustainability Indicators and Environmental Valuation</td>
<td>Anna Alberini</td>
</tr>
<tr>
<td>NRM</td>
<td>Natural Resources Management</td>
<td>Carlo Giupponi</td>
</tr>
<tr>
<td>KTHC</td>
<td>Knowledge, Technology, Human Capital</td>
<td>Gianmarco Ottaviano</td>
</tr>
<tr>
<td>IEM</td>
<td>International Energy Markets</td>
<td>Anil Markandya</td>
</tr>
<tr>
<td>CSRM</td>
<td>Corporate Social Responsibility and Sustainable Management</td>
<td>Sabina Ratti</td>
</tr>
<tr>
<td>PRA</td>
<td>Privatisation, Regulation, Antitrust</td>
<td>Bernardo Bortolotti</td>
</tr>
<tr>
<td>ETA</td>
<td>Economic Theory and Applications</td>
<td>Carlo Carraro</td>
</tr>
<tr>
<td>CTN</td>
<td>Coalition Theory Network</td>
<td>Carlo Carraro</td>
</tr>
</tbody>
</table>

### 2005 SERIES

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