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A theory of competing interventions by external powers in intrastate conflicts: implications for war and armed peace

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ABSTRACT

This paper presents a game-theoretic model of competing interventions in civil conflict. We analyze the conflict between an incumbent government (as defender) and its rebel group (as attacker) when the two parties receive military support from different external powers. In contrast to the traditional analysis of non-competing or biased intervention by a single third party, we first show how competition in external powers can strategically alter the outcome of the two-party conflict and then identify the conditions under which the defender launches an effective strategy to deter the attacker. We find that (i) when the stakes that the competing external powers have in their respective supported parties are equivalent, the amounts of military support endogenously offered by the external interveners are comparable. The government's deterrence strategy is ineffective, and the fighting persists despite the warring parties' valuations for political dominance being asymmetric. (ii) when the external power that supports the government has a higher stake than the competing external power that supports the rebel group, the government's arming allocation can deter the rebellion. (iii) These results have implications for *multi-power* interventions so that the equilibrium outcome can be 'armed peace' or a prolonged war as observed in civil conflicts.

I. Introduction

The past several decades have witnessed continuously increasing cases of outside interventions in intrastate conflicts. Regan (2002a) identified 150 domestic conflicts between 1944 and 1999, in which 101 had third-party interventions. Among the motives why external powers get involved in civil conflicts include the following. The first is the geopolitical motive of deterring a potential threat to preserve national security in regions (Findley and Teo 2006). The second is the economic motive of protecting trade benefits with the domestic parties that prevail (Regan 1998). The third involves the motive of establishing peace talks between conflicting domestic parties (Bhattarai 2016). For example, in Post 1970, the United States' involvement in the Afghan civil conflict was considered a strategic reaction to the Soviet occupation, which paused a severe threat to the interests of America, the Middle East, and the Persian Gulf region. The United States' motives were primarily geopolitical,

seeking to repel communism and preserve regional security and its economic benefits in the Gulf (Findley and Teo 2006).

The geostrategic value of Syria, which is under civil war, has attracted external powers like Russia, Iran, and Western Allies to enhance their respective interests in the region. The importance of Syria lies in its richness of natural resources. The country also serves as the heart of thousands of miles of oil and gas pipelines that run through the Middle Eastern States (Maher and Pieper 2020). Russian and Iran provide military support to the Assad regime, which represents the current government of Syria. The United States and its allies provide military support to rebels. Turkey's military support to Syria's rebel groups was in reaction to the Russian involvement in the civil war, which is a threat to Turkey's national security due primarily to the fear of the Kurds' intention to establish an independent nation at the Northern border of Syria (Cornell 2001). As for the Tajik civil war, Russia

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and Uzbekistan intervened against Afghanistan. During the Cold war, the United States and USSR intervened opposite in the Nicaraguan and Afghan civil conflicts. Another scenario is Saudi Arabia's military support of the Sunnis in Yemen against the security and economic threat from Iran's support of Houthi, a Shiite party in Yemen (Clausen 2018).

The events mentioned above before and after 2000 reveal that competing interests of multiple external powers may strategically play a critical role in affecting the outcomes of civil conflicts. In contrast to the traditional analysis of third-party intervention characterized by a single external power supporting one of the primary parties in conflict,[1] we develop an analytical framework for investigating different types of civil wars involving multiple third-party interveners and their strategic interactions. What effects that interventions by multiple external powers have on the equilibrium outcome of a two-party conflict? What are the political-economic considerations of outside interveners in influencing the conflict? Are there differences in implications between the two alternative types of interventions: one involves competition between external powers (which we refer to as *competing* interventions), whereas the other involves a biased third party (which we refer to as *non-competing* intervention)? In this paper, we present a conflict-theoretic model of competing interventions to shed light on issues related to civil wars and external powers' interests in intrastate conflicts. Moreover, we analyze differences in equilibrium outcomes between competing and non-competing interventions in a civil conflict.

Voluminous academic studies have devoted to analyzing how a *biased* third party affects or alters the outcome of a two-party conflict. Regan (1998) remarks that third-party intervention arises when an outside party's national interest is at stake. Balch-Lindsay and Enterline (2008) consider that third parties are strategic actors and may have incentives to prolong intrastate conflicts. Regan

(2002b) empirically finds that intervention by an outside party attempts to limit hostilities. Amegashie and Kutsoati (2007) postulate a third-party as a social planner maximizing the weighted sum of utilities for the parties to the conflict and the noncombatant population. The authors find that third-party intervention can promote peace through biased (i.e. one-sided) intervention efforts. Considering the endogeneity of intervention by an outside party in a sequential-move arming game, Chang, Potter, and Sanders (2007b) show that intervening actions by an external power can be peace-making or peace-breaking. Blouin (2018) stresses a third party's strategic role, not affecting the primary contenders' fighting costs but exerting a credible threat of force for achieving the lowest likelihood of a two-party conflict. Along with many contributions in the conflict literature, these studies examine the role of a biased third-party, either a conflict manager or a military supporter, and identify conditions that can reduce or aggravate conflicts.[2]

Recognizing the contributions of the existing studies, we go beyond the standard third-party intervention analysis by developing a competing interventions model of multiple external powers that interact strategically to influence the equilibrium outcome of civil conflicts. Specifically, we extend the non-competing third-party intervention model of Chang, Potter, and Sanders (2007b) to allow competition between two external powers to supply military aid to their respective allies involved in armed conflict. To gain further insights into the civil war outcomes, we stress the endogenous decisions of foreign powers when one supports the incumbent government while the other supports the opposition party. In examining competing interventions by two external powers, we characterize the mechanism through which the incumbent government (the defender) may or may not deter its

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[1]Intrastate or civil conflicts involve domestic interest groups competing for a political power to gain control over valuable resources. For studies, see, e.g. Gershenson and Grossman (2000), Azam and Mesnard (2003), Collier and Hoeffler (2004, 2009), Garfinkel and Skaperdas (2007), Vahabi (2010), and Chang, Sanders, and Walia (2015).

[2]Some third-party interventions have the objective of conflict management (i.e. United Nations peacekeeping missions). Such an ideal motivation may not drive all third-party actions. Regan (1998) links interventions by external powers to their national interests and considers it as the "paradigm of realism" and the dominant philosophy in international politics. For other studies on third-party interventions see, e.g. Morgenthau (1967), Bull (1984), Betts (1994), Blechman (1995), Regan (1996), Werner (2000), Cetinyan (2002), Siqueira (2003), Sanders and Walia (2014), Busch and Reinhardt (2006), Regan and Aydin (2006), Rowlands and Carment (2006), Balch-Lindsay, Enterline, and Joyce (2008), Chang and Sanders (2009), Amegashie (2010, 2014), Sanders and Walia (2014), Sawyer, Cunningham, and Reed (2015), Cunningham (2016), and Blouin (2018).

rebellion (the attacker). We identify the conditions under which two external powers' presence is either (i) war-making since fighting persists or (ii) peace-making as there is 'armed peace' between domestic parties.

In our analysis, two external powers pre-commit military assistance to their respective allies (government and rebellion) involved in a civil conflict. We adopt a sequential-move game in which the rebellion is an attacker, and the government is a defender for its political dominance. We examine how military assistance from external powers can affect the outcome of the two-party civil conflict and the conditions under which the government can deter its rebellion. The key findings are summarized as follows. First, when both external powers attach the same strategic value or stake to their respective ally's political dominance, the interveners compete in offering a comparable amount of military support. As such, the government's deterrent strategy is ineffective, and fighting persists. Second, for the case in which an external power that supports the government has a relatively higher stake in its political dominance, the external power provides a disproportionally greater military aid than its counterpart. In this case, the government's deterrent strategy is effective, and the rebellion is better off without fighting. The equilibrium outcome is 'armed peace.'[3] Third, as each conflicting party's winning probability and expected payoff increase with outside support, competition in interventions between external powers arises. Under the shadow of conflict, these results have implications for either armed peace or a prolonged civil war. An intrastate armed confrontation is likely to result in competing interventions by external powers. Peace may not necessarily be the equilibrium outcome unless the government's ally has an adequately high stake in its political dominance than the rebellion's external supporter.

The remainder of the paper is as follows. Section II presents a model of competing interventions by external powers that provide military support to their allies in conflict and analyze the equilibrium outcomes. Section III examines the case of non-competing intervention by a single third party. We first discuss each conflicting party's incentive to acquire military support from external power. We then examine whether the defender (government) is better off by launching a deterrent strategy. Section IV shows differences in outcomes between competing and non-competing Interventions. Section V concludes.

II. A model of competing interventions by multiple external powers

Assumptions on conflict technologies, intervention technologies, and expected payoffs

We consider the scenario that two outside countries (referred to as external powers A and B) may militarily be involved in a conflict between two primary parties (denoted by 1 and 2) competing for political dominance in a nation. Party 1 represents the government, while Party 2 is the rebel group challenging the government's legitimacy in a winner-take-all game. We assume that the intrinsic value of political dominance to party $i(= 1, 2)$ is exogenously given as $V_i(> 0)$, where V_1 and V_2 differ.[4] This assumption is consistent with the notion of asymmetric valuations in rent-seeking activities, as discussed in Hillman and Riley (1989), Nti (1999), Gershenson and Grossman (2000), and Morgan (2003).

We hypothesize that external power A is an ally of the government (Party 1), while external power B supports the rebel group (Party 2). An outside intervener has potential benefits if its supported party remains in power or obtains political dominance. Denote S_1 (respect. S_2) as the benefit or geopolitical value that the external power A (respect. B) derives when Party 1 (respect. 2) is in political dominance.

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[3]We use the term 'peace' to reflect an absence of fighting. If the government moves first by launching a successful preemptive strike against the rebel group, the latter is better off without allocating any consumable resource to fight. This approach follows the notion of 'acquiescence' in a sequential-move game between government and rebel as discussed in Grossman (1999), Gershenson and Grossman (2000), Gershenson (2002), Grossman and Kim (1995), and Chang et al., (2007a, 2007b).

[4]For simplicity and without loss of generality, we assume that $V_1 < 2V_2$.

As in Chang, Potter, and Sanders (2007b), we adopt an 'intervention technology' for each external power by assuming that the outside supporter can affect an allied party's military capability and, in so doing, affect the overall outcome of the conflict. We assume that an external power commits to supporting its ally through military subsidy transfers, denoted as M_i, which enhance Party i's military or fighting efficiency by reducing arming unit costs. Let such a cost function be given as $C_i = C_i(M_i)$, where $C_i'(M_i) = dC_i/dM_i < 0$ and $C_i''(M_i) = d^2 C_i/dM_i^2 > 0$. That is, an increase in M_i lowers the average cost of arming for Party i, but the cost-reducing (or efficiency-enhancing) effect is subject to diminishing returns. For analytical simplicity and tractability, we specify the cost function in the presence of external military assistance as follows:

$$C_i = \frac{1}{(1 + M_i)^\theta} \text{ for } i = 1, 2, \qquad (1)$$

where θ measures the degree of effectiveness with which a dollar of support by an external power reduces Party i's unit cost of conflict-related arming, and $0 < \theta < 1$. In the absence of external support such that $M_i = 0$, the average cost of arming C_i in (1) reduces to 1. This simple specification permits us to explicitly characterize how an external power's intervention through military assistance interacts with the conflict technologies of the contending parties in determining an equilibrium outcome.

Following the theoretical conflict literature, we use a canonical 'contest success function' (CSF) to capture conflict technology. The probabilities that Parties 1 and 2 succeed in fighting are given, respectively, as

$$P_1 = \frac{G_1}{G_1 + G_2}, \quad P_2 = \frac{G_2}{G_1 + G_2},$$

$$P_1 = P_2 = \frac{1}{2} \text{ when } G_1 = G_2 = 0, \qquad (2)$$

where $G_i (\geq 0)$ is the amount of conflict-related arming allocation by Party $i (i = 1, 2)$.[5]

With the presence of military supports by two external powers, the expected payoffs of the government and the rebellion in conflict are:

$$Y_1 = \frac{G_1}{G_1 + G_2} V_1 - C_1 G_1 \text{ and } Y_2$$
$$= \frac{G_2}{G_1 + G_2} V_2 - C_2 G_2. \qquad (3)$$

The objective functions in (3) imply that external intervention is tactically 'indirect' in that an intervener's military aid does not directly affect the CSF of each contending party.[6]

We take into account the political-economic elements of interventions by external powers and their strategic interactions. The expected payoff (U_j) of external power j (for $j = A, B$) is specified as an intrinsic or geopolitical value (S_i) attached to its supporting party, weighted by the party's winning probability of fighting for political dominance in the intrastate conflict, minus the cost of providing the military aid (M_i). Specifically, we have:

$$U_A = P_1 S_1 - M_1 \text{ and } U_B = P_2 S_2 - M_2, \qquad (4)$$

In maximizing its expected payoff, each external power commits to offer a financial subsidy or military assistance M_i to the respective ally for reducing its arming cost in the event of fighting.

We use a three-stage game to analyze the effect of competing interventions by external powers on conflict outcomes. At stage one, the two external powers A and B independently and simultaneously decide on offering military supports to their respective allies (Parties 1 and 2). At stage two, Party 1 determines its arming allocation to maximize the government's expected payoff. At stage three, Party 2 determines its arming allocation to maximize the rebellion's expected payoff. Methodologically, we follow Gershenson and Grossman (2000) and consider a sequential-move game as it permits us to deal with issues in connection with the effectiveness/

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[5]For alternative forms of contest success functions, see, e.g. Tullock (1980), Hirshleifer (1989), Skaperdas (1996), and Garfinkel and Skaperdas (2007).
[6]When there is no external intervention such that $M = 0$ the three-country, three-stage model reduces to a two-country, two-stage model as those examined in Gershenson and Grossman (2000), and Chang, Potter, and Sanders (2007b). Following Hillman and Riley (1989) and Gershenson and Grossman (2000), we consider asymmetric valuations associated with a contested prize which is political dominance in our analysis.

ineffectiveness of a deterrence strategy that Party 1 (the government) may launch to deter Party 2 (the rebellion).[7]

Equilibrium outcome: a never-ending war or armed peace?

We investigate whether the government as a defender can deter its rebellion attacker with the presence of competition between two external powers. The central question is: What are conditions under which competing interventions by external powers result in an outcome that is either armed peace or a never-ending war? We use backward induction to solve the sub-game perfect Nash equilibrium in the three-stage game.

Beginning our analysis with the third stage of the game, we use Party 2's payoff function in (3) to determine its first-order condition (FOC):

$$\frac{\partial Y_2}{\partial G_2} = \frac{G_1 V_2}{(G_1 + G_2)^2} - C_2 = 0.$$

This FOC implies that the rebellion's reaction function of arming is:

$$G_2 = \sqrt{\frac{V_2 G_1}{C_2}} - G_1. \quad (5)$$

Substituting this arming reaction in (5) back into the government's payoff function in (3) yields

$$Y_1 = \frac{G_1}{G_1 + \left(\sqrt{\frac{V_2 G_1}{C_2}} - G_1\right)} V_1 - C_1 G_1.$$

At the second stage of the game, the government determines its gun allocation according to its FOC as follows:

$$\frac{\partial Y_1}{\partial G_1} = \frac{V_1}{2\sqrt{\frac{V_2 G_1}{C_2}}} - C_1 = 0.$$

Solving for the optimal arming allocation yields:

$$G_1 = \frac{V_1^2 C_2}{4 V_2 C_1^2}. \quad (6)$$

Substituting G_1 from (6) back into the rebellion's arming reaction in (5), we have

$$G_2 = \frac{V_1 C_2}{4 V_2 C_1} \left(\frac{2V_2}{C_2} - \frac{V_1}{C_1}\right). \quad (7)$$

Making uses of G_1 in (6) and G_2 in (7), we calculate the winning probabilities for the two contending parties and their expected payoffs:

$$P_1 = \frac{V_1 C_2}{2 V_2 C_1}, P_2 = 1 - \frac{V_1 C_2}{2 V_2 C_1}; Y_1 = \frac{V_1^2 C_2}{4 V_2 C_1}, Y_2$$
$$= \frac{C_2^2}{4 V_2} \left(\frac{2V_2}{C_2} - \frac{V_1}{C_1}\right)^2. \quad (8)$$

Before proceeding to the first stage of the three-stage game, we have the following comparative-static derivatives in the sub-game as follows:

$$\frac{\partial G_1}{\partial M_1} > 0, \frac{\partial G_2}{\partial M_1} \left\langle 0, \frac{\partial P_1}{\partial M_1} \right\rangle 0, \frac{\partial P_2}{\partial M_1} < 0, \frac{\partial G_1}{\partial M_2} \left\langle 0, \frac{\partial G_2}{\partial M_2} \right\rangle 0, \frac{\partial P_1}{\partial M_2} \left\langle 0, \frac{\partial P_2}{\partial M_2} \right\rangle 0,$$

Moreover, we have from G_2 in (7) the following deterrence condition:

$$G_2 = 0 \text{ when } \frac{M_1 + 1}{M_2 + 1} \geq \frac{M_1^c + 1}{M_2^c + 1} \cong \left(\frac{2V_2}{V_1}\right)^{\frac{1}{\theta}}, \quad (9)$$

where M_1^c and M_2^c stand for the critical values of military subsidies provided by the external powers to their allies such that the government (Party 1) deters its rebellion (Party 2).

Given the assumption that $V_1 < 2V_2$, the inequality condition in (9) for effective deterrence does not hold when $M_1 = M_2$. That is, in an intrastate conflict involving military aid from two external powers, if external powers compete to provide an identical amount of support to their respective allies (the incumbent government as a defender and its rebellion as an attacker), the government's deterrent strategy is ineffective as its rebellion with a relatively higher evaluation over political dominance perceives that it is better off to fight. Thus, multiple external forces' interventions to strike a balance in military power between the conflicting parties do not affect the status quo of the ongoing conflict.

We move to the first stage of the three-stage game at which external powers A and B simultaneously commit military subsidies M_1 and M_2 to Party 1 and Party 2, respectively, to lower their arming costs in fighting. Making use of

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[7]For studies that use a Stackelberg-type sequential-move game for primary parties in contest or conflict, see, e.g. Dixit (1987), Baik and Shogren (1992), Leininger (1993), Gershenson and Grossman (2000), Morgan (2003), Congleton, Hillman, and Konrad (2008), and Aanesen (2012).

the two contending parties' winning probabilities in (8), the external powers solve their expected payoff maximization problems as specified in (4). That is,

$$
\underset{\{M_1\}}{\text{Max}}\, U_A = \left(\frac{V_1 C_2}{2 V_2 C_1}\right) S_1 - M_1 \text{ and } \underset{\{M_2\}}{\text{Max}}\, U_A
$$
$$
= \left(1 - \frac{V_1 C_2}{2 V_2 C_1}\right) S_2 - M_2, \tag{10}
$$

noting that C_1 and C_2 are given in (1) as functions of $M_1, M_2,$ and θ. The FOCs for the external powers A and B imply that the optimal amounts of M_1 and M_2 are:

$$
M_1^* = \frac{\theta S_1 V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} - 1 \text{ and } M_2^*
$$
$$
= \frac{\theta S_2 V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} - 1. \tag{11}
$$

Substituting M_1^* and M_2^* from (11) back into Equations (6)-(8), we calculate the equilibrium values of the winning probabilities, the conflict-related arming allocations, and the expected payoffs of the contending parties and the interveners A and B. We record the reduced-form solutions as follows:

$$
P_1^* = \frac{V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta}, P_2^* = 1 - \frac{V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta};
$$

$$
G_1^* = \frac{V_1^2}{4 V_2}\left(\frac{\theta V_1 S_1}{2 V_2}\right)^{\theta}\left(\frac{S_1}{S_2}\right)^{\theta(\theta+1)}, G_2^*
$$
$$
= \frac{V_1\left(2 V_2 S_2^{\theta} - V_1 S_1^{\theta}\right)}{4 V_2}\left(\frac{\theta V_1 S_1}{2 V_2}\right)^{\theta}\left(\frac{S_1}{S_2}\right)^{\theta(\theta+1)};
$$

$$
Y_1^* = \frac{V_1^2}{4 V_2}\left(\frac{S_1}{S_2}\right)^{\theta}, Y_2^* = \frac{1}{4 V_2}\left[2 V_2 - V_1\left(\frac{S_1}{S_2}\right)^{\theta}\right]^2;
$$

$$
U_A^* = (1 - \theta)\frac{V_1 S_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} + 1, U_B^*
$$
$$
= S_2 + 1 - (1 + \theta)\frac{V_1 S_2}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta}.
$$

It is instructive to see how each party's winning probability and expected payoff are affected by exogenous changes in the effectiveness of external support (see the parameter θ in Equation 1). This exercise yields;

$$
\frac{\partial P_1^*}{\partial \theta} = \frac{V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} \ln\left(\frac{S_1}{S_2}\right), \frac{\partial P_2^*}{\partial \theta}
$$
$$
= -\frac{V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} \ln\left(\frac{S_1}{S_2}\right);
$$

$$
\frac{\partial Y_1^*}{\partial \theta} = \frac{V_1^2}{4 V_2}\left(\frac{S_1}{S_2}\right)^{\theta} \ln\left(\frac{S_1}{S_2}\right), \frac{\partial Y_2^*}{\partial \theta}
$$
$$
= -\frac{V_1}{2 V_2}\left(\frac{S_1}{S_2}\right)^{\theta}\left[2 V_2 - V_1\left(\frac{S_1}{S_2}\right)^{\theta}\right] \ln\left(\frac{S_1}{S_2}\right).
$$

It follows that there are three possibilities depending on the relative values of S_1 and S_2 :
(i) if $S_1 > S_2$ then $\frac{\partial P_1^*}{\partial \theta} > 0$; (ii) if $S_1 = S_2$ then $\frac{\partial P_1^*}{\partial \theta} = 0$; and (iii) if $S_1 < S_2$ then $\frac{\partial P_1^*}{\partial \theta} < 0$.

An exogenous increase in military support effectiveness (θ) increases a party's probability of winning if and only if the party's external supporter has a critically high stake than that of the other party's external supporter. Otherwise, the party's probability of winning decreases. Similar results apply to a party's expected payoff. That is,

(i) if $S_1 > S_2$ then $\frac{\partial Y_1^*}{\partial \theta} > 0$; (ii) if $S_1 = S_2$ then $\frac{\partial Y_1^*}{\partial \theta} = 0$; and (iii) if $S_1 < S_2$ then $\frac{\partial Y_1^*}{\partial \theta} < 0$.

Next, we substitute M_1^* and M_2^* from (11) back into the deterrence condition in (9) and obtain the following:

$$
\frac{M_1^* + 1}{M_2^* + 1} = \frac{S_1}{S_2} \text{ and } \frac{M_1^c + 1}{M_2^c + 1} \cong \left(\frac{2 V_2}{V_1}\right)^{\frac{1}{\theta}}.
$$

This implies that for the external powers to be 'peace creators,' the following sufficient condition must hold:

$$
S_1 \geq \left(\frac{2 V_2}{V_1}\right)^{\frac{1}{\theta}} S_2. \tag{12}
$$

In equilibrium, the difference in military aid is:

$$M_1^* - M_2^* = \frac{\theta S_1 V_1}{2V_2}\left(\frac{S_1}{S_2}\right)^{\theta} - \frac{\theta S_2 V_1}{2V_2}\left(\frac{S_1}{S_2}\right)^{\theta}$$

$$= (S_1 - S_2)\frac{\theta V_1}{2V_2}\left(\frac{S_1}{S_2}\right)^{\theta} \qquad (13)$$

Based on the optimal amounts of military aid as shown in Equation (11), and the results in (12) and (13), we see that the strategic interactions of external powers affect the two-party conflict in two possible outcomes;

   (i) If $S_1 \leq S_2$ then $M_1^* \leq M_2^*$. In this case, fighting persists;
   (ii) If $S_1 > S_2$ such that $S_1 \geq \left(\frac{2V_2}{V_1}\right)^{\frac{1}{\theta}} S_2$ then $M_1^* > M_2^*$. In this case, Party 2 is deterred and there is armed peace.

The results of the above analysis permit us to establish the first proposition:

PROPOSITION 1. *In an intrastate conflict between the incumbent government and its rebellion, a peace-making equilibrium may arise when an external power that supports the government (the defender) has a critically high stake than another external power that supports the rebellion (the attacker) such that $S_1 \geq (2V_2/V_1)^{1/\theta}S_2$. In this case, the government's deterrence strategy is effective; the rebellion is better off without fighting. If the government's external supporter has a low stake in its victory than that of the attacker's supporter, the government's deterrence strategy becomes ineffective because the rebellion group is better off fighting. In the latter scenario, competing interventions by external powers result in a war-making equilibrium.*

Proposition 1 implies that military aid by external powers to their respective supported parties depends crucially on stakes (the geostrategic or economic value) attached by the interveners to their allies. An outside force provides a relatively higher military support when its stake is relatively higher, other things being equal. As a result, peace-making is likely to happen when the defender's supporter provides sufficient military aid to deter the attacker. Proposition 1 suggests that a national government's foreign policy should strategically side with those external powers that value its success in maintaining political dominance more than the rebellions' supporter value for fighting against the government. In other words, the government's deterrence strategy effectiveness is contingent upon the relative stakes that external powers attach to their respective allies.

III. Intervention by a single external power – the non-competing case

In the previous section, we analyze the effects of interventions by two competing external powers on a two-party conflict's equilibrium. We discuss two possible outcomes: a never-ending fighting and armed peace, that may emerge when both the government (Party 1) and its rebellion (Party 2) receive military aid from their respective third-party supporters. This analysis assumes that two external powers compete in offering military assistance to their respective allies involved in a civil conflict. In other words, the analysis does not consider the scenario that outside intervention involves one and only one external power, and the intervener has its discretion of providing military support to either the government or the rebellion.

This section examines whether each contending party unilaterally has an incentive to acquire military support from an external power. The first question to analyze is: When the rebellion receives support from its external power, what is the government's odd in fighting against its rebellion without having any military support from outside? The second question is: Will civil conflict end up with competing interventions by external powers in supplying military aid to their respective allies?

We examine the second question that only an external power, A, provides military support to the government (the defender). We use the subscript '$A - 1 - 2$' to represent the case in which the government is supported by external power A while the rebel group is unsupported. We set $M_2^* = 0$ in (6), (7), and (8), make use of the first-order condition for the external powers A in Equation (10), and solve for the optimal value of M_1. We find that for deterring its rebellion, the government's supporter needs to provide a sufficient amount of military support as shown by the following condition:

$$M_1^{A-1-2} \geq M_1^{d(A-1-2)} \cong \left(\frac{2V_2}{V_1}\right)^{\frac{1}{\theta}} - 1,$$

where $M_1^{d(A-1-2)}$ stands for military support allowing Party 1 to deter Party 2 (i.e. $G_2^{A-1-2} = 0$).

If, instead, Party 1's arming allocation is insufficient such that $M_1^{A-1-2} < M_1^{d(A-1-2)}$, Party 1 does not deter Party 2 and fighting persists. In this case, we calculate the probability of winning for the supported party (government) and the unsupported party (the rebellion);

$$P_1^{A-1-2} = \frac{V_1}{2V_2}\left(\frac{2V_2}{\theta S_1 V_1}\right)^{\frac{\theta}{\theta-1}} \text{ and } P_2^{A-1-2}$$
$$= 1 - \frac{V_1}{2V_2}\left(\frac{2V_2}{\theta S_1 V_1}\right)^{\frac{\theta}{\theta-1}}. \tag{14}$$

It is easy to verify that

$$P_1^{A-1-2} > P_1^{1-2} \text{ and } P_2^{A-1-2} < P_2^{1-2};$$

$$Y_1^{A-1-2} > Y_1^{1-2} \text{ and } Y_2^{A-1-2} < Y_2^{1-2}. \tag{15}$$

The above analysis leads to the following corollary:

COROLLARY 1. *Relative to the scenario without external interventions in which armed peace is not the equilibrium outcome, an intervention by a single external power that provides military aid to Party 1 (the defender) (i) reduces the winning probability of Party 2 (the attacker) and (ii) increases the likelihood of armed peace when Party 1's external supporter has a sufficiently high stake in its victory such that $S_1 > (1/\theta)(2V_2/V_1)^{1/\theta}$.*

Corollary 1 implies that Party 1 (the government) has an incentive to acquire external support to increase the winning probability of fighting back against its rebellion. When the strategic value attached to Party 1's political dominance is sufficiently high, the external power finds it better off by providing a greater amount of military support such that the government is more likely to launch a deterrence strategy against the rebellion. An interesting historical event should be mentioned. When the so-called 'Arab Spring' began in Syria, people at a large scale gathered to protest against President Bashar al-Assad and his government.

One big concern of the government was that the rebels could use violence to back down the government. In response, the al-Assad government requested military support from external powers (Iran and Russia) to increase its likelihood of defeating the potential military rebellions.

Our next step of the analysis is to see how an external power's support to Party 2 (the attacker) affects the equilibrium outcome and the likelihood that Party 1 can launch a strategy to deter its rebellion attacker. We use the subscript '$B-1-2$' to represent the case in which no external power offers support to Party 1 (the government), where external power B supports Party 2 (the rebellion). We set $M_1^* = 0$ in Equations (6)–(8), make use of external power B's first-order condition in Equation (10), and solve for the optimal value of M_2. We find that the deterrence condition is:

$$G_2^{B-1-2} = 0 \text{ when } M_2^{B-1-2} \leq \left(\frac{V_1}{2V_2}\right)^{\frac{1}{\theta}} - 1 < 0. \tag{16}$$

where M_2^{B-1-2} is the level of military support provided to Party 2 by its ally from abroad. That is, for any positive amount of military support that external power B offers to Party 2, fighting persists. In other words, the government does not deter the rebellion when the latter can acquire outside support.

We compute the winning probabilities of the unsupported party (government) and the supported (rebels) party, which are:

$$P_1^{B-1-2} = \frac{V_1}{2V_2}\left(\frac{2V_2}{\theta S_2 V_1}\right)^{\frac{\theta}{1+\theta}}$$
$$\text{and } P_2^{B-1-2} = 1 - \frac{V_1}{2V_2}\left(\frac{2V_2}{\theta S_2 V_1}\right)^{\frac{\theta}{1+\theta}}.$$

It is easy to verify that

$$P_2^{B-1-2} > P_2^{1-2} \text{ and } P_1^{B-1-2} P_1^{1-2};$$
$$Y_2^{B-1-2} > Y_2^{1-2} \text{ and } Y_1^{B-1-2} < Y_1^{1-2}. \tag{17}$$

The deterrence condition in (16) and the results in (17) lead to the following:

COROLLARY 2. *Relative to the conflict equilibrium without any outside interventions, if Party 1 (the defender) is unsupported while Party 2 (the attacker) unilaterally receives support from external*

power B, Party 2's winning probability increases relative to Party 1. In this case, Party 1 does not deter Party 2, and fighting persists.

The implications of the results in corollary 2 are as follows. Since an unsupported government's winning probability decreases when its rebellion acquires external support unilaterally, the government is unlikely to deter the supported rebellion. This incentivizes the government also to seek military aid from an external power. The two-party conflict ends up with the presence of interventions by multiple external powers. This result prompts us to compare the equilibrium outcomes when both conflicting parties receive military aid from their respective allies to the case without any outside interventions.

IV. Competing interventions vs. no intervention[8]

It is instructive to compare equilibria for the situation with two competing external powers versus the situation with no intervention. As two situations are 'fair' in some sense, we could see if interventions by outside forces mitigate or exacerbate the inefficiency of two-party conflict without interventions. When the two domestic parties do not receive any military support from external powers, we substitute $M_1 = M_2 = 0$ or $C_1 = C_2 = 1$ into Equations (6)-(8) to calculate the equilibrium arming allocations, and the warring parties' expected payoffs. This exercise yields:

$$G_1^{1-2} = \frac{V_1^2}{4V_2}, \; G_2^{1-2} = \frac{V_1}{4V_2}(2V_2 - V_1) \, Y_1^{1-2}$$
$$= \frac{V_1^2}{4V_2}, \; Y_2^{1-2} = \frac{(2V_2 - V_1)^2}{4V_2}. \quad (18)$$

Relative to the equilibrium outcomes in the situation with no interventions as shown in (18), we find that for symmetric military support by external powers since they have an identical stake in their respective allies, we have the following:

If $S_1 = S_2$ then $M_1^* = M_2^*$ which implies that

$$G_i^* > G_i^{1-2} \, and \; Y_i^* = Y_i^{1-2}. \quad (19)$$

For the case of competing interventions in which their stakes are asymmetric, we have the following two possibilities:

If $S_1 > S_2$ then $M_1^* > M_2^*$ which implies that $G_1^* > G_1^{1-2}$, and $Y_1^* > Y_1^{1-2}$.

If $S_1 < S_2$ then $M_1^* < M_2^*$ which implies that $G_1^* < G_1^{1-2}$, and $Y_1^* < Y_1^{1-2}$.

Furthermore, we compare the overall conflict intensity, measured by the aggregate level of arming allocated by the domestic contending parties, for the equilibrium with two competing external powers versus the equilibrium with no intervention. This yields

$$G_1^* + G_2^* > G_1^{1-2} + G_2^{1-2} \quad (20)$$

The results in (19) and (20) permit us to establish the proposition as follows:

PROPOSITION 2. *Relative to the two-party conflict equilibrium without any outside interventions, military assistance by two competing external powers will be "socially wasteful" if their stakes in the respective parties are equivalent and their supports are comparable. Only when a party can acquire adequate support from an external ally (due to a relatively higher stake in the party) will its expected payoff be higher. Moreover, the arming allocations by the two conflicting parties are higher in the presence of competing interventions than in the situation with no intervention.*

Proposition 2 indicates that competing interventions worsen the overall conflict intensity as each domestic party raises its arming in reaction to its supported enemy. Each contending party's arming and its external supporter's military assistance are thus 'technologically complements.'

Additionally, competing interventions by external powers that offer a comparable support result in the same expected payoffs for the contending parties compared to those without intervention. This result suggests that symmetric military assistance by competing interveners is a socially wasteful activity. However, competing interventions in which their military assistance

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[8]This section is due entirely to an anonymous referee who suggests comparing the equilibrium outcome of competing interventions by two external powers to that of no outside intervention.

is *asymmetric* help increase the arming allocation and expected payoff of one of the contending players. This implies that an incumbent government can maintain its political dominance by launching a deterrence strategy or by fighting, provided that an ally's stake in its political dominance is critically high and the resulting military aid is adequately to dominate those of the rebellion's external supporters. Otherwise, the outcome can be a prolonged war.

V. Concluding remarks

In this paper, we present a game-theoretic setting of strategic competition between external powers in intrastate conflicts to characterize the mechanism through which the defender (government) may or may not deter the attacker (rebellion). The *multi-power* intervention analysis pays particular to the competing interests of multiple external powers in rendering military aid to their allies in an armed conflict. The analysis goes beyond the existing third-party intervention literature that focuses primarily on a *single*-party intervention. By focusing on competing interventions, we present implications for different outcomes in civil wars. First, a conflict between the incumbent government and its rebels is likely to result in multiple-power interventions. Second, armed peace may not be an equilibrium outcome unless the defender's ally has a sufficiently high stake than the attacker's. In the case of third-party intervention by a single external power offering military support to the government as a defender, the defender finds it beneficial to launch a deterrent strategy to defeat the attacker effectively. If, instead, the external power offers military support to the attacker (rebellion) but not the defender, the defender's winning probability decreases, and fighting emerges.

There are interesting implications for the scenario in which two external powers provide military assistance to their respective allies involved in the conflict. When the external powers compete to offer the same support to their allies, the defender's deterrence strategy becomes ineffective such that fighting persists. This suggests that the 'balance of power' effect of offering external military supports turns out to be conflict-aggravating rather than peace-making. Furthermore, we find that the equilibrium outcome can be conflict-reducing or peace-making when the defender's outside supporter has a sufficiently high stake than that of the attacker's supporter. As such, the government as a defender is better off by increasing its conflict-related arming allocation for deterring its rebellion's attack. When the defender's supporter has a stake being lower than that of the attacker's supporter, military aid provided by both external powers becomes asymmetric such that fighting persists. The presence of more than one external power is unlikely to result in armed peace, unless the government's outside supporter has a stake in its political dominance sufficiently higher than its rebellion's supporter.

Our analysis extends the traditional non-competition analysis of third-party intervention to intrastate conflicts (e.g. the civil wars in Afghanistan and Syria) that involve competing interests of multiple external powers. Some caveats should be mentioned. Our study of civil conflicts focuses on outside interventions and abstracts from domestic factors such as the absence of civil rights, the unequal distribution of income, and other social or institutional factors. A potentially interesting extension is to consider these factors by investigating external powers' role in generating or promoting two-party conflicts. We want to pursue these issues in our future research.

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