Hassling Online Appendix

May 7, 2020

Abstract

This Online Appendix is divided into six parts. First, I present the Proofs of Propositions 2 and 4. Then I include discussions of results where hassling cannot be supported by off-path punishments, where short-term hassling is possible, and where hassling can shift the political settlement. I then include simple examples where hassling can prevent war in settings where a challenging policymaking environment, issue indivisibily, information asymmetry, and information asymmetry with endogenous arming can rule out peaceful equilibria. Finally, I discuss some further empirical implications.

Contents

1 Proof of Propositions 2 and 4

Because Proposition 2 is equivalent to Proposition 4 if $h = 0$, the proof of Proposition 4 can be used nearly verbatim to prove Proposition 2 by substituting in $h' = 0$.

I begin by stating a useful lemma that will be used throughout the existence proofs. The following is a modification on Proposition 3.

Lemma 1: *Let action pairs* (x_1, h_1), (x_2, h_2), ... *denote on-path equilibrium play. These actions can constitute a pure strategy Non-War Equilibrium if the following constraints hold:*

$$\sum_{i=1}^{\infty} \delta^{i-1} \left(x_i - K_A(h_i)\right) \geq \frac{P(0,0)}{1-\delta} - c_A, \tag{1}$$

$$\sum_{i=j}^{\infty} \delta^{i-2} \left(x_i - K_A(h_i)\right) \geq -\delta^{j-2} c_A + \sum_{i=j}^{\infty} \delta^{i-2} \left(P(1, h_{j-1})\right) \quad \forall j \in \{2,3,4,...\}, \tag{2}$$

$$\sum_{i=1}^{\infty} \delta^{i-1} \left(1 - x_i - K_D(h_i)\right) \geq -c_D + \frac{1-P(0,0)}{1-\delta}, \tag{3}$$

$$\sum_{i=j}^{\infty} \delta^{i-2} \left(1 - x_i - K_D(h_i)\right) \geq -\delta^{j-2} c_D + \sum_{i=j}^{\infty} \delta^{i-2} \left(1 - P(1, h_{j-1})\right) \quad \forall j \in \{2,3,4,...\}. \tag{4}$$

Lemma 1 states the most general conditions for Non-War Equilibrium existence. Because the War-War equilibrium is the worst possible feasible subgame perfect "punishment" equilibrium,[1] it is used to support the largest possible set of equilibria.

1.1 Proving Proposition 4 ←

Let Assumptions 1 and 2 hold. If at least one Stable Hassling Equilibrium exists, then there exists some $h \in (0,1]$ that satisfies

$$1 \geq \frac{P(0,0) + K_A(h) - \delta \left(P(1,h) - K_D(h)\right)}{1-\delta} - c_A - \delta c_D. \tag{5}$$

[1] Players would reject any prolonged hassle-offer punishment pair that leads to worse payoffs by going to war.

I summarize the proof then proceed below. First I assume the existence of a Stable Hassling Equilibrium defined by triplet (x_1', x_2', h'), with $x_1' \in [0,1]$, $x_2' \in [0,1]$, and $h' \in (0,1]$. I do not directly use x_1' and x_2' in the proof because all I can say about x_1' and x_2' is that they satisfy Lemma 1 for a given h'. However, I can use Lemma 1 to construct bounds on all possible values for x_1' and x_2' for a given h'. I use these bounds to construct an alternate stable hassling equilibrium defined by triplet (x_1^*, x_2^*, h') that, by Lemma 1, will also exist. Last, I show for the Stable Hassling Equilibrium defined by triplet (x_1^*, x_2^*, h'), inequality 5 holds.

Let (x_1', x_2', h') denote one of the existing Stable Hassling Equilibria. I re-write Lemma 1 in terms of this Stable Hassling Equilibrium. For period 1, it must be that

$$x_1' - K_A(h') + \frac{\delta}{1-\delta}\left(x_2' - K_A(h')\right) \geq \frac{P(0,0)}{1-\delta} - c_A \tag{6}$$

and

$$(1 - x_1' - K_D(h')) + \frac{\delta}{1-\delta}\left(1 - x_2' - K_D(h')\right) \geq \frac{1-P(0,0)}{1-\delta} - c_D. \tag{7}$$

For periods $t \in \{2, 3, 4, ...\}$, it must be that

$$\frac{1}{1-\delta}\left(x_2' - K_A(h')\right) \geq \frac{P(1,h')}{1-\delta} - c_A \tag{8}$$

and

$$\frac{1}{1-\delta}\left(1 - x_2' - K_D(h')\right) \geq \frac{1-P(1,h')}{1-\delta} - c_D. \tag{9}$$

I re-write equations 8 and 9 to identify bounds on possible values of x_2'. These are

$$x_2' \geq P(1,h') - c_A(1-\delta) + K_A(h') \tag{10}$$

and

$$x_2' \leq P(1,h') + c_D(1-\delta) - K_D(h'). \tag{11}$$

It is also possible to re-write equations 6 and 7 to identify bounds on x_1'. These are

$$x_1' \geq \frac{P(0,0) + K_A(h') - \delta\left(x_2'\right)}{1-\delta} - c_A, \tag{12}$$

and

$$x_1' \leq \frac{P(0,0) - K_D(h') - \delta(x_2')}{1-\delta} + c_D. \tag{13}$$

If $(x_1',\, x_2',\, h')$ is a Stable Hassling Equilibrium, then I posit that the triplet $(x_1^*,\, x_2^*,\, h')$ defines an alternate Stable Hassling Equilibrium where $x_2^* = min\left\{P(1,h') + c_D(1-\delta) - K_D(h'),\, 1\right\}$ and $x_1^* = max\left\{\frac{P(0,0)+K_A(h')-\delta x_2^*}{1-\delta} - c_A,\, 0\right\}$. For $(x_1',\, x_2',\, h')$ to constitute a stable hassling equilibrium, I must show that $(x_1^*,\, x_2^*,\, h')$ satisfies Lemma 1. I skip the step where I redefine each inequality in Lemma 1 in terms of the new triplet and instead directly express the reduced set of inequalities necessary for $(x_1^*,\, x_2^*,\, h')$ to be a Stable Hassling Equilibrium. In addition to $x_1^* \in [0,1]$ and $x_2^* \in [0,1]$,

$$x_2^* \geq P(1,h') - c_A(1-\delta) + K_A(h'), \tag{14}$$

$$x_2^* \leq P(1,h') + c_D(1-\delta) - K_D(h'), \tag{15}$$

$$x_1^* \geq \frac{P(0,0) + K_A(h') - \delta\left(x_2^*\right)}{1-\delta} - c_A, \tag{16}$$

and

$$x_1^* \leq \frac{P(0,0) - K_D(h') - \delta(x_2^*)}{1-\delta} + c_D. \tag{17}$$

I now show that the triplet $(x_1^*,\, x_2^*,\, h')$ defines a Stable Hassling Equilibrium. By the definitions of x_1^* and x_2^*, $x_2^* \leq 1$, $x_1^* \geq 0$, and inequalities 15 and 16 are satisfied. Also, by Assumption 2, $x_2^* \geq 0$ and inequality 14 is satisfied. By how x_1^* is defined and by 12, $x_1^* \leq x_1'$; because x_1' is (by assumption) part of a Stable Hassling Equilibrium, $x_1' \leq 1$, which makes $x_1^* \leq 1$.

Next, I need to show inequality 17 holds. I do this by cases. In the first case, when $x_1^* = \frac{P(0,0)+K_A(h')-\delta x_2^*}{1-\delta} - c_A$, inequality 17 holds by Assumption 2.[2] In the second case, when $x_1^* = 0$, by Assumption 1 $\left(P(0,0) - K_D(h')\right)/(1-\delta) + c_D - \delta\left(P(1,h) - K_D(h')\right)/(1-\delta) + \delta c_D \geq$

[2] For ease, I'm going to refer to Assumption 2 as the bundle of conditions on the costs – for example, I will reference Assumption 2 as including that $c_A > 0$ and $K_A(\cdot) \geq 0$.

0, making inequality 17 always holds.

Finally, because (x_1^*, x_2^*, h') is a Stable Hassling Equilibrium, I can use inequality 16 to show inequality 5 holds. I do this by cases. In the first case, $x_2^* = P(1,h') - K_D(h') + c_D(1-\delta)$. Because $x_1^* \leq 1$, then 16 implies 5 holds. In the second case, $x_2^* = 1$. When $x_2^* = 1$, then $1 \leq P(1,h') + c_D(1-\delta) - K_D(h')$; if inequality 16 holds, then inequality 5 will also hold. Thus, if some Stable Hassling Equilibrium defined by triplet (x_1', x_2', h') exists, then inequality 5 holds.

1.2 Proving Proposition 4 $\rightarrow$

Let Assumptions 1 and 2 hold. If there exists some $h' \in (0,1]$ satisfying

$$1 \geq \frac{P(0,0) + K_A(h') - \delta\left(P(1,h') - K_D(h')\right)}{1-\delta} - c_A - \delta c_D, \tag{18}$$

then there exists a Stable Hassling Equilibrium.

I prove this by first defining some triplet (x_1', x_2', h') where h' satisfies inequality 18, then I show that this is a Stable Hassling Equilibrium. I define the triplet by assigning $x_2' = min\left\{P(1,h') + c_D(1-\delta) - K_D(h'),\, 1\right\}$ and $x_1' = max\left\{\frac{P(0,0)+K_A(h')-\delta x_2'}{1-\delta} - c_A,\, 0\right\}$. (h', x_1', x_2') is a Stable Hassling Equilibrium if $x_1' \in [0,1]$, $x_2' \in [0,1]$, and, by (re-writing) Lemma 1,

$$x_2' \geq P(1,h') + K_A(h') - c_A(1-\delta), \tag{19}$$

$$x_2' \leq P(1,h') + c_D(1-\delta) - K_D(h'), \tag{20}$$

$$x_1' \geq \frac{P(0,0) + K_A(h') - \delta\left(x_2'\right)}{1-\delta} - c_A, \tag{21}$$

and

$$x_1' \leq \frac{P(0,0) - K_D(h') - \delta(x_2')}{1-\delta} + c_D. \tag{22}$$

By definition, $x_1' \geq 0$, $x_2' \leq 1$, and inequalities 20 and 21 hold. Additionally, by Assumption 2, $x_2' \geq 0$ and inequality 19 holds. By Assumptions 1 and 2, inequality 22 holds. Finally, I need to show that $x_1' \leq 1$. I do this by cases. In the first case, $x_2' = P(1, h') + c_D(1 - \delta) - K_D(h')$. By inequality 18, it must be that $x_1' \leq 1$. In the second case, $x_2' = 1$, which occurs when $1 \leq P(1, h') + c_D(1 - \delta) - K_D(h')$. By Assumption 2, $P(0, 0) - c_A(1 - \delta) + K_A(h') \leq 1$, making $x_1' \leq 1$. Thus, (x_1', x_2', h') is a Stable Hassling Equilibrium.

2 Equilibria Existence With No Off-Path Punishments

All equilibria above had both states declaring "War" used as an off-path punishment. This could be perceived as undesirable because the equilibria above are not robust to accidental deviations from the equilibrium path, or because they rely on both states declaring "war" should small deviations arise. In this section, I consider a different type of equilibrium where states do not use off-path punishments. In the equilibrium characterized below, states will only go to war when it is optimal for them to unilaterally deviate and go to war Thus, I illustrate the robustness of the theory above by illustrating that even when states cannot use off-path punishments, hassling equilibria can still be all that stands between two states and a preventative war. Note that the results here would be different if A had proposal power.

To simplify the analysis, the model and assumptions here vary slightly from that used in the body of the paper. In the body of the paper, following the Fearon (1995) modeling technology, I assumed the costs of war were one-off, giving the present values of going to war $-c_D + (1 - P(\mathbb{1}(t > 1), h_{t-1}))/(1 - \delta)$ and $-c_A + (P(\mathbb{1}(t > 1), h_{t-1}))/(1 - \delta)$. In this section, I adopt the Powell (1999, 86-90) modeling technology for the costs of war, meaning here the present value for going to war is $(1 - P(\mathbb{1}(t > 1), h_{t-1}) - c_D)/(1 - \delta)$ and $(P(\mathbb{1}(t > 1), h_{t-1}) - c_A)/(1 - \delta)$. The Powell technology better captures that states view war as creating long-run and persistent costs. I do not change how I model the costs of hassling. And, consistent with this alternate modeling approach, Assumption 2 is now $c_A \geq K_A(1)$ and $c_D \geq K_D(1)$. As can be seen, this modeling change makes little substantive difference (as I will show hassling can still prevent a preventive war), but it does simplify the analysis.

I also must assign some structure to the P function. I still assume P is weakly increasing in h_{t-1}, but here I also assume that $P(\cdot, h_{t-1})$ is twice differentiable, weakly increasing, and concave in h_t, or $\frac{\partial P(\cdot, h_{t-1})}{\partial h_{t-1}} \geq 0$ and $\frac{\partial^2 P(\cdot, h_{t-1})}{\partial h_{t-1}^2} \leq 0$.

To characterize the equilibrium in the setting without off-path punishments, I first define several terms. I define h' as

$$h' = \begin{cases} 1 & \text{if } \frac{\delta}{1-\delta} P_h(1,1) \geq K_A'(1), \\ \\ 0 & \text{if } \frac{\delta}{1-\delta} P_h(1,0) \leq K_A'(0), \\ \\ \hat{h} & \text{otherwise, where } \frac{\delta}{1-\delta} P_h(1,\hat{h}) = K_A'(\hat{h}), \end{cases}$$

where $P_h(1,\hat{h})$ is the partial derivative of the P function with respect to it's second argument, and $K_A'(\hat{h})$ is the derivative of the function K_A.

I define h^* as

$$h^* = \begin{cases} h' & \text{if } P(1,h') - c_A > 0, \\ \\ 0 & \text{if } P(1,h') - c_A \leq 0. \end{cases}$$

For a fixed h_{t-1}, I define $x_2^*(h_{t-1}) = max\{K_A(h^*) + P(1,h_{t-1}) - c_A,\, 0\}$. This is the optimal second-period-and-beyond offer. I also define $x_1^* = max\left\{K_A(h^*) + P(0,0) - c_A + \frac{\delta}{1-\delta}\left(P(0,0) - P(1,h^*)\right), 0\right\}$. This is the optimal first period offer. Note that x_1^* is a function of h^*, which is based on the underlying parameters of the model; this is in contrast to $x_2^*(h_{t-1})$, which varies based on whatever h_{t-1} is selected by A in the previous period.

These terms allow me to define the Hassling Equilibrium with No Off-Path Punishments, which I will abbreviate as HEWNOPP.

*Definition: In a **Hassling Equilibrium with No Off-Path Punishments (HEWNOPP)**, A selects $h_t = h^*$ for all $t \in \{1,2,3,...\}$, where $h^* > 0$. A "accepts" in period 1 if $x_1 - K_A(h_t) + \frac{\delta}{1-\delta}\left(x_2^*(h^*) - K_A(h^*)\right) \geq \frac{1}{1-\delta}\left(P(0,0) - c_A\right)$ and goes to war otherwise. A "accepts" in periods $t \in \{2,3,4,...\}$ if $x_t - K_A(h_t) + \frac{\delta}{1-\delta}\left(x_2^*(h^*) - K_A(h^*)\right) \geq \frac{1}{1-\delta}\left(P(1,h_{t-1}) - c_A\right)$ and goes to war otherwise. D selects $x_1 = x_1^*$ and $x_t = x_2^*(h_{t-1})$ in periods $t \in \{2,3,4,...\}$. D "accepts" in period 1 if $1 - x_1 - K_A(h_1) + \frac{\delta}{1-\delta}\left(1 - x_2^* - K_A(h^*)\right) \geq \frac{1}{1-\delta}\left(1 - P(0,0) - c_D\right)$ and goes to war otherwise. D "accepts" in periods $t \in \{2,3,4,...\}$ if $1 - x_t - K_A(h_t) + \frac{\delta}{1-\delta}\left(1 - x_2^* - K_A(h^*)\right) \geq \frac{1}{1-\delta}\left(1 - P(1,h_{t-1}) - c_D\right)$ and goes to war otherwise.*

I then describe the existence conditions.

Proposition 5*: Let Assumptions 1 and 2 hold. A HEWNOPP exists when*

$$1 \geq K_A(h^*) + P(0,0) - c_A + \frac{\delta}{1-\delta}\left(P(0,0) - P(1,h^*)\right) \tag{23}$$

and

$$\frac{\delta}{1-\delta} P_h(1,0) > K'_A(0). \tag{24}$$

Proof: See next section.

Inequality 23 identifies if D can offer A a large enough offer in period 1 to keep A from going to war. Inequality 24 identifies if it is optimal for A to select a hassling level greater than 0 (without this, A will not hassle). Similar to the previous sections, when war is costly (high c_A) and when hassling is inexpensive (low $K_A(h^*)$) and effective to moderating D's rise (low $P(0,0) - P(1,h^*)$), a HEWNOPP can exist. What is different is that D's costs of war or hassling are no longer an issue to equilibria existence. Without off-path punishments, in periods $t \in \{2,3,4,...\}$, D will offer A the smallest possible amount needed to keep A from going to war, which leaves D with $1 - x_2^* = min\{1 - K_A(h^*) - P(1,h_{t-1}) + c_A, 1\}$. In both cases, Assumption 2 implies that D does weakly better not going to war than to making an offer and accepting some level of hassling.[3]

In the body of the text, I analyzed cases where Hassling Equilibria existed and Peace Equilibria did not exist. In this setting without off-path punishments, I cannot conduct an entirely analogous equilibria comparison. The equilibrium without off-path punishments have each actor maximizing their present value in each period; based on the functional assumptions, without off-path punishments, there only exists a single HEWNOPP where A either hassles or does not hassle. Therefore, to identify the case where hassling is still preventing a preventative war, I consider a slightly modified model where A no longer has the ability to hassle. In this modified model, I will discuss the existence of a Peace Equilibrium with No Off-Path Punishments, which I will abbreviate as PEWNOPP. By comparing the existence conditions of the HEWNOPP to the existence conditions for the PEWNOPP, I can identify when the availability of hassling is preventing a preventative war.[4]

[3]The two full inequalities that hold by Assumption 2 are $1 - K_A(h^*) - P(1,h_{t-1}) + c_A - K_D(h^*) \geq 1 - P(1,h_{t-1}) - c_D$ and $1 - K_D(h^*) \geq 1 - P(1,h_{t-1}) - c_D$

[4]The analysis below can be thought of as the counterfactual world where hassling technology does not exist, or is (implicitly) prohibitively expensive.

Similar to above, I define several terms. I let $x_2^{**} = max\{P(1,0) - c_A, 0\}$ and $x_1^{**} = max\left\{P(0,0) - c_A + \frac{\delta}{1-\delta}\left(P(0,0) - P(1,0)\right), 0\right\}$.

Definition: In a ***Peace Equilibrium with No Off-Path Punishments (PEWNOPP)****, A "accepts" in period* $t = 1$, *if* $x_1 + \frac{\delta}{1-\delta}(x_2^{**}) \geq P(0,0) - c_A$ *and goes to war otherwise. A "accepts" in period* $t \in \{2,3,4,...\}$ *if if* $x_t + \frac{\delta}{1-\delta}(x_2^{**}) \geq P(1,0) - c_A$ *and goes to war otherwise. D selects* $x_1 = x_1^{**}$ *and* $x_t = x_2^{**}$ *for periods* $t \in \{2,3,4,...\}$.

Proposition 6*: Let Assumptions 1 and 2 hold. A PEWNOPP exists when*

$$1 \geq P(0,0) - c_A + \frac{\delta}{1-\delta}\left(P(0,0) - P(1,0)\right).$$

Proof: See next section.

The results here bare some similarities to Proposition 2. The greater the costs of war (high c_A) and the slower D's rise (low $P(1,0) - P(0,0)$), the easier it is for a PEWNOPP to exist. D's costs of war are not a factor because D is extracting all the available surplus in periods $t \in 2,3,4,...$ by having control of the offers, which makes D always better off not going to war.

When off-path punishments are no longer available, when does the availability of hassling prevent a preventive war? As a simple example, let $P(0,0) = 0.8$, $P(1,h) = P(0,0) * h$, $\delta = 0.9$, $K_A(h) = 0.05 * h$, $K_D(h) = 0.05 * h$, $c_A = 0.2$, and $c_D = 0.2$. Under these conditions, Proposition 6 holds,[5] but Proposition 7 does not. In this example, without hassling, D rises too quickly, which undermines the PEWNOPP.

Observation 4, On the Existence of HEWNOPP when PEWNOPP do not exist: *HEWNOPP exist and PEWNOPP do not exist when D would rise quickly without hassling (high* $P(0,0) - P(1,0)$*) and the optimal level of hassling* h^* *is both inexpensive to A (low* $K_A(h^*)$*) and effective at slowing D's rise (low* $P(0,0) - P(1,h^*)$*).*

Observation 4 grants two central insights. First, Observation 4 is similar to Observation 3. This suggests that regardless of whether off-path equilibria are allowed (or not), hassling still works best at preventing a preventive war when it is low cost and effective. Second, while c_D and $k_D(\cdot)$ are not included in Propositions 5 and 6, it is more difficult to satisfy Propositions 5

[5] In equilibrium, $h^* = 1$ and $x_1^* = x_2^* = 0.8$.

and 6 relative to Propositions 4 and 2 (respectively). The primary reason for this is because in periods $t \in 2,3,4,...$, D offers the smallest possible value that will keep A from going to war. When off-path punishments are allowed, A can receive greater offers in periods $t \in 2,3,4,....$

2.1 Proof of Propositions 5 and 6

Below I prove Proposition 5. The proof of Proposition 6 follows from the proof below by fixing $h^* = 0$.

I first note that hassling level h^* is feasible (by definition) and non-zero by inequality 24. Also, $x_2^* \leq 1$ by Assumption 2 and $x_1^* \leq 1$ by inequality 23. Thus, all offer-hassling pair levels are feasible.

I first show that A never wants to deviate.

Deviation A1: A declaring war.

In the equilibrium, A never declares war.

In periods $t \geq 2$, A's present value of "accepting" is $x_2^*(h^*) - K_A(h^*) + \frac{\delta}{1-\delta}\left(x_2^*(h^*) - K_A(h^*)\right)$, which can be re-written as $max\left\{P(1,h^*) - c_A + \frac{\delta}{1-\delta}\left(P(1,h^*) - c_A\right), 0\right\}$. Thus, in periods $t \geq 2$, A does weakly better accepting relative to going to war. In periods $t = 1$, A's present value of "accepting" is $x_1^* - K_A(h^*) + \frac{\delta}{1-\delta}\left(x_2^* - K_A(h^*)\right)$. When $x_1^* \neq 0$, then I can rewrite this as $K_A(h^*) + \frac{1}{1-\delta}\left(P(0,0) - c_A - \delta x_2^*(h^*) + \delta K_A(h^*)\right) - K_A(h^*) + \frac{\delta}{1-\delta}\left(x_2^* - K_A(h^*)\right)$, this expression simplifies to $\frac{1}{1-\delta}\left(P(0,0) - c_A\right)$. Thus, in period 1 when $x_1^* \neq 0$, A does weakly better accepting relative to going to war. When $x_1^* = 0$, then the expression $0 - K_A(h^*) + \frac{\delta}{1-\delta}\left(x_2^* - K_A(h^*)\right) \geq K_A(h^*) + \frac{1}{1-\delta}\left(P(0,0) - c_A - \delta x_2^*(h^*) + \delta K_A(h^*)\right) - K_A(h^*) + \frac{\delta}{1-\delta}\left(x_2^* - K_A(h^*)\right)$, the RHS of which was used in the $x_1^* \neq 0$ case. Thus, in period 1 when $x_1^* = 0$, A does weakly better accepting relative to going to war.

Deviation A2: A selecting some alternate hassling level.

For periods $t \geq 2$, I define an optimal one period deviation $\tilde{h}$. The present value for this deviation (substituting in $x_2^*(h_{t-1})$) is $K_A(h^*) + P(1,h^*) - c_A - K_A(\tilde{h}) + \delta\Big(K_A(\tilde{h}) + P(1,\tilde{h}) - c_A - K_A(h^*)\Big) + \frac{\delta^2}{1-\delta}\left(K_A(h^*) + P(1,h^*) - c_A - K_A(h^*)\right)$. I proceed by taking first order conditions because this is a constrained optimization problem with a negative second derivative, which yields $-K_A'(\tilde{h}) + \delta\left(K_A'(\tilde{h}) + P_h(1,\tilde{h})\right) = 0$. Re-writing this expression yields $(1-\delta)K'_A(\tilde{h}) = P_h(1,\tilde{h})$; thus, the $\tilde{h}$ that identifies the optimal per-period deviation is equivalent to how h^* was defined earlier. For period $t=1$, an optimal one-period deviation $\tilde{h}$ yields identical first order conditions as periods $t \in \{2,3,4,...\}$, making $\tilde{h} = h^*$.

Deviation A3: A selecting some alternate hassling level, then going to war in the following period.

For periods $t \geq 1$, I define some deviation $\tilde{h}$. The present value of selecting hassling level $\tilde{h}$ and then going to war in the following period is $K_A(h^*) + P(1,h^*) - c_A - K_A(\tilde{h}) + \delta\left(P(1,\tilde{h}) - c_A\right)$. I proceed by taking first order conditions because this is a constrained optimization problem with a negative second derivative, which yields $-K'_A(\tilde{h}) + \delta\left(K'_A(\tilde{h}) + P_h(1,\tilde{h})\right) = 0$. As discussed in Deviation A2, $\tilde{h} = h^*$. As discussed in Deviation A1, A is weakly better accepting than going to war, making A weakly better not changing hassling levels then going to war.

I then show that D never wants to deviate.

Deviation D1: D selects some other offer.

The discussion on A's unwillingness to deviate demonstrated that A is receiving the lowest feasible payment that either makes A indifferent between war and accepting or, when this is not the case, A receives the smallest possible offer (0). Thus, there is no possible offer that would give D a larger share of the asset.

Deviation D2: D declares war.

It remains to be shown that D does weakly better making the offers above relative to going to war.

In periods $t \geq 2$, I compare D's present value from staying on the equilibrium path (LHS) to going to war (RHS) when $x_2^*(h^*) \geq 0$:

$$1 - P(1,h^*) - K_A(h^*) + c_A - K_D(h^*) \geq 1 - P(1,h^*) - c_D.$$

The inequality above can be re-written as

$$c_A - K_A(h^*) + c_D - K_D(h^*) \geq 0.$$

This inequality always holds due to Assumption 2. When $x_2^*(h^*) = 0$, then D's present value from staying on the equilibrium path (LHS) versus going to war (RHS) is

$$1 - K_D(h^*) \geq 1 - P(1, h^*) - c_D.$$

This always holds by Assumption 2. Therefore, D will never deviate in periods $t \geq 2$.

In period $t = 1$, I compare D's present value from staying on the equilibrium path (LHS) to going to war (RHS) when $x_1^* \geq 0$ ($x_1^* \leq 1$ by inequality 23):

$$1 - x_1^* - K_D(h^*) + \frac{\delta}{1-\delta}\left(1 - x_2^*(h) - K_D(h^*)\right) \geq \frac{1}{1-\delta}\left(1 - P(0,0) - c_D\right)$$

Substituting in values of x_1^* and through algebra, the above simplifies to

$$\frac{1}{1+\delta}\left(c_A - K_A(h^*) - K_D(h^*) + c_D\right) \geq 0,$$

which always holds by Assumption 2. When $x_1^* = 0$, then $K_A(h^*) + \frac{1}{1-\delta}\left(P(0,0) - c_A - \delta x_2^*(h^*) + \delta K_A(h^*)\right) \leq 0$; thus, the proof above demonstrates that when $x_1^* = 0$, D prefers to stay the path rather than go to war.

Therefore, D will never deviate, making the above an equilibrium.

3 Short-Term Hassling Equilibria Existence

In this model and discussion, I describe when short-term or long-term hassling is necessary (or better) at avoiding the outcome of a preventive war. In some setting, long-term hassling is necessary to

To simplify the analysis, the model and assumptions here vary slightly from that used in the body of the paper. In the body of the paper, following the Fearon (1995) modeling technology, I assumed the costs of war were one-off, giving the present values of going to war $-c_D + \left(1 - P(\mathbb{1}(t > 1), h_{t-1})\right)/(1-\delta)$ and $-c_A + \left(P(\mathbb{1}(t > 1), h_{t-1})\right)/(1-\delta)$. In this section, I adopt the Powell (1999, 86-90) modeling technology for the costs of war, meaning here the present value for going to war is $\left(1 - P(\mathbb{1}(t > 1), h_{t-1}) - c_D\right)/(1-\delta)$ and $\left(P(\mathbb{1}(t > 1), h_{t-1}) - c_A\right)/(1-\delta)$. The Powell technology better captures that states view war as creating long-run and persistent costs. I do not change how I model the costs of hassling. And, consistent with this alternate modeling approach, Assumption 2 is now $c_A \geq K_A(1)$ and $c_D \geq K_D(1)$. As can be seen, this modeling change makes little substantive difference (as I will show hassling can still prevent a preventive war), but it does simplify the analysis.

In the Stable Hassling Equilibrium, A selects a constant level of hassling in every period. This may be perceived as excessive– could a short instance of hassling be just as effective at preventing war? If the answer to this is "yes," this creates an empirical problem. States may be able to seek out Pareto improving equilibria. Here, if both long-term and short-term hassling are able to prevent war, both parties may prefer the equilibria where hassling occurs as little as possible. And yet, in several instances of hassling mentioned above, like Russia in Ukraine, Pakistan in Afghanistan, and Iran in Israel, hassling has been occurring for years or decades.

I find that short periods of hassling may be insufficient to slow D's rise to be within an acceptable level. Specifically, when D rises dramatically, then prolonged hassling may be the only way to prevent a preventive war. The intuition is as follows. If A stops hassling, then D is able to correct itself and grow in power, which A may find unacceptable. For example, consider what would occur if Russia stopped all activities in Ukraine. While there may be bumps, in expectation Ukraine's economy would expand as the country stabilizes and European integration would become more possible. Put another way, if Russia suddenly stopped hassling Ukraine, Ukraine could still be a rising power, a peaceful diplomatic outcome that appeases Russia may still not exist, and Russia may still be incentivised to start a preventive war. Altogether, prolonged hassling may be necessary to avoid war.

To formalize this intuition, I define and examine a new type of hassling equilibrium, a "Short-Term Hassling Equilibrium," where A only hassles for a single period. The Short-Term Hassling Equilibrium represents the equilibrium where hassling occurs, but occurs for the shortest possible amount of time. In this regard, it may be viewed as a "more efficient" equilibrium relative to the Stable Hassling Equilibrium.

***Definition**: In the **Short-Term Hassling Equilibrium**, D makes offer $\hat{x}_1$ in period 1, $\hat{x}_2$ in period 2, and $\hat{x}_3$ for all periods $t \in \{3, 4, 5, ...\}$. A selects hassling level $h_1 \in (0, 1]$ in period 1 then selects $h_t = 0$ for all $t \in \{2, 3, 4, ...\}$. So long that both players remain on the defined offer-hassle schedule, both players "accept;" otherwise, if there is a deviation in period t, then both states declare "war" in that period.*

I define existence conditions for a Short-Term Hassling Equilibrium in Proposition 7.

Proposition 7: *Let Assumptions 1 and 2 hold. If and only if for some* $h \in (0, 1]$

$$1 \geq \frac{P(1, h_1) - c_A - \delta\left(P(1, 0) + c_D\right)}{1 - \delta} \tag{25}$$

and,

$$1 \geq K_A(h) + \frac{1}{1 - \delta}\left(P(0, 0) - c_A - \delta\left(P(1, h) + c_D\right)\right) \tag{26}$$

if $\frac{1}{1-\delta}\left(P(1, h) + c_D - \delta\left(P(0, 0) - c_D\right)\right) \leq 1$*, or*

$$1 \geq K_A(h) - \delta + \frac{1}{1 - \delta}\left(P(0, 0) - c_A - \delta^2\left(P(1, 0) + c_D\right)\right) \tag{27}$$

if $\frac{1}{1-\delta}\left(P(1, h) + c_D - \delta\left(P(0, 0) - c_D\right)\right) > 1$*, then a short-term hassling equilibrium exists.*

Proof: Available upon request.

Proposition 7 expresses when an equilibrium with one period of hassling can exist. Intuitively, the one period of hassling slows D's rise by introducing an intermediate period with hassling. Without hassling, D would rise from $P(0, 0)$ to $P(1, 0)$ between periods 1 and 2; with one period of hassling, D rises from $P(0, 0)$ to $P(1, h)$ between periods 1 and 2, and from $P(1, h)$ to $P(1, 0)$ between periods 2 and 3. Inequality 25 identifies the condition where A can be made a feasible offer to tolerate D's rise between periods 2 and 3, and inequalities 26 and 27 identify the conditions where A can be made a feasible offer to tolerate D's rise between periods 1 and 2.

Proposition A1 is most informative when viewed in contrast to the existence conditions for Stable Hassling Equilibria (Proposition 4) and Peace Equilibria (Proposition 2). Comparing these existence conditions are best executed graphically. Before doing so, I describe the intuition for both when hassling must occur for a prolonged period to prevent a preventive war, and when hassling must occur for a short period to prevent a preventive war.

First, when both D rises dramatically and hassling is effective at slowing D's rise (relative to its costs), a Stable Hassling Equilibrium will exist but a Short-Term Hassling equilibrium will not exist. If D rises rapidly, a short period of hassling may not be enough to diminish D's rise, and A will choose to fight a preventive war. But, because hassling is effective, A can select a lower level of hassling and be willing to hassle for all time.

Second, when D rises less but hassling is less effective (relative to its costs), a Short-Term Hassling Equilibrium will exist but a Stable Hassling Equilibrium will not exist. Consider the case when some level of hassling is needed to prevent war. If hassling is ineffective, A may be unwilling to select a high level of hassling for all time (Stable Hassling Equilibrium) because this would generate considerable costs. Alternatively, if A is only hassling for a single period (Short-Term Hassling Equilibrium), A can select a higher level of hassling to effectively slow D's rise, and then would not need to absorb these high costs for all time.

These results can be displayed graphically. In Figure 1, I present one such set of parameter values where the various equilibria can exist.

Figure 1: Stable and Short Term Hassling Equilibria Existence

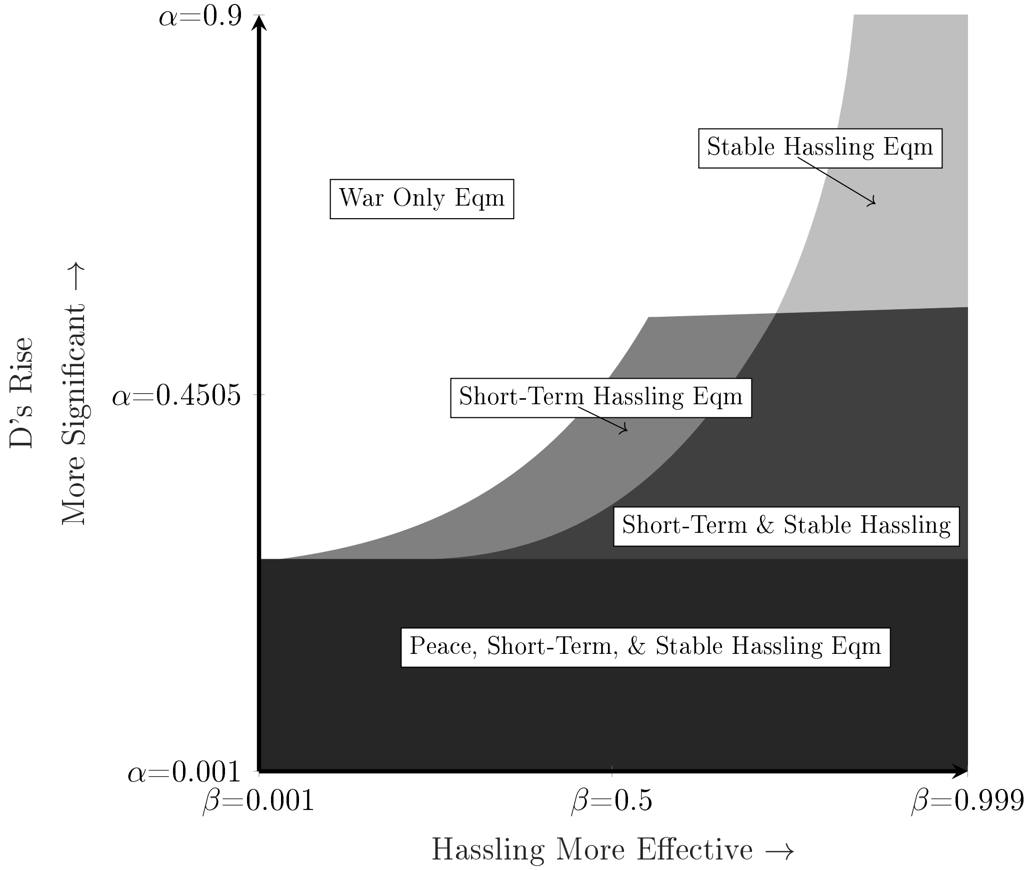

Figure 1: Parameter values are $c_A = 0.1$, $c_D = 0.1$, $\delta = 0.8$, $P(\cdot, h) = 0.9 - \mathbb{1}(t > 1) * \alpha * (1 + \beta * (h^2 - 2h))$, $K_A(h) = 0.05 * h$, and $K_D(h) = 0.05 * h$. Higher points of α (moving north) indicate D rising more dramatically. Higher points of β (moving east) indicate hassling being marginally more effective at slowing D's rise.

Consider a point in the Short-Term Hassling Equilibrium parameter space (for example, $\alpha =$

0.45 and $\beta = 0.5$). As hassling becomes more effective (increasing β), both Short-Term Hassling Equilibria and Stable Hassling Equilibria can exist. This happens because A can slow D's rise enough with lower levels of hassling and therefore A could be willing to hassle for all time because it is less costly. However, as D rises more dramatically (increasing α from the One-Shot & Stable Hassling Equilibria spaces), short-term hassling is no longer sufficient to appease A. Because D will resume its rise after the hassling stops, a longer period of hassling that keeps D weaker for longer is necessary to appease A.

4 When Hassling Shifts the Status Quo

To simplify the analysis, the model and assumptions here vary slightly from that used in the body of the paper. In the body of the paper, following the Fearon (1995) modeling technology, I assumed the costs of war were one-off, giving the present values of going to war $-c_D + (1 - P(\mathbb{1}(t > 1), h_{t-1}))/(1 - \delta)$ and $-c_A + (P(\mathbb{1}(t > 1), h_{t-1}))/(1 - \delta)$. In this section, I adopt the Powell (1999, 86-90) modeling technology for the costs of war, meaning here the present value for going to war is $(1 - P(\mathbb{1}(t > 1), h_{t-1}) - c_D)/(1 - \delta)$ and $(P(\mathbb{1}(t > 1), h_{t-1}) - c_A)/(1 - \delta)$. The Powell technology better captures that states view war as creating long-run and persistent costs. I do not change how I model the costs of hassling. And, consistent with this alternate modeling approach, Assumption 2 is now $c_A \geq K_A(1)$ and $c_D \geq K_D(1)$. As can be seen, this modeling change makes little substantive difference (as I will show hassling can still prevent a preventive war), but it does simplify the analysis.

Additionally, now the utilities in period 1, after an offer-hassling (x_1, h_1) pair is made, are shown below.

A\D	Accept	War
Accept	$x_1 + \alpha h_1(1 - x_1) - K_A(h_1)$, $(1 - x_1)(1 - \alpha h_1) - K_D(h_1)$	$P(0,0) - c_A$, $1 - P(0,0) - c_D$
War	$P(0,0) - c_A$, $1 - P(0,0) - c_D$	$P(0,0) - c_A$, $1 - P(0,0) - c_D$

Additionally, $t \in \{2, 3, 4, ...\}$, after an offer-hassling pair is made, the per-period payoffs depend on if states go to war or not:

A\D	Accept	War
Accept	$x_i + \alpha h_i(1 - x_i) - K_A(h_i)$, $(1 - x_i)(1 - \alpha h_i) - K_D(h_i)$	$P(1, h_{t-1}) - c_A$, $1 - P(1, h_{t-1}) - c_D$
War	$P(1, h_{t-1}) - c_A$, $1 - P(1, h_{t-1}) - c_D$	$P(1, h_{t-1}) - c_A$, $1 - P(1, h_{t-1}) - c_D$

The difference here is in the "Accept, Accept" payoffs. Now a portion of D's political agreement is transferred to A when $h \neq 0$. This is captured in A receiving $\alpha h_t(1 - x_t)$ more and D receiving $\alpha h_t(1 - x_t)$ less, where α is exogeneously determined and $\alpha \in [0, 1]$.

This modification alters the necessary conditions for Non-War Equilibrium existence (as previously outlined in Proposition 1). The necessary conditions for equilibrium existence are identified in Proposition 8.

Proposition 8 *Let Assumptions 1 and 2 hold. A Stable Hassling Equilibrium exist if and only if either Condition 1 or Condition 2 holds some* $h \in (0, 1]$:

Condition 1:

$$\frac{P(1, h') + c_D - \alpha h' - K_D(h')}{1 - \alpha h'} \geq 0$$

Condition 2:

$$\frac{P(0, 0) - c_A + K_A(h') - \alpha h' - \delta \left(P(1, h') + c_D - \alpha h' - K_D(h')\right)}{(1 - \delta)(1 - \alpha h')} \leq 1$$

Proof: Available upon request.

5 Hassling Can Prevent War in Other Settings Where There is no Peaceful Equilibrium

In this section, I consider other cases when bargaining failures prevent Peaceful Equilibria from existing and a Hassling Equilibrium can prevent war. These are simple, fully parameterized examples; I do not work through comparative statics in these other environments because the comparative statics are simply not as clean as they are for the case with a rising power. However, this is not to say that these simple examples are unimportant: to the extent that these other issues are relevant (which a significant political science literature would suggest this is the case), so long that these parameterizations are not unreasonable, these may drive the existence of hassling.

The model and assumptions here vary slightly from that used in the text. For computational ease, I adopt the Powell 1999 modeling technology of the costs of war, meaning that war destroys the asset leading to persistent costs (the present value of going to war is now

$(1 - P(\mathbb{1}(t > 1), h_{t-1}) - c_D) / (1 - \delta)$ and $(P(\mathbb{1}(t > 1), h_{t-1}) - c_A) / (1 - \delta))$.

5.1 Challenging Policymaking Environment

Consider a parameter space where D is not a rising power, but where x_1 and x_2 can only equal 0, but $x_t \in [0, 1]$ for all later periods. This case illustrates when D is unable to immediate develop a political compromise, but can by period $t = 3$ (and onward). Consider parameters and functions $c_A = c_D = 0.2$, $k_A = k_D = 0.05 * h_t$, $\delta = 0.6$, and $P(h_{t-1}) = min\{0.5 + h_{t-1}, 1\}$ (so there is no rising power). Under these parameters, A prefers going to war in period $t = 1$ to any equilibrium without hassling. However, the payoffs from a hassling equilibrium where in periods $t \geq 2$ A selects $h = 0.3$ and D offers A $x_1 = x_2 = 0$ and then $x_t = 0.985$ for all $t \geq 3$ are mutually preferred to any war equilibrium. In this case, hassling allows for the existence of a non-war equilibrium.

5.2 Information Asymmetry

I consider a two period model. In each period $t \in \{1, 2\}$, A makes D an offer $1 - x_t$, then both actors simultaneous decide to "accept" or go to "war." If both players "accept" in period 1, the game moves on to period 2 and repeats. If either player declares war, the game ends in that period and payoffs are realized. I define D's discount factor as $\delta_D = 0.5$ and A's discount factor as $\delta_A = 1$. With probability 0.5 D has cost $c_{D1} = 0.5$, and with probability 0.5 D has cost $c_{D2} = 0.1$. A's costs of war are $c_A = 0.2$, and A's likelihood of victory in war across periods is $p = 0.5$. I assume that if State D goes to war in the first period D receives $(1-p-c_D)*(1+\delta_D)$, and if A goes to war A receives $(p-c_A)*(1+\delta_A)$.

The lowest offer A can make D to prevent war across periods would be $1 - x_t = 0.4$, which leaves A with a two-period payoff of 1.2. If A makes D an offer of $1 - x_t = 0$, then A's expected utility of the game is $2*(0.5*1+*0.5*(0.5-0.2)) = 1.3$. Were there not information asymmetry, A could tailor payments to D and prevent war. However, here, information asymmetry can lead to conflict half the time.

Now let A hassle before an offer is made. I assume hassling is a dichotomous choice $h \in \{0, 1\}$, where $K_A(1) = K_D(1) = 0.01$, $P(0) = 0.5$, and $P(1) = 0.9$. If A hassles in the first round, then in the second period A will offer D $1 - x = 0$. In the first round, to prevent D from going to war, A must make an offer to D that is equivalent to D's expected utility from going to war in the first round, or $1 - x_1 = 0.4 + 0.5 * 0.4 + 0.01 = 0.61$. This would leave A with an across-both-periods payoff of 1.39, which is greater than A's expected utility from going to war in the first period or making peaceful offers (without hassling). Thus, in this setting where peaceful equilibria fail to exist (there is bargaining failure), hassling can prevent war.

5.3 Issue Indivisibility

Alternatively, consider the case when the issue in dispute is indivisible. Instead of the infinite horizon (where issue indivisibility tends to break down, as power-sharing can work over time), consider a two period game where $\delta = 1$, $x_t \in \{0, 1\}$ for $t \in \{1, 2\}$, $c_A = c_D = 0.45$, $k_A = k_D = 0.001 * h_t$, $\delta = 0.4$, and $P(h_{t-1}) = 0.5 - 0.05 * h_{t-1}$. In the world without hassling, because both actors derive a positive expected utility from going to war, there is no set of offers that both actors mutually prefer to war; so, war will occur in the world without hassling. However, when hassling is possible, the offer and hassling pairs (using notation (x_t, h_t) $(0, 1)$ for $t = 1$ and $(1, 0)$ for $t = 2$ constitutes a Non-War Equilibrium.

5.4 Endogenous Rising Power, Simple Model

This is a toy model where one state (State A) develops a "rising technology" that leads to it becomming stronger, and where a rival state (State D) determines how best to respond to that rise. The game order is as follows. First nature selects $V \in \{\underline{V}, \bar{V}\}$, which designates D as a high type ($\bar{V}$) with probability q or a low type ($\underline{V}$) with probability $1 - q$, where $\underline{V} < \bar{V}$. High types strongly value the issue in dispute, while low types value the issue less. D knows nature's selection of its type, but A does not. Next, A selects the rising technology level (i.e. investing in a technology that makes it rise more) where $t \in \mathbb{R}_+$. D observes the selected level of t. Next, D selects $z_D \in \{w, a, h\}$, where D goes to war ($z_D = w$), accepts A's level of technology ($z_D = a$), or hassles ($z_D = h$). If D select "war," then states recieve their standard "war as a costly lottery" payoff ($p - c_A$, $V(1 - p) - c_D$) and the game ends. If D "accepts" or "hassles," then the technological rise comes to fruition and states strike a political bargain. In lieu of defining additional structure to capture the bargaining process between two states,[6] I simply assume that D selecting $z_D = a$ yeilds peace payoffs ($P(t, 0)$, $V(1 - P(t, 0))$) and selecting $z_D = h$ yeilds hassling payoffs ($P(t, h) - c_h$, $V(1 - P(t, h)) - c_h$). Abusing notation (within the P function, h denotes a positive constant), the function P is $P : \{0 \times \mathbb{R}_+\}^2 \to [p, 1]$, and is an increasing function of t and a decreasing function of h.

Consider a fully parameterized case when $q = 0.1$, $p = 0.5$, $c_A = 0.1$, $c_D = 0.1$, $\underline{V} = 1$, $\bar{V} = 3$, $P(t, h) = p + \frac{t}{1+h}$, $h = 2$, $c_h = 0.04$. Having defined these parameters, I can characterize some aspects of equilibrium actions and payoffs in cases where hassling is and is not available as an

[6]Substantively similar results exist if either D or A yeilds proposal power in an added bargaining phase.

action.

First, consider the case when hassling is not an option. Here A is selecting a level of technology that either will (a) invoke the high-type D's to go to war and invoke the low type D's to accept, or (b) invoke both types of D to accept. In case (a), the selected level of techonology is $t = 0.1$, and in case (b), the selected level of technology is $t = 0.0\bar{3}$. A quick calculation reveals that in case (a) A recieves expected payoff 0.58 and in case (b) A recieves expected payoff $0.5\bar{3}$, implying that A does best selecting $t = 0.1$ and going to war with likelihood 0.1.

Second, consider the case when hassling is an option. Listing the behavior of high-type D's then low-type D's, A selects a level of technology that will (c) lead to (war, peace), (d) lead to (war, hassling), (e) lead to (hassling, hassling), (f) lead to (hassling, peace), or lead to (peace, peace). For each I describe the selected level of hassling and A's expected utility: (c) 0.06, 0.544, (d) 0.18, 0.508, (e) 0.06, 0.48, and (f) 0.02, 0.552, (g) 0.02, 0.52. Here A does best selecting the level of technology that leads to the strong type hassling and the weak type accepting, which is case (f), and where war never occurs. Thus, this describes a case where an endogenously rising power can grow too fast and lead to a preventive war in the absence of hassling, but hassling can prevent this preventive war from occuring.

6 Further Empirical Implications

At the end of Section 2.3 in the text, I include the first empirical implication this theoretical work has on large-N studies. I include some other implications here.

As a second way this theoretical work speaks to existing work is that it presents challenges to estimating expected (or realized) power-shifts (as is done in Reiter (1995), Lemke (2003), and Bell and Johnson (2015)). To the best of my knowledge, no existing work estimating power shifts takes hassling into account. This means that any estimation that tries to construct a link between latent capabilities (like investing in centrifuges) and expected power shifts could be obfuscated when hassling undermines the expected effect that the latent capabilities would have. For example, constructing uranium centrifuges would certainly produce an expected future capability shift if they went on to produce the raw material for a nuclear bomb, but a rival state could disabled the centrifuges through hassling. This would mean that any estimation that does not account for hassling might undersell the expected future impact of centrifuges on a power shift.

As a third way this theoretical work speaks to existing empirical work, this paper presents some challenges to estimating latent military strength using wartime outcomes (see Carroll and Kenkel (2016)). To offer some criticism of what I believe is an outstanding paper, this paper essentially backs out the importance of various military and economic factors inductively by seeing how these various factors determine if states prevail (or not) in wartime; they use these outcomes to construct a new kind of CINC score. This paper suggests that what they measure may not be the whole story. Because hassling can be used as a substitute to war to accomplish political goals (like slowing or stopping a rising power), a better representation of a state's military capabilities would include how capable states are at both war and hassling in the pursuit of their policy goals. For example, in the estimation that Carroll and Kenkel (2016) run, because some technologies are better used in hassling than in war, these technologies would not register as significant in contributing towards a state's capabilities when they should.

While I am hopeful that this work can challenge existing analyses, I also hope that the comments above do not dissuade future empirical explorations of low level operations. As a descriptive exercise, it could be interesting to see if there is a relationship between expected future power shifts and instances of low-level (i.e. nonwar) operations or external support for militant groups in the would-be rising power. Alternatively, as I describe in the text and appendix, we might expect hassling to occur in challenging policymaking environments. As a way to test this, in the aftermath of coups or unexpected domestic power transitions, hassling could serve as a placeholder until new international agreements could be established.[7] I believe that future work could go down this path, and I would expect, even with the requisite caveats, that this could be valuable and add insights into these phenomena.

References

Bell, S. R. and Johnson, J. C. (2015) Shifting power, commitment problems, and preventive war, *International Studies Quarterly*, **59**, 124–132.

Carroll, R. J. and Kenkel, B. (2016) Prediction, proxies, and power, *American Journal of Political Science*.

Fearon, J. D. (1995) Rationalist explanations for war, *International organization*, **49**, 379–414.

[7]As an example, there likely would have been no way for Russia to immediately strike a new political bargain over leasing Sevastopol with a post-Euromaidan Ukraine because it was not clear who represented the post-Euromaidan Ukraine.

Lemke, D. (2003) Investigating the preventive motive for war, *International Interactions*, **29**, 273–292.

Powell, R. (1999) *In the shadow of power: States and strategies in international politics*, Princeton University Press.

Reiter, D. (1995) Exploding the powder keg myth: Preemptive wars almost never happen, *International Security*, **20**, 5–34.