Political Competition when Media Create Candidates' Charisma

Ascensión Andina Díaz

NOTA DI LAVORO 134.2004

NOVEMBER 2004

ETA – Economic Theory and Applications

Ascensión Andina Díaz, *Departamento de Fundamentus del Analisis Economico, Universidad de Alicante*

Political Competition when Media Create Candidates' Charisma

Summary

This paper studies the location decisions of political parties. We propose a game where agents vote according to ideology and valence, and media create candidates' charisma. The results we obtain show that candidates realize the power of media and therefore locate themselves at some point between the position and the mediam voter and that of the media. However, and more importantly, we further obtain that depending on the media outlets the voters choose to attend, the equilibrium location of candidates may differ. Thus, when voters choose among the outlets, candidates may differentiate their platforms. On the other hand, when voters are exposed to all the outlets in the economy, candidates tend more to moderate their ideology, in an attempt to get the favor of all the media. This result suggests that political competition may end in differentiation if voters only attend to the media that are ideologically close to their convictions. In contrast, political moderation is more easily reached if voters get information from various sources and therefore make more balanced judgements.

Keywords: Charisma, Exposure to media, Political competition

JEL Classification: D72

I am indebted with my advisor Javier M. López Cuñat, for several helpful conversations and for sharing with me his mathematical precision. I thank Miguel A. Meléndez Jiménez for precious discussions on the main idea of the paper, and Ignacio Ortuño Ortín for his nice suggestions. The usual disclaimer applies.

Address for correspondence:

Ascensión Andina Díaz
Departamento de Fundamentus del Analisis Economico
Universidad de Alicante
Campus San Vicente del Raspeig
Alicante
Spain
Phone: +34 96590 3614
Fax: +34 965 903898
E-mail: aandina@merlin.fae.ua.es

"Men judge generally more by the eye than by the hand, because it belongs to everybody to see you, but to few to come in touch with you. Every one sees what you appear to be, few really know what you are".

Machiavelli.

1 Introduction

The legend says that Harun Arrashid, the great calif in "The Thousand and One Nights", used to walk about the crowded streets of Bagdad at night, to find out whether his people loved or hated him. In doing so, he was reacting to the need of knowing what people think about him. Nowadays, this same impulse is what drives politicians to be concerned with their images in public opinion polls or in the media.

The candidate's image is an important asset that usually plays an important role in the voter's decision on whom to vote for. This is so because people do not simply base their votes on ideological aspects, but rather take the professional qualifications, honesty, integrity or charisma of the candidates into account, when deciding for whom to cast their votes. This means that politicians should be aware of their public images, and in fact, they are. The concern of the candidates for their public images goes back to the US elections of 1936, when the republican candidate, Landon, appointed a director for public relations for the first time in electoral history. The aim of this director was obviously to improve the public image of the republican candidate, which turned out not to be sufficient to win the elections, as Roosevelt won a second term. Despite this, it was the first step in the official career of creating a public image for a politician. Another important reference in the history, is the 1960 first match-up on television, between the republican candidate, Nixon, and the democrat, Kennedy. In this regard, many political experts have stated that the sickly-looking Nixon juxtaposed with the handsome Kennedy, providing the latter a crucial point when people come to decide for whom to vote.

The interesting point is that image does not depend solely on the real skills of a candidate, nor even on how public image experts decide to bring him before the voters. To a great extend, it depends on the way media presents him,[1] i.e. giving more exposure to one candidate than to the other, projecting the positive skills of a politician while hiding his faults, etc., can make the picture that voters have of a candidate different from the real one or the pretended one. In this context, it is the recent start of Al-Hurra (The Free One, in English), the new Arabic-language American satellite TV channel, currently being broadcast all over the Arab world. Dubbed as the American answer to Al Jazeera, Al-Hurra aims to be the visual Voice of America, and so, is the new attempt of the American government to change

[1] McCombs (2002) states: "In the US, a day-by-day observation of the final three months in the 1992 and 1996 presidential elections found that the tone of television news coverage about key campaign events influenced voters' preferences for the candidates. Favorable coverage of Republican campaign events on four national television networks increased support for the Republican candidate".

Arab opinions about the US.[2]

Media outlets usually have underlying political preferences, which may also play a role in the decision of who is their favorite candidate and who is not. These ideological preferences may therefore be translated into different levels of support for different candidates. In other words, the image of a candidate may differ across different outlets. Thus, left-wing outlets will usually project much better pictures of left-wing candidates than of right-wing ones, and the other way round for the right-wing media. Hence, the valence of a candidate a voter will perceive will sharply depend on the media outlet/s the voter is exposed to. In this respect, we present some evidence for Spain, where we observe how readers of three different major newspapers have very different perceptions of the political situation of the country. The data is for 1993, which corresponds to the third term in office of the Social Democratic party, PSOE. This period was characterized by a series of scandals involving financial and other corrupt practices by the governing party. The newspapers we consider are "El País", which is a center-left daily, "El Mundo", which is center-right, and "ABC", which is monarchist and extremely conservative.

Table 1: **Opinions of Readers of Three Major Newspapers (Spain)**

	Newspaper Read Most Frequently		
	El País	*ABC*	*El Mundo*
Believe that there is much corruption in Spanish public life	34%	58%	55%
Believe PSOE is more corrupt than the other parties	28%	42%	60%
Believe that Felipe González (Prime Minister) is honest	66%	32%	26%

Source: Gunther and Mughan (2000).

As we would have expected, the readers of "El País" have better opinions about PSOE than the readers of "El Mundo" or "ABC", which are more critical about this party. We also observe that the first readers have a better image of Felipe González than the rest. This shows how important the selective exposure to the media is in the evaluation of a government.

Yet, the existence of ideological media should not have any important effect on the political competition if people attended to all the media. In such a case, voters would receive a variety of opinions, would weigh them according to some rule, and would form a particular image of the candidates' valences based on all the information they have received. However, empirical evidence shows that people tend to select information that largely conforms to their own partisan preferences ("self-selection of audience").[3] Thus, neither do left-wing voters purchase right-wing newspapers, nor do right-wing voters buy left-wing dailies. The same argument could be applied to television viewers, although here, we guess that this sort of self selection of audience is not so extreme. This attendance to different outlets, together with the ideological tendencies of most of the media, implies that the image voters have of a candidate will

[2] "El País". February 22, 2004.

[3] Some evidence to this respect is given in Gunther and Mughan (2000), page 63; or in Hovland (1959).

be determined by the outlets the voter is exposed to, and therefore, may be biased. In our model, we consider this possibility of "self-selection of audience", as well as the possibility of voters being exposed to all the media, and we analyze how deeply our results depend on such exposure, in a model in which politicians compete for votes through ideology and valence, and where valence is set by mass media.

To this aim, we propose a game where two downsian candidates compete for votes. One is left-wing and the other right-wing. Candidates choose policy platforms that maximize their vote shares. They also compete through the valence, which is endogenously determined in our model. We consider two media outlets in the economy, with locations exogenously given. The media publish information on politicians, in particular, on their charisma.[4] We assume that an outlet prefers the candidate with the ideology closest to its own. It therefore presents a much better picture of this candidate than of his opponent. In particular, we assume that the image of a politician that an outlet projects is a measure of the distance between the position of the outlet and that of the candidate. Given this structure, our aim is to study how politicians compete when the candidates' valences are endogenously determined in the model. More precisely, we analyze political competition under two different set-ups. The first one is the case in which voters are exposed to both outlets. We consider them to be non-selective voters. The second set-up is the case in which voters are only exposed to the most affine media. We call them selective voters. Our findings show that, depending on the way the voters attend to the media, the equilibrium location of candidates may differ. Thus, when voters are exposed to both outlets, candidates tend more to moderate their platforms, in an attempt to win the favor of both media. In contrast, when voters select among the outlets, candidates may differentiate their platforms. The lesson we draw from this, is that situations in which voters attend to the outlets that suit them better may result in political polarization. On the other hand, situations in which voters make more balanced judgments should better foster political moderation.

This result may explain the radicalization of some nationalist parties in Spain. Our point is that the rise of nationalist newspapers in Spain since the death of dictator Franco in 1975, together with the fact that these dailies reach mainly nationalists, could explain the continuous increase in the competencies requested by nationalist parties, and more particularly, issues like the controversial Nationalist Plan by Ibarretxe (Prime Minister of the Basque Country). The intuition behind all this is that if nationalist voters receive most of their information from nationalist sources, then nationalist parties will find it even more profitable to radicalize their platforms, as this guarantees them more favorable coverage from such media and, therefore, a higher support from the nationalist voters.[5]

There is little literature on the role of media in politics. On the one hand, Andina Díaz (2004a) analyzes media competition when the outlets have either economic or political aims. She introduces

[4] In the paper, we refer to valence and charisma as being equivalent.

[5] Pérez Nievas and Fraile (2000), in a study for Catalonia for the period 1980-1999, find that the probability of voting for nationalist parties in general elections is 0.07 for people that only feel Spanish, whereas it is 0.63 for people that only feel Catalan. They also find that these percentages are 0.37 and 0.83 respectively, when elections are for the Catalan government. This data shows that the main share of votes of nationalist parties is quite well defined: nationalist people, what may explain why the radicalization of the nationalist life.

the idea that voters do channel hopping, and shows how results depend on this assumption. Andina Díaz (2004b) also studies the monitoring role of media in a model in which candidates can either signal their types or propose uninformative platforms. She shows that the existence of a media industry drives politicians to discard the use of pooling strategies, and that this result is more likely to occur as the number of swing voters, or the competition among the media, increases. On the other hand, Besley and Prat (2001) use an adverse selection model to capture the possible influencing effects of a bad type government on the media industry. They establish the conditions under which media play no monitoring role, showing that the higher the number of media outlets in the economy, the more difficult the government can silence the media. Finally, Strömberg has a series of papers (2001) and (2004), where he studies the influence media have on the determination of policy outcomes. In particular, he shows that due to the increasing returns to scale of the media industry, a political bias appears, hurting small groups of voters while benefiting big groups. This could somehow offset the bias introduced by interest groups, which usually favor these small groups, leading to more desirable policies.

The second strand of literature our paper is related to, is that on the valence issue. Most of this literature has consider candidates' valences as something exogenously given in the models. Here, we find the papers of Aragonés and Palfrey (2002) and Groseclose (1999) among others, which study political competition when one of the candidates has an given valence advantage. Differently, Carrillo and Castanheira (2002) have endogenized the valence in a game where candidates can invest costly resources that increase their images. They show that when voters either always or never observe the valence, the Median Voter Theorem holds. However, for the case of imperfect observability of valence, parties may deviate from the median voter's bliss point, as an implicit commitment to high investment in valence. Finally, Moon (2001) proposes a model where the valence is interpreted as the monetary resources of a candidate. In this set-up, he shows that the incentive to converge is greater for the candidate with more resources, and that two politicians converge to the median voter only under very limited conditions.

Finally, our paper is also related to the socio-psychological literature on mass media influence, in that regarding the selective behavior of voters when exposed to media. To this respect, we remit the reader to Hovland (1959) and Mutz and Martin (2001) for a discussion on the matter.

In the analysis that follows, we present the model and some basic ideas in Section 2. In Section 3, we analyze the case of non-selective voters, and establish the conditions under which an equilibrium exists in such a case. In Section 4, we deal with the case of selective voters, and study the equilibrium existence and its location. We then discuss some of the results in Section 5. Finally, Section 6 concludes.

2 The model

Two downsian candidates compete for votes. The left-wing candidate is labelled L, and the right-wing candidate R. Candidates choose policy platforms x_{L} and x_{R} that belong to the policy space $\mathsf{X} = [0, 1]$, so that they maximize their vote shares. They also compete through their valence characteristics, v_{L} and $v_{\mathsf{R}} \in \mathbb{R}$. Voters prefer a high valence to a low valence candidate. Thus, *ceteris paribus*, the greater v_{j} is, for $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$, the higher the probability of candidate j winning the election is. Unlike the policy platforms that are determined by candidates, valence characteristics are set by mass media.

We consider two media outlets, A and B, which publish information on politicians. Media outlets are exogenously located at a and b, with $\mathsf{a}, \mathsf{b} \in [0, 1]$. Once the candidates establish their platforms, the media outlets project the pictures of the two candidates. We assume that an outlet prefers the candidate with the ideology that is closest to its own. Therefore, it presents a much better picture of this candidate than of the opponent. In particular, we assume that the quality of the valence an outlet gives to a particular candidate is a measure of the distance between the position of the outlet and that of the politician. That is to say,

$$\begin{aligned} v_{\mathsf{j}}^{\mathsf{A}} &= -(x_{\mathsf{j}} - \mathsf{a})^2 \text{ is the valence outlet } \mathsf{A} \text{ assign to politician } \mathsf{j} \\ v_{\mathsf{j}}^{\mathsf{B}} &= -(x_{\mathsf{j}} - \mathsf{b})^2 \text{ is the valence outlet } \mathsf{B} \text{ assign to politician } \mathsf{j} \end{aligned}$$

with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$.

The idea we are modelling is that the valence that the voters perceive of the candidates does not depend on the real skills of the politicians, but rather on the pictures of them that the media project. This means that the favor of the media is as important as the candidate's ideology in attracting votes. Note also that implicit in this approach is the idea that media are ideological, and as such are not fair in their coverages of the candidates, but rather favor the one with a closer ideology.

Finally, there is a continuum of voters of measure one. Voters have preferences regarding the candidates' policies and valences. Here, however, we characterize them according to their policy preferences, θ.[6] We assume that θ is distributed on the closed interval zero-one, according to a generic distribution function $F(\cdot)$, with a positive density function $f(\cdot)$. Voters observe candidates' valences, but do not realize how valences are formed. In other words, voters are not conscious of the fact that media's ideological preferences may play a role when projecting a better picture of one candidate than of the other, and therefore do not discount for it. The utility of a voter θ in voting for candidate j, with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$, is

$$u_{\theta}^{\mathsf{j}}(x_{\mathsf{j}}, v_{\mathsf{j}}) = \gamma v_{\mathsf{j}} - (x_{\mathsf{j}} - \theta)^2$$

or substituting

$$u_{\theta}^{\mathsf{j}}(x_{\mathsf{j}}, \mathsf{a}, \mathsf{b}) = -\gamma \left[\omega (x_{\mathsf{j}} - \mathsf{a})^2 + (1 - \omega)(x_{\mathsf{j}} - \mathsf{b})^2\right] - (x_{\mathsf{j}} - \theta)^2 \tag{1}$$

[6] Voters agree on the valence issue, therefore we cannot base the order on this dimension.

where $\omega \in [0,1]$, is the time voter θ is exposed to media A, therefore $1-\omega$ is the time she is exposed to media B. Here, $\gamma > 0$ is the salience of the valence dimension, that is to say, the parameter that captures the voters' sensitivity to the valence issue relative to the ideological issue. Note that when γ is zero we are in the classical downsian model, where agents base their votes solely on ideological aspects. As γ increases, the weight of valence raises and the candidates therefore take this other way of attracting votes into account.

In our model, a voter θ votes for L when

$$\gamma v_{\mathsf{L}} - (x_{\mathsf{L}} - \theta)^2 > \gamma v_{\mathsf{R}} - (x_{\mathsf{R}} - \theta)^2$$

and votes for R when

$$\gamma v_{\mathsf{L}} - (x_{\mathsf{L}} - \theta)^2 < \gamma v_{\mathsf{R}} - (x_{\mathsf{R}} - \theta)^2.$$

A voter θ is indifferent to voting for either candidate L or R when

$$\gamma v_{\mathsf{L}} - (x_{\mathsf{L}} - \theta)^2 = \gamma v_{\mathsf{R}} - (x_{\mathsf{R}} - \theta)^2.$$

Solving for θ we get,

$$\theta_I = \frac{x_{\mathsf{L}} + x_{\mathsf{R}}}{2} + \frac{\gamma(v_{\mathsf{R}} - v_{\mathsf{L}})}{2(x_{\mathsf{L}} - x_{\mathsf{R}})} \tag{2}$$

which defines the expression for the indifferent voter, denoted by θ_I. Note that in the case in which we do not consider the valence problem, the indifferent voter is located at the same distance from both L and R. In our case, however, this does not hold, as there is another issue, valence, that matters.

We next define the utility or payoff of a candidate. As mentioned previously, candidates seek to maximize their vote shares. One possible explanation for this type of maximizing behavior is that, the larger the vote share of a party is, the larger its influence in the parliament will be, and therefore, the larger the number of jobs in and around the government that the party can offer to its core members (Grossman and Helpman (1996)). Alternatively, one may think that candidates seek to maximize their vote shares because the policy implemented is a convex combination of the two policies proposed, where the weights are the shares of votes of each party (Alesina and Rosenthal (1995), and Ortuño-Ortín (1997)). For whatever reason they might have, we assume that the payoff of a candidate is his vote share. Additionally, we assume that in the case the candidates tie, each politician gets one half of the votes. Summarizing,

$$\Pi_{\mathsf{j}}(x_{\mathsf{L}}, x_{\mathsf{R}}, \mathsf{a}, \mathsf{b}) = \begin{cases} F(\theta_I) & \text{if } x_{\mathsf{j}} < x_{\mathsf{k}} \\ \frac{1}{2} & \text{if } x_{\mathsf{j}} = x_{\mathsf{k}} \\ 1 - F(\theta_I) & \text{if } x_{\mathsf{j}} > x_{\mathsf{k}} \end{cases}$$

where $\mathsf{j}, \mathsf{k} \in \{\mathsf{L}, \mathsf{R}\}$ and $\mathsf{k} \neq \mathsf{j}$.

3 Non-selective voters

We begin by considering the case in which all the voters are exposed to both media outlets. This means that voters are homogeneous, in the sense that independently of their positions, they attend to the two media outlets in the same proportion of time. Thus, there are no differences in the information they receive, but all of them observe the same news. The valence of the two candidates that the citizens perceive do not therefore differ from one voter to another.

The interest of this set-up is more theoretical than applied, as it does not fit very well the empirical evidence. The reason is that voters usually suffer from confirmatory bias, and thus, choose to attend to the outlets that better fit their prior opinions. It is therefore difficult that all the voters of a country receive exactly the same information, which is the case in this first set-up. We however analyze such a case as a benchmark, which will allow us to compare the results in this case with the findings of a set-up in which the voters are selective.

The utility of a voter θ in voting for j, with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$, is given by expression (1) . That is to say,

$$u_{\theta}^{\mathsf{j}}(x_{\mathsf{j}}, \mathsf{a}, \mathsf{b}) = -\gamma \left[\omega (x_{\mathsf{j}} - \mathsf{a})^2 + (1-\omega)(x_{\mathsf{j}} - \mathsf{b})^2\right] - (x_{\mathsf{j}} - \theta)^2$$

where $v_{\mathsf{j}} = -\left[\omega (x_{\mathsf{j}} - \mathsf{a})^2 + (1-\omega)(x_{\mathsf{j}} - \mathsf{b})^2\right]$ is the image that voter θ perceives about candidate j, given that he receives information from the two outlets.

We next obtain the expression for the indifferent voter. From equation (2) , we know

$$\theta_I = \frac{x_{\mathsf{L}} + x_{\mathsf{R}}}{2} + \frac{\gamma(v_{\mathsf{R}} - v_{\mathsf{L}})}{2(x_{\mathsf{L}} - x_{\mathsf{R}})}$$

with

$$v_{\mathsf{R}} - v_{\mathsf{L}} = (x_{\mathsf{L}} - x_{\mathsf{R}}) \left[\omega (x_{\mathsf{L}} + x_{\mathsf{R}} - 2\mathsf{a}) + (1-\omega)(x_{\mathsf{L}} + x_{\mathsf{R}} - 2\mathsf{b})\right].$$

Then, we can rewrite the expression for this voter as

$$\theta_I = \frac{x_{\mathsf{L}} + x_{\mathsf{R}}}{2} + \frac{\gamma \left[\omega (x_{\mathsf{L}} + x_{\mathsf{R}} - 2\mathsf{a}) + (1-\omega)(x_{\mathsf{L}} + x_{\mathsf{R}} - 2\mathsf{b})\right]}{2}$$

or simplifying,

$$\theta_I = x_{\mathsf{m}} + \gamma (x_{\mathsf{m}} - \mathsf{p}) \tag{3}$$

where $x_{\mathsf{m}} = \frac{x_{\mathsf{L}} + x_{\mathsf{R}}}{2}$, and $\mathsf{p} = \omega \mathsf{a} + (1-\omega)\mathsf{b}$, with x_{m}, $\mathsf{p} \in [0,1]$. That is to say, x_{m} is the mean of the locations of the two candidates, and p the mean of the information that the voters receive from the two media outlets. From equation (3) we observe that ideology and valence jointly determine the location of the indifferent voter, and so, candidates have to take account of both issues when deciding their platforms.

Previous to the analysis of the equilibrium location of candidates, we prove the existence of the indifferent voter.

■ Existence and uniqueness of the indifferent voter

The existence of this voter is not always guaranteed. Indeed, the indifferent voter will not exist when either all the voters vote for candidate L, or all they vote for candidate R. Hence, our first aim is to set up the conditions under which θ_I exists. This is what we do now.

Proposition 1 *There is a unique indifferent voter, whose expression is* $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right)$, *whenever*

$$\frac{\gamma \mathsf{p}}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}}{1+\gamma}. \tag{4}$$

In any other case, there is no θ_I *such that* $u^{\mathsf{L}}_{\theta_I}(x_{\mathsf{L}}, v_{\mathsf{L}}) = u^{\mathsf{R}}_{\theta_I}(x_{\mathsf{R}}, v_{\mathsf{R}})$.

Proof. Let us suppose $x_{\mathsf{L}} \neq x_{\mathsf{R}}$. In such a case, the expression for the indifferent voter is well defined. We observe that $\theta_I < 0 \Leftrightarrow x_{\mathsf{m}} < \mathsf{p}$ and $x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right) < 0 \Leftrightarrow x_{\mathsf{m}} < \mathsf{p}$ and $\gamma > \frac{x_{\mathsf{m}}}{\mathsf{p} - x_{\mathsf{m}}} \Leftrightarrow x_{\mathsf{m}} < \mathsf{p}$ and $x_{\mathsf{m}} < \frac{\gamma \mathsf{p}}{1+\gamma} \Leftrightarrow x_{\mathsf{m}} < \frac{\gamma \mathsf{p}}{1+\gamma}$.

Analogously, $\theta_I > 1 \Leftrightarrow x_{\mathsf{m}} > \mathsf{p}$ and $x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right) > 1 \Leftrightarrow x_{\mathsf{m}} > \mathsf{p}$ and $\gamma > \frac{1 - x_{\mathsf{m}}}{x_{\mathsf{m}} - \mathsf{p}} \Leftrightarrow x_{\mathsf{m}} > \mathsf{p}$ and $x_{\mathsf{m}} > \frac{1+\gamma \mathsf{p}}{1+\gamma} \Leftrightarrow x_{\mathsf{m}} > \frac{1+\gamma \mathsf{p}}{1+\gamma}$.

Therefore, $\theta_I \in [0,1] \Leftrightarrow \left(x_{\mathsf{m}} \geq \mathsf{p} \text{ or } \gamma \leq \frac{x_{\mathsf{m}}}{\mathsf{p} - x_{\mathsf{m}}}\right)$ and $\left(x_{\mathsf{m}} \leq \mathsf{p} \text{ or } \gamma \leq \frac{1 - x_{\mathsf{m}}}{x_{\mathsf{m}} - \mathsf{p}}\right) \Leftrightarrow \left(x_{\mathsf{m}} > \mathsf{p} \text{ and } \gamma \leq \frac{1 - x_{\mathsf{m}}}{x_{\mathsf{m}} - \mathsf{p}}\right)$, or $\left(x_{\mathsf{m}} < \mathsf{p} \text{ and } \gamma \leq \frac{x_{\mathsf{m}}}{\mathsf{p} - x_{\mathsf{m}}}\right)$, or $\left(x_{\mathsf{m}} = \mathsf{p}\right)$.

That is to say, $\theta_I \in [0,1]$ if and only if

$$\frac{\gamma \mathsf{p}}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}}{1+\gamma}.$$

To prove the uniqueness of θ_I, note that $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right)$ is a strictly increasing function in x_{m}. Thus, any pair $(x_{\mathsf{L}}, x_{\mathsf{R}})$ implies a particular value of x_{m}, which is associated to a single value of θ_I. Thus, the uniqueness of θ_I. ■

We shall now illustrate the share of votes of the two candidates, for any situation $x_{\mathsf{L}} \neq x_{\mathsf{R}}$. We know that for the case in which (4) holds, the indifferent voter does exist. In such a case, all $\theta < \theta_I$ vote for the leftist located candidate, and all $\theta > \theta_I$ do for the rightist one. Let us denote the leftist candidate by $c_0 = \arg\min_{\mathsf{j} \in \{\mathsf{L},\mathsf{R}\}} \{x_{\mathsf{j}}\}$, and the rightist one by $c_1 = \arg\max_{\mathsf{j} \in \{\mathsf{L},\mathsf{R}\}} \{x_{\mathsf{j}}\}$. We can then represent the share of votes of the two candidates for the cases in which θ_I exists. It could be, however, that this voter does not exists. In such cases, the share of votes of the two candidates is, despite the existence problems, well defined. Thus, in the case $x_{\mathsf{m}} < \frac{\mathsf{p}\gamma}{1+\gamma}$, we obtain $\theta_I < 0$, then all the voters vote for candidate c_1. In contrast, in the case $x_{\mathsf{m}} > \frac{1+\mathsf{p}\gamma}{1+\gamma}$, we obtain $\theta_I > 1$, thus all they vote for candidate c_0. Hence, there are no problems in determining who gains the election and who not, even in the cases in which θ_I does not exist.

We now define the pseudo-indifferent voter as the value of θ_I which gives the two candidates the share of votes that they get, for a given pair $(x_{\mathsf{L}}, x_{\mathsf{R}})$.

$$\widehat{\theta}_I\left(x_{\mathsf{m}}\right) = \begin{cases} 0 \text{ if } x_{\mathsf{m}} < \frac{\mathsf{p}\gamma}{1+\gamma} \\ x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right) \text{ if } \frac{1+\mathsf{p}\gamma}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}\gamma}{1+\gamma} \\ 1 \text{ if } x_{\mathsf{m}} > \frac{1+\mathsf{p}\gamma}{1+\gamma}. \end{cases}$$

We shall now represent these shares of votes,

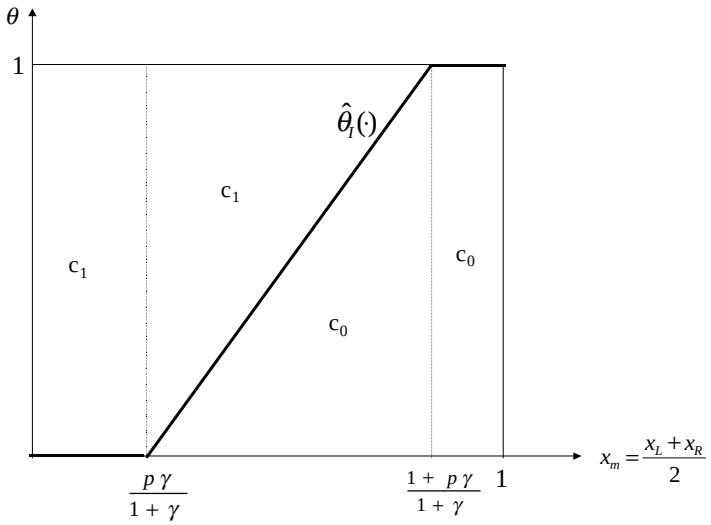

Figure 1: **Share of votes of the two candidates, when** $x_{\mathsf{L}} \neq x_{\mathsf{R}}$.

■ Equilibrium

We now characterize the equilibrium location of candidates.

Proposition 2 *If voters are non-selective, the only equilibrium in pure strategies is* $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}}{1+\gamma}$, *where* θ_{m} *is the location of the median voter.*

Proof. We first prove that $x_{\mathsf{L}} < x_{\mathsf{R}}$ cannot hold in equilibrium. Let us consider such a situation, and let us suppose $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) > \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}})$, i.e. the payoff of candidate L is greater than that of candidate R. In such a case, candidate R gets less than one half of the votes, whereas if he deviates to $x_{\mathsf{R}} = x_{\mathsf{L}}$ he gets exactly one half (by assumption). Thus, candidate R deviates. Analogously, let us suppose that $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) < \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}})$. Here, it is candidate L who has a profitable deviation. Then, this situation can neither hold in equilibrium. Finally, let us suppose $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}})$. In such a case, the indifferent voter exists, and therefore $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2} = F\left(\widehat{\theta}_I\right)$. Then, $\widehat{\theta}_I = \theta_{\mathsf{m}}$. Let us now consider that candidate L deviates to $x'_{\mathsf{L}} \in (x_{\mathsf{L}}, x_{\mathsf{R}})$, with the new indifferent voter being $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p} \in (\theta_{\mathsf{m}}, 1]$. In such a case, the payoff of candidate L is $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2} = \Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}})$, and thus, he finds it strictly profitable to deviate. Hence, $x_{\mathsf{L}} < x_{\mathsf{R}}$ cannot hold in equilibrium.

Analogously, we prove that neither $x_{\mathsf{L}} > x_{\mathsf{R}}$ holds in equilibrium.

Let us finally consider the case $x_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, voters are indifferent to voting for either L or R. Therefore $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2}$, by assumption.

Let us first suppose $x_{\mathsf{L}} = x_{\mathsf{R}} < \frac{\gamma \mathsf{p}}{1+\gamma}$. In such a case, either candidate has a profitable deviation. Let us suppose that candidate R deviates to $x'_{\mathsf{R}} \in \left(x_{\mathsf{L}}, \frac{\gamma \mathsf{p}}{1+\gamma}\right)$. Here, $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 > \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2}$. Thus, $x_{\mathsf{L}} = x_{\mathsf{R}} < \frac{\gamma \mathsf{p}}{1+\gamma}$ cannot occur in equilibrium.

Let us now suppose $\frac{\gamma \mathsf{p}+1}{1+\gamma} < x_{\mathsf{L}} = x_{\mathsf{R}}$. Here also, either candidate has a profitable deviation. Let us suppose that candidate L deviates to $x'_{\mathsf{L}} \in \left(\frac{\gamma \mathsf{p}+1}{1+\gamma}, x_{\mathsf{R}}\right)$, and therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = 1$. Thus, $\frac{\gamma \mathsf{p}+1}{1+\gamma} < x_{\mathsf{L}} = x_{\mathsf{R}}$ can neither occur in equilibrium.

Let $x_{\mathsf{L}} = x_{\mathsf{R}} \in \left[\frac{\gamma \mathsf{p}}{1+\gamma}, \frac{\gamma \mathsf{p}+1}{1+\gamma}\right]$. We now define $\widehat{x}_{\mathsf{m}} \in \left(\frac{\gamma \mathsf{p}}{1+\gamma}, \frac{\gamma \mathsf{p}+1}{1+\gamma}\right)$, as the single value of x_{m} such that $\widehat{\theta}_I(\widehat{x}_{\mathsf{m}}) = (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma \mathsf{p} = \theta_{\mathsf{m}} \in (0,1)$.

Let us first consider the case $\widehat{x}_{\mathsf{m}} < x_{\mathsf{L}} = x_{\mathsf{R}}$, and let us suppose that candidate L deviates to $x'_{\mathsf{L}} \in (\widehat{x}_{\mathsf{m}}, x_{\mathsf{R}})$. In such a case, $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p} > (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma \mathsf{p} = \theta_{\mathsf{m}}$, with $x'_{\mathsf{m}} = \frac{x'_{\mathsf{L}} + x_{\mathsf{R}}}{2}$. Therefore, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$, and thus candidate L finds it strictly profitable to deviate.

Let us now consider the case $x_{\mathsf{L}} = x_{\mathsf{R}} < \widehat{x}_{\mathsf{m}}$, and let us suppose that candidate R deviates to $x'_{\mathsf{R}} \in (x_{\mathsf{L}}, \widehat{x}_{\mathsf{m}})$. In such a case, $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p} < (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma \mathsf{p} = \theta_{\mathsf{m}}$. Then $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$, and therefore candidate R finds it strictly profitable to deviate.

Let us finally consider the case $x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} < x_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, $\widehat{\theta}'_I < \theta_{\mathsf{m}}$, and therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) < \frac{1}{2}$.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} > x_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, $\widehat{\theta}'_I > \theta_{\mathsf{m}}$, and therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) < \frac{1}{2}$.

Analogously, we analyze the deviations of candidate R.

Thus, the only equilibrium is $x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$, with $\widehat{x}_{\mathsf{m}} \in \left(\frac{\gamma \mathsf{p}}{1+\gamma}, \frac{1+\gamma \mathsf{p}}{1+\gamma}\right)$ and $\widehat{x}_{\mathsf{m}}(1+\gamma) - \gamma \mathsf{p} = \theta_{\mathsf{m}}$. That is to say, $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}} + \gamma \mathsf{p}}{1+\gamma}$ is the unique equilibrium. ■

We observe that candidates do not differentiate in equilibrium, but rather locate at the same point, being this point a convex combination of the location of the median voter and that of the media. This is so because ideology and valence are in this model relevant issues for voters. Hence, the idea summarizing this result is that, the fact that voters do not discriminate when attending to media, makes that candidates do neither discriminate. Politicians will therefore want to moderate their platforms, in an attempt to get the favor of both outlets.[7]

4 Selective voters

We next consider the case of voters that are just exposed to their closest positioned media outlet. Note that this set-up is opposite to the previous one, in which all the voters receive the same information. The idea we formalize here could fit, for example, with newspaper readers, who usually buy the ideologically closest newspaper, or with agents who just watch one tv channel or listen to one radio station.

In such cases, different voters may perceive different candidates' valences. Thus, the utility of a voter θ in voting for j, with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$, will depend on the media outlet she is exposed to. In this way,

[7] Candidates want to reach consensus between voters and media outlets. This is here the idea of moderation, where we do not mean that candidates locate at the center of the ideological space, but rather that aim to achieve agreement between the ideology of the median voter and that of the media.

$u^{\mathsf{j}}_\theta(x_{\mathsf{j}}, \mathsf{a}) = -\gamma(x_{\mathsf{j}} - \mathsf{a})^2 - (x_{\mathsf{j}} - \theta)^2$ when θ attends to media A

$u^{\mathsf{j}}_\theta(x_{\mathsf{j}}, \mathsf{b}) = -\gamma(x_{\mathsf{j}} - \mathsf{b})^2 - (x_{\mathsf{j}} - \theta)^2$ when θ attends to media B

$u^{\mathsf{j}}_\theta(x_{\mathsf{j}}, \mathsf{a}, \mathsf{b}) = -\gamma\left[\omega(x_{\mathsf{j}} - \mathsf{a})^2 + (1-\omega)(x_{\mathsf{j}} - \mathsf{b})^2\right] - (x_{\mathsf{j}} - \theta)^2$ when θ attends to A and B

Given that the voters attend to their closest positioned media outlet, and given a particular $\mathsf{a}, \mathsf{b} \in [0,1]$, those voters to the left of $\frac{\mathsf{a}+\mathsf{b}}{2}$ will attend to outlet A (resp. B), if $\mathsf{a} < \mathsf{b}$ (resp. $\mathsf{b} < \mathsf{a}$). Analogously, those voters to the right of $\frac{\mathsf{a}+\mathsf{b}}{2}$ will attend to outlet B (resp. A), if $\mathsf{a} < \mathsf{b}$ (resp. $\mathsf{b} < \mathsf{a}$). Finally, those voters at $\frac{\mathsf{a}+\mathsf{b}}{2}$ will attend to both outlets.[8] We further assume that in the case $\mathsf{a} = \mathsf{b}$, the voters attend to each media one half of their times.[9]

Following the schedule we used in the case of non-selective voters, we obtain the expression for the indifferent voter. From equation (3) , we know

$$\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}\right)$$

where p is now different depending on the location of the indifferent voter. Thus, in the case the indifferent voter is to left of $\frac{\mathsf{a}+\mathsf{b}}{2}$, we have

$$\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_0\right)$$

with $\mathsf{p}_0 = \min\{\mathsf{a}, \mathsf{b}\}$.

On the other hand, in the case the indifferent voter is to right of $\frac{\mathsf{a}+\mathsf{b}}{2}$, we have

$$\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_1\right)$$

with $\mathsf{p}_1 = \max\{\mathsf{a}, \mathsf{b}\}$.

Finally, it can be that the indifferent voter is also the indifferent reader. In such a case, $\theta_I = \frac{\mathsf{a}+\mathsf{b}}{2} = \mathsf{p}$, therefore

$$\theta_I = x_{\mathsf{m}}$$

what occurs when candidates and media outlets locate symmetrically about the indifferent voter.

Here also, we study the conditions for the existence of the indifferent voter. The analysis is now a bit more complex, as the discontinuity in the way the viewers attend to the two media outlets entails additional problems for the existence of θ_I.

■ Existence and uniqueness of the indifferent voter

We perform the analysis just for the case $\mathsf{a} \neq \mathsf{b}$. The reason is that whenever $\mathsf{a} = \mathsf{b}$, the voters behave as if they were non-selective. In fact, they are non-selective because selecting or not does not imply a difference. Hence, we remit the reader to the analysis carried out in the previous section, as it directly applies here.

[8] Here we assume that they spend one half of their times attending to each media, that is to say, $\omega = \frac{1}{2}$.

[9] Or, equivalently in terms of results, one half of the voters attend to each outlet.

Let us then go into the case $\mathsf{a} \neq \mathsf{b}$. In such a case, the indifferent voter exists when either $\theta_I \in \left[0, \frac{\mathsf{a}+\mathsf{b}}{2}\right)$, $\theta_I = \frac{\mathsf{a}+\mathsf{b}}{2}$, or $\theta_I \in \left(\frac{\mathsf{a}+\mathsf{b}}{2}, 1\right]$. We observe that $\theta_I = \frac{\mathsf{a}+\mathsf{b}}{2}$ occurs with probability zero, and thus, we can skip the analysis of this case as it will not change the outcome of the election. We then focus on the other two cases, for which we next establish the conditions under which θ_I exists.

Proposition 3 *There is a unique indifferent voter, whose expression is*
(i) either $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_0\right)$, *whenever*

$$\frac{\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}, \tag{5}$$

(ii) or $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_1\right)$, *whenever*

$$\frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}_1}{1+\gamma}. \tag{6}$$

In any other case, there is no θ_I *such that* $u^{\mathsf{L}}_{\theta_I}(x_{\mathsf{L}}, v_{\mathsf{L}}) = u^{\mathsf{R}}_{\theta_I}(x_{\mathsf{R}}, v_{\mathsf{R}})$.

Proof. Let us suppose $x_{\mathsf{L}} \neq x_{\mathsf{R}}$.

Let us start analyzing point (i), in which the indifferent voter attends to the leftist located media outlet. This occurs when $\theta_I \in [0, \mathsf{p}]$.

In such a case, $\theta_I < 0 \Leftrightarrow x_{\mathsf{m}} < \frac{\gamma \mathsf{p}_0}{1+\gamma}$; and $\theta_I > \mathsf{p} \Leftrightarrow x_{\mathsf{m}} > \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$. Thus, $\theta_I \in [0, \mathsf{p}] \Leftrightarrow \frac{\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$.

Analogously, we analyze point (ii), in which the indifferent voter attends to the rightist located media outlet. This occurs when $\theta_I \in [\mathsf{p}, 1]$.

In such a case, $\theta_I < \mathsf{p} \Leftrightarrow x_{\mathsf{m}} < \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}$; and $\theta_I > 1 \Leftrightarrow x_{\mathsf{m}} > \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$. Thus, $\theta_I \in [\mathsf{p}, 1] \Leftrightarrow \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$.

To prove the uniqueness of θ_I, note that both, $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_0\right)$ and $\theta_I = x_{\mathsf{m}} + \gamma\left(x_{\mathsf{m}} - \mathsf{p}_1\right)$ are strictly increasing functions in x_{m}. Additionally, note also that

$$\frac{\gamma \mathsf{p}_0}{1+\gamma} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma} < \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} < \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$$

since $\mathsf{a} \neq \mathsf{b}$, and then $\mathsf{p} \in (0,1)$. Thus, any pair $(x_{\mathsf{L}}, x_{\mathsf{R}})$ implies a particular value of x_{m}, which is associated to a single value of θ_I. Hence, the uniqueness of θ_I. ■

We shall now illustrate the share of votes of the two candidates, for any situation $x_{\mathsf{L}} \neq x_{\mathsf{R}}$. We know that the indifferent voter, if exists, is unique. Thus, all $\theta < \theta_I$ vote for the leftist candidate, and all $\theta > \theta_I$ do for the rightist one. We have therefore a clear representation of the vote shares for the cases in which θ_I exists. It could be, however, that the indifferent voter does not exist. In such cases, and despite the existence problems, the share of votes of the two candidates is well defined. Thus, in the case $\theta_I < \frac{\gamma \mathsf{p}_0}{1+\gamma}$, all the voters vote for candidate c_1. Additionally, in the case $\theta_I > \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$, all they vote for candidate c_0.[10] Finally, in the case $\theta_I \in \left[\frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}\right]$, all $\theta < \mathsf{p}$ vote for c_0 and all $\theta > \mathsf{p}$ vote for c_1. Hence, there are no problems in determining the vote shares, even in the cases in which θ_I does not exist.

[10] As previously, we denote $c_0 = \arg\min_{\mathsf{j} \in \{\mathsf{L},\mathsf{R}\}}\{x_{\mathsf{j}}\}$, and $c_1 = \arg\max_{\mathsf{j} \in \{\mathsf{L},\mathsf{R}\}}\{x_{\mathsf{j}}\}$.

We shall now define the pseudo-indifferent voter as the value of θ_I which gives the two candidates the share of votes that they really get, for a given pair $(x_{\mathsf{L}}, x_{\mathsf{R}})$.

$$\widehat{\theta}_I(x_{\mathsf{m}}) = \begin{cases} 0 \text{ if } x_{\mathsf{m}} < \frac{\gamma \mathsf{p}_0}{1+\gamma} \\ x_{\mathsf{m}} + \gamma(x_{\mathsf{m}} - \mathsf{p}_0) \text{ if } \frac{\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma} \\ \mathsf{p} \text{ if } \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} \\ x_{\mathsf{m}} + \gamma(x_{\mathsf{m}} - \mathsf{p}_1) \text{ if } \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}_1}{1+\gamma} \\ 1 \text{ if } x_{\mathsf{m}} > \frac{1+\gamma \mathsf{p}_1}{1+\gamma}. \end{cases}$$

We shall now represent these shares of votes,

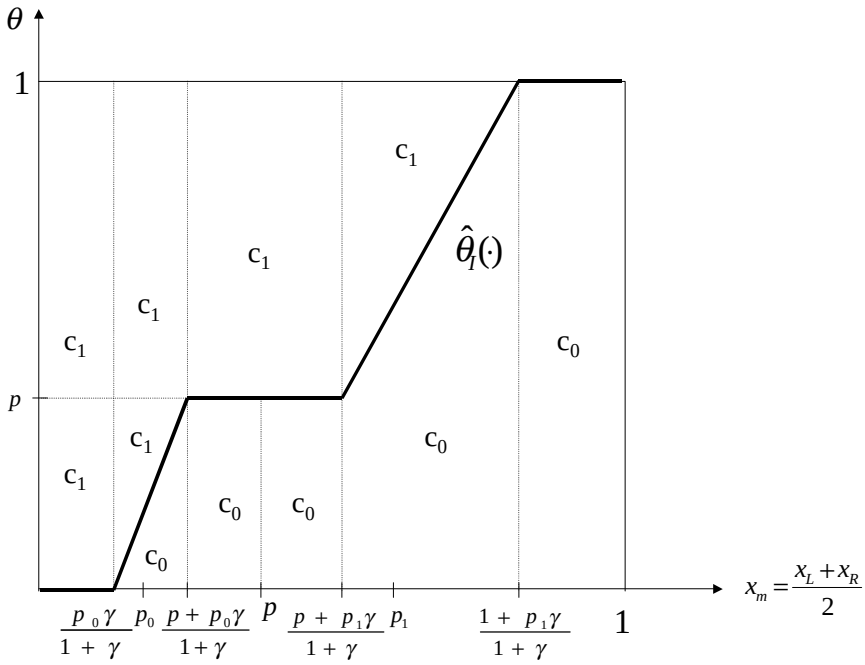

Figure 2: **Share of votes of the two candidates, when** $x_{\mathsf{L}} \neq x_{\mathsf{R}}$.

■ Equilibrium

We next analyze the equilibria that arise for the game in which the voters select between the outlets and may therefore have different perceptions about the candidates' valences. Remember that we have two different set-ups, depending on the location of the media outlets. The first set-up is when the two media outlets locate at the same point, $\mathsf{a} = \mathsf{b}$. The second one is when the two media differentiate, $\mathsf{a} \neq \mathsf{b}$.

Let us first consider that both media outlets locate at $\mathsf{a} = \mathsf{b}$. The equilibrium location for candidates in such a case is the same as the one we obtained in the case of non selective voters, with $\omega = \frac{1}{2}$. Thus, we remit the reader to Proposition 2 in Section 3.

We then consider the case in which $\mathsf{a} \neq \mathsf{b}$. Here, we show that there are equilibria in which the candidates locate at the same point, as well as equilibria in which the candidates differentiate. The last result deserves more attention, as the existence of equilibria in which the candidates do not propose the same platform is not the classical result in a downsian model. The differentiation is here due to the

fact that the voters select between outlets. Thus, the fact that voters receive all the information from one outlet makes politicians being only concerned with that media. In other words, that left-wing (resp. right-wing) voters receive all the information from the leftist (resp. rightist) media, makes candidate L (resp. R) being aware just of the leftist (resp. rightist) media. In contrast, if voters receive information from the two outlets, candidates should not forget about their pictures in the other media. In such a case, politicians would find it profitable to moderate their lines, in an attempt to aim the agreement of both media. The following proposition formalizes these ideas.

Proposition 4 *Suppose* $\mathsf{a} \neq \mathsf{b}$. *Then,*

(i) If $\theta_{\mathsf{m}} < \frac{\mathsf{a}+\mathsf{b}}{2}$, *the only equilibrium is* $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_0}{1+\gamma}$.

(ii) If $\theta_{\mathsf{m}} > \frac{\mathsf{a}+\mathsf{b}}{2}$, *the only equilibrium is* $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_1}{1+\gamma}$.

(iii) If $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, *the pairs* $(x_{\mathsf{L}}, x_{\mathsf{R}})$ *such that* $x_{\mathsf{L}}, x_{\mathsf{R}} \in \left[\frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_1}{1+\gamma}\right]$, *are the only equilibria.*

Proof. We first show that $x_{\mathsf{L}} \neq x_{\mathsf{R}}$ and $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) \neq \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}})$, cannot hold in equilibrium. The reason is that the candidate with less votes has an incentive to deviate and locate at $x_{\mathsf{L}} = x_{\mathsf{R}}$, where he gets by assumption one half of the votes. Thus, such a situation cannot hold in equilibrium.

Let us then consider a hypothetical equilibrium in which $x_{\mathsf{L}} \neq x_{\mathsf{R}}$ and $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2}$. Without lose of generality, let us assume $x_{\mathsf{L}} < x_{\mathsf{R}}$.

Let us suppose $x_{\mathsf{m}} < \frac{\gamma \mathsf{p}_0}{1+\gamma}$. In such a case, $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = 0$. Thus, this situation cannot hold in equilibrium, as candidate L would find it strictly profitable to deviate and locate at $x_{\mathsf{L}} = x_{\mathsf{R}}$.

Analogously, $x_{\mathsf{m}} > \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$, can neither hold in equilibrium.

Let us now suppose $\frac{\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$. In such a case, $\widehat{\theta}_I = (1+\gamma)x_{\mathsf{m}} - \gamma \mathsf{p}_0$, with $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}_I\right) = \frac{1}{2}$, therefore $\widehat{\theta}_I = \theta_{\mathsf{m}}$. Let us suppose that candidate L deviates to $x'_{\mathsf{L}} \in (x_{\mathsf{L}}, x_{\mathsf{R}})$, with $x'_{\mathsf{m}} = \frac{x'_{\mathsf{L}}+x_{\mathsf{R}}}{2}$ and $\frac{\gamma \mathsf{p}_0}{1+\gamma} < x'_{\mathsf{m}} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$. In such a case, $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p}_0 > \theta_{\mathsf{m}}$ and therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$. It is therefore not possible an equilibrium in which $\frac{\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$.

Analogously, we prove that $\frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} < x_{\mathsf{m}} \leq \frac{1+\gamma \mathsf{p}_1}{1+\gamma}$ neither holds in equilibrium.

Let us then consider $\frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{m}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}$, with $\widehat{\theta}_I = \mathsf{p}$. In such a case, $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}_I\right) = F(\mathsf{p}) = \frac{1}{2}$, and therefore $\mathsf{p} = \theta_{\mathsf{m}}$.

Let us suppose $\frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma} < x_{\mathsf{R}}$. Here, candidate L could deviate to $x'_{\mathsf{L}} \in \left(\frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}, x_{\mathsf{R}}\right)$, with $\widehat{\theta}'_I = \min\{(1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p}_1, 1\} > \mathsf{p} = \theta_{\mathsf{m}}$, in which case $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$. Hence, $x_{\mathsf{R}} > \frac{p+\gamma \mathsf{p}_1}{1+\gamma}$ cannot occur in equilibrium.

Analogously, let us suppose $x_{\mathsf{L}} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$. Here, candidate R could deviate to $x'_{\mathsf{R}} \in \left(x_{\mathsf{L}}, \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}\right)$, with $\widehat{\theta}'_I = \max\{(1+\gamma)x'_{\mathsf{m}} - \gamma \mathsf{p}_0, 0\} < \mathsf{p} = \theta_{\mathsf{m}}$, in which case $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$. Hence, $x_{\mathsf{L}} < \frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}$ can neither occur in equilibrium.

Thus, we have shown that in the case there is an equilibrium of the sort $x_{\mathsf{L}} \neq x_{\mathsf{R}}$, it must be such that $\frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma} \leq x_{\mathsf{L}} < x_{\mathsf{m}} < x_{\mathsf{R}} \leq \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}$, with $\mathsf{p} = x_{\mathsf{m}}$. We next show that this configuration constitutes an equilibrium.

Let us consider that candidate L deviates to $x'_{\mathsf{L}} < x_{\mathsf{L}}$. In such a case, $\widehat{\theta}'_I \leq \mathsf{p} = \theta_{\mathsf{m}}$, therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) \leq \frac{1}{2}$. Thus, candidate L does not find it strictly profitable to deviate.

Let us consider that candidate L deviates to $x'_{\mathsf{L}} \in (x_{\mathsf{L}}, x_{\mathsf{R}})$. In such a case, $\widehat{\theta}'_I = \mathsf{p} = \theta_{\mathsf{m}}$, therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) = \frac{1}{2}$. Thus, candidate L does neither find it strictly profitable to deviate.

Let us consider that candidate L deviates to $x'_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2}$ by assumption. Thus, candidate L does not find it strictly profitable to deviate.

Finally, let us consider that candidate L deviates to $x'_{\mathsf{L}} > x_{\mathsf{R}}$. In such a case, $\widehat{\theta}'_I \geq \mathsf{p} = \theta_{\mathsf{m}}$, therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) \leq \frac{1}{2}$. Thus, candidate L does neither find it strictly profitable to deviate.

We now consider a hypothetical equilibrium in which $x_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, $\Pi_{\mathsf{L}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \Pi_{\mathsf{R}}(x_{\mathsf{L}}, x_{\mathsf{R}}) = \frac{1}{2}$ by assumption.

Let us first suppose $x_{\mathsf{L}} = x_{\mathsf{R}} < \frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}$, and $\theta_{\mathsf{m}} \geq \mathsf{p}$. In such a case, either of the two candidates has a profitable deviation. Let us suppose that candidate R deviates to $x'_{\mathsf{R}} \in \left(x_{\mathsf{L}}, \frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}\right)$, with $\widehat{\theta}'_I = \max\{(1+\gamma)x'_{\mathsf{m}} - \gamma\mathsf{p}_0, 0\} < \mathsf{p} \leq \theta_{\mathsf{m}}$. Here, $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$. Thus, $\mathsf{p} \leq \theta_{\mathsf{m}}$ cannot occur in equilibrium.

Let us now suppose $x_{\mathsf{L}} = x_{\mathsf{R}} < \frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}$, and $\mathsf{p} > \theta_{\mathsf{m}}$. Let $\widehat{x}_{\mathsf{m}} \in \left(\frac{\gamma\mathsf{p}_0}{1+\gamma}, \frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}\right)$, be the single value of x_{m} such that $\widehat{\theta}_I(\widehat{x}_{\mathsf{m}}) = (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}} \in (0,1)$. There are three possibilities.

In the first case, $\widehat{x}_{\mathsf{m}} < x_{\mathsf{L}} = x_{\mathsf{R}}$, either of the two candidates has a profitable deviation. Let us suppose that candidate L deviates to $x'_{\mathsf{L}} \in (\widehat{x}_{\mathsf{m}}, x_{\mathsf{R}})$. In such a case, $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma\mathsf{p}_0 > (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}}$, therefore $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$.

In the second case, $x_{\mathsf{L}} = x_{\mathsf{R}} < \widehat{x}_{\mathsf{m}}$, either of the two candidates has also a profitable deviation. Let us suppose that candidate R deviates to $x'_{\mathsf{R}} \in (x_{\mathsf{L}}, \widehat{x}_{\mathsf{m}})$. In such a case, $\widehat{\theta}'_I = (1+\gamma)x'_{\mathsf{m}} - \gamma\mathsf{p}_0 < (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}}$, therefore $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$.

We now show that the third case, $x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$, constitutes an equilibrium.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} < x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$. In such a case, $\widehat{\theta}'_I < (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}}$. Thus, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) < \frac{1}{2}$.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} > x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$. In such a case, $\widehat{\theta}'_I > (1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}}$. Thus, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) < \frac{1}{2}$.

We have shown that candidate L does not have a profitable deviation, what also holds for candidate R. Thus, there is an equilibrium such that $x_{\mathsf{L}} = x_{\mathsf{R}} = \widehat{x}_{\mathsf{m}}$, with $\widehat{x}_{\mathsf{m}} \in \left(\frac{\gamma\mathsf{p}_0}{1+\gamma}, \frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}\right)$, $(1+\gamma)\widehat{x}_{\mathsf{m}} - \gamma\mathsf{p}_0 = \theta_{\mathsf{m}}$ and $\mathsf{p} > \theta_{\mathsf{m}}$. That is to say, there is an equilibrium $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}}+\gamma\mathsf{p}_0}{1+\gamma}$, with $\theta_{\mathsf{m}} < \mathsf{p}$.

Analogously, we prove that there is an equilibrium $x_{\mathsf{L}} = x_{\mathsf{R}} = \frac{\theta_{\mathsf{m}}+\gamma\mathsf{p}_1}{1+\gamma}$, with $\theta_{\mathsf{m}} > \mathsf{p}$.

Finally, we consider those situations such that $x_{\mathsf{L}} = x_{\mathsf{R}} \in \left[\frac{\mathsf{p}+\gamma\mathsf{p}_0}{1+\gamma}, \frac{\mathsf{p}+\gamma\mathsf{p}_1}{1+\gamma}\right]$.

Let us suppose $\mathsf{p} < \theta_{\mathsf{m}}$. In such a case, either of the two candidates has a profitable deviation. Let us suppose that candidate R deviates to $x'_{\mathsf{R}} \in \left(x_{\mathsf{L}}, \frac{\mathsf{p}+\gamma\mathsf{p}_1}{1+\gamma}\right]$, with $\widehat{\theta}'_I = \mathsf{p} < \theta_{\mathsf{m}}$. Then, $\Pi_{\mathsf{R}}(x_{\mathsf{L}}, x'_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$.

Let us now suppose $\mathsf{p} > \theta_{\mathsf{m}}$. In such a case, either of the two candidates has also a profitable deviation.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} \in \left[\frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}, x_{\mathsf{R}}\right)$, with $\widehat{\theta}'_I = \mathsf{p} > \theta_{\mathsf{m}}$. Then, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) > \frac{1}{2}$.

We now show that $x_{\mathsf{L}} = x_{\mathsf{R}} \in \left[\frac{\mathsf{p}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\mathsf{p}+\gamma \mathsf{p}_1}{1+\gamma}\right]$, with $\mathsf{p} = \theta_{\mathsf{m}}$ constitutes an equilibrium.

Let us suppose that candidate L deviates to $x'_{\mathsf{L}} < x_{\mathsf{L}} = x_{\mathsf{R}}$. In such a case, $\widehat{\theta}'_I \leq \mathsf{p} = \theta_{\mathsf{m}}$. Then, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = F\left(\widehat{\theta}'_I\right) \leq \frac{1}{2}$.

Let us suppose that candidate L deviates to $x_{\mathsf{L}} = x_{\mathsf{R}} < x'_{\mathsf{L}}$. In such a case, $\widehat{\theta}'_I \geq \mathsf{p} = \theta_{\mathsf{m}}$. Then, $\Pi_{\mathsf{L}}(x'_{\mathsf{L}}, x_{\mathsf{R}}) = 1 - F\left(\widehat{\theta}'_I\right) \leq \frac{1}{2}$.

Hence, there is an equilibrium $x_{\mathsf{L}} = x_{\mathsf{R}} \in \left[\frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_1}{1+\gamma}\right]$ with $\mathsf{p} = \theta_{\mathsf{m}}$. ■

From Proposition 4 we learn that in the case $\theta_{\mathsf{m}} \neq \frac{\mathsf{a}+\mathsf{b}}{2}$, i.e., when the two media outlets are located in such a way that the median voter only attends to one outlet, both candidates locate themselves at the same point, which is a convex combination of the location of the median voter and that of the most popular outlet. In contrast, in the case $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, i.e., when the median voter is exposed to both media outlets, the candidates may well locate at the same point or differentiate in equilibrium. More precisely, with respect to the latter case, we observe that there are equilibria in which the candidates locate symmetrically about the center, i.e., the median voter, as well as equilibria in which the candidates do not position in such a way. That is to say, it is possible that there exists an equilibrium in which one candidate proposes a more moderate platform than the other, and despite this, they tie. We further observe that in the case of $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, the two media outlets polarize their ideologies more than the candidates differentiate their platforms.

To summarize then, whenever one outlet is more popular than the other, the candidates do not differentiate but rather locate at the same point, with the aim of getting the support of the most popular media outlet. On the other hand, whenever each media outlet has one half of the audience, the candidates may find it profitable to locate at any point in the interval $\left[\frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_1}{1+\gamma}\right]$, as both media have now the same audience and thus, the support of any outlet is equally important.

Finally, the reader should also note that all the equilibria in the case $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, are weak Nash Equilibria. This means that if a candidate deviates to some other location in the interval $\left[\frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_0}{1+\gamma}, \frac{\theta_{\mathsf{m}}+\gamma \mathsf{p}_1}{1+\gamma}\right]$, the new situation will also be an equilibrium. We guess that this might explain why minor changes in a candidate's platform from one election to another does not imply any great difference in election outcomes. Or in other words, the vote share of candidates does not change when their platforms do.

5 Discussion

Before concluding, we would like to stress some aspects that we think deserve more attention.

■ The results we present in Proposition 2 and 4 are much more general than what has been shown. In fact, these results hold whenever the utility function of the voters is such that we can write the expression for the indifferent voter as a function of x_{m}, with $\theta_I(x_{\mathsf{m}})$ being a monotone increasing function in x_{m}.

In such cases, the arguments in the proof of both Propositions apply, and thus, we can generalize these results to any other function satisfying the specified requirements. With respect to this, we guess that any concave utility function for the voters could be expressed in such a way. We do not, however, have any proof for this, but we think it would be an interesting analysis for future research.

■ The result (*iii*) of Proposition 4, in which the candidates may differentiate their platforms, is not an exceptional result due to the particular way in which the voters expose themselves to the media. This result, however, can be obtained from any model in which a set of voters, of positive measure, attends to one outlet, and another set attends to the other media. Thus, whenever $\theta \in [\mathsf{p} - \varepsilon, \mathsf{p} + \varepsilon]$ with $\varepsilon > 0$, expose themselves to both media, and the rest of the voters solely attend to their closest media outlet, it is possible that candidates differentiate their platforms in equilibrium. In such a case, we obtain that whenever $\theta_{\mathsf{m}} = \mathsf{p} + \varepsilon$ or $\theta_{\mathsf{m}} = \mathsf{p} - \varepsilon$, candidates may differentiate in equilibrium. This means that for candidates to find it profitable to propose different policies, one media outlet must be more popular than the other, i.e., one of the outlets must reach more than fifty per cent of the voters. In such a case, we may have an equilibrium in which the candidates differentiate. In contrast, if only the voter who is equidistant from the two outlets attend to both media, the candidates may differentiate only when $\theta_{\mathsf{m}} = \mathsf{p}$, i.e., when the two outlets are equally popular. Finally, let us consider a set-up in which all the voters are exposed to both media outlets, even if in different proportions. In such a case, the only equilibrium that exists implies that the candidates locate at the same point. Hence, we observe that the platform differentiation result requires that a number of voters, of positive measure, receive all their information from just one media. This is the case, for example, of a model in which the extreme voters suffer from confirmatory bias, and thus, only attend to their closest located media outlet.

■ Finally, we briefly discuss the result in which the candidates differentiate their platforms, which might well be the most interesting result presented in this paper. We do so because the differentiation outcome is obtained in this model when $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, which has zero measure relative to the set of parameters. Thus, in order to highlight this result that otherwise would not be very likely in equilibrium, we make an overview of the spatial models that have been proposed in the literature, in which the equilibrium implies that the agents locate symmetrically about the median agent. In this way, we propose a number of situations in which $\theta_{\mathsf{m}} = \frac{\mathsf{a}+\mathsf{b}}{2}$, with $\mathsf{a} \neq \mathsf{b}$, would be the equilibrium, and so, we stress the result in which the candidates polarize their locations.

The seminal Hotelling (1929) model establishes the bases for the theory of spatial competition, in which it is well known that the firms locate at the same point in equilibrium only when they compete for profits and we restrict the analysis to non-price competition. In any other case, differentiation of locations can be obtained as the equilibrium outcome. D'Aspremont et al., (1979) show that we could get the opposite result to the one proposed by Hotelling with a very small change in the seminal model, namely by switching from linear to quadratic transportation costs. In such a case, the Hotelling model in which two firms choose first, where to locate, and then, the price to charge for their products, ends up in a polarization of the firms' locations. This is the case when the agents are distributed according to a

uniform distribution function in a linear market and the transportation costs are quadratic.

This sort of structure can be easily applied to a model in which two newspapers compete in ideology and price, i.e., in the ideology they display in their news, and in the street price of their newspaper. Schulz and Weimann (1989) consider a model in which two newspapers compete in these two variables, and show that newspapers polarize their ideological orientations in equilibrium, such locations being symmetric about the median reader.[11] Gabszewicz et al., (2001) propose the same sort of model, but they add a third stage in which newspaper editors have to decide on the advertising tariff. They show that the final stage completely upsets the above prediction, inducing the softening of the newspapers' political opinions for the cases in which readers' political preferences are weak or advertising earnings are high. Otherwise, newspaper editors choose different ideologies.

On the other hand, Andina Díaz (2004a) analyzes a model in which two tv stations compete for political influence, either reinforcing viewers in their prior opinions, or modifying their opinions. She shows that in the case of viewers being uniformly distributed, and being exposed exclusively to the outlet that is closest to their ideological position, the location of the tv stations in equilibrium is symmetric about the center. This is a particular case of a more general result, which holds whenever firms aim to minimize the distance between their locations and that of their buyers. In Andina Díaz (2004a), to reinforce viewers in their prior attitudes means, for media outlets, to minimize their distance from the viewers. Hence the result. This equilibrium outcome can be obtained, however, in any model in which firms aim to minimize such a distance. Another case in which media outlets would have such an aim is in the case of two newspapers who know that readers only buy a newspaper if it is sufficiently close to their own ideology. In such a case, the newspaper editors would want to display the ideology that attracts the highest number of readers. To illustrate this idea, let us consider two newspapers, A and B, that choose locations a, $\mathsf{b} \in [0,1]$ respectively. Let us also suppose that readers, who only buy one newspaper, are distributed according to a uniform distribution function, and that those readers located further than $\frac{1}{4}$ distance from either daily do not buy any press. In such a case, neither newspaper finds it optimal to locate at $\mathsf{a} = \mathsf{b} = \frac{1}{2}$, since any movement of one daily towards either extreme gives it a greater number of readers. To illustrate this, let us suppose that newspaper A moves to position $\frac{1}{4}$. In such a case, newspaper A sells to all of the readers from 0 to $\frac{1}{4}$, and also to all the people between A and B who are closer to A. As B has not moved, it gains all of the readers between $\frac{3}{8}$ and $\frac{3}{4}$. Newspaper B, however, has a profitable deviation, as by locating at $\frac{3}{4}$ it sells to all of the readers between $\frac{1}{2}$ and $\frac{3}{4}$. The unique equilibrium is therefore $\left(\mathsf{a}^* = \frac{1}{4}, \mathsf{b}^* = \frac{3}{4}\right)$, with $\frac{\mathsf{a}^* + \mathsf{b}^*}{2} = \theta_{\mathsf{m}}$.

[11] They restrict their analysis to the study of symmetric equilibria, and so their results are always symmetric about the median viewer, which is $\frac{1}{2}$ as they assume a uniform distribution function.

6 Conclusion

The aim of this paper is to analyze political competition in a model in which voters vote according to ideology and valence, and valence is set by the media. By so doing, we contribute to the emerging literature on the valence issue, which considers the importance that image effects have on voters. Most of the papers in this literature consider valence as something exogenously given in the models. We, however, go further by proposing a model in which, as well as endogenizing the valence, we make it dependent on what the media say. The reason for this is that empirical evidence shows that people create the pictures of the politicians based on the information they receive, which mainly comes from the media. In McCombs's words: "To a considerable degree, the news media literally create in our heads the pictures of many public issues... Going beyond public issues, there is also good evidence that news coverage influences the pictures that people have of the candidates vying for political office".

In this paper, we study political competition under two different set-ups. First, we consider the case of voters who are exposed to the two media outlets of the economy. Second, we analyze the case of voters who are just exposed to the ideologically closest media. The results we obtain state that candidates realize the power of media, and therefore locate at some point between the position of the median voter and that of the media. The precise location, however, depends on the way the voters attend to the media. Hence, in the case of voters being exposed to both outlets, candidates tend to moderate their platforms, in an attempt to get the favor of both media. On the other hand, in the case of voters selecting between the outlets, candidates may differentiate. The reason for this is that in such a case, enjoying the loyalty of one outlet, may be more important than merely having good relations with both.

The lesson we draw is therefore that political competition may end up in polarization if voters suffer from confirmatory bias and therefore solely attend to the ideologically closest media. In contrast, political moderation is easily reached if voters get information from various sources and therefore make more balanced judgments.

References

[1] Alesina, A. and H. Rosenthal [1995]. *Partisan Politics, Divided Government, and the Economy.* Cambridge University Press. New York.

[2] Andina Diaz, A. [2004a]. "Media Competition: Audience vs. Political Influence". Working Paper, 2003-19, IVIE.

[3] Andina Diaz, A. [2004b]. "Asymmetric Information and Electoral Campaigns: The Monitoring Role of Media". Mimeo, Universidad de Alicante.

[4] Aragonés, E. and T.R. Palfrey [2002]. "Mixed Equilibrium in a Downsian Model with a Favored Candidate". *Journal of Economic Theory*, 103, 1, 131-161.

[5] Besley, T. and A. Prat [2001]. "Handcuffs for the Grabbing Hand? Media Capture and Government Accountability". Mimeo, LSE.

[6] Carrillo, J.D. and M. Castanheira [2002]. "Polarization of Parties and Endogenous Valence". Mimeo, Columbia Business School.

[7] D'Aspremont, C., J.J. Gabszewicz and J.F. Thisse [1979]. "On Hotteling's 'Stability in Competition"'. *Econometrica*, 47, 5, 1145-1150.

[8] Gabszewicz, J.J., D. Laussel and N. Sonnac [2001]. "Press Advertising and the Ascent of the 'Pensée Unique"'. *European Economic Review*, 45, 641-651.

[9] Grosseclose, T. [1999] "Character, Charisma, and Candidate Location: Downsian Models When One Candidate Has a Valence Advantage". Mimeo, Stanford University.

[10] Grossman, G.M. and E. Helpman [1996]. "Electoral Competition and Special Interest Politics". *Review of Economic Studies*, 63, 265-286.

[11] Gunther, R. and A. Mughan [2000]. *Democracy and the Media: A comparative Perspective*. Cambridge University Press.

[12] Hotelling, H. [1929]. "Stability in Competition". *The Economic Journal*, 39, 41-57.

[13] Hovland, C.I. [1959]. "Reconciling Conflicting Results Derived from Experimental and Survey Studies of Attitude Change". *The American Psychologist*, 14, 8-17.

[14] Machiavelli N. [1992]. *The Prince*. New York: Dover Publications.

[15] McCombs, M. [1997]. "Building Consensus: The News Media's Agenda Setting Roles". *Political Communication*, 14, 433-443. Taylor and Francis Editions.

[16] McCombs, M. [2002]. "The Agenda-Setting Role of the Mass Media in the Shaping of Public Opinion". Mimeo, University of Texas at Austin.

[17] Moon, W. [2001]. "Position versus Valence: A Formal Theory of Resource-Constrained Electoral Competition". Mimeo University of California.

[18] Muñoz Alonso, A. [1989]. *Política y Nueva Comunicación: El Impacto de los Medios en la Vida Política*. Fundesco.

[19] Mutz, D.C. and P.S. Martin [2001]. "Facilitating Communication across Lines of Political Difference: The Role of Mass Media". *American Political Science Review*, 95, 1, 97-114.

[20] Ortuño Ortín, I. [1997]. "A Spatial Model of Political Competition and Proportional Representation". *Social Choice and Welfare*, 14, 427-438.

[21] Pérez Nievas, S. and M. Fraile [2000]. "Is the Nationalist Vote Really Nationalist? Dual Voting in Catalonia 1980-1999". Working Paper 2000/147, Fundación Juan March.

[22] Schulz, N. and J. Weimann [1989]. "Competition of Newspapers and the Location of Political Parties". Public Choice, 63, 125-147.

[23] Strömberg, D. [2001]. "Mass Media and Public Policy". *European Economic Review*, 45, 652-663.

[24] Strömberg, D. [2004]. "Mass Media Competition, Political Competition, and Public Policy". Forthcoming, *Review of Economic Studies*.

NOTE DI LAVORO DELLA FONDAZIONE ENI ENRICO MATTEI

Fondazione Eni Enrico Mattei Working Paper Series

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

http://www.feem.it/Feem/Pub/Publications/WPapers/default.html
http://www.ssrn.com/link/feem.html

NOTE DI LAVORO PUBLISHED IN 2003

PRIV	1.2003	*Gabriella CHIESA and Giovanna NICODANO*: Privatization and Financial Market Development: Theoretical Issues
PRIV	2.2003	*Ibolya SCHINDELE*: Theory of Privatization in Eastern Europe: Literature Review
PRIV	3.2003	*Wietze LISE, Claudia KEMFERT and Richard S.J. TOL*: Strategic Action in the Liberalised German Electricity Market
CLIM	4.2003	*Laura MARSILIANI and Thomas I. RENSTRÖM*: Environmental Policy and Capital Movements: The Role of Government Commitment
KNOW	5.2003	*Reyer GERLAGH*: Induced Technological Change under Technological Competition
ETA	6.2003	*Efrem CASTELNUOVO*: Squeezing the Interest Rate Smoothing Weight with a Hybrid Expectations Model
SIEV	7.2003	*Anna ALBERINI, Alberto LONGO, Stefania TONIN, Francesco TROMBETTA and Margherita TURVANI:* The Role of Liability, Regulation and Economic Incentives in Brownfield Remediation and Redevelopment: Evidence from Surveys of Developers
NRM	8.2003	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Natural Resources: A Blessing or a Curse?
CLIM	9.2003	*A. CAPARRÓS, J.-C. PEREAU and T. TAZDAÏT*: North-South Climate Change Negotiations: a Sequential Game with Asymmetric Information
KNOW	10.2003	*Giorgio BRUNELLO and Daniele CHECCHI*: School Quality and Family Background in Italy
CLIM	11.2003	*Efrem CASTELNUOVO and Marzio GALEOTTI*: Learning By Doing vs Learning By Researching in a Model of Climate Change Policy Analysis
KNOW	12.2003	*Carole MAIGNAN, Gianmarco OTTAVIANO and Dino PINELLI (eds.)*: Economic Growth, Innovation, Cultural Diversity: What are we all talking about? A critical survey of the state-of-the-art
KNOW	13.2003	*Carole MAIGNAN, Gianmarco OTTAVIANO, Dino PINELLI and Francesco RULLANI* (lix): Bio-Ecological Diversity vs. Socio-Economic Diversity. A Comparison of Existing Measures
KNOW	14.2003	*Maddy JANSSENS and Chris STEYAERT* (lix): Theories of Diversity within Organisation Studies: Debates and Future Trajectories
KNOW	15.2003	*Tuzin BAYCAN LEVENT, Enno MASUREL and Peter NIJKAMP* (lix): Diversity in Entrepreneurship: Ethnic and Female Roles in Urban Economic Life
KNOW	16.2003	*Alexandra BITUSIKOVA* (lix): Post-Communist City on its Way from Grey to Colourful: The Case Study from Slovakia
KNOW	17.2003	*Billy E. VAUGHN and Katarina MLEKOV* (lix): A Stage Model of Developing an Inclusive Community
KNOW	18.2003	*Selma van LONDEN and Arie de RUIJTER* (lix): Managing Diversity in a Glocalizing World
Coalition Theory Network	19.2003	*Sergio CURRARINI:* On the Stability of Hierarchies in Games with Externalities
PRIV	20.2003	*Giacomo CALZOLARI and Alessandro PAVAN* (lx): Monopoly with Resale
PRIV	21.2003	*Claudio MEZZETTI* (lx): Auction Design with Interdependent Valuations: The Generalized Revelation Principle, Efficiency, Full Surplus Extraction and Information Acquisition
PRIV	22.2003	*Marco LiCalzi and Alessandro PAVAN* (lx): Tilting the Supply Schedule to Enhance Competition in Uniform-Price Auctions
PRIV	23.2003	*David ETTINGER* (lx): Bidding among Friends and Enemies
PRIV	24.2003	*Hannu VARTIAINEN* (lx): Auction Design without Commitment
PRIV	25.2003	*Matti KELOHARJU, Kjell G. NYBORG and Kristian RYDQVIST* (lx): Strategic Behavior and Underpricing in Uniform Price Auctions: Evidence from Finnish Treasury Auctions
PRIV	26.2003	*Christine A. PARLOUR and Uday RAJAN* (lx): Rationing in IPOs
PRIV	27.2003	*Kjell G. NYBORG and Ilya A. STREBULAEV* (lx): Multiple Unit Auctions and Short Squeezes
PRIV	28.2003	*Anders LUNANDER and Jan-Eric NILSSON* (lx): Taking the Lab to the Field: Experimental Tests of Alternative Mechanisms to Procure Multiple Contracts
PRIV	29.2003	*TangaMcDANIEL and Karsten NEUHOFF* (lx): Use of Long-term Auctions for Network Investment
PRIV	30.2003	*Emiel MAASLAND and Sander ONDERSTAL* (lx): Auctions with Financial Externalities
ETA	31.2003	*Michael FINUS and Bianca RUNDSHAGEN:* A Non-cooperative Foundation of Core-Stability in Positive Externality NTU-Coalition Games
KNOW	32.2003	*Michele MORETTO*: Competition and Irreversible Investments under Uncertainty
PRIV	33.2003	*Philippe QUIRION:* Relative Quotas: Correct Answer to Uncertainty or Case of Regulatory Capture?
KNOW	34.2003	*Giuseppe MEDA, Claudio PIGA and Donald SIEGEL*: On the Relationship between R&D and Productivity: A Treatment Effect Analysis
ETA	35.2003	*Alessandra DEL BOCA, Marzio GALEOTTI and Paola ROTA:* Non-convexities in the Adjustment of Different Capital Inputs: A Firm-level Investigation

GG	36.2003	*Matthieu GLACHANT*: Voluntary Agreements under Endogenous Legislative Threats
PRIV	37.2003	*Narjess BOUBAKRI, Jean-Claude COSSET and Omrane GUEDHAMI*: Postprivatization Corporate Governance: the Role of Ownership Structure and Investor Protection
CLIM	38.2003	*Rolf GOLOMBEK and Michael HOEL*: Climate Policy under Technology Spillovers
KNOW	39.2003	*Slim BEN YOUSSEF*: Transboundary Pollution, R&D Spillovers and International Trade
CTN	40.2003	*Carlo CARRARO and Carmen MARCHIORI*: Endogenous Strategic Issue Linkage in International Negotiations
KNOW	41.2003	*Sonia OREFFICE*: Abortion and Female Power in the Household: Evidence from Labor Supply
KNOW	42.2003	*Timo GOESCHL and Timothy SWANSON*: On Biology and Technology: The Economics of Managing Biotechnologies
ETA	43.2003	*Giorgio BUSETTI and Matteo MANERA*: STAR-GARCH Models for Stock Market Interactions in the Pacific Basin Region, Japan and US
CLIM	44.2003	*Katrin MILLOCK and Céline NAUGES*: The French Tax on Air Pollution: Some Preliminary Results on its Effectiveness
PRIV	45.2003	*Bernardo BORTOLOTTI and Paolo PINOTTI*: The Political Economy of Privatization
SIEV	46.2003	*Elbert DIJKGRAAF and Herman R.J. VOLLEBERGH*: Burn or Bury? A Social Cost Comparison of Final Waste Disposal Methods
ETA	47.2003	*Jens HORBACH*: Employment and Innovations in the Environmental Sector: Determinants and Econometrical Results for Germany
CLIM	48.2003	*Lori SNYDER, Nolan MILLER and Robert STAVINS:* The Effects of Environmental Regulation on Technology Diffusion: The Case of Chlorine Manufacturing
CLIM	49.2003	*Lori SNYDER, Robert STAVINS and Alexander F. WAGNER*: Private Options to Use Public Goods. Exploiting Revealed Preferences to Estimate Environmental Benefits
CTN	50.2003	*László Á. KÓCZY and Luc LAUWERS* (lxi): The Minimal Dominant Set is a Non-Empty Core-Extension
CTN	51.2003	*Matthew O. JACKSON* (lxi)*:*Allocation Rules for Network Games
CTN	52.2003	*Ana MAULEON and Vincent VANNETELBOSCH* (lxi): Farsightedness and Cautiousness in Coalition Formation
CTN	53.2003	*Fernando VEGA-REDONDO* (lxi): Building Up Social Capital in a Changing World: a network approach
CTN	54.2003	*Matthew HAAG and Roger LAGUNOFF* (lxi): On the Size and Structure of Group Cooperation
CTN	55.2003	*Taiji FURUSAWA and Hideo KONISHI* (lxi): Free Trade Networks
CTN	56.2003	*Halis Murat YILDIZ* (lxi): National Versus International Mergers and Trade Liberalization
CTN	57.2003	*Santiago RUBIO and Alistair ULPH* (lxi): An Infinite-Horizon Model of Dynamic Membership of International Environmental Agreements
KNOW	58.2003	*Carole MAIGNAN, Dino PINELLI and Gianmarco I.P. OTTAVIANO*: ICT, Clusters and Regional Cohesion: A Summary of Theoretical and Empirical Research
KNOW	59.2003	*Giorgio BELLETTINI and Gianmarco I.P. OTTAVIANO:* Special Interests and Technological Change
ETA	60.2003	*Ronnie SCHÖB:* The Double Dividend Hypothesis of Environmental Taxes: A Survey
CLIM	61.2003	*Michael FINUS, Ekko van IERLAND and Robert DELLINK*: Stability of Climate Coalitions in a Cartel Formation Game
GG	62.2003	*Michael FINUS and Bianca RUNDSHAGEN*: How the Rules of Coalition Formation Affect Stability of International Environmental Agreements
SIEV	63.2003	*Alberto PETRUCCI:* Taxing Land Rent in an Open Economy
CLIM	64.2003	*Joseph E. ALDY, Scott BARRETT and Robert N. STAVINS*: Thirteen Plus One: A Comparison of Global Climate Policy Architectures
SIEV	65.2003	*Edi DEFRANCESCO*: The Beginning of Organic Fish Farming in Italy
SIEV	66.2003	*Klaus CONRAD*: Price Competition and Product Differentiation when Consumers Care for the Environment
SIEV	67.2003	*Paulo A.L.D. NUNES, Luca ROSSETTO, Arianne DE BLAEIJ*: Monetary Value Assessment of Clam Fishing Management Practices in the Venice Lagoon: Results from a Stated Choice Exercise
CLIM	68.2003	*ZhongXiang ZHANG:* Open Trade with the U.S. Without Compromising Canada's Ability to Comply with its Kyoto Target
KNOW	69.2003	*David FRANTZ* (lix): Lorenzo Market between Diversity and Mutation
KNOW	70.2003	*Ercole SORI* (lix): Mapping Diversity in Social History
KNOW	71.2003	*Ljiljana DERU SIMIC* (lxii): What is Specific about Art/Cultural Projects?
KNOW	72.2003	*Natalya V. TARANOVA* (lxii):The Role of the City in Fostering Intergroup Communication in a Multicultural Environment: Saint-Petersburg's Case
KNOW	73.2003	*Kristine CRANE* (lxii)*:* The City as an Arena for the Expression of Multiple Identities in the Age of Globalisation and Migration
KNOW	74.2003	*Kazuma MATOBA* (lxii): Glocal Dialogue- Transformation through Transcultural Communication
KNOW	75.2003	*Catarina REIS OLIVEIRA* (lxii): Immigrants' Entrepreneurial Opportunities: The Case of the Chinese in Portugal
KNOW	76.2003	*Sandra WALLMAN* (lxii): The Diversity of Diversity - towards a typology of urban systems
KNOW	77.2003	*Richard PEARCE* (lxii): A Biologist's View of Individual Cultural Identity for the Study of Cities
KNOW	78.2003	*Vincent MERK* (lxii): Communication Across Cultures: from Cultural Awareness to Reconciliation of the Dilemmas
KNOW	79.2003	*Giorgio BELLETTINI, Carlotta BERTI CERONI and Gianmarco I.P.OTTAVIANO*: Child Labor and Resistance to Change
ETA	80.2003	*Michele MORETTO, Paolo M. PANTEGHINI and Carlo SCARPA*: Investment Size and Firm's Value under Profit Sharing Regulation

IEM	81.2003	*Alessandro LANZA, Matteo MANERA and Massimo GIOVANNINI:* Oil and Product Dynamics in International Petroleum Markets
CLIM	82.2003	*Y. Hossein FARZIN and Jinhua ZHAO*: Pollution Abatement Investment When Firms Lobby Against Environmental Regulation
CLIM	83.2003	*Giuseppe DI VITA*: Is the Discount Rate Relevant in Explaining the Environmental Kuznets Curve?
CLIM	84.2003	*Reyer GERLAGH and Wietze LISE*: Induced Technological Change Under Carbon Taxes
NRM	85.2003	*Rinaldo BRAU, Alessandro LANZA and Francesco PIGLIARU*: How Fast are the Tourism Countries Growing? The cross-country evidence
KNOW	86.2003	*Elena BELLINI, Gianmarco I.P. OTTAVIANO and Dino PINELLI:* The ICT Revolution: opportunities and risks for the Mezzogiorno
SIEV	87.2003	*Lucas BRETSCGHER and Sjak SMULDERS:* Sustainability and Substitution of Exhaustible Natural Resources. How resource prices affect long-term R&D investments
CLIM	88.2003	*Johan EYCKMANS and Michael FINUS:* New Roads to International Environmental Agreements: The Case of Global Warming
CLIM	89.2003	*Marzio GALEOTTI:* Economic Development and Environmental Protection
CLIM	90.2003	*Marzio GALEOTTI*: Environment and Economic Growth: Is Technical Change the Key to Decoupling?
CLIM	91.2003	*Marzio GALEOTTI and Barbara BUCHNER*: Climate Policy and Economic Growth in Developing Countries
IEM	92.2003	*A. MARKANDYA, A. GOLUB and E. STRUKOVA*: The Influence of Climate Change Considerations on Energy Policy: The Case of Russia
ETA	93.2003	*Andrea BELTRATTI*: Socially Responsible Investment in General Equilibrium
CTN	94.2003	*Parkash CHANDER*: The γ-Core and Coalition Formation
IEM	95.2003	*Matteo MANERA and Angelo MARZULLO*: Modelling the Load Curve of Aggregate Electricity Consumption Using Principal Components
IEM	96.2003	*Alessandro LANZA, Matteo MANERA, Margherita GRASSO and Massimo GIOVANNINI:* Long-run Models of Oil Stock Prices
CTN	97.2003	*Steven J. BRAMS, Michael A. JONES, and D. Marc KILGOUR:* Forming Stable Coalitions: The Process Matters
KNOW	98.2003	*John CROWLEY, Marie-Cecile NAVES* (lxiii): Anti-Racist Policies in France. From Ideological and Historical Schemes to Socio-Political Realities
KNOW	99.2003	*Richard THOMPSON FORD* (lxiii): Cultural Rights and Civic Virtue
KNOW	100.2003	*Alaknanda PATEL* (lxiii): Cultural Diversity and Conflict in Multicultural Cities
KNOW	101.2003	*David MAY* (lxiii): The Struggle of Becoming Established in a Deprived Inner-City Neighbourhood
KNOW	102.2003	*Sébastien ARCAND, Danielle JUTEAU, Sirma BILGE, and Francine LEMIRE* (lxiii) : Municipal Reform on the Island of Montreal: Tensions Between Two Majority Groups in a Multicultural City
CLIM	103.2003	*Barbara BUCHNER and Carlo CARRARO:* China and the Evolution of the Present Climate Regime
CLIM	104.2003	*Barbara BUCHNER and Carlo CARRARO*: Emissions Trading Regimes and Incentives to Participate in International Climate Agreements
CLIM	105.2003	*Anil MARKANDYA and Dirk T.G. RÜBBELKE:* Ancillary Benefits of Climate Policy
NRM	106.2003	*Anne Sophie CRÉPIN (*lxiv*):* Management Challenges for Multiple-Species Boreal Forests
NRM	107.2003	*Anne Sophie CRÉPIN* (lxiv)*:* Threshold Effects in Coral Reef Fisheries
SIEV	108.2003	*Sara ANIYAR (* lxiv): Estimating the Value of Oil Capital in a Small Open Economy: The Venezuela's Example
SIEV	109.2003	*Kenneth ARROW, Partha DASGUPTA and Karl-Göran MÄLER(*lxiv*):* Evaluating Projects and Assessing Sustainable Development in Imperfect Economies
NRM	110.2003	*Anastasios XEPAPADEAS and Catarina ROSETA-PALMA(*lxiv*):* Instabilities and Robust Control in Fisheries
NRM	111.2003	*Charles PERRINGS and Brian WALKER* (lxiv): Conservation and Optimal Use of Rangelands
ETA	112.2003	*Jack GOODY* (lxiv): Globalisation, Population and Ecology
CTN	113.2003	*Carlo CARRARO, Carmen MARCHIORI and Sonia OREFFICE*: Endogenous Minimum Participation in International Environmental Treaties
CTN	114.2003	*Guillaume HAERINGER and Myrna WOODERS*: Decentralized Job Matching
CTN	115.2003	*Hideo KONISHI and M. Utku UNVER*: Credible Group Stability in Multi-Partner Matching Problems
CTN	116.2003	*Somdeb LAHIRI*: Stable Matchings for the Room-Mates Problem
CTN	117.2003	*Somdeb LAHIRI*: Stable Matchings for a Generalized Marriage Problem
CTN	118.2003	*Marita LAUKKANEN*: Transboundary Fisheries Management under Implementation Uncertainty
CTN	119.2003	*Edward CARTWRIGHT and Myrna WOODERS*: Social Conformity and Bounded Rationality in Arbitrary Games with Incomplete Information: Some First Results
CTN	120.2003	*Gianluigi VERNASCA*: Dynamic Price Competition with Price Adjustment Costs and Product Differentiation
CTN	121.2003	*Myrna WOODERS, Edward CARTWRIGHT and Reinhard SELTEN*: Social Conformity in Games with Many Players
CTN	122.2003	*Edward CARTWRIGHT and Myrna WOODERS*: On Equilibrium in Pure Strategies in Games with Many Players
CTN	123.2003	*Edward CARTWRIGHT and Myrna WOODERS*: Conformity and Bounded Rationality in Games with Many Players
	1000	**Carlo CARRARO, Alessandro LANZA and Valeria PAPPONETTI: One Thousand Working Papers**

NOTE DI LAVORO PUBLISHED IN 2004

IEM	1.2004	*Anil MARKANDYA, Suzette PEDROSO and Alexander GOLUB*: Empirical Analysis of National Income and So2 Emissions in Selected European Countries
ETA	2.2004	*Masahisa FUJITA and Shlomo WEBER:* Strategic Immigration Policies and Welfare in Heterogeneous Countries
PRA	3.2004	*Adolfo DI CARLUCCIO, Giovanni FERRI, Cecilia FRALE and Ottavio RICCHI:* Do Privatizations Boost Household Shareholding? Evidence from Italy
ETA	4.2004	*Victor GINSBURGH and Shlomo WEBER:* Languages Disenfranchisement in the European Union
ETA	5.2004	*Romano PIRAS:* Growth, Congestion of Public Goods, and Second-Best Optimal Policy
CCMP	6.2004	*Herman R.J. VOLLEBERGH:* Lessons from the Polder: Is Dutch CO2-Taxation Optimal
PRA	7.2004	*Sandro BRUSCO, Giuseppe LOPOMO and S. VISWANATHAN* (lxv): Merger Mechanisms
PRA	8.2004	*Wolfgang AUSSENEGG, Pegaret PICHLER and Alex STOMPER* (lxv): IPO Pricing with Bookbuilding, and a When-Issued Market
PRA	9.2004	*Pegaret PICHLER and Alex STOMPER* (lxv): Primary Market Design: Direct Mechanisms and Markets
PRA	10.2004	*Florian ENGLMAIER, Pablo GUILLEN, Loreto LLORENTE, Sander ONDERSTAL and Rupert SAUSGRUBER* (lxv): The Chopstick Auction: A Study of the Exposure Problem in Multi-Unit Auctions
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
PRA	12.2004	*Ohad KADAN* (lxv): Equilibrium in the Two Player, k-Double Auction with Affiliated Private Values
PRA	13.2004	*Maarten C.W. JANSSEN* (lxv): Auctions as Coordination Devices
PRA	14.2004	*Gadi FIBICH, Arieh GAVIOUS and Aner SELA* (lxv): All-Pay Auctions with Weakly Risk-Averse Buyers
PRA	15.2004	*Orly SADE, Charles SCHNITZLEIN and Jaime F. ZENDER* (lxv): Competition and Cooperation in Divisible Good Auctions: An Experimental Examination
PRA	16.2004	*Marta STRYSZOWSKA* (lxv): Late and Multiple Bidding in Competing Second Price Internet Auctions
CCMP	17.2004	*Slim Ben YOUSSEF:* R&D in Cleaner Technology and International Trade
NRM	18.2004	*Angelo ANTOCI, Simone BORGHESI and Paolo RUSSU* (lxvi): Biodiversity and Economic Growth: Stabilization Versus Preservation of the Ecological Dynamics
SIEV	19.2004	*Anna ALBERINI, Paolo ROSATO, Alberto LONGO and Valentina ZANATTA:* Information and Willingness to Pay in a Contingent Valuation Study: The Value of S. Erasmo in the Lagoon of Venice
NRM	20.2004	*Guido CANDELA and Roberto CELLINI* (lxvii): Investment in Tourism Market: A Dynamic Model of Differentiated Oligopoly
NRM	21.2004	*Jacqueline M. HAMILTON* (lxvii): Climate and the Destination Choice of German Tourists
NRM	22.2004	*Javier Rey-MAQUIEIRA PALMER, Javier LOZANO IBÁÑEZ and Carlos Mario GÓMEZ GÓMEZ* (lxvii): Land, Environmental Externalities and Tourism Development
NRM	23.2004	*Pius ODUNGA and Henk FOLMER* (lxvii): Profiling Tourists for Balanced Utilization of Tourism-Based Resources in Kenya
NRM	24.2004	*Jean-Jacques NOWAK, Mondher SAHLI and Pasquale M. SGRO* (lxvii):Tourism, Trade and Domestic Welfare
NRM	25.2004	*Riaz SHAREEF* (lxvii): Country Risk Ratings of Small Island Tourism Economies
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
NRM	27.2004	*Raúl Hernández MARTÍN* (lxvii): Impact of Tourism Consumption on GDP. The Role of Imports
CSRM	28.2004	*Nicoletta FERRO:* Cross-Country Ethical Dilemmas in Business: A Descriptive Framework
NRM	29.2004	*Marian WEBER* (lxvi): Assessing the Effectiveness of Tradable Landuse Rights for Biodiversity Conservation: an Application to Canada's Boreal Mixedwood Forest
NRM	30.2004	*Trond BJORNDAL, Phoebe KOUNDOURI and Sean PASCOE* (lxvi): Output Substitution in Multi-Species Trawl Fisheries: Implications for Quota Setting
CCMP	31.2004	*Marzio GALEOTTI, Alessandra GORIA, Paolo MOMBRINI and Evi SPANTIDAKI:* Weather Impacts on Natural, Social and Economic Systems (WISE) Part I: Sectoral Analysis of Climate Impacts in Italy
CCMP	32.2004	*Marzio GALEOTTI, Alessandra GORIA ,Paolo MOMBRINI and Evi SPANTIDAKI:* Weather Impacts on Natural, Social and Economic Systems (WISE) Part II: Individual Perception of Climate Extremes in Italy
CTN	33.2004	*Wilson PEREZ:* Divide and Conquer: Noisy Communication in Networks, Power, and Wealth Distribution
KTHC	34.2004	*Gianmarco I.P. OTTAVIANO and Giovanni PERI* (lxviii): The Economic Value of Cultural Diversity: Evidence from US Cities
KTHC	35.2004	*Linda CHAIB* (lxviii): Immigration and Local Urban Participatory Democracy: A Boston-Paris Comparison
KTHC	36.2004	*Franca ECKERT COEN and Claudio ROSSI* (lxviii): Foreigners, Immigrants, Host Cities: The Policies of Multi-Ethnicity in Rome. Reading Governance in a Local Context
KTHC	37.2004	*Kristine CRANE* (lxviii): Governing Migration: Immigrant Groups' Strategies in Three Italian Cities – Rome, Naples and Bari
KTHC	38.2004	*Kiflemariam HAMDE* (lxviii): Mind in Africa, Body in Europe: The Struggle for Maintaining and Transforming Cultural Identity - A Note from the Experience of Eritrean Immigrants in Stockholm
ETA	39.2004	*Alberto CAVALIERE:* Price Competition with Information Disparities in a Vertically Differentiated Duopoly
PRA	40.2004	*Andrea BIGANO and Stef PROOST:* The Opening of the European Electricity Market and Environmental Policy: Does the Degree of Competition Matter?
CCMP	41.2004	*Micheal FINUS* (lxix): International Cooperation to Resolve International Pollution Problems
KTHC	42.2004	*Francesco CRESPI:* Notes on the Determinants of Innovation: A Multi-Perspective Analysis

CTN	43.2004	*Sergio CURRARINI and Marco MARINI:* Coalition Formation in Games without Synergies
CTN	44.2004	*Marc ESCRIHUELA-VILLAR:* Cartel Sustainability and Cartel Stability
NRM	45.2004	*Sebastian BERVOETS and Nicolas GRAVEL* (lxvi): Appraising Diversity with an Ordinal Notion of Similarity: An Axiomatic Approach
NRM	46.2004	*Signe ANTHON and Bo JELLESMARK THORSEN* (lxvi): Optimal Afforestation Contracts with Asymmetric Information on Private Environmental Benefits
NRM	47.2004	*John MBURU* (lxvi)*:* Wildlife Conservation and Management in Kenya: Towards a Co-management Approach
NRM	48.2004	*Ekin BIROL, Ágnes GYOVAI and Melinda SMALE* (lxvi)*:* Using a Choice Experiment to Value Agricultural Biodiversity on Hungarian Small Farms: Agri-Environmental Policies in a Transition al Economy
CCMP	49.2004	*Gernot KLEPPER and Sonja PETERSON:* The EU Emissions Trading Scheme. Allowance Prices, Trade Flows, Competitiveness Effects
GG	50.2004	*Scott BARRETT and Michael HOEL:* Optimal Disease Eradication
CTN	51.2004	*Dinko DIMITROV, Peter BORM, Ruud HENDRICKX and Shao CHIN SUNG:* Simple Priorities and Core Stability in Hedonic Games
SIEV	52.2004	*Francesco RICCI*: Channels of Transmission of Environmental Policy to Economic Growth: A Survey of the Theory
SIEV	53.2004	*Anna ALBERINI, Maureen CROPPER, Alan KRUPNICK and Nathalie B. SIMON:* Willingness to Pay for Mortality Risk Reductions: Does Latency Matter?
NRM	54.2004	*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
NRM	55.2004	*Timo GOESCHL and Tun LIN* (lxvi): Biodiversity Conservation on Private Lands: Information Problems and Regulatory Choices
NRM	56.2004	*Tom DEDEURWAERDERE* (lxvi): Bioprospection: From the Economics of Contracts to Reflexive Governance
CCMP	57.2004	*Katrin REHDANZ and David MADDISON:* The Amenity Value of Climate to German Households
CCMP	58.2004	*Koen SMEKENS and Bob VAN DER ZWAAN:* Environmental Externalities of Geological Carbon Sequestration Effects on Energy Scenarios
NRM	59.2004	*Valentina BOSETTI, Mariaester CASSINELLI and Alessandro LANZA* (lxvii): Using Data Envelopment Analysis to Evaluate Environmentally Conscious Tourism Management
NRM	60.2004	*Timo GOESCHL and Danilo CAMARGO IGLIORI* (lxvi):Property Rights Conservation and Development: An Analysis of Extractive Reserves in the Brazilian Amazon
CCMP	61.2004	*Barbara BUCHNER and Carlo CARRARO*: Economic and Environmental Effectiveness of a Technology-based Climate Protocol
NRM	62.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Resource-Abundance and Economic Growth in the U.S.
NRM	63.2004	*Györgyi BELA, György PATAKI, Melinda SMALE and Mariann HAJDÚ* (lxvi): Conserving Crop Genetic Resources on Smallholder Farms in Hungary: Institutional Analysis
NRM	64.2004	*E.C.M. RUIJGROK and E.E.M. NILLESEN* (lxvi): The Socio-Economic Value of Natural Riverbanks in the Netherlands
NRM	65.2004	*E.C.M. RUIJGROK* (lxvi): Reducing Acidification: The Benefits of Increased Nature Quality. Investigating the Possibilities of the Contingent Valuation Method
ETA	66.2004	*Giannis VARDAS and Anastasios XEPAPADEAS*: Uncertainty Aversion, Robust Control and Asset Holdings
GG	67.2004	*Anastasios XEPAPADEAS and Constadina PASSA*: Participation in and Compliance with Public Voluntary Environmental Programs: An Evolutionary Approach
GG	68.2004	*Michael FINUS*: Modesty Pays: Sometimes!
NRM	69.2004	*Trond BJØRNDAL and Ana BRASÃO*: The Northern Atlantic Bluefin Tuna Fisheries: Management and Policy Implications
CTN	70.2004	*Alejandro CAPARRÓS, Abdelhakim HAMMOUDI and Tarik TAZDAÏT*: On Coalition Formation with Heterogeneous Agents
IEM	71.2004	*Massimo GIOVANNINI, Margherita GRASSO, Alessandro LANZA and Matteo MANERA*: Conditional Correlations in the Returns on Oil Companies Stock Prices and Their Determinants
IEM	72.2004	*Alessandro LANZA, Matteo MANERA and Michael MCALEER*: Modelling Dynamic Conditional Correlations in WTI Oil Forward and Futures Returns
SIEV	73.2004	*Margarita 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	76.2004	*Salvador BARBERÀ and Matthew O. JACKSON* (lxx): On the Weights of Nations: Assigning Voting Weights in a Heterogeneous Union
CTN	77.2004	*Àlex ARENAS, Antonio CABRALES, Albert DÍAZ-GUILERA, Roger GUIMERÀ and Fernando VEGA-REDONDO* (lxx): Optimal Information Transmission in Organizations: Search and Congestion
CTN	78.2004	*Francis BLOCH and Armando GOMES* (lxx): Contracting with Externalities and Outside Options
CTN	79.2004	*Rabah AMIR, Effrosyni DIAMANTOUDI and Licun XUE* (lxx): Merger Performance under Uncertain Efficiency Gains
CTN	80.2004	*Francis BLOCH and Matthew O. JACKSON* (lxx): The Formation of Networks with Transfers among Players
CTN	81.2004	*Daniel DIERMEIER, Hülya ERASLAN and Antonio MERLO* (lxx): Bicameralism and Government Formation

CTN	82.2004	*Rod GARRATT, James E. PARCO, Cheng-ZHONG QIN and Amnon RAPOPORT* (lxx): Potential Maximization and Coalition Government Formation
CTN	83.2004	*Kfir ELIAZ, Debraj RAY and Ronny RAZIN* (lxx): Group Decision-Making in the Shadow of Disagreement
CTN	84.2004	*Sanjeev GOYAL, Marco van der LEIJ and José Luis MORAGA-GONZÁLEZ* (lxx): Economics: An Emerging Small World?
CTN	85.2004	*Edward CARTWRIGHT* (lxx): Learning to Play Approximate Nash Equilibria in Games with Many Players
IEM	86.2004	*Finn R. FØRSUND and Michael HOEL*: Properties of a Non-Competitive Electricity Market Dominated by Hydroelectric Power
KTHC	87.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Natural Resources, Investment and Long-Term Income
CCMP	88.2004	*Marzio GALEOTTI and Claudia KEMFERT*: Interactions between Climate and Trade Policies: A Survey
IEM	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* (lxv): 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 GATTO*: Agglomeration, Integration, and Territorial Authority Scale in a System of Trading Cities. Centralisation versus devolution
CCMP	94.2004	*Pierre-André JOUVET, 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
CCMP	96.2004	*Francesco BOSELLO, Marco LAZZARIN, Roberto ROSON and Richard S.J. TOL*: Economy-Wide Estimates of the Implications of Climate Change: Sea Level Rise
CTN	97.2004	*Gustavo BERGANTIÑOS 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 NIJKAMP*: Willingness to Pay for Agricultural Environmental Safety: Evidence from a Survey of Milan, Italy, Residents
SIEV	101.2004	*Chiara M. TRAVISI, Raymond J. G. M. FLORAX and Peter NIJKAMP*: A Meta-Analysis of the Willingness to Pay for Reductions in Pesticide Risk Exposure
NRM	102.2004	*Valentina 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	104.2004	*Massimo FLORIO and Mara GRASSENI*: The Missing Shock: The Macroeconomic Impact of British Privatisation
PRA	105.2004	*John BENNETT, Saul ESTRIN, James MAW and Giovanni URGA*: Privatisation Methods and Economic Growth in Transition Economies
PRA	106.2004	*Kira BÖRNER*: The Political Economy of Privatization: Why Do Governments Want Reforms?
PRA	107.2004	*Pehr-Johan NORBÄCK 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	*Paulo 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
IEM	116.2004	*Valeria COSTANTINI and Francesco GRACCEVA:* Social Costs of Energy Disruptions
IEM	117.2004	*Christian EGENHOFER, Kyriakos GIALOGLOU, Giacomo LUCIANI, Maroeska BOOTS, Martin SCHEEPERS, Valeria COSTANTINI, Francesco GRACCEVA, Anil MARKANDYA and Giorgio VICINI*: Market-Based Options for Security of Energy Supply
IEM	118.2004	*David FISK*: Transport Energy Security. The Unseen Risk?
IEM	119.2004	*Giacomo LUCIANI*: Security of Supply for Natural Gas Markets. What is it and What is it not?
IEM	120.2004	*L.J. de VRIES and R.A. HAKVOORT*: The Question of Generation Adequacy in Liberalised Electricity Markets
KTHC	121.2004	*Alberto PETRUCCI*: Asset Accumulation, Fertility Choice and Nondegenerate Dynamics in a Small Open Economy
NRM	122.2004	*Carlo GIUPPONI, Jaroslaw MYSIAK and Anita FASSIO*: An Integrated Assessment Framework for Water Resources Management: A DSS Tool and a Pilot Study Application
NRM	123.2004	*Margaretha BREIL, Anita FASSIO, Carlo GIUPPONI and Paolo ROSATO*: Evaluation of Urban Improvement on the Islands of the Venice Lagoon: A Spatially-Distributed Hedonic-Hierarchical Approach

ETA	124.2004	*Paul MENSINK*: Instant Efficient Pollution Abatement Under Non-Linear Taxation and Asymmetric Information: The Differential Tax Revisited
NRM	125.2004	*Mauro FABIANO, Gabriella CAMARSA, Rosanna DURSI, Roberta IVALDI, Valentina MARIN and Francesca PALMISANI*: Integrated Environmental Study for Beach Management:A Methodological Approach
PRA	126.2004	*Irena GROSFELD and Iraj HASHI*: The Emergence of Large Shareholders in Mass Privatized Firms: Evidence from Poland and the Czech Republic
CCMP	127.2004	*Maria BERRITTELLA, Andrea BIGANO, Roberto ROSON and Richard S.J. TOL*: A General Equilibrium Analysis of Climate Change Impacts on Tourism
CCMP	128.2004	*Reyer GERLAGH*: A Climate-Change Policy Induced Shift from Innovations in Energy Production to Energy Savings
NRM	129.2004	*Elissaios PAPYRAKIS and Reyer GERLAGH*: Natural Resources, Innovation, and Growth
PRA	130.2004	*Bernardo BORTOLOTTI and Mara FACCIO*: Reluctant Privatization
SIEV	131.2004	*Riccardo SCARPA and Mara THIENE*: Destination Choice Models for Rock Climbing in the Northeast Alps: A Latent-Class Approach Based on Intensity of Participation
SIEV	132.2004	*Riccardo SCARPA Kenneth G. WILLIS and Melinda ACUTT*: Comparing Individual-Specific Benefit Estimates for Public Goods: Finite Versus Continuous Mixing in Logit Models
IEM	133.2004	*Santiago J. RUBIO*: On Capturing Oil Rents with a National Excise Tax Revisited
ETA	134.2004	*Ascensión ANDINA DÍAZ*: Political Competition when Media Create Candidates' Charisma

(lix) This paper was presented at the ENGIME Workshop on “Mapping Diversity”, Leuven, May 16-17, 2002
(lx) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications”, organised by the Fondazione Eni Enrico Mattei, Milan, September 26-28, 2002
(lxi) This paper was presented at the Eighth Meeting of the Coalition Theory Network organised by the GREQAM, Aix-en-Provence, France, January 24-25, 2003
(lxii) This paper was presented at the ENGIME Workshop on “Communication across Cultures in Multicultural Cities”, The Hague, November 7-8, 2002
(lxiii) This paper was presented at the ENGIME Workshop on “Social dynamics and conflicts in multicultural cities”, Milan, March 20-21, 2003
(lxiv) This paper was presented at the International Conference on “Theoretical Topics in Ecological Economics”, organised by the Abdus Salam International Centre for Theoretical Physics - ICTP, the Beijer International Institute of Ecological Economics, and Fondazione Eni Enrico Mattei – FEEM Trieste, February 10-21, 2003
(lxv) This paper was presented at the EuroConference on “Auctions and Market Design: Theory, Evidence and Applications” organised by Fondazione Eni Enrico Mattei and sponsored by the EU, Milan, September 25-27, 2003
(lxvi) This paper has been presented at the 4th BioEcon Workshop on “Economic Analysis of Policies for Biodiversity Conservation” organised on behalf of the BIOECON Network by Fondazione Eni Enrico Mattei, Venice International University (VIU) and University College London (UCL) , Venice, August 28-29, 2003
(lxvii) This paper has been presented at the international conference on “Tourism and Sustainable Economic Development – Macro and Micro Economic Issues” jointly organised by CRENoS (Università di Cagliari e Sassari, Italy) and Fondazione Eni Enrico Mattei, and supported by the World Bank, Sardinia, September 19-20, 2003
(lxviii) This paper was presented at the ENGIME Workshop on “Governance and Policies in Multicultural Cities”, Rome, June 5-6, 2003
(lxix) This paper was presented at the Fourth EEP Plenary Workshop and EEP Conference “The Future of Climate Policy”, Cagliari, Italy, 27-28 March 2003
(lxx) This paper was presented at the 9th Coalition Theory Workshop on "Collective Decisions and Institutional Design" organised by the Universitat Autònoma de Barcelona and held in Barcelona, Spain, January 30-31, 2004

2003 SERIES	
CLIM	*Climate Change Modelling and Policy* (Editor: Marzio Galeotti)
GG	*Global Governance* (Editor: Carlo Carraro*)*
SIEV	*Sustainability Indicators and Environmental Valuation* (Editor: Anna Alberini)
NRM	*Natural Resources Management* (Editor: Carlo Giupponi)
KNOW	*Knowledge, Technology, Human Capital* (Editor: Gianmarco Ottaviano)
IEM	*International Energy Markets* (Editor: Anil Markandya)
CSRM	*Corporate Social Responsibility and Management* (Editor: Sabina Ratti)
PRIV	*Privatisation, Regulation, Antitrust* (Editor: Bernardo Bortolotti)
ETA	*Economic Theory and Applications* (Editor: Carlo Carraro)
CTN	*Coalition Theory Network*

2004 SERIES	
CCMP	*Climate Change Modelling and Policy* (Editor: Marzio Galeotti)
GG	*Global Governance* (Editor: Carlo Carraro*)*
SIEV	*Sustainability Indicators and Environmental Valuation* (Editor: Anna Alberini)
NRM	*Natural Resources Management* (Editor: Carlo Giupponi)
KTHC	*Knowledge, Technology, Human Capital* (Editor: Gianmarco Ottaviano)
IEM	*International Energy Markets* (Editor: Anil Markandya)
CSRM	*Corporate Social Responsibility and Management* (Editor: Sabina Ratti)
PRA	*Privatisation, Regulation, Antitrust* (Editor: Bernardo Bortolotti)
ETA	*Economic Theory and Applications* (Editor: Carlo Carraro)
CTN	*Coalition Theory Network*