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A Principal-Agent Approach

Imprint

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bibliografie; detaillierte bibliografische Daten sind im Internet über:
http://dnb.d-nb.de abrufbar.

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Democratic Peace – A Principal-Agent Approach

Abstract

The present paper explicitly models the principal-agent relationship between a democratic population and its elected representative within a standard war bargaining setup. I find that the specific structure of this relationship and the problems resulting from it help overcome information asymmetries in crisis bargaining. This provides an alternative theoretic explanation of democracies' signaling advantage which may turn out to be more realistic than the concept of audience costs.

JEL Classification: C78, D74, J52

Keywords: Democratic peace; principal-agent problems; crisis bargaining

December 2013

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1 Introduction

Democratic peace refers to the very stable empirical observation that democracies rarely go to war with one another, but are not immune from fighting wars with non-democracies.[1]

The present paper is a contribution to the theoretic literature which aims to explain democratic peace with informational advantages of democracies.[2] This strand of literature originated in Fearon's (1994) famous paper on audience costs. Audience costs theory claims that democracies are better able to signal their intentions because democratic leaders incur audience costs if they make threats that they later fail to follow through. In contrast, statements of politically unaccountable dictators are considered to lack that source of credibility because they are able to bluff without facing domestic costs.

Despite the prominence of audience costs theory (Snyder and Borghard (2011) count over 400 references in scholarly journals), the actual relevance of audience costs in real world crisis bargaining could not be verified in empirical studies.[3] Also, Snyder and Borghard point out that, in historical cases, public threats are rarely unambiguous which prevents leaders to be held fully accountable for failed threats and the audience costs argument to unfold. Weeks (2008), on the other hand, argues that democracies need not be unique in their ability to raise audience costs. She identifies various sources of audience costs in autocracies and, on these grounds, concludes that a signaling advantage for democratic leaders based on audience costs does not exist.

The main problem of audience costs theory may be the strict assumptions on which it is based.[4] The theory only works if domestic audiences always have the same preferences as their leader and care so much about empty threats to remove the leader from office even though the political outcome is in their best interest.

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[1] see for example Oneal and Russett (1997) and Maoz and Abdolali (1989)
[2] for a critical appreciation of democratic peace theory see Rosato (2003)
[3] for an overview of empirical studies on audience costs see Gartzke (2012)
[4] see Snyder and Borghard (2011)

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In the present paper, I aim to maintain the explanatory power of democracies' signaling advantage over autocracies which is widely supported by empirical tests.[5] However, I will significantly change the way that leads to this signaling advantage by relaxing assumptions and creating a different theoretic model. Since it is basically the logical and empirical discrepancies inherent to the notion of audience costs that cause grounds for concern, I hope to provide an alternative, more convincing theoretic justification of democracies' general preponderance to overcome information asymmetries. More specifically, the present model predicts that the principal-agent relationship, which naturally arises within democratic systems, can explain democracies' signaling advantage.

For that purpose, the present model starts with a standard war bargaining set-up and relaxes the assumption that considers bargaining parties to be unitary entities which either act alone and according to their own ideas (autocratic leaders: A) or implicitly share the same preferences and goals as the people they represent (democratic representatives: R).[6] I distinguish between the two regime types by assuming that democratic constituents have different preferences and that, in contrast to autocracies, representatives are elected to act on behalf of the majority's preferences. Two problems can arise in this kind of setting: First, the representative may not be fully aware of the current majority situation because he does not know the preferences of each and every constituent in each and every bargaining case. Second, the representative may have preferences of his own and be inclined to follow his own and not the majority's preferences.

The present model particularly addresses these problems and shows that they enable democratic leaders to overcome informational asymmetries, given that a functioning election process is in place. This implies that, with the same strength in explaining democracies' signaling advantage, the present approach uses less severe assumptions

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[5]see Eyerman and Hart (1996), Schultz (1999)

[6]The unitary actor assumption is used in most theoretic war bargaining models, see for example Morrow (1989), Fearon (1995) and Powell (1996)

and more realistic modeling than the audience costs approach and may therefore provide a more substantial theoretic underpinning of the democratic peace phenomenon.

Related Literature

Contributions to the democratic peace literature are extensive and diverse. Rosato (2003) provides a critical assessment of the theoretic literature on democratic peace and discusses the causal logic of normative and institutional arguments. The present paper falls under Rosato's category of an institutional argument as it's logic is based on the accountability of political leaders to democratic institutions. As method of analysis, I use a game-theoretic model.

Game-theoretic models of democratic peace can be crudely separated based on the underlying concept of war initiation. Following Fearon (1995), models based on the expected utility argument assume that two states opt for war if the expected utility from war outweighs the expected costs. Any such framework disregards the possibility of bargaining. Once bargaining is allowed, the expected utility approach becomes moot as it cannot explain why two states fail to negotiate a mutually beneficial settlement.

For a bargaining framework, Fearon (1995) identifies two main *rationalist reasons* why agreements may become impossible: commitment problems and information asymmetries.[7] According to Fearon, a rationalist reason for war must explain why states cannot agree on a negotiated settlement and thereby avoid the costs of war. This *rationalist reasons* approach is taken here, as I provide a theoretic model that explains why democracies can overcome information asymmetries and this *rationalist reason* for war dissolves.

In this sense, the paper is closely related to Ramsay (2004) who uses a game-theoretic signaling model and shows that the opposition's endorsement of the leader can work as a costly signal in crisis bargaining and eliminate information asymmetries,

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[7]While commitment problems mainly explain the existence of preventive war, asymmetric information is the reason why states go to war if they have incentives to misrepresent their private information and pretend to be more resolved, in the hope of reaching a more favorable settlement.

a rationalist reason for war. The model is based on the assumption that leaders differ in their competence of handling war and that voters prefer competent leaders with low costs of war over incompetent ones with respectively high costs of war. A central part in the unfolding argument plays the opposition which knows the leader's type, and endorsing him, can reveal a competent, low cost leader not only to the opponent but also to voters. The set-up of the model is very convincing and the crucial assumptions are not far from mine. The advantage of the present model may be that, domestic political opposition is not necessary for the result because it is not a signaling model in the classical sense.

Jackson and Morelli (2007) develop a very general principal-agent model of war. They introduce a measure of political bias independent of regime type that explains why wars can happen even when countries have perfect information. They find that two countries with unbiased leaders can remain at peace given that enforceable peace treaties can be negotiated and hypothesize that this explains democratic peace given the assumption that democracies are less biased than non-democratic regimes. While their paper is very interesting as they provide an additional *rationalist reason* for war or inversely for peace, they do not address the question, how democratic peace can be explained in the presence of imperfect information.

Bueno de Mesquita et al. (1999) also seek to explain democratic peace with institutional characteristics and argue that democratic institutions make it easier for domestic political challengers to unseat a government that undertakes costly or failed policies, assuming that such policies are disapproved of by the public. This is the reason why war is especially risky for democratic leaders, who therefore have a greater incentive to either avoid war altogether or by all means avoid losing wars once they have started, compared to non-democratic leaders, who do not face such risk. In contrast to the present paper, the model in Bueno de Mesquita et al. (1999) is based on the expected utility approach, not a bargaining approach.

The model in Debs and Goemans (2010) also has an expected utility approach at

heart and in this respect differs from the present approach. They argue that peace prevails when the cost of a leader's survival probability depends relatively little on the war outcome and the net gain of staying in office is relatively small, attributes that they rather associate with democratic leaders than autocratic leaders.

The paper proceeds as follows: Section 2 presents the crisis bargaining model, section 3 introduces democracies, section 4 provides a discussion of empirical implications and future research, section 5 concludes.

2   The Model

Two parties, A and B, bargain about the distribution of an issue of size 1. Each player has an individual outside option w_i, which is private information. This modeling correlates to the literature on war bargaining that often treats war as a costly lottery which is won by party A with probability $\phi_A \in [0, 1]$ and party B with probability $\phi_B = 1 - \phi_A$. The expected gains from this lottery equal the parties' respective outside options $w_i = \phi_i - c_i$, where c_i represent the costs of war. Note that, in this formulation, the term c_i also captures the relative value that a party places on winning or losing. That is, c_i reflects party i's costs of war relative to any possible benefits. In practice, low costs of war translate into a high outside option or high resolve, which means that the issue at stake is highly valued and going to war a viable option at relatively small costs. On the other hand, if a party sees little to gain from winning war, then c_i would be large even if the actual costs, incurred by war, were small.[8]

   War can occur in this kind of setting when there is asymmetric information about the opponent's resolve and it may be beneficial to make a low offer which only low resolve types accept. Asymmetric information can be introduced either by assuming that the parties have private information about the probability to win a war, which

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[8]see Fearon (1995)

basically refers to military ressources, or private information about the costs of war, which will be applied here. As stated above, high costs of war immediately result in a low outside option and low costs of war in a high outside option.

The asymmetry in information is modeled as follows: From A's point of view, player B's outside option is low (w_B^l) with probability $0 < \beta < 1$ and high (w_B^h) with probability $1 - \beta$, with $w_B^l < w_B^h$. Equally, player B believes that A's outside option is low (weak type) with probability $0 < \alpha < 1$ and high (strong type) with probability $1 - \alpha$. In contrast to the case of asymmetric information about military resources, in the case of asymmetric information about costs, a mutually beneficial bargaining outcome always exists, even when two strong types negotiate, $w_A^h + w_B^h \leq 1$.

For simplification, I assume that one of the bargainers is selected at random to make a take-it-or-leave-it offer, which the opponent accepts if and only if this offer meets at least her outside option w_i. Otherwise, she opts out and both parties receive their respective outside option payoffs.

3   Introducing Democracies

In the basic model of two unitary actors, as for instance in Powell (1996), neither state can convince the opponent that his level of resolve is, in fact, real because either state can easily renege upon prior commitments and simply lie. Therefore, a state may have an incentive to screen the opponent's type and make an offer which is only acceptable to the weak type, leading to war whenever the opponent is strong. Consequently, the conditions for war can be stated as follows:

Conditions for War in the Unitary Actor Case:

1. *A* makes a screening offer: $\beta(1 - w_B^l) + (1 - \beta)w_A^i > 1 - w_B^h$

2. *B* makes a screening offer: $\alpha(1 - w_A^l) + (1 - \alpha)w_B^i > 1 - w_A^h$

Condition 1 states that it is optimal for player A given his type w_A^i with $w_A^i \in \{w_A^l, w_A^h\}$ to make a screening offer. A screening offer (left hand side) gives him a profit of $1 - w_B^l$ with probability β which is the probability that B is weak and will accept a low offer w_B^l. With probability $1 - \beta$, however, B is strong and refuses to accept such low offer. In this case, war occurs and A obtains his outside option w_A^i. A pooling offer (right hand side) is accepted by weak and strong types and is thus a riskless profit for the proposer. Condition 2 essentially states the same with the roles of the players reversed. Generally, when a state makes a screening offer, the probability of war is positive and equals the probability that the opponent is strong. Making a screening offer is less attractive for weak types because they have a low outside option and therefore a smaller expected profit from making such offer compared to strong types. Also, screening offers become less attractive, the higher the probability of a strong opponent.

In the following analysis, I aim to show that a state does not have an incentive to make a screening offer to a democratic opponent, independent of his own type and the probability of a strong opponent, as long as the democratic leader is sufficiently interested in reelection.

For that purpose, assume that party A is still a single actor (an autocracy or, alternatively, a group with equal preferences), whereas party B consists of a continuum of individual players, normalized to unity, who entrust one political representative, denoted R, to bargain on their behalf. Again player A, the autocrat, is either a weak type with probability α or a strong type with probability $1 - \alpha$. Furthermore, a critical majority in B is weak with probability β and strong with probability $1 - \beta$. This implies that the population is composed of two types of individuals: individuals who have little costs of war and mostly benefit and individuals who do not care to go to war because their costs of war are high. This modeling approach is a natural extension of the unitary actor approach. When we think of different costs of war as different preferences regarding war and assume that war is possible because these preferences are private information, then in the unitary actor case, only the unitary actors' preferences matter.

This is not true for democracies. In democracies, given a functioning election process, the preferences of many individuals are important and eventually majority rules. So, I think it is a logical step to endow democratic voters with preferences and integrate the majority's preferences into the analysis.

I assume that, first the representative (agent) receives a signal $s \in \{w_B^l, w_B^h\}$ about the majority's type, which is accurate with probability $\frac{1}{2} < q < 1$ and second, that the agent is unbiased R_u with probability p and biased R_b with probability $1-p$, where the realized type is the agent's private information.

At this point, it is important to stress that all leaders are agents to some principal, with the difference that the principal in democratic countries is an aggregation of a large number of individuals. This is the key difference between autocracy and democracy in this model, when we consider an autocracy as just another variant of a principle-agent relationship. An autocratic leader answers only to a small number of individuals and it seems plausible that he actually learns their preferences without publicity. On the other hand, a democratic leader cannot possibly learn the preferences of all the voters privately. His only way of narrowing them down is to rely on a public signal. This signal may subsume polls, media reports, and legislative debates and informs not only the democratic leader about what his voters want but also the opponent. The signal being imperfect and public is a direct consequence of the principal being an aggregation of a large number of individuals in democracies. This creates a principal-agent problem in the sense that the signal may be wrong and the outcome not in line with majority's interests.

It is important for this model to work that the signal about the principal's preferences in autocracies is private and in democracies it is public. But this alone does not explain democratic peace. Because even though the signal is public in democracies, it is not as if the opponent knows from the outset what a democratic leader will do. Of course, observing the signal can help the opponent update his belief about the principal's type, however, the democratic leader's type is still private information and

unknown to the opponent.

The analysis and results very much depend on how the democratic leader types are characterized and what the majority's preferences are with regard to her leader. The following paragraph describes the crucial assumptions on which the model is based: First, I assume that the *majority* prefers an unbiased leader who is truly committed to the majority's interests and not his own. Second, an *unbiased agent* is only interested in maximizing the majority's bargaining outcome, not in reelection and not in his own type. Third, a *biased agent* does not derive utility from serving the majority but cares only about his own type, which is either weak (with probability β) or strong (with probability $1 - \beta$), dependent on whether he puts little or much value on the issue at stake. Besides the share that the biased agent receives through bargaining, he also cares about reelection and thus cares about how he is perceived by the critical majority.

In the following, I will equate "critical majority" with "principal" to implie that the agent's reelection concerns are tied to the critical majority which decides whether the agent is retained for future periods or removed from office. Note, that it is not important that an unbiased type even exists. It suffices that the principal has an idea about how an ideal candidate should act which I assume is to maximize the principal's expected payoff from bargaining.

The principal observes the bargaining outcome θ and refers the representative's type. The principal's belief that the representative is unbiased, given the bargaining outcome, is $Pr(u \mid \theta)$. The payoff to the agent is then given by

$$U_{R_u} = EU(P(\theta))$$

for an unbiased agent, where $EU(P(\theta))$ is the principal's expected payoff from bargaining and

$$U_{R_b} = \lambda \theta(w_B^i) + (1 - \lambda) Pr(u \mid \theta)$$

for a biased agent, with $w_B^i \in \{w_B^l, w_B^h\}$, where λ measures the weight, biased agents put on the bargaining outcome and $1-\lambda$ the weight, they put on reputational concerns. Because it simplifies the analysis, let me introduce another variable $r = \frac{1-\lambda}{\lambda}$ which defines the importance of reelection relative to the importance of personal bargaining gains to biased agents.

Making the payoff for a biased agent conditional on the principal's ex post assessment of the agent's type is a common specification in the literature on career concerns in principal-agent relationships. In the political context considered here, one could motivate the assumption by suggesting that the probability that the representative will be reelected increases in the posterior $Pr(u \mid \theta)$.

The payoff to the principal depends on the bargaining outcome and the posterior distribution:

$$U_P(\theta, Pr(u \mid \theta))$$

The principal's payoff mirrors her two objectives. One is to maximize her expected payoff from bargaining. Another is to obtain information about the agent's type which becomes relevant when she needs to decide whether to retain the agent for future, unmodeled periods or hire another one.

The game proceeds as follows:

1. Nature determines the outside option payoffs and whether R is biased.

2. R receives a signal about the majority's type

3. Bargaining game: Upon random selection, either R or A makes a take-it-or-leave-it offer to the opponent.

4. The public observes the bargaining outcome and infers the agent's type.

5. R receives a payoff based on the public's inferences (posterior of R's type) and the bargaining outcome.

The public's inference about R's type can be determined as follows, using Bayes's rule:

$$Pr(u \mid \theta) = \frac{Pr(\theta \mid u)p}{Pr(\theta \mid u)p + Pr(\theta \mid b)(1-p)}$$

There are two possible reasons for war in this set-up. One, R rejects an offer and two, R's offer gets rejected. As shown in the Appendix, it is not possible to restrict R's offer in a way that leads to peaceful acceptance by the opponent as long as the opponent is an autocracy. This is why, in the following analysis, I focus on the first possible reason for war and define conditions that are necessary for the opponent's offer to get accepted by a democratic agent. If the conditions hold, then war does not occur whenever the opponent makes the offer because in the face of reelection concerns, democratic agents coordinate on a single acceptance rule independent of their individual types.[9]

Lemma 1 *In equilibrium, an unbiased agent accepts only an offer* $x \geq w_B^h - q(w_B^h - w_B^l)$ *if* $s = w_B^h$ *and* $x \geq w_B^l + q(w_B^h - w_B^l)$ *if* $s = w_B^l$.

Proof. An unbiased agent is only interested in maximizing the majority's expected payoff. The expected payoff depends on the signal and the quality of the signal. If $s = w_B^l$ an unbiased agent accepts an offer x if and only if

$$x \geq q w_B^l + (1-q) w_B^h \tag{1}$$

where the right hand side of this inequality is the expected payoff from rejecting the offer (and going to war). If $s = w_B^h$ an unbiased agent accepts an offer x if and only if

$$x \geq q w_B^h - (1-q) w_B^l \tag{2}$$

∎

Lemma 1 suggests that both, the opponent and the principal, know how an unbiased representative is supposed to react given the signal and its quality. Since he cannot be

sure about the principal's actual type, the unbiased agent demands compensation for this uncertainty whenever the signal is low and makes concessions whenever the signal is high. Based on the principal's knowledge of the unbiased agent's optimal response, the biased agents coordinate on the same strategy if they put sufficient value on reelection. In equilibrium, this is anticipated by the opponent who makes an appropriate offer which is accepted.

Proposition 1 *When reelection is sufficiently important to biased agents relative to potential gains from bargaining, so that $r > \tilde{r}$ with $\tilde{r} = max\{\tilde{r}_w, \tilde{r}_s\}$, A offers $x^* = w_B^h - q(w_B^h - w_B^l)$ if $s = w_B^h$ and $x^* = w_B^l + q(w_B^h - w_B^l)$ if $s = w_B^l$ in equilibrium and the offer is accepted.*

Proof. It is easy to check that for $\frac{1}{2} < q < 1$, $x^* > w_B^l$. Therefore, the opponent might think about deviating from his equilibrium strategy and making a screening offer $w_B^l \leq x < x^*$. From Lemma 1 we know that an unbiased type rejects $x < x^*$ so that $Pr(u \mid x < x^*) = 0$. Because of this and because $x^* < w_B^h$ for $\frac{1}{2} < q < 1$, a strong biased agent also rejects an offer $x < x^*$. The only plausible candidate for accepting an offer x would be the weak biased type. The opponent only has an incentive to make a screening offer x, acceptable to the weak biased type, if

$$\beta(1-p)(1-x) + ((1-\beta)(1-p) + p)w_A^i > 1 - x^*$$

for $w_A^i \in \{w_A^l, w_A^h\}$ and $w_B^l \leq x < x'$. It follows that $x < \frac{\beta(1-p)+((1-\beta)(1-p)+p)w_A^i - 1 + x^*}{\beta(1-p)} = x'$.

Now we need to verify that it is still optimal for A to offer x^* by showing that also the weak biased type rejects an offer $w_B^l \leq x < x'$.

A weak biased type rejects an offer $w_B^l \leq x < x'$ if and only if:

$$\lambda w_B^l + (1-\lambda)Pr(u \mid war) > \lambda x + (1-\lambda)Pr(u \mid x < x^*)$$

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$$\Leftrightarrow \frac{1-\lambda}{\lambda} > \frac{x - w_B^l}{Pr(u \mid war)} = \tilde{r}_w \tag{3}$$

for $Pr(u \mid x < x^*) = 0$.

The weak biased type is ready to reject an offer that is higher than his outside option if reputational concerns are high. In this case, he is ready to accept personal costs from the bargaining outcome, which is going to war despite high personal costs of war, because these costs are offset by a higher reelection probability which also creates utility.

Next, we need to verify that a strong biased type accepts the offer x^*, even though $x^* < w_B^h$ for $\frac{1}{2} < q < 1$:

$$\lambda w_B^h + (1-\lambda)Pr(u \mid war) < \lambda x^* + (1-\lambda)Pr(u \mid x^*)$$

$$\Leftrightarrow \frac{1-\lambda}{\lambda} > \frac{w_B^h - x^*}{p - Pr(u \mid war)} = \tilde{r}_s \tag{4}$$

since $Pr(u \mid x^*) = p$. If this condition holds, then the strong biased agent prefers accepting x^* over rejecting it because his reputational gains outweigh his personal costs from accepting an offer below his outside option. ∎

For such peaceful equilibrium response to work, it is important that the opponent observes the signal and that the biased types are eager to get reelected so that they imitate the unbiased type's equilibrium response. If one of the above incentive constraints (condition 2.3 and 2.4) fails to hold, the opponent's offer does not necessarily get accepted and war becomes possible. For example, if condition 2.3 fails, the weak biased type would accept an offer $x \leq x'$ and the opponent has an incentive to deviate from the equilibrium strategy defined by Proposition 1 and make a screening offer which is rejected by the unbiased and the strong biased type. On the other hand, if condition 2.4 fails, the strong biased agent rejects the offer x^*. The necessary conditions critically depend on the principal's posterior belief that the agent is unbiased

after observing war, $Pr(u \mid war)$.

In the following corollary, it will be shown that $Pr(u \mid war)$ and thus the necessary conditions depend on the principal being able to learn the actual offer and also distinguish between who the proposer and who the responder is.

Corollary 1 *How public the bargaining process is, matters in the democracy/autocracy case. When bargaining is open-door, the democratic agent accepts x^* in equilibrium, as long as reputational concerns are sufficiently high. Under closed-door bargaining, this is no longer the case.*

Whether conditions 2.3 and 2.4 in Proposition 1 hold, depends on $Pr(u \mid war)$. $Pr(u \mid war)$ on the other hand, depends on how public the bargaining process is. The necessary conditions can only hold simultaneously if $Pr(u \mid war) > 0$ in the weak biased type's incentive constraint which breaks down for $Pr(u \mid war) = 0$ and if $Pr(u \mid war) < p$ in the strong biased type's constraint which breaks down for $Pr(u \mid war) \geq p$.

When the bargaining process is open-door, the principal can observe who makes what offer. In this case, when A makes the offer, given the agents' equilibrium strategies, $Pr(u \mid war) = p$ following $x < x^*$ (which means that $Pr(u \mid war) > 0$ in the weak biased type's incentive constraint) and $Pr(u \mid war) = 0$ following $x \geq x^*$ (which means that $Pr(u \mid war) < p$ in the strong biased type's incentive constraint). It follows that the strong and weak biased type's incentive constraints can be simultaneously fulfilled and a peaceful response to A's offer is possible in equilibrium when the bargaining process is open-door.

When bargaining takes place behind closed doors, the principal cannot observe who makes the offer and what the offer looks like. In this case, $Pr(u \mid war)$ can no longer be uniquely defined based on A's offer because the principal cannot identify the proposer and does not know which offer has been rejected by whom. Therefore, $Pr(u \mid war)$ is not only determined by A's offer but also by R's offer. R's optimal offer,

however, does not necessarily coincide with $0 < Pr(u \mid war) < p$, the range for which the necessary conditions can hold simultaneously. In this case, accepting A's offer is no longer equilibrium behavior and war becomes possible. This will be shown in the Appendix. For example, there is no equilibrium in which A offers x^* and all types of agents have an incentive to make a screening offer because then $Pr(u \mid war) = p$ and the strong biased agent's incentive constraint breaks down. Similarly, there is no equilibrium in which A offers x^* and the unbiased and the weak biased type have an incentive to make a pooling offer while the strong biased type has the incentive to make a screening offer because then $Pr(u \mid war) = 0$ and the weak biased agent's incentive constraint breaks down.

Corollary 7 suggests that the likelihood of war can be reduced when the states involved are a democracy and an autocracy as long as the bargaining process is public, because a democracy always accepts the offer x^* when the bargaining is open-door and reelection concerns are high. It also suggests that such an acceptance rule can disappear even though reelection concerns are high when the bargaining process is closed-door. This is a remarkable result since many theoretic studies cannot account for the empirical paradox that democracies are engaged in war seemingly as often as autocracies at the nation level.[10]

Corollary 2 *When both parties are democracies, there is an equilibrium in which the offer x^* is always accepted given that the incentive constraints hold on both sides. The aggregate probability of war drops to zero, which ultimately results in the observation of a democratic peace. For reasonable restrictions on the off-the-equilibrium-path belief, the democratic peace result holds under open-* ***and*** *closed-door bargaining.*

When both parties are democracies and conditions 2.3 and 2.4 hold, war does not occur in equilibrium. When the bargaining process is completely public, $Pr(u \mid war)$ can be uniquely defined depending on the observed offer, as argued in Corollary 7 and

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[10]see for example Maoz and Abdolali (1989)

the constraints can hold simultaneously. In the closed-door bargaining case, $Pr(u \mid war)$ becomes an off-the-equilibrium-path belief.

To put some restriction on this belief, let us first consider the two scenarios in which war could possibly be observed by the principal: War could either occur if the proposer deviates from his equilibrium strategy and makes too low an offer for the responder to be acceptable or if the responder deviates from his equilibrium strategy and rejects the equilibrium offer. As for the first scenario, we should reasonably assume that $Pr(u \mid war) > 0$ because the unbiased agent definitely rejects an offer $x < x^*$. At most $Pr(u \mid war) = p$ in this scenario, that is, if the offer is rejected by all types. When it comes to the second scenario, the intuitive criterion requires that $Pr(u \mid war) = 0$ because the unbiased agent definitely accepts the equilibrium offer. As long as both sides have positive proposal power, both scenarios are possible and the principal should place positive probability on the incidence of either scenario. It follows that the principal's belief that the agent is unbiased given that war can be observed lies somewhere between zero and p: $0 < Pr(u \mid war) < p$. This is also exactly the range for which the biased agents' constraints (conditions 2.3 and 2.4) are viable.

4   Discussion

The above analysis implies that the principal-agent relationship between a democratic population and her leader can eliminate information asymmetries and facilitate peaceful bargaining. In this section, I highlight some of the empirical implications of the analysis and point toward an interesting issue for future research.

Empirical Implications

The equilibrium strategies of the model point to a number of empirical implications relating democratic institution to the outcome of international crises. One such implication is that, offers to democracies tend to be less radical. To see why this is true, first

note that according to Proposition 1, a democracy is offered $x^* = w_B^h - q(w_B^h - w_B^l)$

if $s = w_B^l$ and $x^* = w_B^l + q(w_B^h - w_B^l)$ if $s = w_B^h$ in equilibrium given that conditions

2.3 and 2.4 are fulfilled. For the relevant range of an informative, yet imperfect signal,

$\frac{1}{2} < q < 1$, it is true that $w_B^l < x^* < w_B^h$. However, as shown in the Appendix,

democracies either make screening or pooling offers to an autocratic opponent. When

we consider w_i^l and w_i^h with $i \in \{A, B\}$ as the extreme points of possible offers, then

we can make the following remark:

Remark 1 *Democracies tend to receive moderate offers but make extreme offers to*

autocracies.

How moderate the offers are, depends on the quality of the public signal q because it

determines the equilibrium offer x^*. Since the strong biased type's incentive constraint

(condition 2.4) depends on x^*, the signal's quality is directly linked to the possibility

of a peaceful outcome.

Remark 2 *If $s = w_B^h$, the offer that democracies receive increases in the precision of*

the signal and thus the probality that x^* is accepted (by the strong biased type) increases

in q. If $s = w_B^l$, the offer decreases in the precision of the signal and thus the probality

that x^* is accepted (by the strong biased type) decreases in q

When we look at the strong biased agent's incentive constraint (condition 2.4), we see

that it is more likely fulfilled, the higher x^*. Since x^* increases in q if $s = w_B^h$, a better

signal increases the probability that the strong biased type accepts the offer and war

is avoided. On the other hand, if $s = w_B^l$, x^* decreases in q so that a worse signal

increases the probability that the offer is accepted. Figure 2.1 below illustrates this

correlation.

Another empirical implication is tied to reelection which plays a crucial role in this

model. As a matter of fact, when we take away the reelection concern, the model breaks

down to the unitary actor case because biased agents have no longer an incentive to

imitate the unbiased type in the hope of getting reelected. This means that democratic
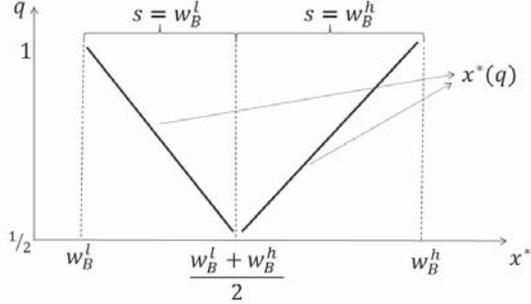
Figure 1: Equilibrium offer x^* depending on signal quality q

peace critically depends on the specific structure of the underlying democratic system. In particular, democratic leaders who do not face reelection, i.e. American presidents in their second term, should be more prone to war or at least equally prone to rejecting an offer as autocrats than leaders who are still viable for reelection, i.e. American presidents in their first term.

Remark 3 *Democracies with a leader serving his final term are more likely to reject an offer in crisis bargaining resulting in war than democracies with a leader who is viable for reelection.*

Future Research

In the model, I assume the signal's quality to be exogenous. Making the quality or even the signal endogenous would provide a whole new set of options to manipulate the equilibrium offer and outcome. For example, the representative could publicly ask for the oppinion of parliament about majority's resolve. Public support from

parliament for a strong stance could improve the quality of an initially high resolve signal or worsen the quality of an initially low resolve signal and thereby increase the equilibrium offer. This mechanism links the model to domestic politics and the question, to what extent the opposition's support or lack thereof can shape the crisis bargaining outcome. It would be an interesting issue for future research to model the opposition's dilemma whether to play along and assist in increasing the equilibrium offer, and at the same time improving the agent's chances of reelection[11] or counteract by reducing the equilibrium offer through lack of support.

The Syria crisis in September 2013, or more precisely, the American response to Syria's use of chemical weapons may be considered as a recent example of such a dynamic. Even though American president Barack Obama publicly assured that he was prepared to order military action against Syria, he first sought approval from Congress. Notably, the American president has the authority to use military force without returning to Congress for approval. Nevertheless, the president's stance seemed to be strengthened if Congress explicitly supported this course of action and weakened otherwise.

5 Conclusion

The paper's aim is to show that the principal-agent structure of democracies dissolves information asymmetries and thus eliminates this rationalist reason for war. In contrast to previous works on that subject, this result is not obtained through a signaling model. There are no costly policy actions, no need of certain oppositional rhetorics or audience costs that give credibility to the leader's demands. Information asymmetries are overcome because democratic agents coordinate on a unique bargaining strategy, namely the strategy of the unbiased agent. Unbiased agents follow this strategy because

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[11]The agent's chance of reelection increases ex ante because a strong biased type more likely accepts a higher offer and the posterior belief that the agent is unbiased is higher if the equilibrium offer is accepted.

it is the optimal strategy when the principal's type is uncertain and the objective is to maximize the principal's payoff. Biased agents follow this strategy, even though it may not be in their personal best interest, because they want to imitate the unbiased agent in order to get reelected. Biased agents are only ready to neglect personal bargaining gains if they get sufficient utility from reelection. So reelection is important. What is equally important is the publicity of the signal about the principal's type. Only if there is free press and media, public debates and freedom of speech, the signal can be considered public and only then knows the opponent which offer to make because the unbiased agent's minimum acceptable offer depends on the signal.

Another way of looking at the model is to accredit the democracy-specific principal-agent problems with the democratic peace result. The two problems responsible for the result can then be subsumed as follows: First, the agent does not know the principal's type because the principal is an aggregation of a large number of individuals with different types, so the agent relies on an imperfect signal. Second, the principal does not know the agent's type because his type is private information, so the principal relies on an updated belief that the agent is the preferred unbiased type.

However we interpret the model, the main ingredient is the principal-agent relationship between a democratic public and its elected representative.

6 Appendix

In this section, I will provide some idea of how the democratic agent's offer to an autocracy looks like. As pointed out before, this offer does not essentially differ from offers between autocracies and depends on the agent's type and the probability that the opponent is weak or strong.

I will also provide proof that "A offering x^* and this offer being always accepted" need not be part of an equilibrium, even though reputational concerns are high, when the bargaining process is closed-door. Under closed door bargainig, the principal cannot

observe who the proposer is nor what the offer looks like. It follows that $Pr(u \mid war)$ also depends on the agent's offer. So in order to calculate $Pr(u \mid war)$, it is also important to think about the agents' optimal offers.

The unbiased agent with a signal $s = w_B^l$ will make a screening offer if

$$\alpha(1 - w_A^l) + (1 - \alpha)(qw_B^l + (1 - q)w_B^h) \geq 1 - w_A^h$$

$$\Leftrightarrow \alpha \geq \frac{1 - w_A^h - qw_B^l - w_B^h + qw_B^h}{1 - w_A^l - qw_B^l - w_B^h + qw_B^h} = \alpha'' \tag{5}$$

The unbiased agent with a signal $s = w_B^h$ will make a screening offer if

$$\alpha(1 - w_A^l) + (1 - \alpha)(qw_B^h + (1 - q)w_B^l) \geq 1 - w_A^h$$

$$\Leftrightarrow \alpha \geq \frac{1 - w_A^h - qw_B^h - w_B^l + qw_B^l}{1 - w_A^l - qw_B^h - w_B^l + qw_B^l} = \alpha' \tag{6}$$

Since $\alpha' < \alpha''$ for $\frac{1}{2} < q < 1$, the unbiased agent makes a screening offer if $\alpha \geq \alpha''$ and a pooling offer if $\alpha \leq \alpha'$ independent of the signal. If $\alpha' < \alpha < \alpha''$ he makes a screening offer if $s = w_B^l$ and a pooling offer if $s = w_B^h$.

A strong biased agent prefers a screening offer if:

$$\alpha(1 - w_A^l) + (1 - \alpha)w_B^h + Pr(u \mid w_A^l) \geq 1 - w_A^h + Pr(u \mid w_A^h)$$

$$\Leftrightarrow \alpha \geq \frac{1 - w_A^h - w_B^h - \left(Pr(u \mid w_A^l) - Pr(u \mid w_A^h)\right)}{1 - w_A^l - w_B^h} = \alpha^s$$

A weak biased agent makes a screening offer if:

$$\alpha(1 - w_A^l) + (1 - \alpha)w_B^l + Pr(u \mid w_A^l) \geq 1 - w_A^h + Pr(u \mid w_A^h)$$

$$\Leftrightarrow \alpha \geq \frac{1 - w_A^h - w_B^l - \left(Pr(u \mid w_A^l) - Pr(u \mid w_A^h)\right)}{1 - w_A^l - w_B^l} = \alpha^w$$

with $\alpha^s < \alpha^w$.

If $\alpha \geq min\{\alpha'', \alpha^w\}$ all types of agents make a screening offer. The public believes that $Pr(u \mid w_A^l) = Pr(u \mid war) = p$. $Pr(u \mid w_A^h)$ is an out of equilibrium belief. For $Pr(u \mid war) = p$, the strong biased agent's incentive constraint breaks down. So in this case, the offer x^* is not always accepted under closed-door bargaining because the strong biased type would prefer to reject it and start war.

If $\alpha \leq max\{\alpha', \alpha^s\}$ all types of agents make pooling offers. The public believes that $Pr(u \mid w_A^h) = p$. $Pr(u \mid w_A^l)$ and $Pr(u \mid war)$ are out-of-equilibrium beliefs. To put some restriction on $Pr(u \mid war)$, we can follow the argument in Corollary 10 and restrict this belief to $0 < Pr(u \mid war) < p$ which coincides with the range for which the biased agents' constraints hold simultaneously as long as reputation is sufficiently important. So in this case, peaceful acceptance of x^* by all types of agents carries over to closed-door bagaining.

For $min\{\alpha', \alpha^s\} < \alpha < max\{\alpha'', \alpha^w\}$, the possible values for $Pr(u \mid war)$ multiply, but there is no point in exploring all the possibilities. Let me only point out two exemplary cases:

- For $\alpha^s < \alpha < min\{\alpha', \alpha^w\}$, the unbiased type and the weak biased type make a pooling offer, while the strong biased type makes a screening offer, so that $Pr(u \mid war) = Pr(u \mid w_A^l) = 0$. For $Pr(u \mid w_A^l) = 0$, however, the weak biased type's incentive constraint breaks down.

- For $\alpha^w > \alpha > max\{\alpha'', \alpha^s\}$, the unbiased type and the strong biased type make a screening offer, while the weak biased type makes a pooling offer, so that $Pr(u \mid war) = Pr(u \mid w_A^l) = \frac{p}{p+(1-\beta)(1-p)}$ and $Pr(u \mid w_A^h) = 0$. In this case, $0 < Pr(u \mid war) < p$ and peaceful acceptance of x^* by all types is possible.

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