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# Politicians: Be Killed or Survive

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# Politicians: Be Killed or Survive

## Abstract

In the course of history, a large number of politicians have been assassinated. Rational choice hypotheses are developed and tested using panel data covering more than 100 countries over a period of 20 years. Several strategies, in addition to security measures, are shown to significantly reduce the probability of politicians being attacked or killed: extended institutional and governance quality, democracy, voice and accountability, a well functioning system of law and order, decentralization via the division of power and federalism, larger cabinet size and strengthened civil society. There is also support for a contagion effect.

JEL Code: D01, D70, K14, K42, Z10.

Keywords: assassinations, rational choice, governance, democracy, dictatorship, deterrence, protection.

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## I. INTRODUCTION

On 22 November 1963, news of President John F. Kennedy's assassination shocked the whole world, leaving a lasting imprint on the collective psyche (Zelizer 1992). The murder of politicians and other noted persons has been an important historical topic in our society. Classic writers, such as Shakespeare or Schiller, have dedicated important works to this topic, namely *Macbeth* and *Wilhelm Tell* respectively. Famous paintings depict the murder of rulers, such as David's "The Murdered Marat". The assassination of rulers and other politicians has been extensively treated in the historical literature (e.g., Hudson 2000, Demandt 2000, Kellerhoff 2003, Uthmann 2004). There is also a substantial literature on the assassination of specific politicians (e.g. Woolf 2006 on Caesar, Warren et al. 1964 on John F. Kennedy, or Bondeson 2005 on Olof Palme). It is, of course, a central issue in criminology (e.g. Siegel 2005, 2007, Adler, Mueller and Laufer 2006, Schmalleger 2004). As for the social sciences, the issue has received some limited attention in sociology (e.g. Wilkinson 1976) and political science (e.g. Feierabend, Feierabend, Nesvold and Jaggar 1971, Laucella 1999, Barkan 2005, and most importantly Iqbal and Zorn 2006, 2008). There is also a specialized "assassination science" (e.g. Fetzer 2000). However, there are only a few studies in economics dealing directly with political assassinations. The most important contributions are by Jones and Olken (2008), analyzing econometrically the consequences of assassinations on institutions and war, and by Zussman and Zussman (2006) on the effectiveness of counterterrorism policy on the stock market (see also Crettez and Deloche 2007, and the more general studies by Frey 2007a,b). The work done in the economics of crime (e.g. Becker 1968, 1974) and terrorism (e.g., Enders and Sandler 2006, Frey 2004) is also directly relevant. This paper theoretically develops and empirically tests a broad set of hypotheses to test the determinants of actual and attempted assassinations using a large panel data set, covering a period of 20 years and more than 100 countries. The theoretical approach is developed using a rational choice framework, working with an extended economics of crime model (see Section II). Section III introduces the data and econometric model, Section IV presents the empirical results, and Section V concludes.

## II. THEORETICAL FOUNDATION

Political assassinations are a common feature of history (Jones and Olken 2008). Politicians are killed under many different circumstances and for many reasons, for example by political enemies seeking revenge. In 1961, the assassination of the first president of the Republic of

Congo, Patrice Lumumba, was arranged by his contender Mobutu and, in 2006, the Shiite-Kurdish government ordered the death of the former Sunnite dictator of Iraq, Saddam Hussein. There are also so-called “targeted killings” arranged by other nations (see e.g. Zussman and Zussman 2006, Statman 2004). There are still a significant number of political assassinations, even if the number recorded is restricted to politicians in power (such as kings, presidents or prime ministers)<sup>1</sup>, to successful attempts<sup>2</sup>, and to those undertaken by one or a few persons<sup>3</sup>. Famous instances<sup>4</sup> in classical European antiquity are the assassinations of the Athenian ruler Hipparchos (514 BC), the father of Alexander the Great Phillip II of Macedonia (336 BC), Julius Caesar (44 BC), and a large number of Roman Emperors<sup>5</sup>. Political assassinations seldom occurred in Medieval Europe (though the French Kings Henry III and Henry IV were killed in 1589 and 1610, respectively). More recent times saw many such murders. Four American presidents have been assassinated (Abraham Lincoln 1865, James A. Garfield 1881, William McKinley 1901, and John F. Kennedy 1963). In Russia, the four emperors Ivan VI, Peter III, Paul I and Alexander II were murdered during a period of less than 200 years. The post-war period of the 20<sup>th</sup> century has also seen a large number of political assassinations, attracting massive media attention. In addition to John F. Kennedy in 1963, other notable political assassinations include the Spanish Prime Minister (PM) Luis Carrero Blanco in 1973, the Egyptian president Anwar al-Sadat in 1981, the Indian PM Indira Gandhi in 1984, the Swedish PM Olof Palme in 1986, and the Serbian PM Zoran Djindjic in 2003.

### *2.1 A Simple Model of Political Assassinations*

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<sup>1</sup> This does not include several recent and significant assassinations, such as Robert Kennedy (1968), Martin Luther King (1968), Aldo Moro (1978), Rajiv Gandhi (1999), Piet Fortuyn (2002) or Benazir Bhutto (2007).

<sup>2</sup> There have been many thwarted attempts. Counting only significant assassination attempts, there are, for example, the cases of American presidents Andrew Jackson, Franklin D. Roosevelt, Harry S. Truman, Gerald Ford and Ronald Reagan. Napoleon III was the object of three assassination attempts within three years (twice in 1855, and again in 1858).

<sup>3</sup> The Latin word “attentatum” (i.e. attempted crime), which still exists today in several languages (e.g. in French “attentat”, in Italian “attentato”, in Spanish “Attentado” or in German “Attentat”), but is not used in English, captures this aspect. Another term sometimes used is “tyrannicide”, meaning the killing of a tyrant. The word assassination refers to the Ismaili Muslim sect Hashshahin, or Assassins who, between the 8<sup>th</sup> and 14<sup>th</sup> centuries, terrorized the Abbasid elite by fearlessly executing the politically motivated murders of rulers.

<sup>4</sup> Facts on political assassinations have been taken from various sources (especially Iqbal and Zorn 2006, 2008, and Jones and Olken 2008). Various articles in wikipedia on “Assassination”, “List of assassins”, “List of unsuccessful assassinations”, “List of assassinated people”, “List of people who survived assassination attempts”, “List of assassinations by car bombing”, “List of assassinated anticolonialist leaders” were also useful; the information reported was checked.

<sup>5</sup> just to name a few: Caligula (41AD), Claudius (54), Vitellius (69), Galba (69), Domitian (96), Commodus (192), Didius Julianus (193), Geta (212), Caracalla (217), Elagabal (222), Maximinus Thrax (238), Pupenius (238), Balbinus (238), Volasianus (253), and Galeus (253).

In Schumpeter (1942) and Downs' (1957) model of a perfectly competitive democracy, the two parties offer the same program. If one party leaves office, the contending party pursues the same program in the median of citizens' preference distribution. Hence, there is no incentive to kill a party leader, as this would not change policy. Assassinations of politicians in power would not be necessary and politicians would not need to be protected against would-be assassins. However, the previous sub-section has shown that such an approach cannot explain the large number of political assassinations. It is therefore useful to reconsider a theoretical framework that helps to deal with the determinants of assassinations. The simple model we suggest has its foundation in the economic theory of crime, initially developed by Becker (1968, 1974), which has since been extended and empirically tested on several occasions (see e.g., Alper and Hellman 2006, Cameron 1988), and has been applied to political assassinations (Frey 2007b). Similar approaches have also been used to model rational extremism (Wintrobe 2006). Our model is summarized in *Figure 1*. There are four possible outcomes:

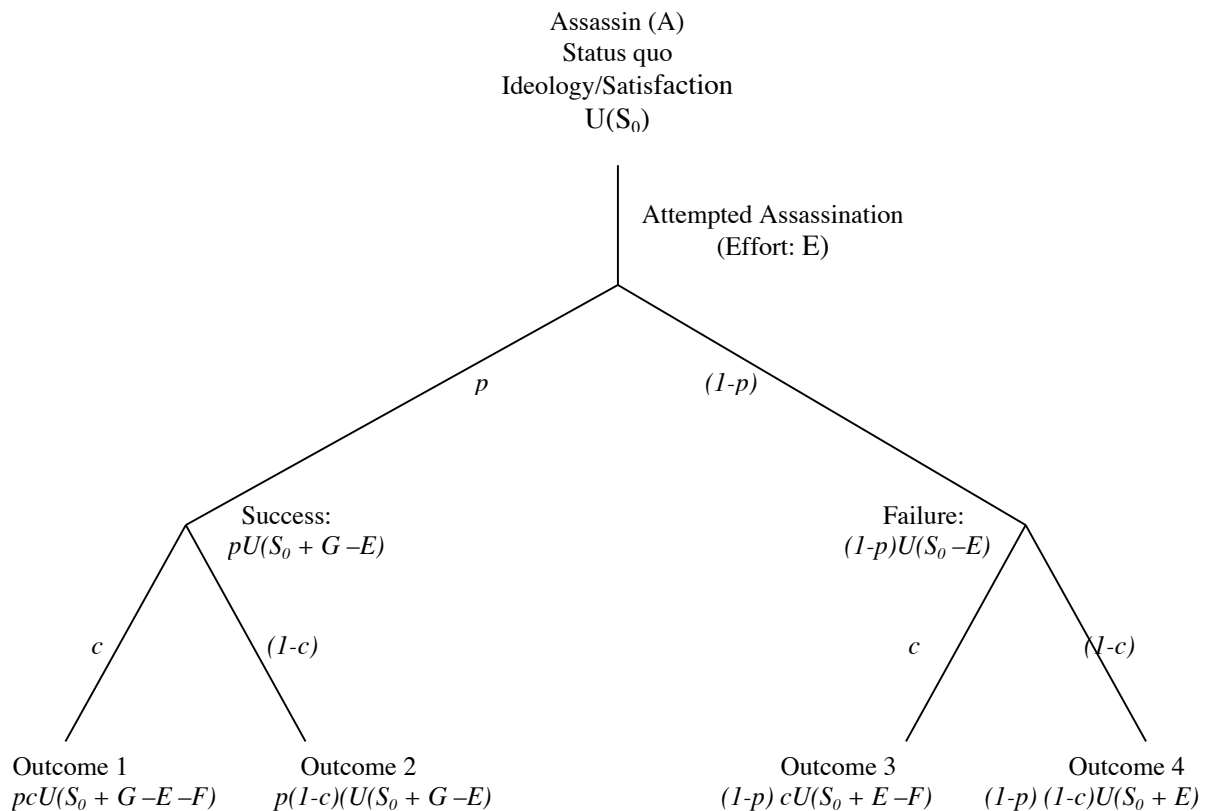
- 1) The assassination is successful and the assassin is caught (outcome 1)
- 2) The assassination is successful but the assassin is not caught (outcome 2)
- 3) The assassination is not successful but the assassin is caught (outcome 3)
- 4) The assassination is not successful and the assassin is not caught (outcome 4).

We assume an additive Neumann-Morgenstern utility function. The utility  $U$  of a potential assassin (PA) is decomposable as  $U(\text{assassin}) = \sum_{i=1}^n p_i f(x^i)$ , where  $f: X \rightarrow \mathfrak{R}$  is a utility function that represents preferences about the outcome (assassination) and  $p$  is the subjective probability that the PA commits the event (assassination). Thus, there is a certain subjective probability  $p$  that the PA is successful and a probability  $(1-p)$  that the PA fails in assassinating the politician. We also assume that the PA is risk neutral. If the politician is assassinated, the PA achieves a gain  $G$  or satisfaction  $S$  out of the assassination. In our case, the PA's utility function can be defined as  $U(S)$ . In a status quo situation, his or her utility function would be  $U(S_0)$ , where we assume that  $dU/dS_0 > 0$ . A successful killing would generate a new satisfaction level  $S_1 = S_0 + G$ , due to the satisfaction gain of  $G$  which increases his or her utility function  $U(S_0 + G)$ . However, this is also connected to a certain effort level  $E$ . We

assume that effort is costly and decreases the utility function of an assassin<sup>6</sup>. Thus, the PA's utility function would be  $U(S_0 + G - E)$ . However, there is not only a probability of success but also a probability  $c$  that the PA is caught, convicted and sanctioned or not caught  $(1-c)$ . If the PA is caught, he or she will experience the cost of a sanction  $F$  that decreases his or her utility level ( $dU/dF < 0$ ). Thus, the PA will attempt a political assassination if:

$$pcU(S_0 + G - E - F) + p(1-c)(U(S_0 + G - E) + (1-p)cU(S_0 + E - F) + (1-p)(1-c)U(S_0 + E) > U(S_0) \quad (1)$$

Figure 1: Model of Assassination



However, one can argue that a PA has alternative channels to express his or her level of dissatisfaction with politicians in power or the government. Achieving political change is a major incentive to kill political decision makers who pursue a disliked or hated policy. Friedrich Schiller's drama *Wilhelm Tell* deals with a classical instance of this desire, as do many other dramatic works. Having a "voice" in democratic (election) processes, protests or

<sup>6</sup> We therefore assume that assassination efforts do not generate procedural utility.

strikes may help to influence political outcomes. Thus, we can extend equation (1) with a factor that measures the gains from using moderate methods of legal pressure  $GL$  that require effort  $EL$ . This means that the  $PA$  decides to carry out an assassination if:

$$pcU(S_0 + G - E - F) + p(1-c)(U(S_0 + G - E) + (1-p) cU(S_0 + E - F) + (1-p) (1-c)U(S_0 + E) > U(S_0 + GL - EL) \quad (2)$$

This equation shows how the decision to assassinate a politician can be modeled as a rational choice. Certainly, further extensions and modifications are possible. For example, one could argue that the probability of getting caught depends on the success of the political assassination attempt. A higher success rate may require a higher level of risk taking, which may lead to a higher probability of getting caught. Nevertheless, this simple model allows us to develop several predictions, using a comparative static approach.

## 2.2 Testable Propositions

The following aspects are expected to determine the level of actual and attempted assassinations:

### *a. Catching Potential Attackers PA (c)*

There are many different countermeasures to deter political assassinations. The more that is spent on police, court personnel, and specialized equipment, the easier it is to discover offenses and convict offenders. The more developed the state of detection technologies, the easier it is to achieve a higher level of success (Becker 1968).

An efficient deterrence process is also generated by a better legal system. We therefore introduce a law and order variable that assesses the strength and impartiality of the legal system and the popular observance of the law. This leads us to the first hypothesis:

*H1: An increase in the efforts to apprehend and convict assassins reduces the probability of (attempted) assassinations.*

One can argue that assassinations are contagious (Iqbal and Zorn 2006). The criminal literature has stressed that the prevalence of a given type of criminal behavior may change the propensity of others to engage in that same behavior. It affects the perceptions about the net



return of such behavior (information function) and also the probability of arrests or constraints (Ludwig and Kling 2006, Cook and Goss 1996, Becker and Murphy 2000, Manski 1993, 2000). A higher number of previous assassinations are an indicator that the government is not able to cope efficiently with assassins.

*H2: The current number of (attempted) assassinations depends positively on the number of previous (attempted) assassinations.*

*b. The probability of a successful assassination ( $p$ ) and/or the required effort to assassinate a ruler ( $E$ )*

The better a politician is protected against would-be killers, the larger are the costs for the attacker. In history, there are prominent examples of organizations established to protect politicians<sup>7</sup>. One of the earliest and best known is the Praetorian Guard (“Praetoriani”) used by the Roman emperors. It dates back at least to the Scipio family and existed until 275 AD, when it was dissolved by Constantine I. The size of this guard varied over time. Under the first emperor Augustus, it was quite large, consisting of 9 cohorts of 500 to 1,000 men each. After Augustus, the Praetorians started to meddle in political affairs. Instead of protecting emperors, they often killed them, examples being Claudius (54 AD), Galba (69), Vitellius (69), Pertinax (193), Caracalla (217), or Elagabalus (222).

The Janissaries formed the Ottoman sultan’s household troops and bodyguard. It originated in the 14<sup>th</sup> century and was abolished four hundred years later (1826) by Sultan Mahmud II. Its full strength varied widely. In 1475, for example, it numbered 6,000 men, and in the 18<sup>th</sup> century it numbered 113,000 men (Nicolle 1995). As was the case with the Praetorians, the Janissaries meddled heavily in politics and also killed rulers they were supposed to protect. Thus, they assassinated Sultan Osman II in 1622.

The Garde Impériale was established in 1799 to protect the French consuls, but gained prominence under Emperor Napoléon. It consisted of the most prominent Old Guard, the Middle Guard and the Young Guard. In 1804, it numbered 8,000 men, but with the invasion of Russia in 1812 it comprised more than 100,000 men. Their final defeat was at Waterloo, where they retreated despite their motto “La Garde meurt mais se ne rend pas”.

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<sup>7</sup> See e.g. Melanson and Stevens (2005), Beyer (2003), DiJulius (2003). The following articles in wikipedia proved helpful in gaining an overview: “Bodyguard”, “Praetorian Guard”, “Janissary”, “Imperial Guard”, “United States Secret Service”, “Royalty and Diplomatic Protection Department”.

Hitler's bodyguard considered themselves the 20<sup>th</sup> century equivalent of the Praetorians (but were loyal to the Führer until the very end of WWII). The Schutzstaffel SS (Höhne 1979, Graber 1982) was established in 1920 as a personal guard for Hitler, but was initially part of the Schutzabteilung SA. With the execution of SA leadership in June 1934 ("Night of the Long Knives"), it became independent. Until 1929, it numbered no more than 280 personnel, but under the leadership of Heinrich Himmler it grew to 52,000 men in 1932, to 250,000 men by the beginning of the War, and comprised 38 divisions during the War. Hitler's personal security (see Hoffmann 1980) was, of course, a smaller unit. In 1934, it was the Leibstandarte SS Adolf Hitler (LSSAH), but when this unit engaged as part of the Waffen-SS in the War, Hitler's personal security was entrusted to the Reichssicherheitsdienst RSD.

Today's most prominent bodyguard is found in the United States. It has been designed to protect the president and comprises 2,100 plainclothes special agents (usually in conservative business suits, sunglasses and communication earpieces), a uniformed division of 1,200 persons and 1,700 technical and administrative employees<sup>8</sup>. The corresponding unit in the United Kingdom is called Royalty and Diplomatic Protection Department, and in Russia it is the Federal Protective Service (Deriabin 1984, Deriabin and Bagley 1990). The latter is estimated to number more than 30,000 uniformed personnel plus several thousand plainclothes agents. The Presidential Security Service protects the president of Russia. However, bodyguards can sometimes be disloyal. A famous case is the assassination of the Indian Prime Minister Indira Gandhi in 1984 by two of her Sikh bodyguards (Frank 2002, Sarin 1990, Dilip and Ashok 1985).

The preceding discussion on the various bodyguards highlights the impossibility of getting any clear quantitative notion of their size. This is not only due to the fact that much of the work they do is highly secret, but also that they perform many different tasks in addition to protecting the ruling politician. A common feature, however, is that the bodyguard has a strong tendency to grow in leaps and bounds, and that the strict task of protecting the ruler is transferred to a smaller specialized unit. Their growth does not necessarily mean that the ruler is better protected, because their large number and importance give them the opportunity to meddle in politics, and even to seize power.

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<sup>8</sup> The American Secret Service also investigates a wide variety of financial fraud crimes and identity thefts and provides forensic assistance for some local crimes. Not all of the 5,000 Secret Service agents are directly involved with protecting the president.

There are many different possibilities to raise the costs of attacking a politician. The most important ones are: clearing large areas (for instance, shutting down entire sections of cities and roads and restricting access to buildings); using armored cars (of which the best known is the “Popemobile” with its bulletproof glass); using bomb and weapon detectors; wearing bullet proof vests; having a body double as a decoy; or going into seclusion. These counter-measures offer varying degrees of effectiveness, depending on the circumstances, and impose different costs on the person requiring protection. They all serve to make an attack more difficult, raising the cost of attempting to assassinate a politician. We therefore empirically test the following hypothesis:

*H3: An increase in protection reduces the number of (attempted) assassinations.*

However, some would-be killers are attracted by prominent politicians and have an inner drive to kill them, irrespective of how these politicians act and irrespective of the response from the media<sup>9</sup>. One example is John Hinckley, who severely wounded President Ronald Reagan. Hinckley was subsequently described as having serious psychological problems. He stated publicly that he had wanted to get the attention of actress Jody Foster rather than make any political or ideological statement<sup>10</sup>. These cases can be considered to be (high level) random events. However, such random events are more frequently observed in larger societies.

*H4: The larger the population of a country, the higher is the chance that a mentally deranged person attacks and kills a politician.*

### *c. Political Accountability (G)*

Assassinations of political rulers are undertaken for many different reasons, ranging from political and ideological differences, wanting to attract media attention to the work of

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<sup>9</sup> There is a considerable psychological and medical literature devoted to these cases. For example, Fine and Vossekul (1999) estimated that about 25% of the actual attackers in the United States were found to be delusional, a figure that rose to 60% with 'near-lethal approachers'. They also estimated that around two-thirds had previously been arrested for (not necessarily related) offenses, that around 44% had a history of serious depression, and 39% a history of substance abuse. These studies appear to attribute a large part of all political assassinations to mentally deranged persons. See the critical discussion in Iqbal and Zorn (2006).

<sup>10</sup> Prominent people always run the risk of being attacked on these grounds. Examples are the Beatle John Lennon in 1980, or the film director, writer and art critic Theo van Gogh in 2004. Tennis player Monica Seles is an example of an unsuccessful assassination attempt. In 1993, while playing in Hamburg, a Steffi Graf fan stabbed her.

mentally deranged persons. While leaders of democratic countries are also targets, there seems to be a clear prevalence in dictatorial and authoritarian countries. For example, between 1921 and 1945, there were about 40 assassination attempts on Hitler<sup>11</sup>, the most notable ones being by Kurt Lutter in 1933, by Johannes Georg Elser in 1933, by Erwin von Witzleben in 1941, by Henning von Treskow in 1943 and by Claus Schenk Graf von Stauffenberg in 1944. This highlights a central hypothesis of the paper: The more politically accountable a country is, the less political assassinations are attempted. The more accountable and democratic the governance is, the lower is the incentives to seek a policy change by exerting force. Interestingly, in Switzerland (a country with a high level of direct democracy and local autonomy), the Swiss politicians, including the members of the Bundesrat (the Federal Council), are not normally protected and take pride in using public transportation just as everyone else. Indeed, no member of the Federal Council has ever been killed for political reasons<sup>12</sup>.

Conversely, there is a strong desire to kill rulers and politicians who impose their own will on the population. The less accountable a ruler is, i.e. the more he or she pursues his or her own will and disregards the will of the population, and oppresses the people, the greater is the benefit killing him or her. In contrast, in a politically accountable state, this incentive is weak, because policies are more likely to take into account the preferences of the population. Moreover, the rulers are sanctioned by an elected parliament that is perceived as efficient, or in some cases even by popular vote. We can therefore develop the following hypothesis:

*H5: An increase in political accountability, government effectiveness and constitutional strength, and therefore an increase in the legitimacy of the ruler(s), reduces the number and the probability of (attempted) assassinations. The stronger the civil society, the less politicians are killed.*

#### *d. Expected gains (G) of killing a ruler*

The expected effect on policy of an assassination (see also Jones and Olken 2008) is greater when there is *one politician in charge* than if the policy is determined by a committee of (equal) politicians. This one person in charge, (it may be a king, a president or a prime

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<sup>11</sup> Duffy and Ricci (1992), Hamerow (1997), Gisevius (1998).

<sup>12</sup> There have been political assassinations in Switzerland, but the targets have been foreigners visiting or seeking refuge in the country, and the attackers have also been foreigners. Examples are the Austrian Empress and Queen of Hungary Elisabeth ("Sisi" or "Sissi" in books and films), who was killed in 1898 by an anarchist in Lausanne, and Kazem Rajavi, an Iranian opposition leader, who was assassinated in 1990 in Geneva.

minister), plays a prominent role and has some discretionary room to act according to his or her preferences. He or she, therefore, becomes the object of dislike or hatred for a number of individuals, some of whom may demand that the ruler be killed. On the other hand, if the government has many cabinet ministers, an extreme policy is more difficult to pursue and various different interests are accommodated.

Individuals may have an incentive to kill a politician to create chaos, independent of whether the ruling politician pursues the will of the people. This was the avowed goal of some revolutionaries of the 1960s<sup>13</sup>. However, the probability that a political assassination leads to chaos is smaller in a democracy than in a more authoritarian system, because the succession rules are clearly determined. Therefore, the desire to kill politicians depends on factors similar to those involved when an attacker directly seeks a change of policy. We therefore test the following hypothesis empirically by using the cabinet size as a proxy for the number of politicians in charge.

*H6: An increase in the number of politicians in charge leads to a decrease in the number of (attempted) assassinations.*

In a *centralized state*, the ruler has more power than in a governmental system with several decision makers. In a country with an extensive division of power between the legislature, the executive and the judiciary, as well as between the central and sub-central units (states, provinces, communes), there is less incentive to kill politicians because the advantages of assassinating leading politicians is expected to be smaller.

*H7: The more centralized a country is, the more assassinations are observed.*

On the other hand, increasing the level of political instability/unrest or conflicts raises the number and the probability of (attempted) political assassinations. An increase in the level of aggressiveness makes it harder for the rulers to satisfy citizens' preferences, which can lead to an increase in (attempted) assassinations. Assassinations are fostered by the presence of more generalized political unrest, and people may feel the need to engage in all kinds of political violence, including assassinations (Iqbal and Zorn 2006).

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<sup>13</sup> It is debatable whether they meet the conditions outlined above for a political assassination, as these revolutionaries were often terrorist groups (such as the German RAF, the Italian Brigade Rosse, or the French Action Direct) and not one or a few individual attackers (see e.g. Frey 2004).

*H8: An increase in the level of political instability and unrest (conflicts) raises the number of (attempted) assassinations.*

An increase in income inequality also reduces trust in the ruler(s). It is an indicator of a lower level of solidarity by the elite toward lower income groups. Furthermore, income inequality may be associated with political instability. On the one hand, less privileged groups may choose to use undemocratic instruments to improve their situation (Alesina and Perotti 1996). On the other hand, privileged groups may try to maintain their position by illegal means.

*H9: A higher level of income inequality increases the number and the probability of (attempted) assassinations.*

The more *developed the media*, the more attention is focused on the ruler. An important part of any dictator's policy is to use the media to his or her advantage (see Glaeser 2006). Hitler was one of the first to fully exploit this possibility (skillfully managed by Goebbels, see e.g. Fest 1963, Kershaw 2000); contemporary dictatorships do the same, sometimes to a ridiculous extent (as in the case of Saparmurat Niyazov, President of Turkmenistan 1985-2006, or Kim Jong-il in North Korea). An aspect of the dictator's personality cult is that much attention is focused on his or her person, possibly making him or her the object of aggression (e.g., Reiner 2002). On the other hand, an increase in freedom of the press can reduce the probability of (attempted) political assassinations. Freedom of speech and freedom of the press are generally considered to be important human rights and are powerful controls against government malfeasance (Brunetti and Weder 2003), providing alternative ways of achieving political changes or expressing political preferences. We focus on the lack of freedom of the press by looking at repressive actions or facilities, censorship, self-censorship, harassment and expulsions. Repression reduces the possibility of having a "voice", which reduces the possibilities and incentives of using legal pressure (*GL*) and increases the incentives to gain from a political change (*G*).

*H10: Reducing freedom of the press, in the form of media repression, increases the incentive for political assassinations.*

It may be argued that there are would-be assassins who want to attract the attention of the media by killing a ruler; they are not interested in the political consequences. With a *free press*, the attention gained is typically greater than with the media in an authoritarian system, where the news may even be suppressed so that the political class can cling to power. A recent example was the sudden death of the dictatorial ruler of Turkmenistan, Niyazov. It was rumored that he was poisoned, but whether this is true or not remains unclear, as the media in Turkmenistan are completely controlled. In contrast, in a country with free media, such rumors cannot be suppressed, which raises the media attention obtained by a political assassination. Thus, there may also be an imitation effect induced by intensive media attention (Reiner 2002, Christensen 2004).

### III. DATA AND ECONOMETRIC MODEL

#### 1. Political Assassinations

A POLITICAL ASSASSINATION (PA) is defined as “any politically motivated murder or attempted murder of a high government official or politician”. The *Banks’ Cross-National Time-Series Data Archive*<sup>14</sup> supplies the data, which covers a large set of countries over a very long period of time. *Tables A1* and *A2* and *Figure A1* provide an overview of the data used. Nevertheless, it should be noted that the data is not bias-free. Many aspects of political murders are either unknown or uncertain, or for political reasons remain undisclosed. Moreover, in the case of political assassinations, the data are often not objective but are *systematically* manipulated by the persons and organizations involved. This applies in particular to thwarted assassination attempts. The security services often have an interest in publicizing – or even in inventing – thwarted attempts in order to emphasize their importance, and to thereby accrue more prestige, political importance and funds. Under different circumstances, the security services may have an interest in suppressing the publication of such events because they fear an imitation effect. Such manipulation is easier in dictatorships and in countries with controlled media than in democratic countries. This means that some of the data points are more unreliable than others. This creates a special problem, because political assassinations seem to occur more often in authoritarian developing economies than in democratic developed economies<sup>15</sup>.

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<sup>14</sup> For simplicity’s sake, the term “political assassination” is taken to include both attempted and successful political assassinations.

<sup>15</sup> Such manipulation of data is a common phenomenon when the data are of importance in the political process. For instance, misrepresentation has proved to be a problem for GNP and other economic indicators declared to be goals of government activity. As the rate of unemployment has become a politically important indicator,

## 2. Independent Variables

We use the *International Country Risk Guide* (ICRG) data set to measure political risk, political accountability and law and order. The POLITICAL RISK INDEX (*PRI*) provides an assessment of the political stability on a comparable basis by using 12 different measures that cover both political and social factors. These measures include aspects such as bureaucratic quality, corruption, democratic accountability, government stability, law and order, internal and external conflicts, religious and ethnic tensions, or military presence in politics.<sup>16</sup> A higher number of points indicates a lower potential risk and therefore higher scores are in line with a higher institutional and governance quality. We develop a further index, namely POLITICAL ACCOUNTABILITY (*AC*) that focuses on the five variables - bureaucratic quality, corruption, democratic accountability, government stability and law and order. In addition, LAW & ORDER (*LO*)<sup>17</sup> is a key variable in our theoretical model (see previous section). Further data are taken from the *Banks' Cross-National Time-Series Data Archive*, namely the cabinet size (*CS*), which refers to the number of ministers of cabinet rank and several variables that allow us to construct a Conflict Index (*CI*)<sup>18</sup> that covers general strikes, guerrilla warfare, government crises, purges, riots, revolutions and anti-government demonstrations. The remaining variables (*CTRL*) are collected from the *World Development Indicators* and refer to population size, share of people age 65+, and GDP. To our knowledge, no internationally comparable data on security expenditures and other efforts to protect politicians are available. For the same reason that the number of assassination attempts may be biased, the activities of the security organizations are not revealed. As a (admittedly imperfect) proxy, we take defense expenditures as a percentage of total national

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governments have started to manipulate it in order to simulate a better picture of the state of the labor market than is accurate. Thus, the long-term unemployed are defined as no longer being part of the work force and therefore no longer raise the official rate of unemployment. It is also well known that the measure of budget deficit has been cleverly manipulated by some European countries when the rules for entering the European Monetary Union required that budget deficits did not exceed three percent of GDP and the public debt did not exceed sixty percent of GDP (see, e.g., Forte 2001, Von Hagen and Wolff 2004). Such distortions of indicators were so widespread that observers stated that “[...] the determining factor for achieving membership of the planned European Monetary Union (EMU) seems to rely on widespread use of public-sector creative accounting measures” (Dafflon and Rossi 1999: 59-60).

<sup>16</sup> [http://www.icrgonline.com/page.aspx?page=icrgmethods#Background\\_of\\_the\\_ICRG\\_Rating\\_System](http://www.icrgonline.com/page.aspx?page=icrgmethods#Background_of_the_ICRG_Rating_System)

<sup>17</sup> The ‘law’ sub-component measures the strength and impartiality of the legal system, while the ‘order’ sub-component is an assessment of popular observance of the law.

<sup>18</sup> We use the *Weighted Conflict Index* provided by *Banks' Cross-National Time-Series Data Archive* without considering political assassinations. The weighted conflict index is calculated in the following manner: multiply the value of the number of General Strikes by 43, Guerrilla Warfare by 46, Government Crises by 48, Purges by 86, Riots by 102, Revolutions by 148, Anti-Government Demonstrations by 200. Add the weighted values together and divide by 8 (see *Banks' Cross-National Time-Series Data Archive* codebook).



government expenditures (derived from the *Banks' Cross-National Time-Series Data Archive*), because it can arguably be assumed that they are strongly positively correlated - the larger the share of military expenditures, the larger the expected protection given to politicians. The GINI coefficient is used as a proxy for income inequality, using the *World Income Inequality Database*. A proxy for decentralization and federalism is derived from the *DPI 2004 Database of Political Institutions*. An index is constructed covering the following variables: contiguous autonomous regions, locally elected municipal governments and state/province governments<sup>19</sup>.

### 3. Specifications

To test our hypotheses, the following baseline equations are econometrically estimated:

$$PA_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 PRI_{it} + \beta_3 CI_{it} + \beta_4 CS_{it} + TD_t + REGION_i + \varepsilon_{it} \quad (3)$$

$$PA_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 AC_{it} + \beta_3 CI_{it} + \beta_4 CS_{it} + TD_t + REGION_i + \varepsilon_{it} \quad (4)$$

$$PA_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 LO_{it} + \beta_3 CI_{it} + \beta_4 CS_{it} + TD_t + REGION_i + \varepsilon_{it}, \quad (5)$$

where  $i$  indexes the countries in the sample and  $t$  denotes the time period (1984 till 2003). We control for time as well as regional invariant factors including fixed time,  $TD_t$ , and fixed regional effects,  $REGION_i$ <sup>20</sup>.  $\varepsilon_{it}$  denotes the error term. Specification (5) can be extended to include lagged political assassination data (LPA, see specification (6)). This allows us to examine whether there is a contagion effect. Moreover, it provides a way to account for historical factors, which are difficult to account for in other way, and therefore controls for unobserved variables.

$$PA_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 LO_{it} + \beta_3 CI_{it} + \beta_4 CS_{it} + \beta_5 LPA_{it} + TD_t + REGION_i + \varepsilon_{it} \quad (6)$$

In further specifications, the number of control variables can be extended to include GDP per capita. It controls for wealth and economic development, which allows a polity that provides more benefits to the people (Iqbal and Zorn 2006). In addition, we test alternative hypotheses, focusing on further variables (FV), such as the impact of defense expenditures, federalism, lack of freedom of the press and income inequality.

<sup>19</sup> Mean value of all the subfactors.

<sup>20</sup> We differentiate between Europe, Latin America, North America, North Africa, Sub Saharan Africa, the Pacific, Asia, the Caribbean and Australia.

$$PA_{it} = \alpha + \beta_1 CTRL_{it} + \beta_2 LO_{it} + \beta_3 CI_{it} + \beta_4 CS_{it} + \beta_5 LPA_{it} + \beta_6 FV_{it} + TD_{it} + REGION_i + \varepsilon_{it} \quad (7)$$

#### IV. EMPIRICAL RESULTS

*Table 1* presents the basic results. We report three models, namely OLS specifications, probit models where 1 measures whether a political assassination happened in  $i$  at time  $t$  (0 otherwise), and left censored tobit models due to a large amount of zeros in the data set. In the OLS estimations, the *beta* or *standardized* regression coefficients compare magnitude, which reveals the relative importance of the variables employed. To obtain robust standard errors in these estimations, we use the Huber/White/Sandwich estimators of standard errors. *Table 1* indicates that the results are quite robust with regard to the chosen models. In the first three specifications, we explore the effect of the POLITICAL RISK INDEX variable. The coefficient is highly statistically significant. The probit specification (see regression (2)) indicates that an increase in the political risk index variable by one unit reduces the probability of assassinations by 2.8 percentage points. In specifications (4) to (6), the variable POLITICAL ACCOUNTABILITY is used instead of POLITICAL RISK INDEX. The result suggests that political or governance institutions are important. The coefficient is always statistically significant, showing relatively large quantitative effects. The higher the level of accountability and governance quality, the lower is the incentive to kill politicians, as the preferences of the people are better taken into account in the political process. Thus, an increase in political accountability, government effectiveness and constitutional strength, or, in other words, an increase in the legitimacy of the ruler(s), reduces the number of political assassinations. The stronger the civil society, the less politicians are killed (or survive assassination attempts). In specifications (7) to (9), we use LAW AND ORDER instead of POLITICAL ACCOUNTABILITY or POLITICAL RISK INDEX. The results show that the variable LAW AND ORDER has an even stronger negative impact on political assassinations, as evidenced by the size of the coefficients, the marginal effects and the  $R^2$ . In last three specifications (10) to (12), the variable CONFLICT INDEX is omitted to check for robustness, as it can be argued that the variable is endogenous. As can be seen, the previous results remain robust. In particular, we observe that the variable LAW AND ORDER is still statistically significant and indicates the strongest quantitative effects among all the independent variables used.

In sum, the findings indicate that hypotheses 1 (on the effort made to apprehend and convict assassins) and 5 (on legitimacy and civil society) cannot be rejected. The CONFLICT INDEX variable is also statistically significant at the 1% level in the 12 regressions, with the largest beta coefficients. Thus, an increase in political instability, political unrest or conflicts increases the number and the probability of (attempted) political assassinations quite markedly, a result that supports hypothesis 8. This result is consistent with what Iqbal and Zorn (2006) report.

*Table 1* suggests that cabinet size is negatively correlated with political assassinations, which is consistent with hypothesis 6. A large cabinet reduces the incentives to kill a politician. However, compared to the other variables discussed, the effect is not very strong and the coefficient is not always statistically significant in the three models. On the other hand, the population size has a strong and statistically significant positive impact on assassinations. Thus, hypothesis 4 cannot be rejected. Individuals compelled by some inner drive, rather than by a political motive, to kill politicians, are more frequently observed in larger subject pools. A larger share of people age 65+ has a negative impact on political assassinations. The literature on the economics of crime also suggests that age is negatively correlated with committing crimes<sup>21</sup>. The OLS estimates show a statistically significant negative correlation. However, the impact is less obvious with the two alternative models.

In the next step, we explore whether we find a contagion effect and how economic development affects political assassinations. The results are reported in *Table 2*. The lagged assassination variable (ASSASSINATION(t-1)) is always statistically significant and shows the largest beta coefficients of all the regressions reported in *Table 2*. Contrary to Iqbal and Zorn (2006), we observe a strong contagion effect, which is consistent with hypothesis 2. The previously observed results remain robust. Specifications (19) to (21) report a positive relationship between economic development and political assassinations. However, the coefficient is only statistically significant in the OLS regression. This suggests that developed countries are not free from experiencing political assassinations once we control for governance/institutional quality and the level of conflict<sup>22</sup>.

*Table 3* tests the remaining hypotheses. For simplicity's sake, we only report the coefficients of the variables of interest. *Table 3* provides a summary of 16 regressions. The

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<sup>21</sup> For a discussion, see Torgler (2007) and Torgler and Valev (2006, 2007).

<sup>22</sup> Nevertheless, one should keep in mind the previous discussion with regard to potential biases in our dependent variable. Due to potential manipulation, data from developing countries are less reliable than those from developed countries.

findings show that hypothesis 3 cannot be rejected. An increase in defense expenditures in relation to total national expenditures reduces the number of political assassinations. To the extent that defense expenditures are indeed a reasonably good proxy for the unobtainable expenditures and other efforts to protect politicians, the estimation results indeed show that the better a politician is protected against would-be killers, the larger the costs to the attacker and the lower the number of political assassinations. Comparable effects are observable when focusing on how decentralization affects political assassinations. The coefficient is also statistically significant in all the specifications showing similar beta coefficients. This result is consistent with hypothesis 7. An increase in decentralization via the division of power and federalism reduces the likelihood of politicians being attacked and killed.

The following regressions focus on the lack of freedom of the press. The findings show a positive correlation with the number of assassinations. Repressive actions against the media increase the incentive to take radical steps, such as political assassinations, to combat the existing regime. Alternative channels of voice are suppressed and negative reciprocity encouraged. The coefficient is statistically highly significant and the beta coefficients report large quantitative effects. Finally, *Table 3* reports how changes in income inequality are related to political assassinations. There is a strong positive correlation that is statistically significant at the 1% percent level in all the regressions. Thus, hypothesis 9 cannot be rejected. When income is distributed more unequally, the support for the regime in power falls and the incentive to use radical and undemocratic instruments to change the situation increases.

*Table 4* explores the robustness of the previous findings by applying an instrumental variable technique approach. Evaluating the direct effects of our governance quality or law and order and conflicts variable on political assassinations, in a setting where unobserved factors may affect these two key independent variables and political assassinations, may require an instrumental variable technique to separate the impact of these factors from underlying alternative factors. It can be argued that a higher level of political assassinations may lead to more conflicts. However, most of the variables included in our index, such as general strikes, anti-government demonstrations, revolutions, or riots can be seen as activities organized by non-elite groups rather than reactions to the existing regime due to political assassinations. Jones and Olken (2008) explore whether assassinations affect military conflicts. They find that assassinations only have a limited affect on conflict. Successful assassinations lead to an intensification of small-scale conflicts. On the other hand, weaker

evidence was found for high-intensity conflicts. Successful assassinations seemed to have the opposite effect, promoting the end of the conflict. This may reduce the causality problem. Nevertheless, political assassinations may weaken the current elite, which may lead to a stronger incentive to induce a change in power through such channels as inciting revolutions. For these reasons, it is important to analyze potential causality problems. *Table 4* reports four 2SLS estimations, together with several diagnostic tests and the first stage regressions. It should be noted that the results remain robust using the variables POLITICAL ACCOUNTABILITY or POLITICAL RISK INDEX, instead of LAW AND ORDER, and using the alternative specifications discussed in previous tables. *Table 4* indicates that, for the 2SLS, the coefficient of our instrumented variables remains statistically significant. Similar results are also visible for other independent variables, such as population or cabinet size. First, we use a lagged law and order variable (LAW AND ORDER(t-1)) as a straightforward instrument for LAW AND ORDER (see regressions (22) and (24)). In the next step, another instrument for LAW AND ORDER is added, namely temperature (see regressions (23) and (25)). In the first two regressions in *Table 4*, the variable CONFLICT INDEX is omitted. Once we include the variable CONFLICT INDEX, we also include a one-year lagged conflict index variable (CONFLICT INDEX(t-1)) as an instrument for it. The use of temperature as an instrument requires further discussion. There are an increasing number of studies that investigate the way in which climatic conditions have an impact on countries' or regions' institutions (see, e.g., Engerman and Sokoloff 1997, Landes 1998, La Porta et al. 1999, Diamond 1997, Sachs 2000, Hirshleifer and Shumway 2003, Schaltegger and Torgler 2007). Such external situations may affect the preferences of inhabitants and hence their culture and institutional arrangements. According to Diamond (1997), geography and climate help to explain different nations' economic destinies. La Porta et al. (1999) investigate the effect of latitude and argue (in line with Landes (1998)) that temperate zones result in better agriculture and a healthier climate, which helps to develop their economies and institutions. However, Sachs (2000) criticizes this approach, arguing "when latitude is tested for explanatory power against various direct climate or ecological measures, we find that latitude per se adds little if anything to the explanation of patterns of cross-country development" (pp. 4-5). The studies of Engerman and Sokoloff (1997), Landes (1998) and Sachs (2000) investigate the connection between climate and economic development. Sachs (2000), for example, presents evidence that production technology in the tropics has lagged behind temperate zone technology in the areas of agriculture and health, which opened a

considerable income gap between the climate zones. Roll (1992) emphasizes that the unambiguously observable weather is a genuinely exogenous identifying variable. Schaltegger and Torgler (2007), show that weather conditions are valid instruments for government accountability. The advantage of using temperature is that it varies over time to a certain degree, and can therefore be considered in a panel analysis. Thus, we investigate the relevance of a nation's annual mean TEMPERATURE in Celsius<sup>23</sup> as an instrument for LAW AND ORDER, POLITICAL ACCOUNTABILITY and POLITICAL RISK INDEX. *Table 4* shows that the instruments employed are effective in explaining LAW AND ORDER and CONFLICT INDEX. All factors are statistically significant at the 5% or 1% level. Moreover, the *F*-tests for the instrument exclusion set in the first-stage regression are statistically significant at the 1% level in all cases. *Table 4* also reports a test for instrument relevance, using the Anderson canonical correlations LR to analyze whether the equation can be identified. The test shows that the null hypothesis can be rejected, indicating that the model is identified and the instruments are relevant (see Hall, Rudebusch and Wilcox 1996). The Anderson-Rubin test suggests that the endogenous variables are jointly statistically significant. Such a test is robust to the presence of weak instruments. We also present Sargan's (1958) test for over-identification of the specifications (23) and (25), where we use two instruments for LAW AND ORDER to examine the validity of the exclusion restrictions. The test results indicate that the Sargan tests fail to reject the null hypotheses that our instruments are valid. These outcomes support the validity of the instruments employed in the analysis. In sum, the empirical results provided in *Table 4* are in line with the results from previous tables, suggesting that the econometric estimation results are consistent with our key hypotheses.

## V. CONCLUSIONS

In the course of history, many politicians have been assassinated. Even if we only count the murder of rulers, such as presidents, prime ministers, and kings and queens, there are still many cases of political murders. These have happened primarily in authoritarian or dictatorial countries, but leaders in democracies, for instance, have also been targeted, as shown by the many successful assassinations and attempted assassinations of American presidents. A

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<sup>23</sup> See Mitchell et al. (2004).

rational choice analysis is developed to explain the determinants of political assassinations and several hypotheses are tested.

The results allow us to draw policy conclusions that go beyond the deterrence approach presently dominating the policy agenda. Our analysis suggests that an extension of voice and accountability, governance quality and rule of law, a larger cabinet, more decentralization via the division of power and federalism, an increase in freedom of the press, a decrease in income inequality, a strengthening of civil society and an increase in protection significantly reduce the incentive to assassinate politicians. The empirical analysis suggests that alternative instruments, going beyond deterrence, should be considered to reduce the number of (attempted) political assassinations. The policies presently undertaken are dominated by a deterrence approach, where the costs to the attacker are raised. This is true even for democracies where increasing emphasis has been put on protecting politicians by using the secret service, police or military forces. Thus, for example, the security precautions taken to protect the American president are enormous, both at home and when he visits foreign countries<sup>24</sup>. It has become common practice in democratic countries to seal off whole streets and sections of cities to protect local and foreign politicians. The protective measures are even more extensive in authoritarian and dictatorial countries<sup>25</sup>. However, the costs of these measures are external to these organizations and persons, and are moreover a public bad, so that only little, if any, opposition is mustered. The closing off of streets and sections of cities, for example, is costly for the people in terms of inconvenience and time lost. For the secret service, the costs imposed are irrelevant as long as the persons negatively affected have no incentive to oppose them at an individual level. A political movement restricting these measures can easily be thwarted, as the benefits of the security measures are clear.

Quite a different approach to using deterrence is to reduce the expected benefits for assailants. As suggested in our paper, there are a variety of options. A move to a more democratic and accountable regime, a regime with a higher level of governance and institutional quality, with a better functioning law and order system and more decentralized

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<sup>24</sup> When the US president visits a foreign country, a large number of secret service agents are sent in advance. When the president arrives, he does so with a small air force, a motorcade of armor-plated cars, a communications van packed with state-of-the art devices and 250 heavily-armed secret service agents, dozens of advisers and teams of sniffer dogs. See “Protecting the US president abroad” (<http://news.bbc.co.uk/2/hi/americas/4535911.stm>).

<sup>25</sup> The current emphasis on protective measures can partly be explained by rent seeking (the same can be claimed for the reaction against terrorist threats, treated extensively in Frey 2004, chapter 2). There are a great many organizations and persons benefiting directly from extended security measures, in particular the secret service community.

structures that are less vulnerable to attacks, may reduce the number of (attempted) political assassinations. The decentralization of power can be enhanced by dividing it more equally between parliament and the courts, and by granting more power to the subunits (states, provinces, communes). Policies to reduce income inequality and to promote freedom of the press also tend to reduce the number of political assassinations. In addition, changing from one (democratic) ruler (be it president, prime minister or king) to a committee of several persons also reduces the incentive of assassins to attack executive members. For example, the danger of political assassinations would drastically fall if the US executive were to consist of a committee of equals, say of three to seven persons. The incentive to kill any of them would be much smaller, as any would-be assassin realizes that killing one of them would hardly affect the policy direction.

We also observe that assassinations are contagious. This result is consistent with the criminal literature, which has stressed that the prevalence of a given type of criminal behavior may affect the propensity of others to engage in criminal behavior.

The paper constitutes an empirical step towards deepening the analysis of political assassinations using a large panel data set. We are well aware that an econometric analysis is only one approach to gaining insights into the reasons for political assassinations. Future work could profit from case studies of political assassinations, especially if it were based on the technique of “analytic narratives” (see, e.g., Bates et al. 1998) to generate further theoretical and empirical insights for at least some aspects of the issues involved.



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Table 1: The Determinants of Political Assassinations (1984-2003)

Explanatory variables	OLS	Probit	Tobit (left censored)	OLS	Probit	Tobit (left censored)	OLS	Probit	Tobit (left censored)	OLS	Probit	Tobit (left censored)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Political Risk Index	-0.112*** (-4.28)	-0.028*** (-7.87) <i>-0.004</i>	-0.100*** (-7.56)									
Political Accountability				-0.069*** (-2.69)	-0.243*** (-5.22) <i>-0.034</i>	-0.893*** (-5.09)						
Law and Order							-0.161*** (-5.96)	-0.309*** (-8.02) <i>-0.041</i>	-1.126*** (-8.12)	-0.198*** (-6.97)	-0.340*** (-8.97) <i>-0.046</i>	-1.273*** (-8.96)
Conflict Index	0.179*** (4.26)	0.3e-04*** (4.78) <i>0.4e-05</i>	0.0001*** (6.28)	0.185*** (4.40)	0.3e-04*** (5.06) <i>0.4e-05</i>	0.1e-03*** (6.85)	0.172*** (4.19)	0.3e-04*** (4.84) <i>0.4e-05</i>	0.1e-03*** (6.28)			
Cabinet Size	-0.056*** (-3.40)	-0.005*** (-0.82) <i>-0.001</i>	-0.026 (-1.22)	-0.052*** (-3.17)	-0.003 (-0.49) <i>-0.4e-03</i>	-0.019 (-0.91)	-0.056*** (-3.38)	-0.003 (-0.47) <i>-0.3e-03</i>	-0.019 (-0.91)	-0.073*** (-3.96)	-0.007 (-1.29) <i>-0.001</i>	-0.038* (-1.76)
log(population)	0.115*** (5.43)	0.200*** (6.71) <i>0.026</i>	0.739*** (6.66)	0.119*** (5.56)	0.194*** (6.53) <i>0.027</i>	0.726*** (6.56)	0.113*** (5.53)	0.195*** (6.54) <i>0.026</i>	0.702*** (6.49)	0.172*** (7.40)	0.248*** (8.83) <i>0.033</i>	0.932*** (8.63)
Share Population >65	-0.096*** (-3.42)	0.005 (0.26) <i>0.001</i>	0.008 (0.12)	-0.109*** (-3.78)	-0.009 (-0.47) <i>-0.001</i>	-0.039 (-0.56)	-0.088*** (-3.33)	0.006 (0.31) <i>0.001</i>	0.020 (0.29)	-0.095*** (-3.49)	0.003 (0.16) <i>0.4e-03</i>	0.006 (0.08)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> / Pseudo R <sup>2</sup>	0.144	0.213	0.157	0.140	0.191	0.143	0.150	0.216	0.161	0.126	0.196	0.147
Prob > F/ Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
# of observations	2464	2386	2464	2483	2405	2483	2483	2405	2483	2484	2406	2484

Notes: Estimations with robust standard errors. OLS coefficients = standardized/beta coefficients. t-statistics in parentheses, marginal effects in italics. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively. The probit regressions have a lower amount of observations, as one region has no variation.

Table 2: Contagion Effect

Explanatory variables	OLS	Probit	Tobit (left censored)	OLS	Probit	Tobit (left censored)	OLS	Probit	Tobit (left censored)
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Assassinations(t-1)	0.201** (2.58)	0.130*** (3.35) <i>0.017</i>	0.449*** (4.79)	0.195*** (2.60)	0.130*** (3.54) <i>0.017</i>	0.428*** (4.66)	0.187** (2.58)	0.13*** (3.55) <i>0.018</i>	0.416*** (4.50)
Law and Order	-0.189*** (-5.68)	-0.318*** (-7.13) <i>-0.042</i>	-1.223*** (-7.42)	-0.157*** (-4.94)	-0.290*** (-6.36) <i>-0.037</i>	-1.087*** (-6.76)	-0.227*** (-5.18)	-0.317*** (-5.89) <i>-0.044</i>	-1.200*** (-6.78)
Conflict Index				0.163*** (3.81)	0.3e-04*** (5.11) <i>3.9e-06</i>	0.0001*** (5.52)	0.164*** (3.65)	0.3e-04*** (4.77) <i>4e-06</i>	0.0001*** (5.23)
Cabinet Size	-0.060*** (-3.45)	-0.01 (-1.08) <i>-0.001</i>	-0.037 (-1.46)	-0.046*** (-2.87)	-0.002 (-0.40) <i>-0.0003</i>	-0.020 (-0.80)	-0.046** (-2.55)	0.0009 (0.13) <i>0.0001</i>	-0.009 (-0.34)
log(population)	0.152*** (6.54)	0.24*** (7.49) <i>0.032</i>	0.896*** (7.21)	0.100*** (4.85)	0.194*** (5.69) <i>0.025</i>	0.681*** (5.51)	0.126*** (5.17)	0.195*** (5.46) <i>0.027</i>	0.690*** (5.44)
Share Population >65	-0.048* (-1.95)	0.009 (0.40) <i>0.001</i>	0.034 (0.43)	-0.046* (-1.92)	0.012 (0.52) <i>0.002</i>	0.047 (0.60)	-0.110*** (-3.42)	0.007 (0.29) <i>0.001</i>	0.005 (0.05)
log(GDP per capita)							0.130*** (3.47)	0.045 (0.77) <i>0.006</i>	0.243 (1.16)
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup> / Pseudo R <sup>2</sup>	0.170	0.223	0.164	0.192	0.245	0.179	0.200	0.243	0.177
Prob > F/ Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
# of observations	1810	1755	1810	1809	1754	1809	1684	1629	1684

Notes: Estimations with robust standard errors. OLS coefficients = standardized/beta coefficients. t-statistics in parentheses, marginal effects in italics. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively. The probit regressions have a lower amount of observations, as one region has no variation.



Table 3: Defense Expenditures, Federalism, Press Freedom and Income Inequality

	<i>Beta</i>	t-stat.	Rule of Law	Conflict Index	Assassination(t-1)	Other factors	N	R2
<i>Defense Expenditures (DE)</i>								
Defense Exp./Total National Exp. Eq. (7)	-0.073**	-2.58	Yes	Yes	No	Yes	1176	0.176
DE Eq. (10)	-0.063**	-2.22	Yes	No	No	Yes	1177	0.145
DE Eq. (13)	-0.070**	-2.16	Yes	Yes	Yes	Yes	864	0.211
DE Eq. (16)	-0.060*	-1.86	Yes	No	Yes	Yes	865	0.185
<i>Federalism</i>								
Federalism Index (FI) using Eq. (7)	-0.061*	-1.89	Yes	Yes	No	Yes	1175	0.139
FI Eq. (10)	-0.062*	-1.92	Yes	No	No	Yes	1175	0.136
FI Eq. (13)	-0.079*	-1.95	Yes	Yes	Yes	Yes	860	0.143
FI Eq. (16)	-0.079*	-1.96	Yes	No	Yes	Yes	860	0.140
<i>Lack of press freedom</i>								
Repressive actions (RA) using Eq. (7)	0.166***	2.93	Yes	Yes	No	Yes	1034	0.216
FI Eq. (10)	0.183***	3.12	Yes	No	No	Yes	1034	0.192
FI Eq. (13)	0.196***	3.21	Yes	Yes	Yes	Yes	740	0.308
FI Eq. (16)	0.214***	3.31	Yes	No	Yes	Yes	740	0.278
<i>Income inequality</i>								
GINI Coefficient using Eq. (7)	0.139***	2.67	Yes	Yes	No	Yes	853	0.180
GINI Eq. (10)	0.139***	2.66	Yes	No	No	Yes	853	0.139
GINI Eq. (13)	0.015***	2.71	Yes	Yes	Yes	Yes	642	0.258
GINI Eq. (16)	0.164***	2.66	Yes	No	Yes	Yes	642	0.250

Notes: Summary of 16 regressions. Estimations with robust standard errors. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively.

Table 4: 2SLS Estimations

Explanatory variables	2SLS	First Stage Regression of Law and Order	2SLS	First Stage Regression of Law and Order	2SLS	First Stage Regression of Law and Order	First Stage Regression of Conflict Index	2SLS	First Stage Regression of Law and Order	First Stage Regression of Conflict Index
	(22)		(23)		(24)			(25)		
Law and Order	-0.194*** (-4.53)		-0.190*** (-4.90)		-0.164** (-3.87)			-0.146*** (-3.56)		
Conflict Index					0.4e-04*** (2.60)			0.5e-04*** (3.47)		
Cabinet Size	-0.009** (-2.03)	0.001 (0.46)	-0.015*** (-3.03)	0.003 1.22	-0.006 (-1.38)	0.001 (0.30)	-43.680* (-1.96)	-0.013** (-2.54)	0.003 (1.32)	-32.919 (-1.17)
log(population)	0.137*** (6.39)	-0.044*** (-2.81)	0.156*** (6.10)	-0.039*** (-3.63)	0.088*** (3.15)	-0.039** (-2.42)	896.963*** (7.71)	0.096*** (3.15)	-0.029*** (-2.62)	712.678*** (4.85)
Share Population >65	-0.0004 (-0.03)	0.068*** (7.01)	0.0004 (0.02)	0.016** (2.19)	0.001 (0.06)	0.064*** (6.67)	-109.649 (-1.58)	-0.001 (-0.04)	0.017** (2.35)	-6.447 (-0.07)
Instruments										
Law and Order(t-1)		0.577*** (31.95)		0.902*** (61.47)		0.592*** (31.94)	36.718 0.280		0.897*** (61.26)	-439.633** (-2.24)
Annual Temperature				-0.007** (-2.06)					-0.007** (-1.98)	-9.140 (-0.19)
Conflict Index(t-1)						-4.7e-06 (-1.36)	0.338*** (13.54)		-6.6e-06*** (-2.98)	0.401*** (13.51)
Test of excluded instruments		1021.10***		1931.44***		529.25***	93.25***		1333.45***	67.42***
Identification/IV relevance test:										
Anderson canon. corr. LR statistic	764.50***		1470.43***		175.97***			166.72***		
Weak identification statistics:										
Anderson-Rubin test of joint significance of endogenous regressors	20.39***		23.83***		25.32***			37.68***		
overidentification test of all instr.:										
Sargan statistic			0.964					0.082		
Regional fixed effects	Yes		Yes		Yes			Yes		
Year fixed effects	Yes		Yes		Yes			Yes		
Prob > F	0.000		0.000		0.000			0.000		
# of observations	1278		841		1262			836		

Notes: Estimations without beta coefficients. t-statistics in parentheses, marginal effects in italics. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively.

## APPENDIX

Table A1: Countries

Albania	Guatemala	Nigeria
Algeria	Guinea	Norway
Angola	Guinea-Bissau	Oman
Argentina	Guyana	Pakistan
Armenia	Haiti	Panama
Australia	Honduras	Papua New Guinea
Austria	Hungary	Paraguay
Azerbaijan	Iceland	Peru
Bahamas	India	Philippines
Bahrain	Indonesia	Poland
Bangladesh	Iran	Portugal
Belarus	Iraq	Qatar
Belgium	Ireland	Romania
Bolivia	Israel	Russian Federation
Botswana	Italy	Saudi Arabia
Brazil	Jamaica	Senegal
Bulgaria	Japan	Sierra Leone
Burkina Faso	Jordan	Singapore
Cameroon	Kazakhstan	Slovakia
Canada	Kenya	Slovenia
Chile	North Korea	Somalia
China	South Korea	Spain
Colombia	Kuwait	Sri Lanka
Congo, Republic of	Latvia	Sudan
Congo, the Democratic Republic of the	Lebanon	Suriname
Costa Rica	Liberia	Sweden
Cote D'Ivoire	Libyan Arab Jamahiriya	Switzerland
Croatia	Lithuania	Syrian Arab Republic
Cuba	Luxembourg	Tanzania, United Republic of
Cyprus	Madagascar	Thailand
Czech Republic	Malawi	Togo
Denmark	Malaysia	Trinidad and Tobago
Dominican Republic	Mali	Tunisia
Ecuador	Malta	Turkey
Egypt	Mexico	Uganda
El Salvador	Moldova, Republic of	Ukraine
Estonia	Mongolia	United Arab Emirates
Ethiopia	Morocco	United Kingdom
Finland	Mozambique	United States
France	Myanmar	Uruguay
Gabon	Namibia	Venezuela
Gambia	Netherlands	Viet Nam
Germany	New Zealand	Yemen
Ghana	Nicaragua	Zambia
Greece	Niger	Zimbabwe

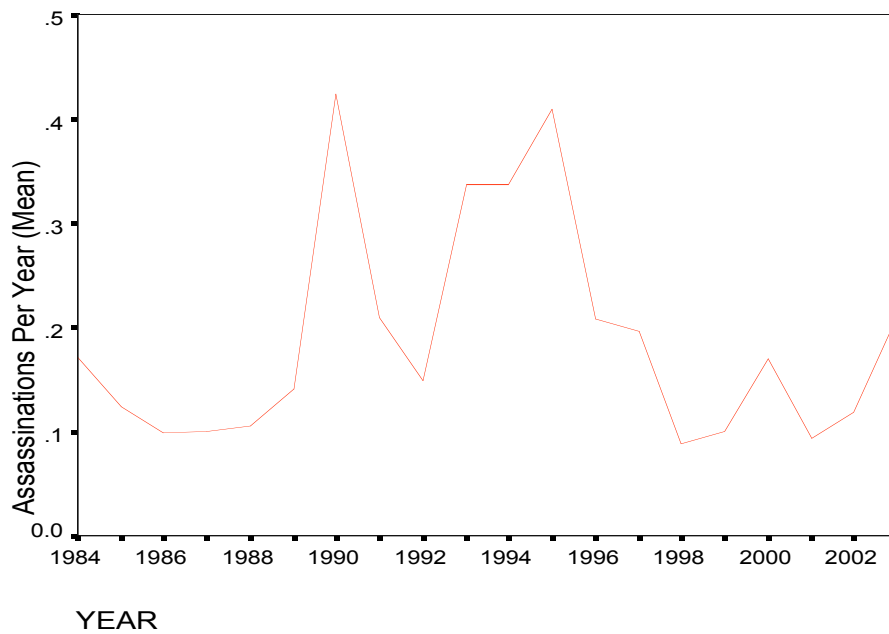
Notes: Unbalanced panel. Countries based on specification (4) in Table 1.

Table A2: Summary Statistics

Key Variables	Obs	Mean	Std. Dev.	Min	Max
assassinations	3682	0.190	0.872	0	15
political accountability	2620	3.977	1.234	0.5	6.6
law and order	2620	3.646	1.545	0	6
political risk	2601	62.443	16.123	9.583	97
conflict index	3681	2587	6123	0	91125
cabinet size	3707	21.591	9.208	0	109
log(population)	3709	8.301	2.288	0	14.079
share population >65	3713	6.255	4.229	1.007	19.330
log(GDP per capita)	3442	7.495	1.551	4.035	10.751
defense expenditures <sup>a</sup>	1492	0.128	0.113	0	0.819
federalism index	1479	0.289	0.322	0	1
lack of press freedom	1487	3.094	4.085	0	20
income inequality	1136	37.088	10.547	16.63	73.90

Notes: <sup>a</sup> Some countries, such as Liechtenstein or Andorra, with no defense expenditures, do not appear in the regressions due to the lack of control variables. (See also *Table A1*).

Figure A1: Assassinations Per Year (Mean)



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