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Electoral Incentives, Term Limits
and the Sustainability of Peace

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Abstract

One of the few stylized facts in international relations is that democracies, unlike autocracies, almost never fight each other. We develop a theoretical model to examine the sustainability of international peace between democracies and autocracies, where the crucial difference between these two political regimes is whether or not policymakers are subject to periodic elections. We show that the fear of losing office can make it less tempting for democratic leaders to wage war against other countries. Crucially, this discipline effect can only be at work if incumbent leaders can be re-elected, suggesting that democracies with term limits should be more conflict prone, particularly when the executive is serving the last possible term. These results rationalize recent empirical findings on how term limits affect the propensity of democracies to engage in conflicts.

JEL classifications: C72, D72, F00

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1 Introduction

One of the few stylized facts in international relations is that democracies are much less likely to fight one another than autocracies or mixed pairs of states. This so-called "democratic peace" phenomenon is supported by a vast empirical literature and has been described as an "empirical law" in international relations. However, the "consensus that democracies rarely if ever fight each other is not matched by an agreement as to how best to explain this strong empirical regularity" (Levy, 2002). In line with Putnam (1988)'s idea of two-level games, institutional explanations of the democratic peace emphasize that domestic and international politics are fundamentally intertwined: in democracies, domestic institutions constraint leaders' incentives to engage in military conflicts.

Three recent empirical studies have shed new light on the importance of leaders' incentives in international security relations. These papers show that executive term limits, which restrict or completely eliminate electoral accountability of democratic leaders, can have a crucial impact on interstate conflicts. Haynes (2012) shows that "lame-duck" presidents, who are constitutionally prohibited from re-election, are systematically less effective than their re-electable counterparts in crisis-bargaining situations. Using data on all post-World War II militarized interstate disputes initiated by presidential democracies, he finds that lame-duck democratic leaders tend to issue less effective threats because their targets, doubting their credibility and resolve, are more likely to resist their demands. Zeigler *et al.* (2013) study militarized disputes in a sample of forty-eight democracies with term limits between 1976 and 2000. They show that leaders who face binding term limits are more likely to initiate conflicts than those who can still be re-elected. Conconi *et al.* (2014) examine the impact of term limits on interstate conflicts over the 1816-2001 period. They construct a new dataset of different types of executive term limits in democratic countries. Their analysis confirms that democracies rarely fight each other. However, exploiting the variation in term limits both across and within countries, they find that democracies in which the leader faces binding term limits are as conflict prone as autocracies. The type of term limits also matters: in democracies with two-term limits, conflicts are less likely to arise during the executive's first mandate, when re-election is still possible.

In this paper, we develop a theoretical model that can explain both the democratic peace phenomenon and the recent empirical findings on the impact of executive term limits on interstate conflicts. Table 1 summarizes the main empirical regularities that we want the model to explain. It reports the predicted probability of conflict in different country pairs: autocratic dyads, mixed dyads (i.e. one democracy and one autocracy), democratic dyads without term limits, and democratic dyads with different types of executive term limits.[1]

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[1]The table is constructed using the dataset from Conconi *et al.* (2014) available at http://onlinelibrary.wiley.com/doi/10.1111/jeea.12074/suppinfo. The reported predicted probabilities are computed using a logit model where the dependent variable takes a value of 1 if there is militarized dispute (MID) between two countries in a given year:

$$Pr(MID = 1) = G(\beta_0 + \beta_1 \text{ Mixed dyad} + \beta_2 \text{ Democratic dyad} + \beta_3 \text{ Democratic dyad with at least one}$$
$$\text{lame-duck executive} + \beta_4 \text{ Democratic dyad with at least one first-term executive} + \beta_5 \mathbf{X} + \beta_6 \gamma_t),$$

Table 1: Predicted Probability of Conflict

Autocratic dyads	0.0057***
	(0.0004)
Mixed dyads	0.0063***
	(0.0016)
Democratic dyads (with no term limits)	0.0016***
	(0.0004)
Democratic dyads with at least one lame-duck executive	0.0053***
	(0.0011)
Democratic dyads with at least one first-term executive	0.0024***
	(0.0006)

Notes: Standard errors clustered by dyad in parentheses; *** significant at 1%.

In line with the democratic peace literature, the above table shows that democracies rarely fight each other: the predicted probability of conflict between two democracies (0.16%) is significantly lower than between two autocracies (0.57%) or between an autocracy and a democracy (0.63%). However, this result vanishes when democratic leaders cannot be re-elected: for democratic dyads in which at least one of the leaders is a lame duck, the probability of conflict (0.53%) is not statistically different from autocratic or mixed dyads. Notice also that conflicts involving democracies with two-term limits are less likely to arise during the president's first term (0.24%), when electoral accountability is still at work.

The theoretical model presented in this paper provides a rationale for these differences in conflict patterns. We formalize an idea first put forward by Emmanuel Kant [1795]. In his essay on "Perpetual Peace", he argued that leaders who are accountable to the people are less prone to break peaceful relations: if the people who have to pay for it with their lives and possessions decided whether or not there should be a conflict, they "would be very cautious in commencing such a poor game, decreeing for themselves all the calamities of war" (p. 13). Our model shows how re-election motives and term limits can affect the incentives of democratic leaders to engage in military conflicts.

Following Jervis (1978), we describe international relations as a repeated prisoners' dilemma game between two countries. This setting reflects the fact that the use of military force is often beneficial in the short-run, but tends to have long-term detrimental consequences: each country is tempted to attack another one to obtain a portion of its wealth and resources; however, if both countries use force, the resulting military conflict is costly compared to being at peace. Peace is a dyadic phenomenon: it can only be sustained if the leaders of both countries have incentives to cooperate. This view of international security relations relies on the idea that, in the absence of a supranational authority with direct powers to punish violations, governments will only refrain from aggressive military behavior if they perceive that doing so is in their interest.

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where G is the logistic distribution, $\mathbf{X}$ is a matrix of dyad-specific controls used in the literature of interstate conflicts (Major power, Military balance, Alliance, Distance, Common border) and γ_t denotes year fixed effects. Autocratic dyads are the omitted category.

We build upon the literature on self-enforcing international agreements, which examines how cooperative behavior among policymakers of different countries can be sustained by credible threats among the parties involved when they engage in long-term relationships (e.g. Dixit, 1987; Bagwell and Staiger, 1999; Ederington, 2001). In this paper, we depart from the existing literature, which considers policymakers and their countries to be one and the same, to examine how electoral incentives affect the sustainability of international cooperation, in a setting in which policymakers' objectives are allowed to differ from those of their countries.[2]

We first examine the sustainability of international peace between democracies and autocracies. The crucial difference between the two forms of governments is that in democracies, unlike in autocracies, policymakers are subject to periodic elections. In this setup, we derive predictions about the likelihood of conflict in different dyads (two autocracies, two democracies, and a mixed dyad). Our theoretical model provides a simple explanation of the democratic peace based on electoral accountability: if the payoffs from future terms in office are sufficiently large, the threat of losing office can reduce politicians' willingness to break peaceful relations with other countries. Our model can also explain why the democratic peace is a dyadic phenomenon, i.e. why democracies rarely fight each other but often fight with autocracies.

We then look at the impact of executive term limits, which restrict the number of mandates that a democratic leader can serve in office. Our model suggests that term limits should hinder peace, since they reduce—and can even eliminate, in the case of binding term limits—the incumbent's payoffs from future periods in office; in turn, this implies that term limits reduce voters' ability to punish leaders who engage in costly military conflicts. In particular, our theoretical analysis generates two distinct predictions in line with the empirical findings of Table 1: democracies whose leaders face binding term limits should be as likely to be involved in military conflicts as autocracies; for democracies that impose two-term limits, the likelihood of being involved in a military conflict should depend on whether the executive is in the first or second mandate.

The rest of the paper is organized as follows. In the next section, we provide a brief review of the related literature. Section 3 describes the setup of the model while Section 4 discusses the sustainability of peace in autocratic, democratic, and mixed dyads. Section 5 examines the impact of term limits and Section 6 concludes.

2   Related Literature

Our paper is related to several streams of literature. First, it contributes to the literature on the democratic peace. Existing theoretical explanations for the democratic peace can be divided into two broad approaches: normative and institutional explanations. The normative approach contends that democracies are less conflict prone toward one another because they share similar norms of compromise and cooperation (e.g., Maoz and Russett, 1993; Dixon, 1994; Dixon and Senese, 2002). In essence, these norms mandate nonviolent conflict resolution and negotiation. Because democratic

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[2]Two notable exceptions are the papers by McGillivray and Smith (2008) and Conconi and Sahuguet (2009), which examine the role of electoral incentives on the sustainability of international cooperation.

leaders are committed to these norms they try to adopt them in the international arena rather than resorting to violence. To explain conflicts between democracies and non-democracies, this literature argues that democratic values are applied only when democracies face other democracies and are abandoned otherwise.

Our paper belongs to the literature on institutional explanations of the democratic peace, which argues that democracies are peaceful toward one another because of the limits placed upon leaders by government institutions. Leading theoretical models in this literatures do not focus explicitly on the role of elections and term limits. The selectorate explanation put forward by Bueno de Mesquita *et al.* (1999) is based on the idea that political leaders must satisfy their key supporters (their winning coalition) to remain in power: autocratic leaders, who answer to a small winning coalition, can choose to accept less favorable chances of victory because they can placate supporters with private goods; in contrast, democratic leaders with a large winning coalition are willing to go to war only when they believe they have an excellent chance of winning and thus not hurting their backers. The literature on audience cost costs (e.g. Fearon, 1994 and 1997) argues that the ability of democracies to generate audience costs allows them to commit more easily to publicly stated bargaining positions. This credibility in bargaining leads democracies to be engaged in less conflicts. A related study by Levy and Razin (2004) emphasizes communication and trust: in democracies, participation of the public and open debate send clear and reliable information regarding the intentions of democracies to other states; in contrast, it is difficult to know the intentions of nondemocratic leaders, what effect concessions will have, and if promises will be kept. Jackson and Morelli (2007) consider a model where the political leader's costs and benefits from a war may differ from the population at large. In their framework, dictatorships are more likely to be at war with each other because the preferences of their leaders are more "biased", i.e. different from those of the population.

Our theoretical analysis is motivated by key findings in the empirical literature on interstate conflicts. Several studies provide support for the Kantian idea that the public acts as a restraint on war (see for instance Russet and O'Neal, 2001 and Bueno de Mesquita *et al.*, 1999).[3] As mentioned in the introduction, our paper provides a theoretical rationale for the findings of three recent empirical studies on the impact of term limits on interstate conflicts (Haynes, 2012; Zeigler *et al.*, 2013; Conconi *et al.*, 2014).

To the best of our knowledge, this is the first paper that proposes a theoretical model explaining how electoral accountability and term limits affect the incentives of democratic leaders to engage in conflicts. The role of term limits has been explored in other policy areas. Most of the literature focuses on the impact of term limits on domestic policies. For instance, Besley and Case (1995) and List and Sturm (2006) study the impact of term limits on fiscal and environmental policy. Our

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[3]Gaubatz (1991) finds that democracies start conflicts early in the electoral cycle, suggesting that approaching elections discipline democratic leaders. More recent studies reviewed in Bueno de Mesquita (2006) examine how the use of force affects the likelihood that a leader remains in office and find that "defeat in war, for instance, is costly for society and therefore for accountable democratic leaders more so than for nonaccountable autocrats, monarchs, or junta leaders" (p. 640).

paper complements these studies, examining the impact of term limits on foreign security policy and on the likelihood of conflicts in different dyads.

3   Setup

International security relations are modelled as a repeated prisoners' dilemma game between two countries, 1 and 2 (as in Jervis 1978). Attacking another country is tempting as it can lead to obtain a portion of its wealth and resources. However, once the attacked country reacts by defending itself, the military conflict that ensues is costly for both countries compared to a situation of peace. Importantly, the actual decision-makers are not the countries themselves, but their leaders, who are driven by different objectives. We first describe the countries' actions and payoffs and then move on to the leaders' objectives and the political process.

3.1   Countries' Actions and Payoffs

As in any standard prisoners' dilemma game, a country chooses between two strategies: either cooperate (C), that is, not using military force against the other country, or defect (D), that is, deploying military force. Conflicts are driven by the desire to appropriate a portion of the other country's wealth. This should be interpreted broadly, to include not only territory, but also other resources (e.g., oil, raw materials), or even political concessions. In particular, we assume the following: each country i has wealth of W_i; independently of the outcome of the conflict, waging a war costs a country a fraction $K > 0$ of its wealth; a country's probability of winning depends on the military strength it deploys relatively to that of its opponent; if a country wins the war, it gains a fraction $G > 0$ of the other country's wealth. The parameter G captures the extent of the spoils obtained from attacking the other country,[4] while the parameter K captures the extent of the military costs, including the loss of lives and the military expenses occurred during a conflict.[5]
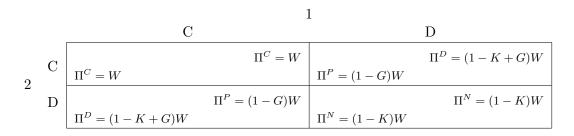
In a peaceful situation (when both countries play C), each country i keeps all its wealth, without wasting any resources on deploying military force, achieving a payoff of $\Pi_i^C = W_i$. If country i breaks peace, playing D while country j plays C, the attacking country obtains a payoff equal to $\Pi_i^D = (1-K)W_i + GW_j$, while the other country gets $\Pi_j^P = (1-G)W_j$. In a war situation (in which both countries play D), a country wins a fraction G of the other country's resources with a probability that increases in its military strength and decreases in the other country's military strength. If the two countries deploy the same military strength, none of them wins the war.[6]

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[4]Jervis (1978) argues that the extent of the "gains from exploitation" may depend on the availability of raw materials and whether or not the occupied territories are inhabited by people of the same ethnic groups.

[5]For example, according to the Combat Area Casualty File (CACF), during the Vietnam war more than $58,000$ Americans were killed, more than $300,000$ wounded, and almost $14,000$ completely disabled. Moreover, according to the U.S. Veteran's Administration, up to $800,000$ Vietnam veterans have been diagnosed as having "significant" to "severe" problems of readjustment. The total cost of the war amounted to hundreds of billions of dollars and these costs will continue for decades in the form of veterans' benefits (see www.va.gov).

[6]Our setup presents some similarities with that described by Jackson and Morelli (2007), in which conflicts are also driven by appropriation motives. Crucially, Jackson and Morelli (2007) rule out the possibility of costly stalemates, assuming that wars are always desirable for one of the two countries involved. We allow instead for the possibility

		1	
		C	D
2	C	$\Pi^C = W$ $\Pi^C = W$	$\Pi^D = (1 - K + G)W$ $\Pi^P = (1 - G)W$
	D	$\Pi^P = (1 - G)W$ $\Pi^D = (1 - K + G)W$	$\Pi^N = (1 - K)W$ $\Pi^N = (1 - K)W$

We are interested in examining how domestic political institutions—rather than countries' relative power—affect the likelihood of conflict. We thus focus on two countries that have the same initial wealth and access to the same technology. In this symmetric setup, countries' payoffs are given in Table 2. Assuming $G > K$, each country is tempted to attack the other to obtain a portion of its wealth and resources; however, both countries find it desirable to be at peace rather than being involved in a war, in which they waste a fraction K of their wealth, without gaining any of the other country's resources. This implies that the following inequalities hold: $\Pi^D > \Pi^C > \Pi^N > \Pi^P$.

The prisoners' dilemma described above constitutes the stage game, which is repeated indefinitely. We denote the current period by t, $(t = 0, 1, 2, ..., \infty)$ and the actions taken at period t by $a^t = (a_1^t, a_2^t)$, where $a_i^t \in A = \{C, D\}$. The payoffs to country i are the stage payoffs of the stage game and are denoted $\Pi_i^t(a_i^t, a_{-i}^t)$, where a_{-i}^t refers to the action taken at time t by the other country. We assume the payoffs are the same for each country and are time invariant. The payoffs are summarized by the vector $\Pi = (\Pi^D, \Pi^C, \Pi^N, \Pi^P)$ defined above.

3.2 Leaders' Objectives

The main novelty of the model compared to a standard repeated prisoners' dilemma is that the actual players are the active leaders of the countries rather than the countries themselves.[7] To focus on the role of electoral accountability, we make two main assumptions on the preferences of the leaders. First, we assume that, independently of the political regime, the utility of a leader depends on whether or not he is in power and on the actions played in the security dilemma game. This means that in the absence of any institutional constraint, democratic leaders have the same preferences as autocratic leaders and would be as conflict prone.

Second, we assume that leaders have preferences that differ from those of their citizens. Politicians are office motivated and derive "ego rents" equal to Z while in power. To capture Kant's idea that politicians need to be "disciplined" because they do not fully internalize the costs of

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that, when two countries of similar military strength face each other, they simply end up wasting part of their wealth in the conflict, without gaining resources from the other country (i.e., $\Pi_i^N = (1 - K)W_i$). In our setting, being involved in a military conflict can thus be costly for both countries compared to being at peace.

[7]Our analysis presents some similarities with the existing literature on repeated games between overlapping generations of players, which has examined the sustainability of cooperation between organizations run by agents with finite but overlapping tenures (e.g. Crémer, 1986; Salant, 1991; Kandori, 1992; Smith, 1992). Compared to this literature, we allow for agents' re-election; the life span of the leader is thus *endogenously-determined* rather than exogenously fixed.

military conflicts, we also assume that — whether or not they are in power — leaders only take into account a fraction α of the total costs incurred by their country when deploying military force. From their point of view, the payoffs of the stage game are thus different from those of Table 2, and are given by $\pi^D = (1 - \alpha K + G)W > \pi^C = W > \pi^N = (1 - \alpha K)W > \pi^P = (1 - G)W$. Country leaders are thus "biased" in their evaluation of the consequences of the use of force, and citizens want to discipline them toward more peaceful behavior. For simplicity—and in line with Kant's original argument—we model the gap between the leaders' preferences and those of the citizens as arising solely from differences in the costs of conflicts. It would be straightforward to allow also for differences in the benefits, by assuming that politicians get a larger share of the gains from attacking another country.

To incorporate the fact that countries are run by leaders whose identity may change overtime, we assume that in each country there is a pool L of identical leaders. We denote by l_i^t the identity of the leader of country i at time t, with $l_i \in L_i = \{1, 2, 3...\}$. The payoff of politician k in country i can then be written as

$$U_{i,k} = \sum_{t=0}^{\infty} \delta^t I_t(k) Z + \sum_{t=0}^{\infty} \delta^t \pi_i^t \left(a_i^t, a_{-i}^t \right) \tag{1}$$

where $\delta \in (0, 1)$ is the common factor by which country leaders discount future payoffs and $I_t(k)$ is an indicator variable which is equal to 1 when politician k is in power and to 0 otherwise.

3.3 Political Regimes

We introduce a recursive process that describes which leader is in power in a given country at any point in time. We denote by $e^t = \left(e_1^t, e_2^t \right)$ the results of this process at time t. The result $e_i^t = 0$ corresponds to a situation in which the identity of the leader in power in country i at time t does not change. This could be the case either because there is no election in that period, or because the incumbent is re-elected. The result $e_i^t = 1$ corresponds instead to situations in which there is an election and the incumbent leader l_i^t loses office and is replaced by $l_i^t + 1$. In democracies, changes in the identity of the leaders result from an electoral process. We do not explicitly model voters as players of the game; however, we describe a voting process that implicitly reflects their interests and is allowed to depend on the history of the game.

Let us denote with $h^t = (a^0, a^1, a^2, ..., a^t; e^0, e^1, e^2, ..., e^t)$ the history of the game up to time t. The space of all possible histories at time t is given by H^t and the space of all histories is $H = \cup_{t \geq 1} H^t$. For each possible history up to time t and given the actions in that period, the incumbent stays in power if $e_i^t = 0$. The function p captures a leader's probability of retaining office, depending on the actions played and the political regime.

Autocracies

We consider first the case of autocracies. Autocracies are regimes in which leaders are not subject to periodic elections. Incumbents stay in power with certainty:[8]

Assumption 1 *Autocratic leaders cannot be removed from office: $p^t_{AU}\left(h^t, a^t\right) = 1$ for any h^t, a^t.*

Democracies

In democracies, periodic elections allow voters to discipline their leaders and deter leaders from breaking peace. For simplicity, we focus on one-period mandates, though our analysis can be readily extended to more general term structures.

We assume that politicians are rewarded if they are able to sustain peaceful relations and are punished if they behave aggressively:[9]

Assumption 2 *Democratic leaders have higher chances of being re-elected in peaceful periods than when they use force: $p^t_{DE}\left(h^t, (C, C)\right) \equiv \bar{p} > p^t_{DE}\left(h^t, (D, \cdot)\right) \equiv \underline{p}$.*

Notice that Assumption 2 is in line with the interests of the voters, who want to deter politicians from engaging in costly conflicts.

It would instead be against the interests of the voters if their leader behaved cooperatively when the other country defects. We thus assume the following:

Assumption 3 *When faced with aggressive behavior by the other country, democratic leaders have higher chances of being re-elected if they use force: $p^t_{DE}\left(h^t, (D, D)\right) > p^t_{DE}\left(h^t, (C, D)\right)$.*

This assumption guarantees that it is always optimal for the leader of a country to play D when he expects the other country to be playing D.

Finally, we consider the case of term limits. As discussed in the introduction, many democracies impose restrictions on the number of terms an executive may serve. Term limits usually take one of three forms: some countries rule of the possibility of re-election altogether (one-term limits); others allow for re-election only once (two-term limits); in other countries, there exists only a restriction on the number of consecutive terms a person can serve.[10]

In our analysis, we focus our attention on democracies with one-term and two-term limits. These are "strong" term limits, which determine the maximum number of terms a person can be in office. Currently, examples of countries with one-term and two-term limits include Mexico and the United States, respectively. Comparing the military behavior of democracies whose executives

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[8]Our results continue to hold if we assume that autocratic leaders face an exogenous probability of retaining office. What matters is that in autocracies, citizens cannot discipline politicians through the electoral system.

[9]The re-election chances of a democratic leader who deploys force are assumed to be independent of the behavior of the other country's leader. Allowing $p^t_i\left(h^t, (D, D)\right)$ to differ from $p^t_i\left(h^t, (D, C)\right)$ would not affect the main results of our analysis.

[10]Many of these countries ban "immediate re-election", allowing an individual to serve again after an interruption of one or two terms.

face "strong" term limits with that of democracies with no term limits allows us to evaluate the effects of electoral incentives on the sustainability of peace between countries.[11]

Consider first a "lame duck" democratic leader, who is serving his last possible term (the first term in a country with one-term limits or the second term in a country with two-term limits). In this case, re-election is ruled out by binding term limits:

Assumption 4 *Lame duck democratic leaders cannot be re-elected:* $p_{LD}^t \left(h^t, a^t \right) = 0$ *for any* h^t, a^t.

For a democratic leader serving his first of two possible terms, the probability of re-election p_{FT}^t is as described in Assumptions 2 and 3.

3.4 Leaders' Strategies and Equilibrium Concept

A strategy of the policymaker of country i is a function $\sigma_i : H \to A$. Note that there is no explicit mention of the identity of the policymaker playing at each period in the strategies. This is not necessary, since the recursive formulas take into account the election results which are incorporated in the history. Hence, the strategies take into account the identity of the policymakers, which depend on histories.

A repeated game with elected players is defined by: the two sets of policymakers L_i and L_j, the prisoners' dilemma stage game $\Gamma = (A, \Pi)$, the parameters α and Z, and an electoral process p. We study subgame-perfect equilibria in which each policymaker chooses a strategy σ_i so as to maximize his payoff, taking as given the electoral process and the strategy of the other country's policymaker.

The main idea of sustaining cooperation in repeated games is that, when players are patient enough, short-run opportunism is more than compensated by the long-run gains of maintaining peaceful relationships. It is well known that in repeated games many equilibria are possible. In what follows, we examine the sustainability of the efficient equilibrium, along which the two countries are always at peace with each other. By comparing conditions under which international peace can be sustained in different political regimes, we will show that electoral incentives can provide a simple theoretical explanation for the fact that democracies almost never fight each other, and that binding term limits eliminate differences in the incentives of democratic and autocratic leaders.

Cooperation between countries is a dynamic phenomenon. Equilibrium strategies must satisfy incentive constraints that involve a comparison between short-run defection gains and long-run punishment losses. Cooperation is possible when policymakers believe that any aggressive behavior will be followed by tough retaliation.

Given that aggressive behavior leads to immediate gains for the attacker, while war emerges only as future retaliation, the possibility of cooperation depends on the discount factor that summarizes the relative importance of current versus future payoffs. The easiest way to enforce the cooperative

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[11]We do not consider here the case of democracies with "weak" term limits, which only set a restriction on the number of *consecutive* terms an executive can serve. This is somewhat intermediate between scenarios with no term limits and scenarios with "strong" term limits.

equilibrium is to punish deviations as harshly as possible. In the context of a prisoners' dilemma, maximal punishments take a simple form: they correspond to the infinite repetition of the static Nash equilibrium. We thus focus on Nash-reversion punishment strategies.[12]

For given political institutions, we compute the critical discount factor for which cooperation can be sustained as a subgame perfect equilibrium in trigger strategies. When politicians have a discount factor higher than the critical one, peace can be sustained as an equilibrium. When politicians have a discount factor lower than the critical one, war is the equilibrium. To assess the sustainability of peace across political institutions, we compare the critical discount factors. A political environment with a higher critical discount factor is then interpreted as less conducive to cooperation and peace. As usual in the literature on repeated games, we will interpret the critical discount factor as an indicator of the likelihood of conflict.[13]

To compute the critical discount factor in a given dyad, we first derive the critical factors δ_i and δ_j linked to the politicians' individual incentive constraint. These incentive constraints compare the payoff of cooperation to the payoff of deviation when the leader believes the other country is going to cooperate. For cooperation to be sustainable, both incentive constraints need to be satisfied. The critical discount factor for the dyad is the maximum between the two individual critical discount factors. Peace is thus dyadic in nature.

4   The Sustainability of Peace

In this section, we examine the conditions under which cooperation can be sustained as a subgame perfect equilibrium in trigger strategies between two countries. Given the dyadic nature of cooperation, there will be three cases to examine: dyads composed of two autocracies, dyads composed of two democracies, and mixed dyads. For now, we consider democracies in which leaders are not facing term limits. We analyze the role of term limits in the following section.

4.1   Autocratic Dyads

In the case of an autocratic leader, the value of sustaining international peace corresponds to the sum of discounted cooperative payoffs π^C and the office rents Z:

$$V_{AU}^C \equiv \sum_{t=0}^{\infty} \delta^t \left(\pi^C + Z\right) = \frac{\pi^C + Z}{1 - \delta}, \tag{2}$$

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[12]Starting from Dixit (1987), these strategies have been studied extensively in the context of self-enforcing cooperation. Note that the main results carry through when we consider renegotiation-proof punishment strategies as in Van Damme (1989). The analysis is available upon request.

[13]In the model, the critical discount factor is an indication on how easy it is to sustain cooperation. In equilibrium, either the countries always ccoperate or they always defect. To get periods of conflict followed by periods of cooperation, the model needs to allow for payoffs that change from period to period. In the Appendix, we show that the analysis can be extended to such model.

where the subscript AU refers to autocratic leaders. The continuation value of being in a military conflict forever is instead given by

$$V_{AU}^N \equiv \sum_{t=0}^{\infty} \delta^t \left(\pi^N + Z \right) = \frac{\pi^N + Z}{1 - \delta}. \tag{3}$$

Under the assumption of Nash-reversion punishment strategies, a surprise military attack at time t yields deviation gains equal to $\pi^D - \pi^C$ in that period, but leads to reversion to the non-cooperative payoffs equilibrium π^N forever after. The punishment associated with Nash reversion is the long-term loss of the gains associated with cooperation and can be written as

$$\Omega_{AU} \equiv V_A^C - V_A^N = \frac{\pi^C - \pi^N}{1 - \delta}. \tag{4}$$

A common choice of C can be supported by Nash-reversion punishment strategies as long as the following incentive constraint is satisfied:

$$\pi^D - \pi^C \leq \delta \Omega_{AU}. \tag{5}$$

The minimum discount factor δ_{AU} above which an autocratic leader will have incentives to sustain peace is the δ that satisfies 5 with equality. We can state the following:

Result 1 *In autocratic dyads, peace will be sustained as long as the leaders' discount factor is at least δ_{AU}.*

As mentioned above, this critical discount factor δ_{AU} represents a measure of the difficulty to sustain peace between autocratic leaders. Notice that when policymakers are not subject to re-election, the extent of their opportunism (Z) does not affect their incentives to enter a military conflict. As we will see below, this is not the case for democratically-elected leaders, who can loose office and the associated rents.

4.2 Democratic Dyads

We now examine the sustainability of peace between democratic countries, in which the leaders are subject to periodic elections.

As discussed above, we assume that voters can commit to reward "good deeds" (that is, to re-elect policymakers who have behaved cooperatively) and punish "bad deeds" (that is, to dismiss policymakers who have behaved noncooperatively). In this setting, we will show that the threat of not being re-elected always acts as a discipline device, making democratic policymakers less likely to trigger military conflicts.[14]

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[14]We have also examined retrospective voting. In this case, democratic leaders have additional incentives to deviate since, in addition to the appropriation gains, they gain an "electoral boost"; other things being equal, this leads to less cooperation. However, short-term gains can be more than offset by the long-term political costs associated with

In the case of a democratic leader, the value of sustaining international peace corresponds to the sum of discounted cooperative payoffs π^C plus the sum of discounted rents, taking into account that they remain in power with probability $\bar{p}$ as long as peace is sustained. We thus get:

$$V_{DE}^C \equiv \frac{\pi^C}{1-\delta} + \frac{Z}{1-\bar{p}\delta}, \tag{6}$$

where the subscript DE refers to a democratic leader. The continuation value of being in a military conflict forever is computed in a similar fashion. We get:

$$V_{DE}^N \equiv \frac{\pi^N}{1-\delta} + \frac{Z}{1-\underline{p}\delta}. \tag{7}$$

Comparing these continuation values with (2) and (3), we can see that, for $\bar{p}$ and $\underline{p}$ smaller than unity, both the continuation value of cooperation and the continuation value of being at war are lower for democratic leaders than for autocrats. International peace can be supported by Nash-reversion punishment strategies as long as the following incentive constraint is satisfied:

$$\pi^D - \pi^C \leq \delta\Omega_{DE}, \tag{8}$$

where

$$\Omega_{DE} \equiv \frac{\pi^C - \pi^N}{1-\delta} + Z\left(\frac{\bar{p}}{1-\bar{p}\delta} - \frac{\underline{p}}{1-\underline{p}\delta}\right). \tag{9}$$

Contrary to the case of autocratic leaders, the incentives of democratic leaders to break peace depend crucially on the level of the office rents Z. Under Assumption 2, costly conflicts reduce leaders' chances to hold on to power. To verify this, notice that breaking peace at time t lowers the chances of being re-elected from period $t+1$ onwards from $\bar{p}$ to $\underline{p}$, implying a loss in terms of expected rents.

We can use (8) to derive the minimum discount factor δ_{DE} above which a democratic leader will have incentives to sustain peace. We can state the following:

Result 2 *In democratic dyads, peace will be sustained as long as the leaders' discount factor is at least δ_{DE}.*

Comparing equations (5) and (8), we can see that the one-period gains from breaking peaceful relations are the same for autocratic and democratic leaders. The incentive constrains of autocratic and democratic leaders only differ with respect to the long-run punishment for breaking peace. In particular, the punishment faced by democratic leaders is unambiguously more severe than the corresponding punishment faced by autocratic leaders, i.e., $\Omega_{DE} > \Omega_{AU}$. In turn, this implies that the critical discount factor above which peace can be sustained for democracies (δ_{DE}) is lower than the corresponding discount factor for autocracies (δ_{AU}).

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being in a military conflict and hence electoral incentives can still deter policymakers from breaking international peace. Our key results are robust to this alternative modeling of voting behavior. The analysis is available upon request.

The best-case scenario for peace is one in which voters can commit to *always* re-elect policymakers who have behaved cooperatively and *always* dismiss policymakers who have behaved noncooperatively. This voting behavior maximizes the punishment for breaking international peace and is the most conducive to cooperation. In this case, with re-election probabilities $\bar{p} = 1$ and $\underline{p} = 0$, the critical discount factor is equal to $\frac{\pi^D - \pi^C}{\pi^D - \pi^N + Z}$.

4.3 Mixed Dyads

We next consider mixed dyads—country pairs involving a democracy and an autocracy. This case is a bit more complex than the previous two, given that the country leaders have different incentive constraints.

Peace between two countries can only be sustained as an equilibrium if neither of the leaders has incentives to defect. The regime that is less prone to cooperation then drives a dyad's ability to cooperate. In turn, this implies that the critical discount factor that allows to sustain peace between a democracy and an autocracy is δ_{AU}, the maximum between the two individual critical discount factors. Conflicts should thus be as likely to arise between autocracies and between democracies and autocracies.

To understand this result, notice that a democratic leader has always incentives to defect when he expects the other leader (an autocrat) to defect: compared to being "cheated" upon, this outcome leads both to a higher period payoff and a higher probability of being re-elected. Thus whether or not peace can be sustained depends only on the incentive constraint of the autocratic leader.

Result 3 *In mixed dyads, peace will be sustained as long as the leaders' discount factor is at least δ_{AU}.*

4.4 The Democratic Peace

In our model, the incentives of country leaders to maintain peace depend on the type of political regime. As mentioned above, defecting from peace generates the same short-run gains for autocratic and democratic leaders. The key difference is in the punishment for defecting, which is unambiguously more severe when leaders face re-election. As a result, the critical discount factor above which peace can be sustained (δ_{DE}) is lower than the corresponding discount factor for autocracies and mixed dyads (δ_{AU}). It follows that conflicts between pairs of democratic countries will be less likely than conflicts between non-democratic countries.

We can thus state the following result:

Proposition 1 *Conflicts in democratic dyads are less likely than conflicts in autocratic and mixed dyads.*

Our model can thus explain the democratic peace phenomenon: the threat of losing office can act as a discipline device, deterring democratic leaders from breaking peaceful relations. It can also explain the dyadic nature of this phenomenon: while democracies rarely fight each other,

they regularly fight autocracies (see the predicted probabilities at the bottom of Table 1 in the introduction).

One limitation of the model is that, in equilibrium, two countries will always be either at war or at peace with each other. In the Appendix, we show that, by introducing a stochastic component in the countries' payoffs, we can generate cycles of war and peace periods on the equilibrium path while keeping the logic of the democratic peace result. The analysis is close in spirit to the analysis of price wars in repeated games models of tacit collusion (see for instance Rotemberg and Saloner, 1986). In that framework, the critical discount factor directly translates in the likelihood of conflicts. An environment with critical discount factor means everything else equal that the two countries have a likelihood of being in conflict at a given time. The lower the discount factor, the lower the associated probability that the two countries are in conflict in a given period.

5   The Impact of Term Limits

In this section, we consider the case of democracies in which the leaders face restrictions on the number of mandates they can serve, and examine the impact of term limits on the likelihood of conflicts. This allows us to provide a theoretical rationale for the findings of recent empirical studies about the consequences of executive term limits in democracies (see discussion in the introduction).

Restrictions on the tenure of the executive eliminate the disciplining effect of electoral accountability and reduce the incentives for cooperation. We would thus expect democratic leaders who cannot be re-elected to be more conflict prone than democratic leaders who can be re-elected. Consider the incentive constraint of a lame duck democratic leader:

$$\pi^D - \pi^C \leq \delta \Omega_{LD} \tag{10}$$

where

$$\Omega_{LD} = \frac{\pi^C - \pi^N}{1 - \delta}. \tag{11}$$

Comparing (10) with (5), we see that the incentives of a lame duck democratic leader coincide with those of an autocratic leader. This implies that the minimum discount factor that allows a democratic leader in his last term to sustain peace is equal to $\delta_{LD} = \delta_{AU}$. The intuition behind this result is that, in both cases, incumbent politicians are not accountable to the electorate: no matter what they do, autocratic leaders remain in office and continue to receive rents Z; similarly, no matter what they do, lame duck democratic leaders lose office and the associated rents.

Lame duck democratic leaders are thus as conflict prone as autocratic leaders. To see this, notice that the short-run deviation gains are the same for all leaders. Lame duck democratic leaders also face the same long-run punishment for breaking peace: in both cases, the leader is not accountable to the electorate, so there is no "re-election penalty"; the only punishment comes from the cost of being at war rather than at peace with the other country, which is independent or whether on not a politician is in office.

It follows that:

Proposition 2 *Conflicts between democracies in which the executives face binding term limits are as likely as conflicts involving autocracies.*

In the case of countries with two-term limits, the model also predicts that electoral calendars matter: conflicts should be less likely to arise in the executive's penultimate mandate—when he is still accountable to the electorate—than in his last mandate, when he is a lame duck.

To verify this, consider the incentive constraint of a democratic leader serving the first of two possible terms:

$$\pi^D - \pi^C \leq \delta\Omega_{FT}, \tag{12}$$

where

$$\Omega_{FT} = \frac{\pi^C - \pi^N}{1 - \delta} + \delta Z(\overline{p} - \underline{p}). \tag{13}$$

It is straightforward to verify that Ω_{FT} is larger than Ω_{AU} but smaller than Ω_{DE}. Comparing (12) with (5) and (8), it follows that democratic leaders serving the first of two possible terms should be less tempted to break peace than an autocratic leader/lame duck democratic leader, but more tempted than a democratic leader who does not face term limits.

Proposition 3 *Conflicts involving democracies in which the leaders serve the first of two possible terms are less likely than conflicts involving autocracies, but more likely than conflicts involving democracies without term limits.*

The implication of Proposition (3) is that in democracies with two-term limits, conflicts should be more likely to arise during an executive's last term. The reason is that in the first term of his mandate, the leader is disciplined by the election while in the second term, the leader is a lame duck who can not be elected again. These calendar effects have been empirically documented in Conconi *et al.* (2014): conflicts involving democracies with two-term limits are more likely in the executive's last mandate than in the penultimate one.

6   Conclusion

One of the few stylized facts in international relations is that democracies, unlike autocracies, almost never fight each other. Recent empirical studies show that binding term limits invalidate this result, making "lame duck" democratic leaders as conflict prone as autocratic leaders.

To rationalize these findings, we have presented a theoretical model that allows to study the sustainability of international peace between democracies and autocracies and the impact of term limits on the likelihood of conflicts. Our model of war and peace is a standard two-country repeated prisoners' dilemma game, in which the use of military force is beneficial in the short-run, but has long-term detrimental consequences: each country is tempted to attack the other to obtain a portion of its wealth and resources; however, if both countries use force, the resulting military conflict is

costly compared to being at peace. Peace can only be sustained if the leaders of both countries have incentives to cooperate. The main novelty is that the actual players are the active leaders, whose objectives do not coincide with those of their citizens.

Our model formalizes the Kantian idea that electoral accountability can deter leaders from starting costly conflicts. The fear of losing office can make it less tempting for democratic leaders to wage war against each other. Crucially, this discipline effect can only be at work if incumbent leaders can be re-elected. In democracies without term limits, periodic elections provide the means by which the electorate can hold opportunistic political leaders accountable for their foreign policy decisions. Conversely, in autocracies and democracies with term limits, politicians are freer to adopt unpopular policies, knowing that this will have no repercussion on whether or not they are able to stay in power. In the case of democracies with two-term limits, conflicts are less likely to arise during the executive first term, when the discipline effect of elections is still at work.

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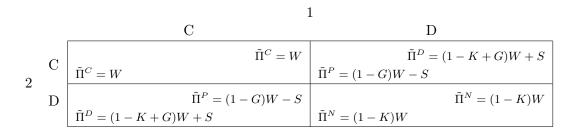Smith, L. (1992). "Folk Theorems in Overlapping Generations Games," *Games and Economics Behavior* 4, 426-449.

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Appendix: Stochastic Payoffs

The model described in the paper predicts that any pair of countries should always be either at war or at peace. In this appendix, we show that the model can be extended to allow for the possibility of cycles of war and peace on the equilibrium path.

We introduce a stochastic component in the countries' payoffs matrix, in the spirit of Rotemberg and Saloner (1986). More specifically, we assume that at every period t, the payoffs matrix of the dyad is affected by a shock S^t. The shocks S^t are identically and independently distributed according to a distribution F whose support is $\left[0, \overline{S}\right]$. Table A-1 summarizes the effects of the shock on the countries' payoffs. Notice that the shock S only affects $\tilde{\Pi}^D$ and $\tilde{\Pi}^P$. This implies that breaking peace is more or less tempting in different periods, since the fraction of resources that can be acquired by attacking the other country varies.

Table A-1: Prisoners' dilemma (countries' payoffs)

		1	
		C	D
2	C	$\tilde{\Pi}^C = W$ $\tilde{\Pi}^C = W$	$\tilde{\Pi}^D = (1 - K + G)W + S$ $\tilde{\Pi}^P = (1 - G)W - S$
	D	$\tilde{\Pi}^P = (1 - G)W - S$ $\tilde{\Pi}^D = (1 - K + G)W + S$	$\tilde{\Pi}^N = (1 - K)W$ $\tilde{\Pi}^N = (1 - K)W$

As in the benchmark model, leaders are assumed to have different preferences from their citizens. Politicians derive rents Z while in power and only take into account a fraction α of the total costs incurred by their country when deploying military force. From their point of view, the payoffs of the stage game are $\tilde{\pi}^D = (1 - \alpha K + G)W + S = \pi^D + S$, $\tilde{\pi}^C = W = \pi^C$, $\tilde{\pi}^N = (1 - \alpha K)W = \pi^N$, and $\tilde{\pi}^P = (1 - G)W - S = \pi^P - SW$.

In what follows, we focus on equilibria in which as much cooperation as possible can be sustained between two countries. As we did in the benchmark model, we examine the conditions under which cooperation can be sustained in all three possible dyads.

A-1 Autocracies

We focus on an equilibrium in trigger strategies of the form:

Cooperate in period $t = 0$ if $S^t \leq \bar{S}_{AU}$, where $\bar{S}_{AU}$ is the threshold for cooperation in the autocratic dyad;

Cooperate in period t if $S \leq \bar{S}_{AU}$ and both players have cooperated before whenever $S^t \leq \bar{S}_{AU}$, defect otherwise.

We can compute the expected value of sustaining cooperation from the point of view of autocratic leaders. With probability $F\left(\bar{S}_{AU}\right)$, the two countries cooperate, while with probability $\left(1 - F\left(\bar{S}_{AU}\right)\right)$ the shock is high and both countries find it too tempting to defect. The continuation value of cooperation can thus be written as:

$$\tilde{V}_{AU}^{C} \equiv \frac{F\left(\bar{S}_{AU}\right)\pi^{C} + \left(1 - F\left(\bar{S}_{AU}\right)\right)\pi^{N} + Z}{1 - \delta}, \tag{14}$$

while the continuation value of noncooperation is given by:

$$\tilde{V}_{AU}^{N} \equiv \frac{\pi^{N} + Z}{1 - \delta}. \tag{15}$$

We have a subgame-perfect Nash equilibrium if players have the incentive to cooperate when the shock is low enough and the other player is following the equilibrium strategy. Given the prisoners' dilemma payoffs and the discount factor, we can solve for the maximum $\bar{S}_{AU}$ for which the following condition is satisfied:

$$\pi^{D} + \bar{S}_{AU} - \pi^{C} \leq \delta\tilde{\Omega}_{AU}, \tag{16}$$

where

$$\tilde{\Omega}_{AU} = \tilde{V}_{AU}^{C} - \tilde{V}_{AU}^{N} = \frac{F\left(\bar{S}_{AU}\right)\left(\pi^{C} - \pi^{N}\right)}{1 - \delta}. \tag{17}$$

On the equilibrium path, autocratic dyads will experience cycles of cooperation and conflict. The probabilities of war and peace are given by $1 - F\left(\bar{S}_{AU}\right)$ and $F\left(\bar{S}_{AU}\right)$ respectively.

A-2   Democracies

To simplify the analysis, we consider the case where re-election probabilities of democratic leaders are equal to $\bar{p} = 1$ and $\underline{p} = 0$.

We focus on an equilibrium in trigger strategies of the form:

Cooperate in period $t = 0$ if $S^t \leq \bar{S}_{DE}$, where $\bar{s}_D$ is the threshold for cooperation in the democratic dyad;

Cooperate in period t if $S^t \leq \bar{S}_{DE}$ and both players have cooperated before whenever $S \leq \bar{S}_{DE}$, defect otherwise.

With probability $F\left(\bar{S}_{DE}\right)$, the shock is low enough for the two countries to be able to sustain peace; in this case, incumbent policymakers get re-elected; with probability $\left(1 - F\left(\bar{S}_{DE}\right)\right)$ the shock is high, the two countries are at war and incumbent policymakers do not get re-elected. For democratic leaders, the continuation values of cooperation and noncooperation are respectively given by

$$\tilde{V}_{DE}^{C} \equiv \frac{F\left(\bar{S}_{DE}\right)\pi^{C} + \left(1 - F\left(\bar{S}_{DE}\right)\right)\pi^{N} + Z}{1 - \delta}, \tag{18}$$

and

$$\tilde{V}_{DE}^N \equiv \frac{\pi^N}{1-\delta}. \tag{19}$$

Peace is sustained when the shock is below the threshold identified by this condition:

$$\pi^{DE} + \bar{S}_{DE} - \pi^C \leq \delta \tilde{\Omega}_{DE}, \tag{20}$$

where

$$\tilde{\Omega}_{DE} = \tilde{V}_{DE}^C - \tilde{V}_{DE}^N = \frac{F\left(\bar{S}_{DE}\right)\left(\pi^C - \pi^N\right) + Z}{1-\delta}. \tag{21}$$

For given countries' payoffs, discount factor δ and office rents Z, we can obtain the critical threshold $\bar{S}_{DE}$ below which two democracies will be at peace.

Comparing (17) with (21), it is straightforward to verify that the punishment following a defection is always larger for democratic leaders than for autocrats. The intuition is the same as in our benchmark model: if they break peaceful relations, democratic leaders can lose the benefits of holding office (Z). Given that the deviation gains are the same for autocratic and democratic leaders, it follows that $\bar{S}_{DE}$ always weakly exceeds $\bar{S}_{AU}$. As a result, democratic dyads will be at war less often than autocratic dyads.

A-3 Term Limits

Finally, consider lame duck democratic leaders. In this case, the continuation value of cooperation can thus be written as

$$\tilde{V}_{LD}^C \equiv \frac{F\left(\bar{S}_{LD}\right)\pi^C + \left(1 - F\left(\bar{S}_{LD}\right)\right)\pi^N}{1-\delta}, \tag{22}$$

while the continuation value of noncooperation is given by

$$\tilde{V}_{LD}^N \equiv \frac{\pi^N}{1-\delta}. \tag{23}$$

The incentive constraint of lame duck democratic leaders can then be written as

$$\pi^D + \bar{S}_{LD} - \pi^C \leq \delta \tilde{\Omega}_{LD}, \tag{24}$$

where

$$\tilde{\Omega}_{LD} = \tilde{V}_{LD}^C - \tilde{V}_{LD}^N = \frac{F\left(\bar{S}_{LD}\right)\left(\pi^C - \pi^N\right)}{1-\delta}. \tag{25}$$

Comparing (25) with (17), it is straightforward to verify that the punishment of breaking peace is the same for lame duck democratic leaders and autocratic leaders. As in Section 5, the intuition behind this result is that, in both cases, incumbent politicians are not accountable to the electorate: no matter what they do, autocratic leaders remain in office and continue to receive rents Z; similarly, no matter what they do, lame duck democratic leaders lose office and the associated rents.