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Introduction

This thesis has been inspired by my interest in studying political institutions, how they work, their failures and interaction with demographic and economic features of the society.

It is composed by three independent chapters, among which the first and the third are maybe the most related ones; they both analyze the effect of diversity on media independency and political campaigns respectively. As long as heterogeneous preferences reflect socio-demographic features of the population, these studies appear to be relevant to modern societies more and more characterized by high levels of diversity. The second chapter studies an Italian case and shows the negative effect of large amount of public spending on organized crime activities. This analysis is important for all the countries dealing with the presence of criminal organizations. In what follows I provide a brief description of each chapter separately. In the first chapter, as in Besley and Prat (2005), media are captured whenever the government bribes them for hiding news which potentially threaten his reelection. My aim is to study how heterogeneity in consumers' preferences for media outlets can shape the structure of the media market, in turn affecting the extent to which media can be captured. I distinguish between "hard" ethno-linguistic differences and "soft" hedonic differences among consumers. My model shows that when consumers are separated by strong linguistic or cultural barriers, a politician is able to gain political support by bribing only a subset of newspapers; by contrast, when consumers' heterogeneity is hedonic, he needs to bribe a large number of outlets, rendering the enterprise more difficult. However social cohesiveness of groups (e.g. word of mouth communication) can mitigate the negative effect of segmentation. These results imply that standard indexes of market structure may say little about the extent of media freedom since different sources of media pluralism may have opposite implications for the ability of politicians to in-

fluence citizens' information. Additionally I show how the interplay between social and market features affects media independency. Overall this analysis can shed light on the possibility for the media sector to foster the quality of politics especially in developing countries, where cultural and ethnic polarization play a key role.

Second chapter explores the relation between public spending and organized crime activity. Public transfers from central governments are widely used policy tools aimed at promoting economic development. We argue that large amounts of public transfers can have the opposite effect to the one desired. By providing politicians and entrepreneurs with higher incentives to engage in rent seeking practices, they can lead to an increase in illegal activities. Preliminary results we obtain from a panel dataset of the provinces of central Italy for the period 1993 - 2003 show a positive association between the increase in public spending and the spread of organized crime. We find no evidence of a similar relationship between public spending and other kinds of violent crimes. These results suggest that Mafia activity takes place wherever economic opportunities arise.

In the third chapter I focus on the nature of political campaigns, a topic almost disregarded by political economists. The content of political platforms plays an important role in dividing voters and determines the relevant dimensions of conflict in a society. There is an interesting pattern in politics showing that campaigns which used to be dominated by socio-economic issues are now focusing on other issues such as religion, moral values, ethnicity or the environment. The purpose of the model I develop, is to explain the presence of certain issues in electoral campaigns and more broadly in the political arena. In my setup issues differ in their *divisiveness*, to be defined as the extent to which members within a coalition disagree. Political candidates face a trade-off; they can either choose *unifying* issues which strengthen their own (but eventually also their opponent) constituency or *divisive* issues which weaken the opponent (but eventually also their own) supporters. In a basic model of agenda setting (part 1), I show that the presence of the first and the second type of issues mainly depends on the distribution of voters preferences in the population. The main results are that when political race is more competitive: 1) the agenda setter raises divisive issues whenever the heterogeneity in his coalition is lower than the opponent one; 2) voters welfare can decrease when *divisive* issues instead of *unifying* issues are raised. In the last section I describe future directions of this research; in particular, I want to introduce competition,

through strategic interaction between parties. This will render the theoretical framework more applicable to electoral campaigns. Moreover I would like to explore behavioral aspects of voting choices. This would help to explain intriguing phenomena observed in campaigns such as priming and framing.

Chapter 1

Diversity and Media Capture

¹I am grateful to Alberto Alesina, Eliana La Ferrara, Nicola Gennaioli, Andreas Hefti, Matthias Messner, Michele Polo, Guido Tabellini and audiences at the 6th Workshop on Media Economics at Zurich University, Bocconi and Collegio Carlo Alberto PhD Workshop, EDGE Jamboree in Copenhagen and Bocconi Development reading group, for very helpful comments. **Keywords:** Media, Corruption, Ethnolinguistic Fragmentation, Word of Mouth Communication. **JEL:** D72, D83, L82

1.1 Introduction

Nowadays the media represent a very important instrument through which citizens can monitor politicians' behavior and the functioning of other institutions, such as the judicial or the financial system. Viewing the one between voters and their representatives as a principal agent relation, the availability of unbiased information gives to the agents the incentive to well behave. On the contrary if the agents are able to manipulate the news about their own conduct, the asymmetry of information increases the scope for moral hazard practices. Therefore media providing hard news play a crucial role in fostering the quality of politics. There is a large debate on which features of the media market can guarantee freedom and independence of the information; the ones most emphasized by antitrust agencies and economic literature have been ownership structure and pluralism. My study links to this debate pointing out that standard indexes of market structure such as the number of outlets supplied and their concentration may say little about the extent of media freedom since different sources of media pluralism may have opposite implications for the ability of politicians to influence citizens' information. Moreover other social elements, such as the extent of word of mouth communication among individuals, need to be considered. In my analysis, as in Besley and Prat (2005), media are captured when the politician bribes them in exchange for favorable information or silence. My goal is to analyze how heterogeneity in consumers' preferences for media outlets can shape the structure of the media market, in turn affecting the extent to which media can be captured by politicians. I distinguish between "hard" ethno-linguistic differences and "soft" hedonic differences among consumers. The first type of heterogeneity is due to strong cultural and linguistic barriers which separate consumers such that each outlet has to specialize choosing to target a specific ethno linguistic group. This leads to a segmented market where readers buy only from a restricted sample of the outlets. The second type of heterogeneity is hedonic and regards the main issue covered by a newspaper; within the same language group, some consumers may prefer to read about sport, others about politics or fashion and so on. This feature of consumers preferences generates a horizontal differentiated market; the more heterogeneous and distant are individuals' preferences along this dimension, the higher the number of outlets willing to enter that market. In a market segmented along the linguistic dimension, a high hedonic heterogeneity among consumers translates in having more

outlets targeting each linguistic group. I analyze these two sources of pluralism for the media market demonstrating that they have opposite effects on media freedom. The main result of my analysis is that ethno linguistic fragmentation tends to foster media capture, while hedonic heterogeneity tends to reduce it. The intuition behind this result is that when consumers are separated by linguistic or cultural barriers, they cannot obtain information from each others' news outlet. Thus by bribing only a subset of few newspapers, politicians are able to gain political support. By contrast, when consumers' heterogeneity is hedonic, a large number of media outlets is supplied in equilibrium. However, since under this second type of heterogeneity consumers can freely acquire information from any outlet, a politician will need to bribe a very large number of outlets to gain political support, rendering the enterprise more difficult. In addition I introduce another relevant dimension, the level of word of mouth communication among individuals both within and between different communities. This element will be loosely also called social cohesiveness or social capital. I will show that in fractionalized environments the presence of social cohesiveness between communities is necessary to observe media freedom. Furthermore if social cohesiveness is high only within communities it might actually exacerbate the negative effect of fragmentation. I will start my analysis without considering communication across communities, assuming that individuals cannot overcome linguistic barriers speaking a different language. I later generalize the model allowing a fraction of individuals to communicate with members of other groups, inducing information sharing across groups. I will show that the presence of these "skilled" individuals mitigate the adverse effect of segmentation.

This paper relates to the growing body of literature on media which, on one hand, focuses on the effects of media on social and political outcomes, on the other, analyzes the determinants of media bias. In the first strand one can mention Besley and Burgess (2002) and Stromberg (2004) which focus on the role of media in taking politicians accountable. The former study uses a panel data from India, showing that the government increases public food distribution and relief funds in states where newspaper's circulation is higher; instead Stromberg finds that in 1930's the US countries with more radio listeners have been the ones that received more New Deal Funds. Regarding the effects of mass media on voters' political decisions and attitudes, Della Vigna and Kaplan (2006) analyze the impact of entry of Fox news in cable markets on voting behavior; using a data set on voting for US towns they find that Republicans gained

from 0,4 to 0,7 percentage points in towns which broadcast Fox News; Gerber et al. (2006) conduct a randomized control trial just prior to the November 2005 gubernatorial election in Virginia in which the control group was represented by individuals that received a free subscription to the Washington Post, while individuals in the treatment group received a free subscription to the Washington Times. They find that individuals assigned to the Washington Post were eight percentage points more likely to vote for the Democrat in the 2005 election, while individuals assigned to the New York Times, were only four percentage points more likely to vote for the Democrat. Others studies stressed the social outcomes of mass media; Gentzkow and Shapiro (2006) analyzed the effect on children's school performance, Olken (2006) on adult participation in social activities and trust, La Ferrara et al (2008) found that in Brazil women exposed to soap operas decreased their fertility rate. Finally, Jensen and Oster (2007) estimate the impact of cable TV on female autonomy, school enrollment and fertility. This work is closely related to the literature on media bias that can be divided in two streams; the first focusing on a demand driven bias, the second on a supply driven bias. Gentzkow and Shapiro (2007) measured media bias looking at similarities between the language used by media outlets and congressmen and find that the bias of newspapers depends mainly on consumers ideological position and less on the identity of owners. Also Mullainathan and Shleifer (2005) identify the origin of bias in the demand side, arguing that it is driven by consumers prior beliefs. Instead others stress a supply driven bias as Larcinese et al. (2007) who investigate the correlation between the endorsement policy of newspapers, and the differential coverage of bad/good economic news as a function of the president's political affiliation. They find suggestive evidence that outlets with pro-Democratic endorsement give more coverage to high unemployment when the incumbent president is a Republican than when the president is a Democrat, compared to newspapers with pro-Republican endorsement pattern, furthermore this result is not driven by the partisanship of readers. Besley and Pratt (2005) belong to the second stream; they build a model of media ownership and political capture, where media capture arises endogenously. Their main findings are that media pluralism and independent ownership reduce capture and that media capture negatively affects some political outcomes such as political turnover. My paper can be considered lying in between these two lines of research; on one hand I consider a supply driven bias, since it originates from the politician; on the other hand, the likelihood of media capture turns out to depend on features of consumers preferences,

i.e. on the demand side. The novelty of my paper is that I derive the equilibrium outcomes of the media market making explicit assumptions on consumers preferences; this helps to distinguish between the effect of different sources of pluralism and generates a non trivial relationship between media capture and pluralism, defined as the total number of outlets in the market. Moreover I introduce an important dimension, namely information diffusion through word of mouth. This new element provides insights on the role of social capital and its interaction with standard "market" dimensions, on explaining the level of media independence. My analysis sheds light on the positive role of communication between individuals of different language and of soft heterogeneity in consumers preferences. Since hedonic heterogeneity can be referred not only to preferences over issues (sports, nature, culture) but also to consumers' ideological positions, my model would predict a higher media freedom if the population has highly heterogeneous political preferences. This paper offers important empirical predictions on the relationship between total number of outlets and media capture. Consistent with the conclusion of Besley and Prat, it is widely accepted the fact that having more media outlets can guarantee media freedom. My analysis implies that this is not always the case; in particular, different sources of pluralism might have opposite effects on press freedom and it is crucial to consider also the role of "social" dimensions. For example in fragmented countries pluralism can be considered a good indicator of press freedom only in the presence of high social cohesiveness across communities.

Overall this analysis offers important policy implications and sheds light on the possibility for the media sector to foster the quality of politics in countries where cultural and ethnic polarization play a key role; this turns to be relevant not only in developing countries but also in environments characterized by a high level of immigration, as US, where the presence of a large number of ethnic communities remarkably boosted the entry of new outlets (see Waldfoegel on ethnically differentiated newspapers in US). The paper will continue as it follows; in the next section I will briefly discuss some examples which motivate this research. In the third section I present the theoretical framework and I determine the equilibrium media capture. Fourth section provides an extension that allows the presence of a group of "skilled" individuals able to overcome linguistic barriers. In the fifth section I conclude.

1.2 Motivating Examples

The following anecdotal evidence demonstrates how competition in the media sector can be a poor indicator of media independency. Despite this section does not represent an accurate test of the theoretical framework, it helps to understand why it is relevant to study deeper the role of competition. Indeed I consider four developing countries characterized by high ethnolinguistic fragmentation which display a large number of active media outlets but at the same time a low level of press freedom. In my view this is due to the combination of two factors; fragmentation and lack of social cohesiveness among different linguistic groups.

Cameroon is characterized by an extremely high index of ethnolinguistic fragmentation (ELF=0.8). Since the end of 90s, president Biya has encouraged the establishment of local ethnic based media. Currently radio coverage extends to about 80% of the country, while television covers 60% of the territory and there are several active newspapers. Notwithstanding the scope to manipulate information for subgroups of the population has increased. Indeed several international agencies have reported that government closely monitors local media. The press in Cameroon is declared not free and occupies the 143rd position in the 2009 Freedom House ranking.

In Uganda there are around 56 language spoken and it is the most fractionalized country in Africa (ELF=0.93). President Museveni has promoted the liberalization of the media sector since the second half of the 80s. At the moment around thirty newspapers and fourty between radio and TV stations are operating in the country. Also in Uganda the liberalization appears to have been used by the regime to influence regional papers written in local languages. Indeed Monroe Price (2001) reports: " Some of the rural populations, especially in the north and the east, have been traditionally antagonistic toward the central government and the intention is that, through a careful use of local print media, popular opinions can be formulated and channeled to the advantage of the regime". Uganda still holds the 109th position in Freedom House ranking.

The last case I want to mention is India which is characterized by high ethnolinguistic fragmentation with more than 400 languages spoken. The country is the second largest market in the world for newspapers (more than four thousands daylies in 100 different languages!). Despite the impressive dimension

of the media sector, India holds the 76th position in the Freedom House ranking and is classified only partly free. Actually several anecdotes testify how local newspapers are captured by the government or by rebel groups, e.g. ULFA in Assam region.

These evidence is consistent with the argument developed in the paper; rendering entry profitable, linguistic fragmentation, boosts the number of outlets in the media market. However, if word of mouth communication (e.g. social cohesiveness) is low among different linguistic communities, the scope for bribing the media increases for a politician. This would explain the emergence of an unconventional negative relation between pluralism and media independency.

1.3 The Model

My analysis is divided in two parts; first I analyze the media sector using a standard horizontal differentiation model a la Salop; here, I determine how soft and hard heterogeneous consumers' preferences for media outlets shape the market structure. In the second part I describe the political setup; through a simple model of moral hazard I will study the politician incentives to misbehave and to capture the media. Then I derive the reservation utility of the outlets, i.e. the amount they have to be offered to accept to hide the news. This helps to pin down the conditions under which media capture is likely to arise.

Assumptions

In this economy there is a population normalized to one, which is divided into N separated ethno linguistic groups. Each of them has different culture, religion and above all a different language. The population of each group j is uniformly distributed around a unitary perimeter circle city with density $\mu_j \in (0, 1)$. For simplicity let $\mu_j = \mu, \forall j, s.t. \mu = \frac{1}{N}$. This restriction is useful for computations but it is not necessary for the results. Each city is targeted by a certain number of media outlets which are the only source of information available to consumers. All the outlets share the same information so that no outlet has a privileged access to news. Moreover, for simplicity, information cannot be bias such that no newspaper can misrepresent or falsify it. The hypothesis of perfect segmentation implies that consumers

in a group are not able to overcome the linguistic barriers therefore they are able to read and speak only in their own language. In each group individuals can communicate between them such that any piece of information available to one individual might become common knowledge. Therefore individuals can be informed either by reading a newspaper or by speaking to their "neighbor". I model the diffusion of information within the group in the following way. Let $I_{ij} \in \{0, 1\}$ be the information individual i in group j , gets reading a newspaper, where $I_{ij} = 1$ means that the newspaper reports a bad news (it is informative) about the politician, while $I_{ij} = 0$, means the news is not reported. Moreover let $I \in \{0, 1\}$, be the level of information available in the group, with:

$$I = \begin{cases} 0 & I_{ij} = 0, \forall i \in j \\ \text{if} & \\ 1 & I_{ij} = 1, \text{ for at least one } i \in j \end{cases}$$

i.e., the level of information available in the group will be equal to 1 if at least one consumer has access to an informative newspaper.

In equilibrium the level of information of individual i in group j is the following:

$$I_{ij}^* = I_{ij} + d(s_c, sh_I) (I - I_{ij}) \quad (1.1)$$

where $d(s_c, sh_I)$ defined over $[0, 1]$ is the information diffusion function in group j , $s_c \in [0, 1]$ is the level of social capital and sh_I is the share of informative outlets. The function can be interpreted as the probability that individual i becomes informed communicating with others. Since both higher available informative outlets and social capital fuel information sharing within a group, I simply assume $d(s_c, sh_I) = s_c \times sh_I$, be a linear and strictly increasing function in both arguments. I also assume that information spreads among individuals located at most at a distance D . Since I consider unitary circle groups, this implies that the necessary condition for information diffusion in a group is $D = 1/2$. I introduce a model of electoral accountability in which citizens can discipline the politician through a backward-looking voting behavior. The incumbent politician objective is to maximize rents from office, R , so he only cares about reelection. The voters monitor the politician by reading newspapers and

decide whether to keep him in office. There is a proportional electoral system, therefore the politician is reelected if he gets the votes of at least half of the population. Everyone is risk neutral. To model the media market I follow the standard analysis of spatial differentiation "on the circle" *a la* Salop ('79), adding segmentation due to ethno linguistic fragmentation. In my setup I interpret the N ethnic groups as N different circle cities having unitary perimeter each.

Consumers distribute themselves among the N circle cities and around each are located at different places. This can be interpreted as consumers having heterogenous hedonic preferences which lie on a continuum. This model studies entry and location when there are no barriers to entry other than fixed costs. The newspapers produced in each ethnic group are n . Each outlet produces only one good. There is free entry and each potential commodity requires a fixed set-up cost f and a constant marginal cost c . Let me restate how the information diffusion works; the outlets differentiate themselves with respect to the main issue they cover (sport, economics, fashion, gossip) but they all provide truthful information about the politician conduct. Newsprints share the same information, i.e. they have the same technology and the same sources to get the news, so at the beginning of the period they all know the actual behaviour of the politician. Consumers enjoy utility B from information. The outlets perfectly compete among themselves for the provision of information. Since its production cost is normalized to zero, firms charge a price equal to zero for the news and make consumers only paying for the differentiated component of the good. There is a large number of identical potential firms. The firms also are located around each circle, can choose only one location and no location is a priori better than another. Consumers wish to buy one unit of the good and have a unit transportation cost s . In the preferences interpretation they incur in a utility loss from not consuming their preferred commodity. They are willing to buy as long as the generalized cost does not exceed the utility they obtain from the good $\bar{u} + B$.

The firm profit is: $\bar{\pi} = (p_i - c)D_i - f$ if it enters and $\bar{\pi} = 0$ otherwise. I assume for simplicity that potential entrants are not able to anticipate the occurrence of media capture so they decide whether to enter or not disregarding potential politician's bribes.

Timing

The timing of the events is as follows:

1. Letting n be the number of entering firms, in the first period (t_0), potential entrants simultaneously choose whether or not to enter.
2. In the second period entering firms compete in prices.
3. In the third period (t_2) the incumbent can decide to steal or not to steal an amount S of money. If he steals, the judiciary punishes him with probability $(1 - p)$;
4. In t_3 the incumbent decides whether to hide the news bribing the media or not; if he decides to hide the news he makes an offer b_i to each outlet i .
5. In t_4 outlet i observes b_i and decides whether to accept or reject it. If it accepts, it does not publish the news and receives b_i . If it rejects, it reports the fact.
6. In the last period (t_5) voters buy newspapers. Elections are held in which voters choose between the incumbent and an identical opponent. Notice that citizens will punish the official ex post, voting for the opponent, only if they learn he misbehaved during his mandate.

1.3.1 Equilibrium in the Media Sector

Firms are located equidistant from one another and maximal differentiation is exogenously imposed. Given the assumption of free entry, the equilibrium profit of entering firms is zero. To solve the problem we should; 1) determine the Nash equilibrium in prices for any number of firms and calculate the profit functions and 2) determine the Nash equilibrium in the entry game. Let me solve the problem for a firm located in the representative city j .

Equilibrium in price

Assume that n firms entered the market. They are located symmetrically so it is reasonable to look at an equilibrium in which all charge the same price p . Firm i has only two competitors, the two surrounding it. Suppose it chooses price p_i . A consumer located at the distance $x_i \in (0, \frac{1}{n})$ from firm i is willing to purchase from firm i rather than from i 's closest neighbor if:

$$p_i + sx \leq p + s\left(\frac{1}{n} - x\right) \quad (1.2)$$

Calling $x^* \equiv \frac{p + \frac{s}{n} - p_i}{2s}$ and remembering that the density of consumers in circle j is μ_j we can determine the demand function solving:

$$D_i(p_i, p) = 2 \int_0^{x^*} f(x) dx = \frac{p + \frac{s}{n} - p_i}{s} \mu \quad (1.3)$$

Firm i faces demand: $D_i(p_i, p) = 2x = \frac{p + \frac{s}{n} - p_i}{s} \times \mu$, thus, firm i will solve:

$$\underset{p_i}{Max} \left[(p_i - c) \left(\frac{p + \frac{s}{n} - p_i}{s} \times \mu \right) - f \right] \quad (1.4)$$

Differentiating with respect to p_i and then setting $p_i = p$ gives: $p = c + \frac{s}{n}$

Equilibrium in the number of entrants

From the zero profit condition for the existing firms we can obtain the number of firms in equilibrium:

$$(p - c) \frac{1}{n} \times \mu - f = \frac{s}{n^2} \times \mu - f = 0 \quad (1.5)$$

The equilibrium prices and number of firms for each group in equilibrium are:

$$p_j^* = c + \sqrt{\frac{sf}{\mu}} \quad (1.6)$$

and

$$n_j^* = \sqrt{\frac{\mu}{f}} \times s \quad (1.7)$$

Firms' entry decision turns out to depend on the scope for both economies of scale ($\frac{\mu}{f}$) and differentiation (s); as the fixed costs increase relative to market size (μ), the number of equilibrium entrants decreases while, *ceteris paribus*, a lower substitutability rate between the outlets leads to an increase in the number of entrants since the firms have more opportunity to differentiate. It is important to notice that in equilibrium must be:

$$n_j^* \geq 1 \quad (1.8)$$

Or using (7):

$$N \leq \frac{s}{f} \quad (1.9)$$

If this expression is not satisfied it means that no outlet will enter to target the group; in other words this implies that groups could remain "naturally" uninformed. The elements that render this situation more likely are: i) high substitutability rate between outlets, that is a lower hedonic heterogeneity of consumers, ii) high fix set up costs and iii) low level of fragmentation. As before, this is due to the presence of economies of scale; since there are fix set up costs an increase in market size increases the market share available for each firm entering the group. This implies that if a population is extremely fragmented it is more likely to observe completely uninformed groups since they are easily above the previous threshold. The following result provides an important implication:

Lemma 1 *Whenever (9) is satisfied, i.e. $1 \leq N \leq \frac{s}{f}$, an increase in segmentation increases the total number of outlets entering the market. Let n_{TOT}^* be the equilibrium number of outlets in the whole market, then:*

$$\frac{\partial n_{TOT}^*}{\partial N} > 0$$

This result implies that if consumers are sufficiently hedonically heterogeneous, an increase in ethnic fragmentation, leads more firms to enter the market. In turn, as we will clarify, this has important implications for the equilibrium level of media capture. In equilibrium also the following condition must hold:

$$p^* + \frac{s}{2n^*} < \bar{u} + B \quad (1.10)$$

i.e. the consumer furthest from a store, having to travel a distance of $\frac{1}{2n^*}$, receives a positive net surplus consuming the good.

1.3.2 Political Equilibrium

The politician has to decide whether to affect voters' decision by capturing the media. In this way he could hide his bad conduct and steal without being punished by the voters. Let C, NC indicate corrupted and not corrupted media, while S, NS stand for to steal and not to steal. By backward induction we can determine whether in t_2 the incumbent, anticipating population's voting behavior, decides to steal or not. This decision is closely related to the one about capturing or not media outlets, which affects voters' response. The politician expected payoffs in the first period are:

- i) $E(NC|S) = p \times S$
- ii) $E(NC|NS) = R$
- iii) $E(C|S) = p(S + R) - C$
- iv) $E(C|NS) = R - C$

where R are the rents for staying in office and C is the cost of bribing the media. In order to be reelected under a proportional electoral system, the politician needs the vote of at least half of the population.

To describe voters behavior let pr_i be the probability of individual i to vote for the incumbent, then:

$$pr_i = \begin{cases} 1 & \text{if } I^J, I_{i_j} = 0 \\ 0 & \text{if } I_{i_j} = 1 \\ 1 - d(s_c, sh_I) & \text{if } I_{i_j} = 0, I^J = d(s_c, sh_I) \end{cases}$$

If the incumbent steals, individual i reappoints him only if $I_{i_j}^* = 0$ (he did not learn the truth). If the voter reads an informative newspaper $pr_i = 0$, while if he only communicates with other group members he votes for the incumbent with $pr_i = 1 - d(s_c, sh_I)$ (i.e. the probability he does not get the information). The relevant decision to study is whether the politician silences the information in t_3 once he misbehaved in the third period. According to a standard rational choice approach, the politician decides whether to bribe or not the media whenever the profit of bribing is greater than or equal to zero. Comparing previous payoffs, I can introduce the following result:

Proposition 2 *The politician steals and captures the media whenever:*

$$C \leq pR \tag{1.11}$$

Notice that the threshold is increasing in p and R . Intuitively, rents from office increase the likelihood of media capture; in countries where rents from office are higher, corrupted politicians face a greater incentive to exert pressure on the media in order to maintain the power. On the other hand, the more efficient is the judiciary system (p low), the smaller is the politicians incentive to steal and silence the media. In the next section I will determine the cost of media capture C , analyzing how it is affected by our variables of interest. The following analysis helps us to find out under which conditions the incumbent is succesful in bribing the media and as a consequence media capture is observed in equilibrium.

1.3.3 Equilibrium Media Capture I

We have seen that within a group, information spreads through newspapers or communication among individuals. If no outlet reports the fact, no piece of information can be transmitted across individuals ($I = 0$) and the whole group remains uninformed. On the other hand, if at least one outlet is informative ($I = 1$), the information spreads within the group with probability $d(s_c, sh_I)$, departing from the full informed individual i , who reads the newspaper ($I_{ij} = 1$). The equilibrium level of information for all other individuals in the group would be:

$$I_j = d(s_c, sh_I)$$

Recall that $d(s_c, sh_I) = s_c \times sh_I$, with $sh_I = \frac{n^I}{n^*}$, where n^I are the informative outlets and n^* is the total number of newspapers in group j . Overall the politician needs a vote share of $\frac{1}{2}$ for reelection. For simplicity I analyze the equilibrium media capture when the politician decides to seek the support of half of the groups, bribing all the outlets targeting them. In this case he should bribe all the outlets targeting $\frac{N}{2}$ groups, namely $n^U = \frac{1}{2} \sqrt{\frac{sN}{f}}$, where n^U indicates the total number of uninformative outlets. The cost of a single bribe b_i corresponds to the reservation utility of each outlet; in order to accept the politician's offer, the outlet has to be compensated for the profit he would earn publishing the news. Let this profit be π_i . It can be shown that ¹:

Proposition 3 *The politician offers a bribe $b_i = \pi_i$ to each outlet i in group j , where:*

$$\pi_i = B \left(1 - s_c \sqrt{\frac{Nf}{s}} \right) \sqrt{\frac{f}{sN}}$$

It follows that, in order to be reelected, the incumbent has to pay a total bribe, $TC = n^U \times \pi_i$.

¹All proofs are in the Appendix

Then the following propositions hold:

Proposition 4 *In case of bribing, when the politician decides to seek the political support of half of the groups, he needs to pay a total bribe TC , s.t.:*

$$TC = \frac{B}{2} \left(1 - s_c \sqrt{\frac{Nf}{s}} \right) \quad (1.12)$$

Proposition 5 *Media capture will arise in equilibrium whenever:*

$$\frac{B}{2} \left(1 - s_c \sqrt{\frac{Nf}{s}} \right) \leq pR \quad (1.13)$$

Discussion

These equilibrium conditions give several insights on the interaction between market and "social" variables. Notice that the cost of media capture is strictly increasing in our measure of hedonic heterogeneity. On the other hand, fragmentation and the level of social capital always render cheaper for the politician to bribe the media. The negative role of social capital relies on a free riding argument; when communication between individuals is widespread, consumers have a high probability to get informed not only reading the newspaper but also speaking with others. Therefore even if an outlet is the only source of information in a certain group, it can charge his readers with a low price. As a consequence a politician would need to pay a lower bribe to silence the newspaper. Hedonic heterogeneity of consumers has a clear negative effect on media capture. This is channeled through the equilibrium number of firms and prices; given a certain market size, a lower substitutability rate (higher s) between the outlets, leads to a higher equilibrium price. This in turn increases the potential profit margin for each firm such that more firms enter in equilibrium. Ceteris paribus, the politician has to bribe more outlets active in a certain group and we can conclude that higher hedonic heterogeneity reduces the scope for media capture. This source of pluralism always turns out to be good for press freedom and captures the usual positive effect of pluralism on media independence, emphasized in the literature and in the competition policy debate. The number of groups N , to be interpreted as ethnic fragmentation, increases media capture. Ceteris paribus,

whenever $N > 1$, the politician needs to silence a smaller number of firms, facing a lower cost of bribing. This is due to the fact that information can be diffused within a group but cannot be transmitted across groups. Taking into account previous results we can derive a non trivial positive association between pluralism in the media market and media capture. In particular:

Proposition 6 *If $N \leq \frac{s}{f}$, an increase in market segmentation (i.e. ethnic heterogeneity) increases the total number of outlets in the market (pluralism), but at the same time it leads to higher media capture.*

The above threshold is the condition to have at least one outlet entering the market, therefore as one observes a positive number of outlets, it is surely satisfied. The proposition implies that whenever fragmentation does not deter entry, it increases the equilibrium number of active newspapers in the market. Nonetheless we have seen that it decreases the cost of capturing. This result has an important empirical implication, namely, the level of pluralism can be misleading as a measure of media freedom. Indeed imagine two otherwise identical countries A and B , except for the level of segmentation; zero in the first and positive in the second. Then one would observe higher pluralism in the second country but also a higher level of media capture. This implies that in assessing the degree of media independence, regulatory authorities should take into account other features of the market than pluralism, such as segmentation and taste heterogeneity. From a normative standpoint this means that having more outlets overall and implementing policies aimed at increasing the pluralism, it is not necessarily desirable. Particularly, if the market is segmented such policies might fail to enhance media freedom. Instead we should distinguish between positive and negative sources of pluralism, undertaking different actions to address them. Until now I have assumed strong linguistic barriers such that information could be transmitted only within groups; in the next section I will relax this assumption showing how information transmission across groups can actually mitigate the negative effect of fragmentation.

1.4 Communication Across Groups

In this section I relax the hypothesis of perfect separation between groups, pursuing a generalization of the previous setup. All the former assumptions still hold with the exception that now I allow a portion α of individuals to be able to communicate with members of other ethnolinguistic groups. The members of this group can be thought as "skilled" open minded voters. Assume that in each group there are $\frac{\alpha}{N}$ mobile individuals. As before, any piece of information available to one of these mobile individuals, becomes available to the others with a certain probability which depends on α . In particular the equilibrium level of information of individual i in group j , is the following:

$$I_{i_j}^* = I_{i_j} + d(s_c, sh_I) (I^j - I_{i_j}) + d(s_{cg}, sh_{I_\alpha}) (I^\alpha - I_{i_j}) \quad (1.14)$$

with:

$$d(s_{cg}, sh_{I_\alpha}) = \begin{cases} 0 & \text{if } i \notin \alpha \\ \alpha s_{cg} sh_{I_\alpha} & \text{if } i \in \alpha \end{cases}$$

where I_{i_j} is the information individual i gets reading his favourite newspaper, I^j is the level of information available in group j with $I^j = 1$ if at least one outlet is informative in j , and I^α is the level of information available among mobile consumers. Notice that $I^\alpha = 1$, implies that for at least one mobile individual information is available at his group level. Moreover $d(s_{cg}, sh_{I_\alpha})$ is the information diffusion function of the skilled consumers, where s_{cg} , the generalized social capital, measures the degree of communication between individuals of different groups (also referred to as social capital "at the country level"). This function is strictly increasing in α , such that a larger mobile group, increases the probability of information diffusion across communities. Besides, sh_{I_α} represents the total share of informative outlets available for the mobile individuals. Let me make an example to describe the role of the mobile group in spreading information. Assume that in group j the newspapers are all silenced ($I^j = 0$), then if in at least one group z information is available ($I^z = 1$), the mobile voters in z spread it in the mobile group

($I^\alpha = 1$), such that any individual $i \in \alpha$ in group j , becomes informed with probability $d(s_{cg}, sh_{I^\alpha})$. The implications of this mechanism for media capture are quite obvious; as I will show, a higher fraction α in the population renders media capture more expensive for the politician. Essentially the presence of the mobile group mitigate the negative effect of segmentation since now the politician has to silence more than half of the groups. In this framework, the presence of individuals able to overcome the linguistic barriers does not affect the media market but only the equilibrium media capture. In particular I will not consider the case in which newspapers compete for mobile individuals from different ethnic groups. Here I am implicitly assuming that also skilled readers face an infinite cost of switching to a newspaper targeting another language group.

1.4.1 Equilibrium Media Capture II

I follow the same logic as before to determine the equilibrium. Now the individual i 's voting behavior can be described as the following:

$$\begin{array}{rcc}
 & 1 & I^j, I^\alpha = 0, \forall i \\
 & 0 & I_{i_j} = 1, \forall i \\
 pr_i = & 1 - d(s_c, sh_I) & \text{if } I_{i_j} = 0, I^j = 1, i \notin \alpha \\
 & 1 - [d(s_c, sh_I) + d(s_{cg}, sh_I)] & I^j, I^\alpha = 1, I_{i_j} = 0, i \in \alpha \\
 & 1 - d(s_{cg}, sh_I) & I_{i_j} = 0, I^j = 0, I^\alpha = 1, i \in \alpha
 \end{array}$$

where pr_i is the probability of voting for the incumbent. Under this scenario, if voter $i \in \alpha$, he has another source of information, namely the skilled individuals from other groups. If all the outlets in j are silenced, voter i has still a probability of $d(s_{cg}, sh_I)$ to know about the politician misconduct and to deny its vote. In case politician misbehaved, in order to be sure of reelection he has to keep uninformed N^{**} groups such that his reelection probability is $\geq \frac{1}{2}$. Recall that in the previous section it was $N^* = \frac{N}{2}$.

Using the same logic as before, we obtain that²:

Proposition 7 *In order to be reelected the politician needs to keep silenced all the outlets targeting N^{**} groups, where:*

$$N^{**} = \frac{N\sqrt{1 + (s_{cg}\alpha)^2} - (1 - s_{cg})}{2s_{cg}\alpha} \quad (1.15)$$

Moreover:

$$N^{**} > N^*, \forall s_{cg}\alpha > 0 \quad (1.16)$$

This result is very intuitive; when individuals of different groups can speak among themselves ($s_{cg} > 0$), a bad news about the politician can reach groups in which no outlet is informative. This happens with a certain probability which increases with α , the fraction of skilled individuals in the population. As a consequence the politician has to keep uninformed more groups than before to face the same probability of reelection. In this case the following proposition holds:

Proposition 8 *The politician offers a bribe $b'_i = \pi'_i$ to each outlet i in group j , such that:*

$$\pi'_i = B \left(1 - s_c \sqrt{\frac{Nf}{s}} - \frac{N \left(2\alpha s_{cg} - \sqrt{1 + (\alpha s_{cg})^2} \right) + 1 + \alpha s_{cg}}{2N} \right)$$

In order to be reelected, the incumbent has to pay a total bribe equal to: $TC' = N^{**} \times \pi'_i$. Moreover it can be shown that:

$$\begin{aligned} \frac{\partial N^{**}}{\partial \alpha s_{cg}} &> 0 \\ \frac{\partial \pi'_i}{\partial \alpha s_{cg}} &< 0 \end{aligned} \quad (1.17)$$

Notice that an easier information transmission across groups has two opposite effects. On one hand it makes media capture easier, which as before, is due to a free riding argument; now skilled individuals have a chance to get the information even when all the outlets targeting their group are silenced, therefore

²All proofs are in the Appendix

a newspaper that publishes the news, cannot fix a high price. This decreases the cost of capture for the politician. On the other hand, the higher the communication among groups, the larger the number of groups the politician has to keep silenced in order to be reelected. The value of the parameters determines which of the two effects dominates. The hedonic heterogeneity of consumers, as before, negatively affects the likelihood of media capture. Instead segmentation, if sufficiently high, continues to render media capture more likely, despite now the negative effect of segmentation is made less severe by the presence of information transmission across groups. This implies that proposition (6) continues to be valid. This is an additional warning for regulatory authorities since also in countries where the fraction of α is high, the pluralism indicator might overestimate the level of media freedom. Comparing the two cases, with and without communication across groups, the following result can be established:

Proposition 9 *If there is positive information transmission across groups in the population, the total cost of capture is higher whenever: $\alpha s_{cg} \lesssim 0.6$*

These results tell us that in ethnically diverse countries, media independency can be promoted implementing policies aimed at increasing the degree of integration between different communities. I want to remark the different role played by the two types of social capital, the one at the community level and the one at the country level, namely among distinct linguistic groups. The former renders media capture more viable for the incumbent; indeed, despite making communities more cohesive, it favors a free riding behavior by individuals. The latter instead, lowers ethnolinguistic barriers between individuals making communities less isolated such that media capture becomes expensive for the politician; in the extreme case, where communities are completely integrated and information diffusion among them is perfect, the politician would need to silence all the outlets active in the market. This model provides several empirical predictions on the effects of competition and word of mouth communication on media independency. In particular it highlights the complementarity between competition and social capital. We have seen that competition *per se* is not necessarily conducive to media freedom; first, in countries where pluralism in the media market is high and the population is ethnically fragmented, one should observe independent media only if the population is integrated, namely, individuals of different groups communicate among themselves; second, even in absence of fragmentation, pluralism promotes media freedom if there is some

information transmission among individuals, in other words the society is sufficiently cohesive. These predictions seem to be consistent with the examples described previously; fragmented countries where different communities are only internally cohesive displays a low degree of press freedom, despite a large number of active media in the market.

1.5 Conclusions

This paper has developed a framework in which to analyze the occurrence of media capture. I focused on three elements that in my opinion are crucial in determining media capture; social capital both at a country and at community level, hedonic heterogeneity and ethno linguistic fragmentation of the population. The second is a feature of consumers' utility implying different individual preferences on the main issue covered by newspapers which leads to a horizontal differentiated market and in turn rises the number of media outlets supplied in equilibrium. Under this type of heterogeneity a politician needs to bribe a very large number of outlets to gain political support. This analysis highlights that it is relevant to understand the determinants of hedonic heterogeneity; education and income might be two plausible candidates. The third element I focus on, is ethno linguistic fragmentation which generates a segmented market. On this respect I derived a non trivial positive relationship between media capture and the level of pluralism induced by fragmentation of the population. Indeed, on one hand, a larger number of groups increases the number of total newspapers in the market rendering capture more expensive for the politician; on the other hand, when consumers are separated by strong linguistic or cultural barriers, they cannot obtain information communicating among each others. As a result, by influencing only a subset of few newspapers, politicians are able to obtain a sufficient number of votes for reelection. Since both hedonic heterogeneity and ethnic fragmentation represent a source of pluralism, this analysis can provide interesting empirical predictions on the relationship between an economy's total number of firms and media capture; I argue that it might be misleading to compare the degree of pluralism in media market in different countries in order to establish the quality of the press. This result has clear implications for regulatory policies of media market; in particular, standard indexes of market structure such as the number of outlets supplied and their concentration may say little about the extent of media freedom

since different sources of media pluralism may have opposite implications for the ability of politicians to influence citizens' information. This is consistent with the anecdotal evidence I provided showing how independency of the media can be negatively associated to the level of pluralism. From a normative standpoint it would be desirable to implement policies affecting other features of the media market: for example in highly fragmented environments, it might be helpful to implement policies aimed at encouraging the entry of local newspapers. This could be achieved decreasing the fixed set up costs in the media market but also increasing readers heterogeneity of tastes, for example through their level of education. The model provides a strong support for education policies in fragmented countries; we have seen that a higher fraction of "skilled" individuals can mitigate the negative effect of linguistic and cultural barriers, rendering information diffusion more likely across groups. The extent of information diffusion depends on social cohesiveness across groups which is likely to increase with cultural features such as participation and trust. This would imply *ceteris paribus*, a negative association between the level of trust at the country level and corruption, which indeed has been empirically found. As future directions, it might be interesting to extend the model: a) allowing the politician to corrupt also the judicial system to understand to which extent different forms of corruption are complements or substitutes, b) exploring how different electoral systems / forms of government would affect the main results, for example comparing proportional versus majoritarian or centralized versus decentralized systems. Overall, I think that this project can shed light on the possibility for the media sector to foster the quality of politics especially in developing countries, where cultural and ethnic polarization play a key role.

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Appendix

Proofs of Propositions (3) - (5)

Derivation of b_i , i.e. outlet i reservation utility in case of bribing.

In equilibrium all the outlets targeting half of the groups need to be silenced. Assume that one deviates and decides to publish the news. Which is the price the informative outlet could charge to his consumers? Consumers value information B . If a consumer does not buy the informative newspaper he would become informed only through communication with other readers, so with a probability:

$$p_I = d(s_c, sh_I) = s_c \sqrt{\frac{fN}{s}}$$

The price that informative outlet could charge to each of his readers would be:

$$p_i = B \left(1 - s_c \sqrt{\frac{fN}{s}} \right)$$

As a consequence the profit outlet i would earn publishing the news is: $\pi_i = p_i \times D_i$, where D_i is i 's demand. This is exactly the bribe the politician should offer to each outlet, such that: $b_i = p_i \times D_i$.

Using the previous result it is straightforward to derive the total cost of capture. In order to gain reelection, the politician needs to silence a total number of outlets, $n^U = \frac{1}{2} \sqrt{\frac{sN}{f}}$.

Then the total cost of capture will be: $TC = b_i \times n^U$. And after substituting for b_i , we obtain:

$$TC = B \left(1 - s_c \sqrt{\frac{fN}{s}} \right)$$

Proof of Propositions (7) and (8)

Derivation of N^{**} , i.e. the number of groups that politician needs to keep completely uninformed to obtain reelection.

Let $N^I = \frac{N - N^{**}}{N}$ be the number of groups left completely informed. Now we can easily derive the condition for N^{**} under which the politician obtains the majority of the votes:

$$N^{**} \left[1 - \alpha s_{cg} \frac{N - N^{**}}{N} \right] \geq \frac{N}{2} \quad (1.18)$$

Solving for N^{**} we obtain:

$$N^{**} = \frac{N \sqrt{1 + (s_{cg}\alpha)^2} - (1 - s_{cg})}{2s_{cg}\alpha}$$

Derivation of b'_i , i.e. outlet i reservation utility when communication across groups is allowed. Using the same logic as before we can pin down the price that an informative outlet could charge to his consumers. Now if a consumer j does not buy the informative newspaper he could become informed through communication with other readers of the same group or of different groups, so with a probability:

$$p_{Ij} = \begin{cases} d(s_c, sh_I) & j \notin \alpha \\ d(s_c, sh_I) + d(s_{cg}, sh_I) & j \in \alpha \end{cases}$$

Hence the price that an informative outlet could charge to each of his readers would be:

$$p'_i = \frac{\alpha}{N} d(s_c, sh_I) + \frac{1 - \alpha}{N} d(s_{cg}, sh_I)$$

Substituting we find:

$$p'_i = B \left(1 - s_c \sqrt{\frac{fN}{s}} + \frac{1 - 3s_{cg}\alpha - N \sqrt{1 + (s_{cg}\alpha)^2}}{2N} \right)$$

As a consequence the profit that outlet i would earn publishing the news, so the bribe the politician should offer to each outlet is: $\pi'_i = b'_i = p'_i \times D_i$, where D_i is i 's demand. Using the expression for N^{**} found before, it is easy to derive the total cost of capture. This will be:

$$TC' = b'_i \times n^U = \frac{N^{**}}{N} p'_i$$

Chapter 2

Public Spending and Organized Crime: the Case of the 1997 Marche and Umbria Earthquake

“Everything comes from the cement” , by writer
R. Saviano in Gomorra

“More than 20% of Mafia profit comes from public investments” , by the judge Giovanni Falcone in
Cose di Cosa Nostra

¹This chapter is coauthored with my colleague Massimiliano Onorato and it is part of a joint project with R. Perotti and G. Tabellini. We are grateful to Federico Faccioli, Ludovica Gazzè and Enrico Mallucci for research assistance and to T. Nannicini for sharing data on Italian municipalities’ public spending. Financial support from Bocconi University is gratefully acknowledged. We also wish to thank the Italian Ministry of Economic Development for financial support in the early stage of the project. **Keywords:** organized crime, public transfers, rent-seeking, political economy. **JEL:** H300, H540, K000, K420

2.1 Introduction

The persistence of organized crime is a feature of most southern Italian regions. Criminal organizations such as the Mafia, Camorra and 'Ndragheta have systematically grown over the last fifty years and massively entered the political and economic environment. This, arguably, is one of the reasons for the social and economic backwardness of the South of Italy. In this paper we focus on the role of public spending to explain the level of criminal activity. Transfers from higher levels of government can increase the incentives for politicians, public officials and entrepreneurs to engage in rent seeking activities. Competition for rents can also assume legal forms, but under some circumstances, it can take the form of bribery, corruption, extortion, black markets and, therefore, promote criminal activity. Since public transfers are a key policy instrument in fighting underdevelopment it is crucial to analyze their effect on political and economic outcomes. It is very difficult, though, to provide a systematic assessment of the impact of public transfers on different measures of criminal performance, since they are endogenous and rarely randomly distributed. To address this issue we use the earthquake that affected two regions, Marche and Umbria, in the Center of Italy in order to identify exogenous variation in public spending. Anecdotal evidence suggests that in southern Italy, public transfers from the central government triggered the collusion between politicians and organized crime or entrepreneurs. Documents from official Commissions of the Italian Parliament report the infiltration of organized crime in certain areas of the South after the inflow of money for reconstruction in aftermath of the 1980 Irpinia earthquake (see, also, Barbagallo, 1999). In the case of Marche and Umbria, the question we ask is: did the six billion euro that flooded a region of 820.000 inhabitants increase the scope for rent seeking and foster organized crime's activities? The earthquake which hit Umbria and Marche on September 26, 1997 was particularly violent, reaching a magnitude of nine degrees on the Mercalli scale. The whole region was, indeed, declared damaged. There is some anecdotal evidence given by the population, reporting observable changes since 1997 in everyday life such as increasing fights, arsons and bombing attempts ("Dossier Umbria", Libera 2008). In fact, in February of 2008 a special unit of Carabinieri, R.O.S., imprisoned, as a precautionary measure, 57 people charged of affiliation to the Mafia, grand larceny, extortions and other offenses. The inquiry documented an association between the "Casalesi", a clan of the Camorra, and the Morabito - Palmara - Bruzzaniti, a clan of the 'Ndragheta, that operate jointly in several of Umbria's economic sectors, particularly in

housing and construction. These families are suspected to exert their influence in public procurement contracts and public auctions. Additional evidence, directly related to our findings, describes the role that the organized crime played in Umbria's reconstruction phase. Several confessions made by Mafiosi turned into informants and investigations done by the Sicilian and Umbria judiciary, reported the willingness of Mafia bosses, as Provenzano and Lo Piccolo, to establish their illegal activities in Umbria. In 2000 and in 2007 respectively, three entrepreneurs operating in the Umbria building sector were arrested and incriminated of several offences as among others, affiliation to the Mafia, arsons, extortions, manipulation of public contract and money laundering. According to the inquiry, they established enterprises in Umbria right after the earthquake and took part in the reconstruction on behalf of Brancaccio and Lo Piccolo clan. In fact, this is consistent with a statement of Baldassarre di Maggio, ex mafioso, describing the mafia's role in organizing bid rigging in construction: "we kept 5%; 3% was for the Mafia, and 2% was for a middle man entrepreneur to pay the politicians as part of the overall agreement". In line with this evidence, we view the Mafia as a type of entrepreneur (see, for instance, Arlacchi, 2007) ready to move where profitable economic opportunities arise. Since the Mafia is considered to be specialized in building activity, we expect it to respond more to opportunities in this sector. Preliminary results we have obtained so far by using a panel data set of the regions of the Center of Italy for the period 1993 – 2003, show a positive association between public spending in construction and the activities of organized crime. This result is robust to the inclusion of time varying covariates such as unemployment, income and educational attainment rates. The same exercises produce no correlation between public spending and violent crime activity. These results are consistent with our a priori expectations that the relevant flow of public capital in the earthquake's aftermath have represented a big economic resource that several actors started to compete for. As a further step we intend to use corruption data to address the relationship between the Mafia and the political sector, and to collect data on the efficiency of judicial institutions since the quality of the judiciary affects the extent to which public spending can foster criminal activities.

This paper is related to two strands of literature. The first one explores the link between targeted public funds from the central government and the increase in rent seeking practices. A large debate has focused on the effects of public transfers on several political and economic outcomes. Tanzi and Davoodi (2007) present cross country evidence showing a positive correlation between corruption and public invest-

ment. They also find that higher corruption leads to a lower quality of public infrastructure and reduces the productivity of public investments. Public financing can be particularly harmful in countries with high corruption and weak institutional controls. With a more specific focus on the theory of rent seeking, Murphy et al. (1991) show how an increase in the number of rent seekers, lowering returns to both rent seeking and entrepreneurship, can crowd out entrepreneurship and induce more people to engage in rent seeking. Assuming increasing returns for rent seeking, they identify a mechanism which can explain its high self sustaining levels. For this reason some countries are trapped in a bad equilibrium characterized by a high level of rent seeking and low economic growth, despite the large amounts of funds they receive. The authors distinguish between private and public rent seeking activities. The private one takes the form of theft, piracy, litigation and usually consists of transfers among private parties of capital and land output that affects the productive sector of the economy. On the other hand, public rent seeking attacks the innovative sector of the market. This emerges when a bureaucrat is able to affect the fortunes of private parties and can take the form of bribing, corruption and lobbying. Under some circumstances, rent seeking translates into violent activities such as extortion, expropriation, murder, and as long as an offense generates a demand for defense, this creates scope for the emergence of criminal organizations and criminal behavior in general. In our study we take the same perspective of Murphy et al. (1991) considering organized crime as a violent expression of rent seeking. If organized criminal groups compete for rents with other economic and political actors, we can expect an increase in their criminal activity as the scope for rents becomes higher. In our study we offer suggestive empirical evidence about the link between exogenous variation in public transfers and organized crime. Surprisingly we find a positive correlation in an area with strong institutions and civic values which should fuel the productive use of public funds. A careful comparative analysis needs to be done to understand how these elements affect the appearance of organized crime. In the empirical section we consider also alternative explanations for the increase in organized criminal activities. In particular, we test the classic Becker's (1968) crime equation from theory on criminal behavior. Becker analyzes the determinants of criminal behavior using the logic of individual rational choice. He shows that agents become involved in illegal activities whenever the marginal returns from crime exceed the marginal returns from legal occupations and once the expected level of conviction and the severity of punishment are taken into account. The amount

of crime is determined not only by individual preferences but also by the socio economic environment created by public policies, such as spending on police, severity of convictions for different crimes and opportunities for employment. According to Becker's theory, crime should reduce if there is an increase in the probability of being caught or in the cost of punishment. There are several factors which can affect costs and gains of crime. Levitt and Venkatesh (1998) emphasize the role of education, which, by improving labor market outcomes, implies a higher opportunity cost for committing crime. In addition, education positively affects individual preferences and values. Lochner and Moretti (2001), indeed, find that schooling significantly reduces criminal activity. The crime equation has been tested also in the Italian context. Buonanno and Leonida (2006) use a fifteen year regional panel and consider several types of crime against the property and the person. They include three sets of explanatory variables to account for education, deterrence and socioeconomic situation. They use the percentage of crimes committed by unknown offenders to proxy the probability of apprehension. They find that education is significantly and negatively correlated with total and property crimes. The probability of apprehension is significant and with the expected sign for crimes against the property and the person. Marselli and Vannini (1997) also test the crime equation. Their results are in contrast with the predictions of the standard economic model of crime. Using a panel of Italian regions for the period 1980-1999, they find that probability of punishment is more effective as deterrent for crime than the severity of punishment and the efficiency of police. While the rate of unemployment has a positive effect on crime rates, monthly wage rate and level of education do not play any relevant role. In our analysis we do not find strong evidence of the relevance of socioeconomic variables (such as education level, unemployment rates, and income) on the incidence of criminal activities. A possible rationale for these findings is that if higher levels of education, employment and per capita income can increase the opportunity cost to engage in criminal activities, they, on the other hand, create more wealth and consequently larger expected gains from criminal activities such as robbery, kidnappings and extortions. The paper will continue as follows. In section 2 we describe the data. Sections 3 and 4 describe respectively the methodology and the main results. In section 5 we present some robustness checks. Section 6 concludes.

2.2 Data and Background

The panel we use comprises annual observations on the 32 provinces of the regions of Emilia-Romagna, Toscana, Marche, Umbria, Lazio e Abruzzo for the period 1993-2003. The data source for the two measures of criminal activity we consider in this paper is ISTAT, “Statistiche Giudiziarie Penali”. Our measure of organized criminal activity (Index of organized crime) is computed by summing up the charges made by the five sectors of the police force to the judiciary for the following crimes: homicide committed by the Mafia, bombing attempts, arson and grand larceny. We compute also a second index where each crime is weighted by the seriousness of the sentence. Values are reported as the incidence of the listed crimes over 100,000 inhabitants. The second measure of criminal activity we use is the index of violent crime. This is computed on the basis of the charges made by the five sectors of the police force to the judiciary for the following crimes: massacre, homicides, infanticide, lesions, sexual assaults, kidnapping, assassination attempts and theft. Values are reported as the incidence of the above mentioned crimes over 100,000 inhabitants for all our measures of criminal activity. We take public spending data from ANCI (National Association of Italian Municipalities) and we consider total expenses and expenses in capital accounts. All values are per capita and in real term. Other data we use are unemployment rate, secondary school enrolment from ISTAT and gdp per capita provided by Istituto Tagliacarne. Finally we use data on the intensity of the Umbria-Marche earthquake for each province that was hit as measured on the Mercalli scale, weighted by the population of each municipality interested by this natural disaster.

As it will be clear in the section that describes the methodology, we collapse the time series dimension into two periods (pre and post earthquake) and, therefore, we consider only the average value of each variable for the pre and post period. Table 1 reports the descriptive statistics for all the provinces in our sample. We focus on this sample of regions since our aim is to study whether the big inflow of public money in the Umbria and Marche earthquake aftermath has increased the activity of organized crime. The Umbria and Marche earthquake was violent and disastrous. It caused extensive damages: 3.687 houses were evacuated, 22.000 private buildings and 1.336 public buildings ruined, 461 infrastructures such as hospitals, schools, roads and universities damaged and 213 hydro geological disorders took place. The homeless amounted to 25.000 and 76 cities were hit. The total amount of estimated damages is 8

billion euro. The relief program was organized in two phases according to the priority of interventions; the first (1998-2001) was aimed at the reconstruction of private housing and involved mainly homeless and the most damaged buildings. The second phase (2002-2008) consisted of interventions toward building less damaged and toward houses where families do not live permanently. At first glance Figures 1-2 seem to suggest a positive association over time between our two measures of public spending per capita (in 1,000 of Euros) and the level of organized crime in our treated group (the provinces of Umbria and Marche). Moreover, we can notice the relevant increase of public expenses after the year of the earthquake (1997).

2.3 Methodology

In this section we describe the methodological approach that we adopt to test whether an increase in public spending could boost the activity of organized crime. Consider the following linear model that will be at the basis of our empirical analysis:

$$organiz.crime_{it} = \alpha + \beta spending_{it} + x'_{it}y + \delta_i + \mu_t + \epsilon_{it} \quad (2.1)$$

where $organiz.crime_{it}$ is the measure of criminal activity in province i at time t , $spending_{it}$ denotes public spending per capita, x_{it} a vector of potential time varying covariates and μ_t is a random error term. The model also includes a full set of province fixed effects and a full set of time fixed effects to capture unobserved shocks (time trend) common to all the provinces in our sample. The coefficient of main interest is β . Ordinary least-squares (OLS) estimates of equation (1) will not be consistent if $Cov(spending_{it}, \epsilon_{it}) \neq 0$. This can be the case in the presence of a reverse effect of organized crime on public spending or of omitted time varying factors that affect both public spending and the intensity of criminal activities. We, therefore, rely on an instrumental variable approach in order to identify the impact of an increase in public spending on the spread of organized crime. We use the strong earthquake that hit the provinces of Umbria and Marche in September 1997 as a source of exogenous variation in public spending per capita. In specific, we posit the following relationship between public spending

per capita and the occurrence of the earthquake as the first stage equation of the instrumental variable approach:

$$spending_{it} = \alpha + \zeta earthquake_{it} + x_{it}'\eta + \delta_i + \mu_t + v_{it} \quad (2.2)$$

where $spending_{it}$ is public spending per capita in province i at time t , x_{it} a vector of potential time varying covariates, δ_i and μ_t denote respectively a full set of province and time fixed effects and v_{it} is a random error term. The covariate $earthquake_{it}$ is our treatment variable. In our baseline specifications, this variable is a dummy denoting the provinces of Umbria and Marche affected by the earthquake for the years after the earthquake (from 1998 onward). We also provide estimates where the variable $earthquake_{it}$ is our province level measure of the earthquake's magnitude for the provinces hit by the earthquake after 1997 e 0 otherwise. The coefficient of main interest is ζ . The sample is comprised of the six provinces of the regions of Umbria and Marche hit by the 1997 earthquake and the twenty-six provinces of the neighboring regions of Emilia Romagna, Toscana, Lazio and Abruzzo (control group). We choose to use as control group the provinces belonging only to the neighboring regions of Marche and Umbria in order to guarantee a higher degree of homogeneity between the treated and control groups in terms of their economic, cultural and social characteristics. The years to which our analysis refers, span from 1993 to 2003. The validity of our empirical strategies and the consistency of the instrumental variable estimates rely on two assumptions: a) the instrument $earthquake_{it}$ has to be strongly correlated with the explanatory variable of interest in the first stage equation, which is to say the coefficient ζ in the equation (2) must be statistically different from zero or, equivalently, $Cov(earthquake_{it}, spending_{it}) \neq 0$; b) the instrument $earthquake_{it}$ should have no partial effects on our indicator of organized crime and should not be correlated to unobserved time – varying factors that influence the spreading of organized crime, which is to say $Cov(earthquake_{it}, \epsilon_{it}) = 0$ where ϵ_{it} is the error term in the second – stage equation (1). While the first assumption can be statistically tested and its validity in the context of our analysis is discussed in the subsequent section, the plausibility of the second one cannot be empirically assessed. In some of our estimating equations we include a set of time – varying covariates, like unemployment rate, gdp per capita and secondary school enrollment rate. These variables represent potential relevant

omitted factors which might influence the spread of organized crime and, at the same time, be affected by the occurrence of a disastrous earthquake. Communities hit by major earthquakes might also experience a change in their cultural attitudes and in the quality of the overall institutional framework (see, for instance, Pereira, 2006). This, in turn, may affect the spreading of organized crime. Institutions and civic norms tend, nevertheless, to show a high degree of resilience over time (see, among the others, Acemoglu, Johnson and Robinson, 2001, and Tabellini, 2008). Even if the extent to which institutions and cultural attitudes might adapt to major external shocks is an issue that deserves further empirical analysis, we think that the short length of the post-treatment period that we consider (1998 – 2003) makes it less likely that institutional and cultural evolution is in the short run a relevant omitted phenomenon eventually correlated to the occurrence of the Umbria and Marche’ earthquake. We also expect that our dependent variables are characterized by a high positive serial correlation. To deal further with this issue, we use as a simple remedy a strategy suggested by Bertrand, Duflo and Mullainathan (2004). We take the average of our variables before and after the occurrence of the earthquake and estimate equations (1) and (2) by two stage least-squares in a panel dataset with time dimension equal to two.

2.4 Main Results

2.4.1 Ols Estimates

Tables 2 and 3 report OLS estimates of equation (1). Our variable $spending_{it}$ is measured as province level expenses per capita in capital account in Table 2 and as total expenses (current and in capital account) in Table 3. In both Tables, in columns 1 - 3 the dependent variable is the simple incidence over 100,000 inhabitants of our organized crime indicator. In columns 4 – 6 of both Tables the dependent variable is our second index of organized crime in which each included crime receives a weight equal to the maximum number of years you can be sentenced to. Columns 1 and 4 provide baseline results from models where the only covariate is public spending per capita. In columns 2 and 5 we report estimates from models in which we include as additional covariates the unemployment rate and the log of gdp per capita. The estimating equations of Columns 3 and 6, finally, include also the secondary school enrollment rate as additional

control variable. The OLS estimates of our crime equation (1) show a positive but not statistically significant association between our measures of public spending and the two indices of organized crime. The results reported in Tables 2 and 3 should, nevertheless, be interpreted with a word of caution. Our measures of public spending are very broad and refer to a large variety of areas of intervention which public spending can be addressed to. If public spending, in particular in the sector of construction, may actually favor the spreading of organized crime, other forms of government intervention, like spending in schooling, in public security or in assistance to socially marginalized people, might reduce the breeding grounds of organized crime. We cannot say which of these effects prevails. By relying on the “natural experiment” of the earthquake, we think to be able to better identify that variation in public spending that involves more the sector of the construction. Moreover, if citizens expect higher public spending to attract organized crime, they might be more careful in choosing politicians less prone to collusion with organized crime and at monitoring their activity. This mechanism might be of particular relevance in the regions of the center of Italy that we consider in our analysis, since they have not been affected by an endemic presence of organized crime. Finally, we find no evidence of the relevance of socioeconomic variables (unemployment rate, income per capita and educational attainment) on the incidence of the organized crime activity. A possible rationale is that if higher levels of education, employment and per capita income increase the opportunity cost to engage in criminal activities, they, on the other hand, create more available wealth and larger expected gains from engaging in criminal activities. As discussed in the previous session, we nevertheless expect that OLS estimates are not consistent. In the following section, we report the results we obtain from our instrumental variable strategy.

2.4.2 Reduced Forms and Instrumental Variable Estimates

In order to understand whether the treated provinces experienced an increase in organized crime activity after the treatment year we estimate the following specification:

$$organiz.crime_{it} = \alpha + \beta earthquake_{it} + x'_{it}y + \delta_i + \mu_t + v_{it} \quad (2.3)$$

In Figure 3 we plot the index of organized crime for the treatment and the control group to study whether after the year of the earthquake treated provinces have experienced an increase in organized crime compared to the control group. Looking at the graph one can notice that over the whole period, the level of organized crime in the control group is higher than the one in the treatment. However, the difference substantially shrinks after 1997. This is consistent also with results reported in Table 4. In the table we see that control and treatment groups are similar in all the variables we consider before and after the earthquake, except for the two organized crime measures. Consistent with what we observed in the previous graph, it appears that the difference in organized crime between control and treatment groups, despite being positive and significant in the pre period, becomes smaller and not significant in the post period. Reduced form results are reported in Tables 5 and 6, where we use both the treatment variables as previously defined. The coefficient of interests β is always positive and statistically significant. When we consider the magnitude of the earthquake as treatment variable, it remains statistically significant. The magnitude of the coefficients are stable to the inclusion of additional control variables. These results confirm a positive association between the occurrence of the earthquake and the increase in organized crime activity. To have an idea of the size of the effect, by looking at column 2 in Table 5, we find that the occurrence of the earthquake is associated to an increase in organized crime activity of about 2.4 offences over 100,000 inhabitants. Finally we run a placebo regression to be confident that our reduced forms results are not driven by some omitted phenomenon associated with the year of the earthquake. In Table 7 we report the results for the placebo where we change the treatment year to be 1996. The coefficient of interest is always not statistically different from zero. We do not show the results for when we use the magnitude of the earthquake since they are similar to the one displayed. In Tables 8 and 9 we report the results we obtain by estimating equations (1) and (2) by two stage least-squares. Our variable $spending_{it}$ is measured as province level expenses per capital in capital account in Table 8 and as total expenses (current and in capital account) in Table 9. In columns 1 – 3 and 4 - 6 of both Tables, the dependent variable of the second stage equation is, respectively, the simple and weighted indicator of organized crime. Panels at the bottom of both the Tables report first stage estimates of the coefficient ζ of the dummy variable $earthquake_{it}$ in equation (2). Results displayed in both Tables show a strong and statistically significant first stage relationship between the occurrence of the earthquake and the increase in public

spending per capita. The occurrence of the earthquake increased on average capital spending per capita and total expenditure per capita, respectively, by 271 – 277 Euros and 373 – 381 Euros, depending on the different specifications. Second stage estimates suggest a positive and statistically significant association between public spending per capita (measured as both capital and total expenses) and our two indices of organized crime. The magnitude of the coefficients and the precision of the estimates are fairly stable to the inclusion of additional control variables. Estimates from Table 8 suggest that on average a positive change of 100 Euros in the capital expenses per capita induced an increase of almost 1 unit in the incidence over 100,000 inhabitants of the number of the crimes related to the Mafia. In the specifications of Tables 10 and 11 we use the average magnitude of the earthquake at province level as an instrument for public spending. First stage results are again strong and show a positive and statistically significant relationship between our instrument and the two measures of public spending per capita. The estimated effect of public spending per capita on organized criminal activity is also positive and significant at a conventional level. The estimated magnitude of the coefficients of the two measures of public spending is fairly similar to the one we obtain by using the simple dummy variable as instrument.

2.5 Robustness

In this section we perform additional econometric exercises as robustness checks for the main results that we have so far discussed. Specifically, we consider whether our estimates might be simply capturing a more general spread of violent criminal activities in the areas affected by the earthquake due, for instance, to the social and economic disruption caused by such a natural disaster. We report estimates from a reduced form similar to the equation (3) except for considering as dependent variable, the indicator of the incidence of violent criminal activities. The results which are displayed in Table 12 show a negative, albeit not statistically significant, association between the dummy variable $earthquake_{it}$ and our index of violent crime. We obtain very similar results when we use the average intensity of the earthquake at province level as an independent variable. These findings alleviate the concern that our results might simply reflect a wider increase of crime in the provinces affected by the earthquake. In Tables 13 we report

two stage least-squares estimates of equation (1) and (2) with the index of violent crime as the dependent variable in the second stage regression. There are no clear reasons to expect that a higher influx of public money for the reconstruction in the aftermath of an earthquake should produce a spreading of other kinds of violent crimes. If this were our finding, this would cast serious doubt on the reliability of our results. The estimates we obtain by our instrumental variable strategy show a negative, albeit not statistically significant, association between increase in public spending (measured by both capital and total expenses) and the incidence of violent crimes. Very similar results are obtained by using the average intensity of the earthquake at province level rather than the simple dummy variable as an instrument. The robustness results, therefore, support our findings that an increased influx of public spending for reconstruction is conducive to the expansion of Mafia activity.

2.6 Conclusions

The Mafia and the other forms of organized crime that affect the Southern regions of Italy can be thought of as criminal entrepreneurs that try to take advantage of profitable business opportunities whenever and wherever available. The presence of lucrative opportunities often induce the Mafia to expand its activities beyond the geographical areas characterized by its endemic presence and beyond its “traditional” core business such as traffic of arms, drugs and extortions. Preliminary evidence that we provide from the reconstruction in the aftermath of the 1997 earthquake that hit two regions in the center of Italy, Marche and Umbria, is in line with this reasoning. Marche and Umbria are two areas of Italy that did not experience an endemic presence of Mafia. Nevertheless the relevant influx of money for their reconstruction seems to have induced an increase in the presence and activity of criminal organizations.

We plan to extend our study in several ways. We also want to assess whether a similar phenomenon occurred in the aftermath of other major earthquakes that have hit Italy. An interesting and related issue that we plan to explore further concerns the consequences of the spread of organized crime on the quality of politicians.

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Table 1. Descriptive statistics.

Variables	Mean
Organized Crime	19.231 (6.841)
Organized Crime (Weighted)	2.140 (0.663)
Violent Crime	81.245 (34.869)
Capital Exp. pc	323.975 (121.828)
Total Exp. pc	1244.758 (228.780)
Unemployment	7.395 (2.772)
Log gdp pc	9.677 (0.165)
School	0.888 (0.084)
Observations	64

Standard deviations in parentheses.

Figure 1.



Figure 2.



Table 2. Organized Crime and Capital Expenses per capita.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Exp. pc	0.0038 (0.0033)	0.0040 (0.0031)	0.0042 (0.0033)	0.0004 (0.0004)	0.0004 (0.0004)	0.0004 (0.0004)
Unemployment		-0.5265 (0.6480)	-0.4773 (0.6928)		-0.0477 (0.0625)	-0.0518 (0.0636)
Log gdp pc		2.0214 (29.8626)	2.3591 (29.7641)		2.1703 (2.9246)	2.1420 (2.9533)
School			12.2835 (17.9426)			-1.0294 (1.5102)
Observations	64	64	64	64	64	64
R-squared	0.887	0.889	0.890	0.881	0.885	0.886

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Organized Crime and Total Expenses per capita.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Total Exp. pc	0.0017 (0.0021)	0.0018 (0.0020)	0.0020 (0.0021)	0.0001 (0.0002)	0.0001 (0.0002)	0.0001 (0.0002)
Unemployment		-0.5022 (0.6713)	-0.4538 (0.7176)		-0.0449 (0.0648)	-0.0493 (0.0659)
Log gdp pc		5.3635 (30.2876)	5.8118 (30.2030)		2.4896 (2.9282)	2.4489 (2.9528)
School			11.9320 (17.9955)			-1.0857 (1.4479)
Observations	64	64	64	64	64	64
R-squared	0.886	0.888	0.889	0.879	0.883	0.884

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Figure 3. Organized Crime Index (treated and control groups), 1993 – 2003.

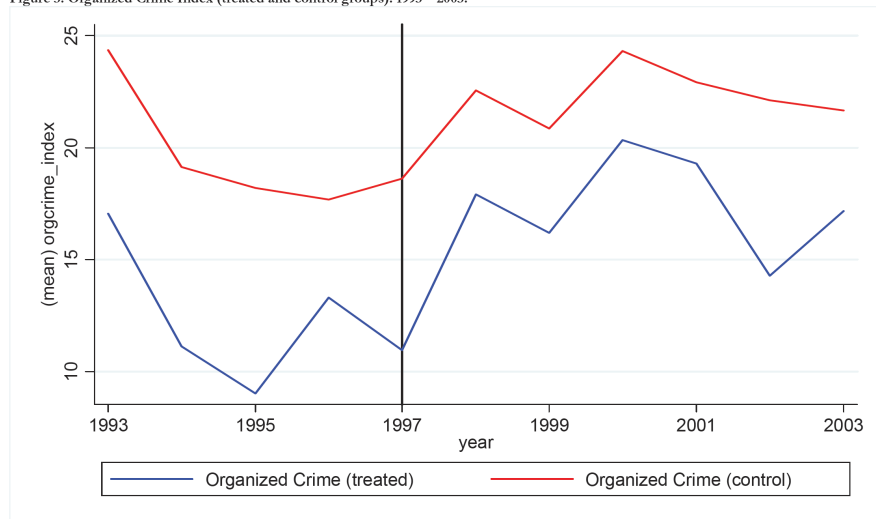


Table 4. Treated and control provinces before and after the earthquake

	Treated Provinces	Non-Treated Provinces	Mean difference (p-value)
	<u>Mean</u>	<u>Mean</u>	
	(1)	(2)	(3)
<i>Panel A. Province Characteristics Before 1998</i>			
Organized crime	12.436 (2.441)	18.862 (7.993)	0.063
Organized Crime (Weighted)	1.413 (0.273)	2.02 (0.714)	0.051
Violent crime	56.543 (20.975)	69.555 (34.543)	0.386
Capital exp. pc	270.644 (65.213)	272.722 (59.003)	0.939
Total exp. pc	1081.615 (279.932)	1202.725 (199.712)	0.223
Unemployment	7.419 (1.167)	8.448 (2.947)	0.412
Log gdp pc	9.600 (0.063)	9.650 (0.174)	0.491
School	0.873 (0.033)	0.838 (0.017)	0.258
<i>Panel B. Province Characteristics After 1997</i>			
Organized crime	17.558 (2.283)	21.552 (5.855)	0.114
Organized Crime (Weighted)	2.159 (0.305)	2.422 (0.582)	0.295
Violent crime	81.827 (18.663)	98.501 (33.387)	0.250
Capital exp. pc	594.136 (209.4033)	325.190 (58.026)	0.000
Total exp. pc	1514.937 (249.101)	1262.091 (194.609)	0.010
Unemployment	5.644 (1.138)	6.739 (2.793)	0.358
Log gdp pc	9.670 (0.065)	9.721 (0.180)	0.504
School	0.946 (0.040)	0.927 (0.084)	0.594
N. Obs.	6	26	

Standard deviations in parentheses in columns (1) and (2).

Table 5. Reduced form. Organized Crime and Earthquake.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Earthquake Dummy	2.431*	2.402*	2.667*	0.343**	0.341**	0.335*
	(1.303)	(1.306)	(1.454)	(0.157)	(0.161)	(0.173)
Unemployment		-0.472	-0.400		-0.042	-0.043
		(0.658)	(0.708)		(0.061)	(0.063)
Log gdp pc		5.762	6.437		2.547	2.529
		(30.829)	(30.646)		(2.917)	(2.954)
School			16.795			-0.425
			(19.434)			(1.638)
Observations	64	64	64	64	64	64
R-squared	0.890	0.892	0.894	0.889	0.893	0.893

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 6. Reduced form. Organized Crime and Earthquake.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Earthquake Magnitude	0.465*	0.460*	0.515*	0.065**	0.065**	0.064*
	(0.238)	(0.241)	(0.269)	(0.029)	(0.030)	(0.032)
Unemployment		-0.463	-0.389		-0.041	-0.042
		(0.659)	(0.710)		(0.061)	(0.063)
Log gdp pc		6.694	7.504		2.678	2.661
		(30.740)	(30.504)		(2.893)	(2.931)
School			17.288			-0.372
			(19.526)			(1.647)
Observations	64	64	64	64	64	64
R-squared	0.890	0.892	0.894	0.889	0.893	0.893

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Placebo Reduced Forms.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Earthquake Dummy	1.585	1.568	1.634	0.216	0.212	0.216
	(1.594)	(1.607)	(1.656)	(0.200)	(0.201)	(0.209)
Unemployment		-0.440	-0.423		-0.063	-0.061
		(0.695)	(0.731)		(0.062)	(0.065)
Log gdp pc		9.772	9.403		2.069	2.046
		(30.108)	(30.714)		(2.516)	(2.602)
School			4.314			0.267
			(21.392)			(1.599)
Observations	64	64	64	64	64	64
R-squared	0.880	0.882	0.882	0.873	0.878	0.878

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 8. Capital expenses per capita and Organized Crime. Two stage least-squares estimates.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Exp. pc	0.009*	0.009**	0.010**	0.001**	0.001**	0.001**
	(0.005)	(0.004)	(0.005)	(0.001)	(0.001)	(0.001)
Unemployment		-0.572	-0.524		-0.056	-0.059
		(0.414)	(0.434)		(0.040)	(0.040)
Log gdp pc		-1.955	-2.099		1.449	1.458
		(20.290)	(19.998)		(2.046)	(2.032)
School			13.652			-0.819
			(11.844)			(1.108)
	First Stage					
Earthquake Dummy	271.023**	272.094**	277.257**	271.023**	272.094**	277.257**
	(99.821)	(103.782)	(103.744)	(99.821)	(103.782)	(103.744)
Observations	64	64	64	64	64	64
R-squared	0.883	0.886	0.886	0.870	0.874	0.876

Two-stage least squares estimates. All the specifications include time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 9. Total expenses per capita and Organized Crime. Two stage least-squares estimates.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Total Exp. pc	0.007** (0.003)	0.006** (0.003)	0.007** (0.003)	0.001** (0.000)	0.001** (0.000)	0.001** (0.000)
Unemployment		-0.537 (0.434)	-0.485 (0.459)		-0.051 (0.043)	-0.054 (0.043)
Log gdp pc		5.371 (20.042)	5.887 (19.837)		2.491 (2.071)	2.460 (2.033)
School			13.732 (11.737)			-0.809 (1.016)
First Stage						
Earthquake Dummy	373.955*** (128.581)	374.656*** (131.714)	381.58*** (131.982)	373.955*** (128.581)	374.656*** (131.714)	381.58*** (131.982)
Observations	64	64	64	64	64	64
R-squared	0.880	0.883	0.883	0.861	0.867	0.869

Two-stage least squares estimates. All the specifications include time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 10. Capital expenses per capita and Organized Crime. Two stage least-squares estimates. Average earthquake magnitude as instrument.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Exp. pc	0.009** (0.004)	0.008** (0.004)	0.009** (0.004)	0.001** (0.001)	0.001** (0.001)	0.001** (0.001)
Unemployment		-0.568 (0.415)	-0.520 (0.435)		-0.055 (0.040)	-0.058 (0.040)
Log gdp pc		-1.561 (20.206)	-1.709 (19.923)		1.508 (2.038)	1.518 (2.023)
School			13.532 (11.806)			-0.838 (1.090)
First Stage						
Earthquake Magnitude	54.505*** (16.867)	55.021*** (17.658)	56.343*** (17.781)	54.505*** (16.867)	55.021*** (17.658)	56.343*** (17.781)
Observations	64	64	64	64	64	64
R-squared	0.884	0.887	0.887	0.872	0.876	0.878

Two-stage least squares estimates. All the specifications include time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 11. Capital expenses per capita and Organized Crime. Two stage least-squares estimates. Average earthquake magnitude as instrument.

	DEPENDENT VARIABLES					
	Organized Crime			Organized Crime (weighted)		
	(1)	(2)	(3)	(4)	(5)	(6)
Total Exp. pc	0.006** (0.003)	0.006** (0.003)	0.007** (0.003)	0.001** (0.000)	0.001** (0.000)	0.001** (0.000)
Unemployment		-0.535 (0.434)	-0.483 (0.459)		-0.051 (0.043)	-0.054 (0.043)
Log gdp pc		5.370 (20.022)	5.884 (19.803)		2.491 (2.060)	2.460 (2.021)
School			13.645 (11.723)			-0.824 (1.006)
First Stage						
Earthquake Magnitude	74.372*** (21.158)	74.633*** (21.859)	76.371*** (22.036)	74.372*** (21.158)	74.633*** (21.859)	76.371*** (22.036)
Observations	64	64	64	64	64	64
R-squared	0.881	0.883	0.883	0.863	0.868	0.870

Two-stage least squares estimates. All the specifications include time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 12. Reduced form. Violent Crime and Earthquake.

	DEPENDENT VARIABLE		
	Violent Crime		
	(1)	(2)	(3)
Earthquake Dummy	-3.662 (5.450)	-3.505 (5.351)	-5.461 (6.316)
Unemployment		1.257 (2.434)	0.733 (2.237)
Log gdp pc		203.798 (174.986)	198.823 (160.930)
School			-123.780 (142.110)
Observations	64	64	64
R-squared	0.914	0.919	0.922

OLS regressions with time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 13. Public spending per capita and Violent Crime. Two stage least-squares estimates.

	DEPENDENT VARIABLE					
	Violent Crime					
	(1)	(2)	(3)	(4)	(5)	(6)
Capital Exp. pc	-0.014 (0.013)	-0.013 (0.012)	-0.020 (0.014)			
Total Exp. pc				-0.010 (0.009)	-0.009 (0.009)	-0.014 (0.010)
Unemployment		1.404 (1.549)	0.985 (1.385)		1.353 (1.538)	0.906 (1.370)
Log gdp pc		215.061** (109.094)	216.301** (98.689)		204.370* (113.010)	199.949** (101.612)
School			-117.345 (88.428)			-117.509 (89.145)
	First Stage					
Earthquake Dummy	271.023** (99.821)	272.094** (103.782)	277.257** (103.744)	373.955*** (128.581)	374.656*** (131.714)	381.58*** (131.982)
Observations	64	64	64	64	64	64
R-squared	0.915	0.920	0.924	0.916	0.921	0.925

Two-stage least squares estimates. All the specifications include time and province fixed effects. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Chapter 3

Divisiveness in Political Campaigns

¹I wish to thank Alberto Alesina, Nicola Gennaioli, Jesse Shapiro, Guido Tabellini and the participants at IGIER Bocconi Brown Bag seminar for very useful comments. **Keywords:** Agenda Setting, Issue Voting, Campaigns. **JEL:** D72, D83

3.1 Introduction

The content of political platforms plays an important role in dividing voters and determines the relevant dimensions of conflict in a society. There is an interesting pattern in politics showing that campaigns which used to be dominated by socio-economic issues are now focusing on other issues such as religion, moral values (abortion, stem cell research, gay marriage), ethnicity and the environment. The purpose of this model is to explain the presence of certain issues in electoral campaigns and more broadly in the political arena. Voters preferences surely affect political platforms, however in modern societies, individuals preferences are highly differentiated and the political conflict might occur along several dimensions, often poorly correlated among each other; income, ethnicity, religion, etc. A natural question follows; which of these dimensions will be relevant in a political race? In other words, which topics will be selected by a winning motivated candidate? This decision is subject to several constraints which limit both the type and the number of political issues; distribution of preferences in the population, economic resources and time for campaigns, information available to voters, but also voters cognitive constraints. There is extensive evidence both in psychology and political communication focusing on media, that shows the effect of priming and framing on individuals judgement capacity (see Denton for a review); "priming" consists in calling attention to some matters while ignoring others. It has been found (Iyengar et al.), that in this way television news influence the standards by which governments, presidents, policies, and candidates for public office are judged. "Framing" instead assumes that the scheme in which news or arguments are presented matters for their judgement and can lead to individuals bias; in political campaigns, it might imply that voters value differently a topic such as abortion whether it is discussed alone, paired with another issue or presented in a certain manner. Politicians have teams of experts available, who design their campaigns taking into account how voters process political messages (see Denton). Hence it seems relevant to study how this cognitive mechanisms affect the presence of certain issues in political platforms. Highton (2002) provides evidence on priming in US congressional elections, studying the effects on the 1998 House elections of voters' assessments of the two most prominent national political leaders at the time, President Bill Clinton and Speaker of the House Newt Gingrich. During the year, details about Lewinsky case were revealed and received tremendous media attention. Despite before elections the polls

reported a big drop in the voters evaluation of Clinton as a person, for the first time in 58 years, the president's party gained seats in the midterm House elections. What did it happen? Republicans focused their campaign on the Lewinsky case: "near the end of October, the Republicans waged a media blitz, a last-minute, multi-million-dollar infusion of commercials by the Republican Party reminding voters of the Clinton scandal". But this strategy turned out to be a backfire. Indeed Democrats answered the attacks stressing the sharp distinction between Clinton "private life" and his presidential performance, on which he had still a large consensus. Two elements appeared to have mattered for the political outcome: 1) the higher importance voters gave to Clinton political performance relative to his personal traits, and 2) the maximum attention the sexual scandal received by the media and by the Republican party. Would the results have been the same if the sexual scandal were less covered in the political debate? It might be the case that the presence in the campaign of two, instead of only one issue, helped voters to make a clearer distinction among them, taking into account their relative importance. In line with this idea, Abramowitz (1985) noticed that the relation between politicians evaluations and voters choice in elections is affected by the salience voters assign to the issues addressed by the candidates. Also issue ownership, a concept extensively described in the literature (Budge and Farlie (1983), Petrocik (1996), and Ansolabehere and Iyengar (1994)), has been found to affect voting choice; according to this argument, political parties become closely associated with certain issues in a way that citizens take as granted party's competence in handling them. Analyzing political campaigns, Petrocik suggests that the successful candidate will focus public attention on issues that the candidate's party has a better reputation for handling than the opposing party. Petrocik argues that when a party is successful in moving its issues to the top of the agenda, that party's candidates benefit. This paper is related to the above literature on issue voting. However my attempt is to provide a theoretical setup, which at my knowledge is missing, able to explain which types of issues are put forward in campaigns, and to focus on the role of two elements respectively: 1) the distribution of voters preferences in the population on different issues, and 2) the cognitive constraints which undermine the ability of voters to choose among available options. In the first part of the paper I will focus on (1), providing the intuition on the role played by preference diversity. In the last section I will briefly describe the direction of this reasearch in order to address (2). I follow Levy (2004) for modeling coalitions behavior and stability. However the focus of my analysis is not the role of

parties in aggregating preferences, rather it is to determine which dimensions of conflict emerge, given how coalitions react. Essentially I analyze a discrete choice of candidates regarding the topics to discuss and to vote on. In the basic setup issues differ in their *divisiveness*, to be defined as the extent to which members within a party/coalition disagree. In reality politicians face a trade-off; they can either choose *unifying* issues which strengthen their own (but eventually also their opponent) constituency or *divisive* issues which weaken the opponent (but eventually also their own) supporters. In the first part (1) of the analysis, I will show that the presence of the first and the second type of issues mainly depends on how voters preferences are distributed in the population. I present a very simple model in which a politician has the agenda setting power; once he has raised the issues, the opponent can only respond on those issues without the possibility to raise other issues. Although this is a very strong assumption which rules out any competition on issues between candidates, this can be a partial description of what happens in reality. There is evidence in electoral campaigns which finds issues convergence among candidates' platforms (Kaplan, et al. 2006, Sides 2006, Sigelman and Buell 2004). In a sense, this simple framework might be viewed as the last stage of a dynamic process in which parties compete on issues. The main results are that when political race is more competitive: 1) the agenda setter raises divisive issues whenever his coalition is less heterogeneous than the opponent one; 2) voters welfare might decrease when divisive instead of unifying issues are raised. Presenting an example on the recent Health Reform vote in the US Congress, I describe how this framework can be applied in a legislature. Moreover if applied within a legislature the basic model would provide an empirical prediction: in parliamentary systems where the opposition has more constitutional power, the incumbent has a higher incentive to weaken the opponent coalition, voting on divisive issues. This would result in a decrease of party polarization (for an account of this type of dynamics see Poole and Rosenthal). Overall, this analysis helps to understand which dimensions of conflict emerge when the political race is very competitive and the coalitions are polarized in the traditional dimensions (taxes, social reforms, etc); this seems to be particularly relevant to modern societies characterized by increasing level of diversity. The paper continues as it follows; in the second section I present the basic model of agenda setting, third section provides an example of the framework within a legislature; in the fourth section I describe the direction to address (2) and I conclude.

3.2 Agenda Setting in Campaigns

Assume a population divided in four groups: A, B, C, D , with measures $\alpha, \beta, \gamma, \delta$ respectively, and $\alpha + \beta + \gamma + \delta = 1$. No group represents the majority of the population, i.e. $\alpha, \beta, \gamma, \delta \in (0, \frac{1}{2})$. These groups constitute the set of voters. The set of players is formed by one representative i for each group, so there are four players, each having the same preferences of his group. Each group g is characterized by a continuous and concave utility function u_g defined over the policies that are in the platforms. In other words the relevant policy space is the one individuals face during the campaign and at the time of elections. The policy set Q , is composed by the policies, $x, y \in \{0, 1\}$. At the elections at most two policies can be raised due to time and money constraints faced by the candidates. Then if both x and y are on the table, the utility function of group g is:

$$u_g(i, j) = -s_g(g_i - i)^2 - (1 - s_g)(g_j - j)^2 \quad (3.1)$$

i.e. individuals want to minimize the weighted distance of the policy from their ideal point. The weights $s_g \in [0, 1]$ capture the importance of the issue i relative to issue j for group g .

The ideal policy of the four players are:

- 1) $(A_x, A_y) = (0, 0)$
- 2) $(B_x, B_y) = (1, 0)$
- 3) $(C_x, C_y) = (0, 1)$
- 4) $(D_x, D_y) = (1, 1)$

such that groups' utility functions are:

- 1) $u_A(i, j) = -s_g i^2 - (1 - s_g) j^2$
- 2) $u_B(i, j) = -s_g(1 - i)^2 - (1 - s_g) j^2$
- 3) $u_C(i, j) = -s_g i^2 - (1 - s_g)(1 - j)^2$
- 4) $u_D(i, j) = -s_g(1 - i)^2 - (1 - s_g)(1 - j)^2$

Interpretation

Issues (x, y) can be interpreted as redistribution and religion respectively, where the position 0 in the policy space stands for "against to", while 1 stands for "in favor of". Groups can be viewed as: conservative republicans (A), liberal republicans (C), conservative democrats (B) and liberal democrats (D), where "liberal" and "conservative" refer to the position groups have over religion (y). The political game works as the following: 1) one of the politician is the agenda setter; he has to decide whether to announce a platform only on issue x or in both issues x and y ; 2) the opponent coalition decides whether to run or not. If it runs, it announces a platform on the issues raised; 3) elections are held, the platform which receives more votes wins the election and it is implemented. A group or a coalition decides to not run in the election whenever it is indifferent, since it faces a zero probability to win. I use the same framework of Levy (2006) to describe equilibrium platforms and coalition stability. Voters sincerely vote on platforms. Let the four players be organized in a coalition structure π which is a partition on the set $\{A, B, C, D\}$. From now on I will interchangeably use the terms coalition and party. First I characterize the possible equilibrium platforms for a coalition structure (i.e. AC vs BD). As a second step I analyze whether this coalition structure is stable. As in Levy, I assume that a party chooses the platform from the Pareto set of its members, which contains the set of policies a party can commit to.

Definition 1 Denote Q_S the Pareto set of coalition S , be defined as: $Q_S = \{q \in Q \mid \nexists q' \text{ s.t. } \forall i \in S, u_i(q') \geq u_i(q), \text{ with at least one strict inequality}\}$

An equilibrium is a set of platforms offered by parties and a political outcome. The election outcome is represented by the platform that receives more votes.

Definition 2 Equilibrium in the platform game is a collection of strategies $\delta(\pi)$ such that for each coalition S there does not exist any other set of strategies that makes every coalition member better off, given the set of strategies taken by all the other coalitions but S .

Notice that agreements within coalitions are enforceable, while the coalition structure in itself is not. So to determine a stable equilibrium outcome it is important to ask whether the related coalition structure is stable. For this purpose it is necessary to introduce a stability concept. I use the same cooperative stability concept as Levy (2006).

Definition 3 *A stable party is the one in which no group of individuals chooses to quit, inducing a finer partition which is stable in itself.*

Remark 4 *A group exiting from the coalition, runs in the elections if it faces a positive probability of winning. Otherwise group members abstain.*

Notice that as suggested by Levy, exit from the coalition by a group can be viewed as a short term deviation, such as vote abstention. Taking into account the mechanism which leads to a stable coalition, the agenda setter strategically chooses which political issues to raise. Consider the partition be $\pi \equiv AC|BD$, such that two coalitions are formed, one between Republicans and the other between Democrats. Call AC the right wings, R , and BD the left wings, L . Let A be the politician which has the agenda setting power (this can be due to higher "communication" skills, better knowledge of the polls, etc.). He can either only raise the redistribution issue or both redistribution and religion. Once A has chosen the issues to vote on, coalitions decide which platforms to offer, the population votes and the winning platform is implemented. As in Levy I focus on partisan equilibria, the ones in which party members vote for their party platform if it offers one. Moreover if all coalition members are indifferent between running and not running, the coalition chooses not to run. I want to compare two scenarios: one in which politician A raises only issue x and the other in which it raises both x, y . Notice that the only feature which distinguishes x and y is the level of disagreement they induce within the two coalitions. Indeed x can be interpreted as an "unifying" issue which strenghtens R and L constituencies, while y as a "divisive" issue which tends to weaken them, eventually undermining their stability. In contemporary societies divisive issues other than religion are ethnicity, immigration, moral values, environmental policies, stem cell research, etc. Hence I will analyze the choice between raising only unifying issues or also divisive issues. Let me remark that I disregard the case in which only the divisive issue is raised since the outcome is trivial (coalitions always break) and does not offer interesting insights.

3.2.1 One Issue

If politician A raises only "redistribution", the political conflict between parties is unidimensional and it is as if $s_g = 1$ in (1), such that utility function of group g becomes: $u_g(i) = -(g_i - i)^2$. Since both groups of Republicans (Democrats) share the same preferences over x , the coalitions offer the platforms $(0, 0)_R$ and $(1, 1)_L$ respectively. It is straightforward to notice that this coalition structure is stable. The probability of winning for coalition R will be:

$$p_R = \begin{cases} 0 & (\alpha + \gamma) < \frac{1}{2} \\ \frac{1}{2} & \text{if } (\alpha + \gamma) = \frac{1}{2} \\ 1 & (\alpha + \gamma) > \frac{1}{2} \end{cases} \quad (3.2)$$

The same logic applies to p_L with $p_L = 1 - p_R$.

Given the previous assumptions, both coalitions will choose to present their platforms and run if none of them has the majority, i.e. $p_R = p_L = \frac{1}{2}$. If this is not the case, the coalition representing the majority unopposedly runs and wins. Therefore the members of coalition R faces an expected utility of:

$$E[u_R(x)] = \begin{cases} 0 & (\alpha + \gamma) > \frac{1}{2} \\ -1 & \text{if } (\alpha + \gamma) < \frac{1}{2} \\ -\frac{1}{2} & (\alpha + \gamma) = \frac{1}{2} \end{cases} \quad (3.3)$$

3.2.2 Two Issues

I want to analyze the stability and the political outcomes with the same coalition structure as before when politician A , the "conservative republican", raises both issues x, y , i.e. redistribution and religion. Consider again coalitions $R(AC)$ and $L(BD)$; as already stated, they have to propose policy platforms in their Pareto set, which for R is $(0, y)$, while for L is $(1, y')$ with $y, y' \in \{0, 1\}$. Parties adopt a fixed rule,

namely plurality rule, to decide which policy to select within their Pareto set. Let $\alpha > \gamma, \delta > \beta$, such that conservative republicans and liberal democrats represent the majority in their parties. Moreover let within parties preference heterogeneity over religion be measured as the difference in the size of the two groups in the same party, with a higher difference meaning lower heterogeneity. Let: $H_R = 1 - (\alpha - \gamma)$ and $H_L = 1 - (\delta - \beta)$ be the heterogeneity within the right wing and the left wing coalition, respectively. Platforms coincide with the bliss points of the larger groups. In particular, the right wing presents the platform $(0,0)_R$, while the left wing presents the platform $(1,1)_L$, corresponding to conservative republicans and liberal democrats bliss points. Let me analyze whether this coalition structure is stable. I distinguish between two cases depending on whether or not both minority groups within each coalition assign high or low importance to religion relative to redistribution issue.

Case 1: $s_C, s_B > \frac{1}{2}$ or $s_C, s_B \leq \frac{1}{2}$

In this case both liberal republicans and conservative democrats give high or low weight to religion.

Proposition 1 *Coalition structure $\pi \equiv AC|BD$ is stable if $s_{B,C} > \frac{1}{2}$. Instead, if $s_{B,C} \leq \frac{1}{2}$, both groups C and B break their parties. Then if $H_R < H_L$, group A , unopposedly runs in the elections and wins. On the other hand if $H_R = H_L$ both the majority groups A and D run, facing a probability of winning of $1/2$. Finally if $H_R > H_L$, only group D runs and wins the elections.*

If religion is more salient than redistribution, liberal republicans prefer to make the left party win since it presents their ideal "religion" policy. On the other hand, the conservative democrats make the same reasoning and breaking their coalition, are ready to let the right wing party win. Thus both coalitions break and the election outcome depends on the groups size.

Summing up:

- if $s_{B,C} > \frac{1}{2}$, the probability of winning for coalition R is exactly the same as in (2) and the expected utility of politician A is the same as in (3);
- if $s_{B,C} \leq \frac{1}{2}$, coalitions break. The probability of winning faced by politician A is:

$$\begin{aligned}
 p_A = & \begin{array}{ll} 0 & H_R > H_L \\ \frac{1}{2} & \text{if } H_R = H_L \\ 1 & H_R < H_L \end{array} \quad (3.4)
 \end{aligned}$$

and his expected utility is:

$$\begin{aligned}
 E[u_A(x, y)] = & \begin{array}{ll} -1 & H_R > H_L \\ -\frac{1}{2} & \text{if } H_R = H_L \\ 0 & H_R < H_L \end{array} \quad (3.5)
 \end{aligned}$$

Case 2: $s_C > \frac{1}{2}; s_B \leq \frac{1}{2}$

In this case liberal republicans assign a smaller weight to religion relative to redistribution, than conservative democrats do.

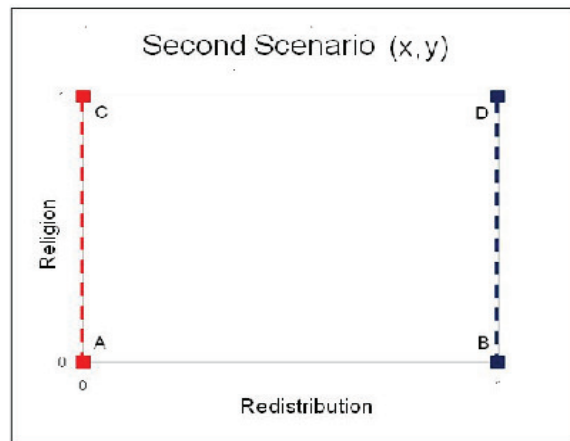
Proposition 2 *Coalition structure $\pi \equiv AC|BD$ is not stable. Only group B breaks its coalition. Then coalition R unopposedly runs in the elections and wins.*

Now conservative democrats are the one most responsive to religion issue. As a consequence, they deviate from their coalition and let the right coalition win. Therefore under this scenario A 's utility is at its maximum, i.e.: $E[u_A(x, y)] = 0$. Notice that if $s_B > \frac{1}{2}; s_C \leq \frac{1}{2}$, the opposite scenario takes place; the right wing coalition splits and D wins the election.

Equilibrium

To determine the optimal decision of politician A , we have to compare A 's expected utility under the two different scenarios.

Graphically A 's choice can be represented by the following figures.



Politician A will choose religion as a second issue (second scenario), instead of only redistribution, whenever:

$$E[u_A(x,y)] > E[u_A(x)] \tag{3.6}$$

3.2.3 Main Results

- If $s_{B,C} > \frac{1}{2}$, politician A is indifferent between choosing x, y and x alone.
- If $s_{B,C} \leq \frac{1}{2}$ or $s_C > \frac{1}{2} \cup s_B \leq \frac{1}{2}$:
 - Whenever $H_R < H_L$, i.e. the heterogeneity in preferences over religion is higher within the Left coalition than in the Right wing coalition and the latter represents the half or the minority of the population, the conservative Republican agenda setter, strictly prefers to raise both issues (second scenario).
 - If $H_R \geq H_L$, and the republican coalition represents the majority of the population, the agenda setter is indifferent between the two scenarios.

Discussion

The first statement implies that when voters (in the minority groups B and C) mainly care about redistribution they are not willing to break their coalitions because of the disagreement along the religion issue. Therefore voting also on the divisive issue would not change the election outcome compare to the first scenario. Hence the agenda setter facing the same expected utility, would be indifferent between the two options. Nevertheless a platform with both issues might negatively affect the utility of the minority groups. On the other hand if individuals in the minority groups care more about religion, the agenda setter faces the opportunity to "exploit" the division in the opposing coalition. When electoral competition is stiffer, even if agenda setter's coalition displays some disagreement ($H_R > 0$), it is still strictly optimal for A to raise the "divisive" issue as long as his party is less divided than the other ($H_R < H_L$).

Remark 3 *The decision to vote on (x, y) can be strictly optimal for the agenda setter, but it might substantially decrease voters welfare. It can be shown that raising religion decreases voters welfare whenever $\frac{1}{2} \geq s_B \geq s_C$.*

The loss in welfare which second scenario involves, is related to the importance groups of voters assign to religion relative to redistribution; indeed voting on religion can slightly benefit a majority but largely harm a minority. This is the case when a majority cares less about the religion issue than the minority. Stressing a bit this result, one could expect that issues which a majority of the population is concerned about, might disappear from the political debate. Notice that in this framework since voters are not sophisticated (i.e. they do not value policy issues if they are not in the platforms) do not take into account religion default policy if the issue has not been raised. In this section I described political outcomes observed in many contexts. Just to make an example, in post communist countries like Slovakia, Serbia, Bosnia, Bulgaria and Romania, ethnic cleavages, have been used by former communists to divide the anticommunist faction. Notice that in most cases ethnicity did not represent an "issue" before. In Slovakia, for instance, the former communist Meciar leading the MDS (Movement for a Democratic Slovakia) won the elections in 1992. His government was plagued by internal fragmentation and by the absence of a stable parliamentary majority. Then he attempted to divide the opposition starting a campaign against the minority Hungarian group whose political representation was part of the opposition.

3.3 Health Reform and Abortion

Within a legislature the problem can be reformulated as the following; in each period the agenda setter, either a member of the ruling coalition or of the opposition, has to decide which type of issue the parliament has to vote on, given the issues already under discussion. In this section I provide a recent example which describes how the setup can be interpreted within a legislature.

" Will President Obama mention abortion tonight? Not a chance. Abortion is perhaps the most divisive moral issue in America, and because the president wants to force the taxpayers to pay for abortion (it would be covered in the public plan), he is not going to go near it. The rational thing to do would be to drop abortion from the health care bills and support conscience rights for health care workers. Then the bishops would come back to the table. The president could take the opportunity tonight to do so. But he won't. He won't because he is inextricably tied to the most radical segments of the abortion industry. If I am wrong, I will be glad to say so tomorrow", Conservative Catholic League President Bill Donohue

speaking about the upcoming speech of Obama to the Congress on the Democratic health reform proposal. Donohue was actually wrong, since, during the speech Obama said: "*One misunderstanding I want to clear up: under our plan, no federal dollars will be used to fund abortions, and federal conscience laws will remain in place*". Obama was actually answering to the continuous attacks by the Republicans who first raised the abortion issue against the health reform, claiming that Democratic proposals on increasing access to healthcare would expand access to abortion. Since abortion issue has always been more divisive within the Democrats, the Republicans raised it on purpose. Obama administration took several months of negotiations to reach an agreement with the conservative Democrats ready to deny their vote to the health bill. At the end on November 8th, US House of Representatives passed the health reform bill together with the Stupak-Pitts amendment which prohibits a public health insurance option from offering abortion as part of basic coverage. This example can be interpreted in light of previous results. The political race on Health Reform in the US Congress was very competitive, with representatives almost splitted in half. Republicans represented a slight minority on all the instances of Health Reform under discussion. At some point, they raised the abortion issue. This is consistent with my results; Republicans represented a minority on Health Reform most closely related issues but, at the same time, their coalition displays a lower division than the Democratic party on abortion issue. At the end the abortion bill passed gaining the votes of the Conservative Democrats and all the Republican coalition (in this case $H_R = 0$). Notice that the welfare effect of abortion ban approval could be measured by comparing this to the case in which the ballot were on another closely related Health Reform issue (unifying). Despite it is not possible to draw clear conclusions on the welfare effect of the abortion bill, we could conclude that welfare was negatively affected if the average loss of the liberal Democrats was higher than the average benefit of the Republican coalition. Actually this could have been the case considering that, *relative to other health reform issues*, only a subset of the Republicans assigns higher importance to abortion. Indeed the harsh discussion on the ban has taken away from the political debate other less divisive issues/amendments, about which a majority might have been highly concerned.

3.4 Future Directions

The results in section 2 follow from strong assumptions on voting behavior and interaction between coalitions. In order to render the theoretical framework more applicable to electoral campaigns, I plan to introduce competition, through strategic interaction between parties. This would address the following question: if one party raises redistribution and religion, what would prevent the opponent from answering with a potentially favorable issue?

The second limitation of the model is that voting behavior is perfectly rational; my purpose is to explore behavioral aspects of voting choices, making non standard assumptions on individuals' cognitive ability to process political messages. This could help to study priming and framing effects that have been found to be relevant in political campaigns. Moreover I would be able to explain unusual electoral results as in 1998 US House midterm elections.

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