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Keywords: Intrastate Conflict; Third party intervention
JEL Classification : D74; D82; F5; H56

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1 Introduction

Since 1945 an estimated 13 to 26 million civilians have lost their lives in the course of armed conflicts, most of them in civil wars (Valentino *et al.* , 2004). This type of conflict is the prevailing form of war, making up more than 90% of contemporary armed conflicts, and are more frequent in poor countries. Despite a traditional emphasis on the internal causes and consequences of civil wars (see Blattman & Miguel, 2010), the role played by the international dimensions of such conflicts and the potential for transational spread of civil war is well established in the literature on conflict (Gleditsch, 2007a,b). Civil war may spread violence outside the boundaries of the country where the conflict occurs(e.g. Salehyan & Gleditsch, 2006) and prompt military intervention by third party states, or by the international community under the rubric of peacekeeping operations (Diehl, 2008).

The existing research on the role of third parties in civil wars focuses mainly on the effect of intervention on civil war outcomes and its duration, to identify the extent to which interventions by states or coalitions of states decrease violence (e.g. Regan, 1996, 2002; Doyle & Sambanis, 2006). Part of the literature shows that military instruments are ineffective and sometimes have a negative effect on the economic recovery of war-torn societies (see Diehl, 2008, for a review of the literature). In particular, simultaneous interventions on the government and opposition sides prolong civil conflicts (Balch-Lindsay & Enterline, 2000), a finding corroborated by Regan (2002) and Elbadawi & Sambanis (2000). Moreover, (U.S.) military interventions may also have a counterproductive impact on the number of terrorist attacks originating from the host-countries when these countries are oil-exporting (Azam & Thelen, 2010). This is not surprising given a lack of understanding of the motivations and constraints faced by intervening nations, and their implications on the conflict outcome. External parties may have incentives in undermining a peace settlement, and vested interests in the conflict outcome that could exacerbate the level of violence among conflict antagonists and possibly justify their own involvment. Therefore, before trying to explain the impact of those operations, we first need to understand the reasons for intervening.

Our paper explores the economic conditions that lead third parties to intervene in ongoing internal wars. We start by developing a formal model that ties together the main economic forces

driving the decision to interfere in a civil war and the potential costs associated with such choice. The role of third-party intervention in conflicts has recently received some attention from theoretical economists, but there is still no consensus on how one should analytically characterize third party military intervention as an activity and how one should integrate a third party into traditional two party models of conflict (Bove & Smith, 2011). Siqueira (2003) takes the third-party's ally as given and examines the impact on the conflict intensity of siding with or against the government, depending on the relative strength of the actors. However, he does not model the intervener's decision. An earlier attempt to study the endogeneity of third-party intervention in conflict was made by Chang *et al.* (2007) and Amegashie & Kutsoati (2007). Chang *et al.* (2007) consider the interaction between a third party's intervention technology and the conflict technologies of the belligerents and show how this interaction affects the sub-game perfect Nash equilibrium outcome. According to their model, a third party can secure peace or disrupt an existing peaceful order, depending on the nature of the conflict and its objectives. Amegashie & Kutsoati (2007) endogenize a third-party's choice of whom to side with and distinguish between military and non-military options. They show how the third party's decision to intervene depends on conflict factors such as the shape of the conflict success function, the relative capacities of the combatants, the duration of the conflict in the absence of intervention and the weight attributed to the welfare of the combatants. The main focus of these papers is the impact of the intervention on the conflict outcome given some kind of altruism on the part of the intervener towards either the populations directly affected by conflict, or the combatants. None of these works goes beyond the canonical characterization of conflict and intervention as a struggle for victory on the battleground, thus incorporating only military features (e.g. the fighting effort and the success ratio) and ignoring a number of non-military elements which are likely to be central to the decision to intervene. Recent theoretical developments emphasize the role of institutions, economic development and natural resources in shaping civil conflict (Besley & Persson, 2010a,b). Accordingly, violence is associated with institutional and economic factors, such as the capacity of a state to fulfill its functions or economic shocks that can affect wages and aid. Chang *et al.* (2007) and Chang & Sanders (2009) do consider the economic motivations of third-parties deciding to militarily intervene, yet the benefits of intervention are exogenous. Our formalization takes into account conflict characteristics but broadens the scope and helps to clarify the role of a number of endogenous

economic factors which can explain why some conflicts attract interventions while others do not. However, we still account for some military factors hampering the decision to intervene.

We test our theoretical framework empirically against a dataset on intrastate conflicts on the period 1960-1999. To date, only one study by Regan (1998) explains empirically the causes of third party involvement in civil wars, and finds that intense conflicts are unlikely to attract outside actors, while those that involve humanitarian crises are likely to do so. Some studies examine which conflicts attract UN intervention (Gilligan *et al.* , 2003; Mullenbach, 2005; Doyle & Sambanis, 2000), while others explain the issue of troop contribution to peacekeeping operations (Lebovic, 2004; Bove & Elia, 2011). However, these works mostly focus on security interests (i.e. proximity), humanitarian concerns (i.e. casualties, refugees) and ethnic and colonial ties, thus disregarding a number of economic factors which have been proved to statistically affect the likelihood and durability of civil wars (e.g. Fearon & Laitin, 2003; Collier *et al.* , 2004; Fearon, 2005; Besley & Persson, 2008; Bruckner & Ciccone, 2010) and may well explain the incentives to intervene in an internal war. Economic ties between countries have for instance been shown to play a deterministic role in protecting the trading partner in an interstate dispute (Aydin, 2008). Yet, there are no systematic studies on the economic value of an interstate dispute and the mechanism through which economic factors encourage third-party states to intervene. Military intervention is a financially expensive, risky, and dangerous endeavor. Therefore, the states must balance the expected costs with their strategic interests, but also with possible economic benefits accruing form the intervention and the opportunities for success.

We proceed as follows. Section 2 presents a model of a conflict with the possibility of third party intervention. Section 3 describes our dataset and discusses the methodological issues involved in the choice of the proxies, section 4 presents the methods used in the empirical analysis. Section 5 provides empirical support to our theoretical hypotheses and Section 6 concludes the paper.

2 Theoretical Framework

We consider a country *i* harbouring an industry producing (or extracting) a valuable good (oil, natural gaz, diamonds...). The industry's net profits in time *t* are given by $\lambda^t \pi^t$, where the weighting

factor λ^t represents the strength and stability of country s at time t. We assume that $\lambda^t = \lambda > 0$ if country i is in a peaceful situation, while $\lambda^t = 0$ otherwise. In the presence of weak institutions, profits may be diluted in attempting to enforce contracts even in peaceful times (i.e. $\lambda < 1$). When the country is highly unstable, and prone to regime changes, foreign investments in the country are at risk of disruption or even expropriation, thus lowering the profitability of the industries in country s. λ can be interpreted as a "'business enhancing" form of state capacity, which shows how in particular cases of extremely fragile states, multinational corporations may not find the investment profitable, even in presence of large reserves of natural resources. This important specification allows us to distinguish between countries which are potentially at war where the investments are viable, from otherwise similar countries where the unpredictability of the regime duration makes the investments inadvisable. For the purpose of our analysis, we use the notions of state strength and state stability interchangeably.

Country i faces internal opposition by a sub-group of the population. To keep things simple we assume that the citizens of country κ form two equally sized groups, each represented by a leader aiming to maximize his group's well being. One of these leaders is in power and is named the *incumbent* and accordingly denoted by I, while the other leader represents the *opposition* and is designated by O. The game takes place over two time periods, $t = \{1, 2\}$. In the beginning of time period 1, country s is embroiled in a civil war which criples the manufacturing industry and yields a victor who controls the government for the remaining of period 1. The incumbent (winner) imposes on the losing side its policy for the current period, and therefore decides the taxes and transfers in the country given the taxing constraint $\tau^{it} \leq T$ $(i = \{I, O\})$. Therefore, in $t = 1$ the incumbent government taxes labour-income by imposing unit taxes of $\tau^{i1} \leq T$ on group i's individuals. Given its budget constraint, the incumbent government invests resources in constituting an army of size a which will be operational starting from the next time period. In a second stage of the same time period the *opposition* collects contributions (taxes) among its own group, $\tilde{\tau}^{O1}$, and decides the size of the rebel army, r, to gather to try overruling the incumbent in the subsequent time period. In the second time period, the opposition decides whether or not to try taking over the government by violent means, and if it does, its likelihood of success is given by $p(a, r; e)$ which is described by the following expression:

$$p(a, r; e) = \frac{a}{a + er} \qquad \text{where} \quad e \leq 1 \tag{1}$$

The e parameter designates the contestants' relative fighting efficiency. Subsequently, the incumbent and the opposition take the same decisions as in $t = 1$.

Absence of third party intervention

Solving the game backwardly, it is immediate to deduce that $\tau^{O2} = T$, and therefore that $-\tau^{I2} = T + 2\frac{\lambda^2\pi}{w}$, which means that the opposition group pays the highest admissible tax, and the incumbent group receives these proceeds and the country's profits under the form of transfers.

In the first time period, when the opposition group decides to arm in order to attempt taking over power by violent means, it imposes taxes $\tilde{\tau}^{O1}$ on the individuals of its own group and solves the following problem:

$$\max_r \left(1 - \tilde{\tau}^{O1}\right) w + p(a, r) u^{O2} + (1 - p(a, r))\, u^{I2} \tag{2}$$

$$\text{s.t.} \begin{cases} r \leq \tilde{\tau}^{O1} w/2 \\ \tilde{\tau}^{O1} \leq 1 - \tau^{O1} \end{cases}$$

Where u^{I2} depicts the utility of the incumbent in the second time period given that the industry is generating no profits because of conflict. The first constraint captures the trade-off between weapons production and citizen's consumption, while the second constraint forebids the opposition leader to tax his supporters more than their net income (i.e. after the central government collected taxes).

At optimality if the constraint is not binding, the F.O.C. reads:

$$-p_r \left(u^{I2} - u^{O2}\right) = 2$$

which equals

$$\frac{ea}{(a + er)^2} \left(u^{I2} - u^{O2}\right) = 2 \tag{3}$$

Thus implying that the opposition's reaction function $r(a)$ is given by

$$r(a) = \sqrt{\frac{a\left(u^{I2} - u^{O2}\right)}{2e}} - \frac{a}{e} \tag{4}$$

Notice, however, that this move is profitable to the opposition party only if the expected payoff is larger than when not arming and passively accepting being in the opposition in $t = 2$. If we denote by a^d the threshold level of a above which O is better off not purchasing weapons, a^d should satisfy the following inequality:

$$u^{O2} \geq p(a^d, r(a^d))u^{O2} + \left(1 - p(a^d, r(a^d))\right)u^{I2} - r(a^d) \tag{5}$$

and this can be re-written as:

$$\left(1 - p(a^d, r(a^d))\right)\left(u^{I2} - u^{O2}\right) \leq r(a^d) \tag{6}$$

or, replacing for the appropriate values:

$$\left(u^{I2} - u^{O2}\right) - \sqrt{\frac{2a^d\left(u^{I2} - u^{O2}\right)}{e}} \leq \sqrt{\frac{a^d\left(u^{I2} - u^{O2}\right)}{2e}} - \frac{a^d}{e} \tag{7}$$

Notice first that for $r(a)$ to be strictly positive, we need that $\frac{\left(u_2^I - u_2^O\right)}{2} > \frac{a^d}{e}$. We next re-write expression (7) as follows:

$$\Psi = \left(u^{I2} - u^{O2}\right) - \sqrt{\frac{2a^d\left(u^{I2} - u^{O2}\right)}{e}} - \sqrt{\frac{a^d\left(u^{I2} - u^{O2}\right)}{2e}} + \frac{a^d}{e} \tag{8}$$

Differentiating w.r.t. a^d gives the following:

$$\frac{\partial \Psi}{\partial a^d} = -\frac{1}{2}\sqrt{\frac{2\left(u^{I2} - u^{O2}\right)}{a^d e}} - \frac{1}{2}\sqrt{\frac{\left(u^{I2} - u^{02}\right)}{2a^d e}} + \frac{1}{e}$$

We can therefore show that $\frac{\partial \Psi}{\partial a^d}$ is negative if

$$\frac{1}{e} < \frac{1}{2}\sqrt{\frac{\left(u^{I2} - u^{O2}\right)}{a^d e}}\left(\sqrt{2} + \frac{1}{\sqrt{2}}\right)$$

$$\Leftrightarrow 4 < \underbrace{\frac{e\left(u^{I2}-u^{O2}\right)}{a^d}}_{>2\Leftarrow r(a^d)>0}\underbrace{\left(\sqrt{2}+\frac{1}{\sqrt{2}}\right)^2}_{>2}$$

We therefore have that $\frac{\partial\Psi}{\partial a^d} < 0$, and $\Psi\left(a^d|_{r(a^d)=0}\right) = 0$, thus implying that $\Psi\left(a|_{r(a)>0}\right) > 0$, which in turn allows us to conclude that the opposition group is undeterred for any a such that $r(a) > 0$. Hence, $a^d = a|_{r(a)=0}$, or $a^d = \frac{e}{2}\left(u^{I2}-u^{O2}\right)$.

For the deterrence strategy to be implementable, however, the incumbent government should dispose of the necessary resources to fund these expenditures. The question is particularly salient when considering a country already embroiled in civil strife, whose industry is crippled by the conflict. The feasibility constraint thus reads as:

$$\begin{aligned}(1+T)\,w \geq a^d &= \frac{e}{2}Tw \\ \Leftrightarrow e &\leq \frac{2(1+T)}{T}\end{aligned} \tag{9}$$

Should the above condition be violated, the Opposition movement will be undeterrable by the incumbent government. Yet, if the condition is satisfied, for deterrence to be played at equilibrium, we still ought to verify whether the incumbent government finds it optimal to play this strategy. In order to determine the equilibrium strategy of the incumbent, we therefore need to compute his payoffs under conflict and under deterrence.

The optimal size of the army of the incumbent if a violent conflict is to be expected is determined by solving the following problem:

$$\max_{\tau^{I1},\tau^{O1},a}\left(1-\tau^{I1}\right)w + p(a,r)u^{I2} + (1-p(a,r))\,u^{O2} \tag{10}$$
$$\text{s.t.}\begin{cases} a \leq \sum_{j=I,O}\tau^{j1}w/2 + \lambda\pi \\ \tau^{O1} \leq T \end{cases}$$

At optimality the constraint is binding and therefore determines the equilibrium transfers to group I. The army size a should maximize (10), and the associated F.O.C. is given by:

$$\left(p_a + p_r r(a)'\right)\left(u^{I2} - u^{O2}\right) \geq 2$$

Using (3) in the above FOC, we obtain:

$$p_a + p_r r(a)' = -p_r$$

$$\Leftrightarrow r - ar(a)' = a$$

$$\Leftrightarrow \sqrt{\frac{a\left(u^{I2} - u^{O2}\right)}{2e}} - \frac{a}{e} - \frac{1}{2}\sqrt{\frac{a\left(u^{I2} - u^{O2}\right)}{2e}} + \frac{a}{e} = a$$

And we thus derive the optimal armaments level:

$$a^* = \frac{\left(u^{I2} - u^{O2}\right)}{8e} \tag{11}$$

Plugging this value into $r(a)$, we obtain:

$$\begin{cases} r(a^*) = \frac{\left(u^{I2} - u^{O2}\right)}{4e}\left(1 - \frac{1}{2e}\right) & \text{if } \ e \geq 1/2 \\ = 1 & \text{otherwise} \end{cases} \tag{12}$$

Which eventually gives us the equilibrium probability of the government winning the contest:

$$p(a^*, r^*) = \frac{1}{2e} \tag{13}$$

This equilibrium probability of the government winning the conflict is such that *i*) when the opposition is as efficient as the government p^* equals $1/2$, *ii*) this probability is decreasing in e, and *iii*) $p^* = 1$ if $e < 1/2$.

Having computed the equilibrium size of the army in case of armed confrontation, we still need to determine whether the deterrent option is more profitable to the incumbent. A first important observation is that $a^d > a^*$. Indeed, we have that $a^d = \frac{e}{2}\left(u^{I2} - u^{O2}\right) > \left(u^{I2} - u^{O2}\right)/(8e) = a^*$ for any $e \geq 1/2$.

For what follows we use the short notation $u^{Jt}(a)$ (and $\tau^{Jt}(a)$) to designate the utility (and the tax rate) of group J in time t given that the incumbent invests in an army of size a. Moreover, we use the hat symbol to label the incumbent's utility under peace. The deterrent strategy proves more profitable to the incumbent government if the following expression is satisfied:

$$u^{I1}(a^d) + \hat{u}^{I2}(0)) \geq u^{I1}(a^*) + p^* u^{I2}(0) + (1 - p^*)u^{O2}$$

$$\Leftrightarrow -\tau^{I1}(a^d) - \hat{\tau}^{I2}(0) > -\tau^{I1}(a^*) - T - p^* \left(\tau^{I2}(0) - T\right)$$

Since $-\tau^{It}w = 2\left(\lambda_J^t \pi^t - a^t\right) + Tw$, and given that in case of deterrence $\lambda^2 = \lambda$, the above expression can be re-written as:

$$2T - 2a^d/w > T + 2\lambda\pi/w - 2a^*/w - T + 2p^*T$$

$$\Leftrightarrow (1 - p^*)Tw + \lambda\pi > a^d - a^*$$

$$\Leftrightarrow (1 - p^*)Tw + \lambda\pi > \left(\frac{e}{2} - \frac{1}{8e}\right)\left(u^{I2}(a^*) - u^{O2}\right)$$

$$\Leftrightarrow (1 - p^*)Tw + \lambda\pi > \left(e - \frac{1}{4e}\right)Tw$$

And this expression can therefore be expressed as:

$$\lambda\pi > \left(e + \frac{1}{4e} - 1\right)Tw \tag{14}$$

Condition (14) allows us to state the following proposition:

Proposition 1. *Provided the incumbent government is able to fund a deterrent army, deterrence is more likely to be observed for higher levels of peace-time profits $\lambda\pi$ (i.e. state stability and production), for lower state tax capacity T, for lower wages w and for lower relative fighting efficiency levels of the opposition, e.*

The intuition behind these findings is straightforward. Notice that the opposition forces will not be able to enjoy the profits $\lambda\pi$ if they attempt to overrule the incumbent government by force, since the civil war will freeze the activity of the industry. On the other hand, higher peace-time profits incentivize the incumbent to make sure the country remains stable. Both lower state capacity and lower wages increase the incentives for deterring the opposition forces. Indeed, the incentives for the opposition to take over power are reduced since the pie at stake is smaller. This, in turn implies that the level of deterrent weapons will also be lower at equilibrium, since the opposition will invest less effort in attempting to fight the government forces. Hence, the cost of deterrence being smaller, the incumbent is more likely to deter the opposition forces. Certainly, since the pie at stake is smaller for the opposition forces, the same holds true for the incumbent, whose incentives to fight to stay in power are lower. Yet, this effect affects the conflict and deterrent payoffs of the incumbent in the same fashion (i.e. proportionally), thus not further affecting the deterrence incentives. Lastly, weaker opposition forces are less efficient in a civil war, which implies a higher probability of victory for the incumbent in case of conflict, but they also make the opponent deterable at a lower cost. In the relevant range of parameters ($e \geq 1/2$) the latter effect always dominates the former.

Third party intervention

We now introduce the possibility of a third party intervention in country i by an external actor. Assume there exists a country that has the possibility to deploy troops abroad. The military technology of the third party intervener (TPI) is taken not to be necessarily the same as the incumbent's technology so that the opposition's relative fighting efficiency against the the TPI is given by $\tilde{e} \in [1/2; \infty[$.

We denote by b the total size of intervention. The benefits of an intervention take the form of privilieged contracts and other business agreements between the TPI and the incumbent government. Moreover, we assume that the TPI is never budget constrained.

In case a third party intervention does occur in country i, the cost of the operation to the TPI is therefore equal to $b = a^d$. The price the incumbent government is willing to pay for having a peaceful society therefore constitutes a crucial determinant of third party intervention. This amount is equal to the payoff difference for the incumbent between prolonging the civil conflict

and putting an end to it. Combining these expressions, we obtain that the following condition for observing a third party intervention:

$$b = a^d < u^{I1}(0) + \hat{u}^{I2}(a^d) - \left(u^{I1}(a^*) + p^* u^{I2}(a^*) + (1 - p^*)u^{O2}\right)$$

Which, after substitutions and simplifications yields the following expression paralleling Condition (14):

$$\lambda\pi > \left(\tilde{e} + \frac{1}{4e} - 1\right) Tw \tag{15}$$

This condition, combined with Condition (9) allows us to state the following proposition that contains the testable hypothesis of our model:

Proposition 2. *Third party intervention in civil wars is more likely to be observed for higher levels of peace-time profits $\lambda\pi$ (i.e. the combination of state stability and production), for lower state tax capacity T, and for lower wages w. Moreover, assuming that the relative strength of the opposition against the TPI ($\tilde{e}$) is less reactive to a change in power of the opposition than the relative strength of the incumbent (e), the stronger the opposition, the more likely we witness a third party intervention.*

The comparative statics results are straightforward. Yet the following graphical representation may help clarify the ideas.

On the x-axis of Figure 1 we measure the peace-time profitability of country i's industry, while the relative strength of the opposition forces with respect to the incumbent are depicted on the y-axis. The solid horizontal line represents the feasibility constraint, therefore implying that the incumbent has the means to deter the opposition on the South of this line alone: a stronger opposition increases the amount of resources required for the opposition to be deterred. The incresaing dotted curve is the locus of points satisfying condition 14 with equality. In the area lying on the North-West quadrant of this curve the incumbent government is unwilling to deter the opposition forces, and prefers to fight instead. Finally, the decreasing dashed curve is the locus of points satisfying condition 15 with equality. We therefore have that in the triangle-shaped area lying between the dotted, the dashed, and the solid curves, the TPI is willing to restore peace at

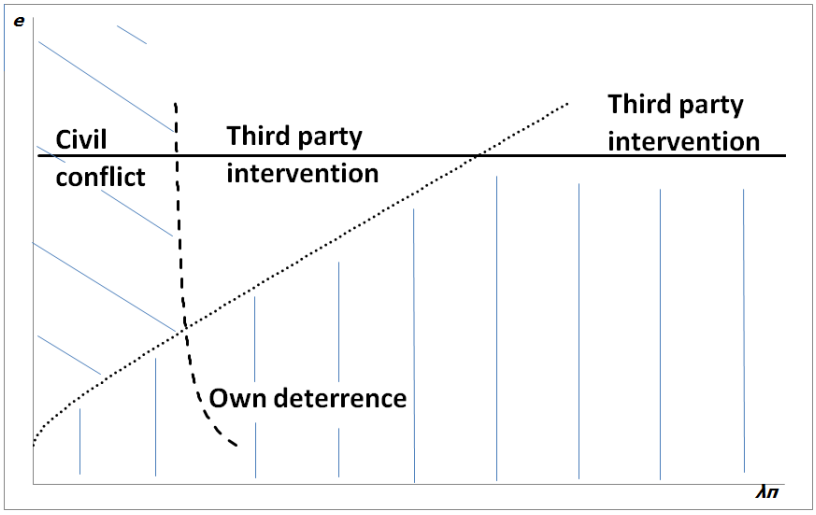

Figure 1: Third party intervention in Civil Wars for $\tilde{e} < e$

terms that are satisfying to the incumbent opposition, while the incumbent would be able to deter the opposition forces if it desired so. In the area lying above the horizontal line, and to the right of the dashed one, the third party intervener is willing to restore peace, and the incumbent is unable to deter the opposition even if it were willing to.

Consider a value of e such that the incumbent government has the means to deter the opposition forces if it chooses so. For low values of peace-time profits, $\lambda\pi$, neither the government, nor the TPI would be willing to end the on-going conflict. Indeed, in resource-poor countries, the benefits from securing a peaceful environment do not justify the disproportionately important means required to achieve that outcome. In the presence of a more profitable industry (higher $\lambda\pi$), however, the relatively fitter TPI ($\tilde{e} < e$) will find it profitable to intervene militarily in the civil conflict, when the incumbent government would have otherwise prolonged the civil war. For intermediate levels of peace-time profits, the incumbent government is not sufficiently efficient on the battle ground to implement a deterrence strategy. Yet, the incumbent government will allow the relatively more efficient TPI to restore peace since the latter's lower intervention cost creates scope for a lower intervention price to be paid by the incumbent to the TPI. When the peace-time profits are very high, however, no third party intervention will be observed, since the incumbent government will then prefer restoring peace (or suppress the insurgency) with it's own army, and therefore will not have to share the profits with the TPI. In that case we would not observe a civil

war either.

Having derived some clear theoretical predictions on the economic factors favoring third party intervention, we now confront our findings to the data.

3 Data

To provide an empirical analysis of the military and economic conditions which are likely to affect the probability of observing a third party interference in a civil war, according to our theoretical model, we need to clarify some methodological issues.

We confront the predictions of proposition 2 with the data. Interestingly, proposition 2 speaks of situations where there is an ongoing conflict, due to the government' decision not to or inability to deter the opposition. And our main scope is to focus on ongoing civil wars. However, there are some difficulties involved in testing our theories. In our effort to provide realistic proxies of the "'observable"' conditions driving the decision to intervene, we are not always able to provide nuanced measures, such as the relative strength of the rebel movement or the level of wages. Moreover, the choice of our control variables is constrained by the need to keep an acceptable number of observations. Therefore we do not include the level of tax revenue since this information, available only for a minority of countries and a limited period, would decrease dramatically the number of observations and would therefore render less credible our statistical inference.

Our sample of civil wars, disaggregated into periods of third party intervention and non-intervention, is taken from Balch-Lindsay *et al.* (2008). These authors split the COW Intra-State War Participants (Sarkees & Schafer, 2000) into spells to merge the intervention, which is time-varying, into the civil war data. The sample contains all countries that are in the Correlates of War system - i.e. all countries with a minimum size and international recognition - and covers the years 1960-1999. The COW definition of intervention is consistent with an overt military contribution of third parties.[1]

To provide an empirical support to our theoretical hypotheses, we divide the covariates in two

[1] Specifically, quoting Small & Singer (1982, p.219), third party involvement is considered an intervention when "direct military participation of such a magnitude that either 1,000 troops are committed to the combat zone or, if the force is smaller or the size unknown, 100 deaths are sustained".

groups which identify our variables according to the nature of the conflict vis-à-vis the nature of the economy.

Nature of the conflict

To capture the relative fighting effort and the conflict technology of the opposition we use two variables: whether the civil war has separatist goals and the type of terrain. Separatist goals is a dichotomous variable that is coded 1 when the goal of an opposition group in a civil war is separatist and 0 otherwise Balch-Lindsay *et al.* (2008). We use this dummy to proxy for the importance of the struggle and the relative efforts put in place by the government. Separatist demands challenge the state sovereignty and the territorial integrity, thus governments should be more reluctant to surrender than under a non-separatist threat. In fact, throughout the history of the interstate system, states rarely condoned partition. Moreover, allowing one region to gain autonomy creates a precedent for subsequent separatist demands. An additional way to capture the relative rebel strength is the type of terrain. Inhospitable terrains can be used by rebels to elude government detection; by becoming more inaccessible, rebels can regroup, rearm and train new recruits. Forested or mountainous regions hamper the detection of the rebels.[2] The literature on civil wars suggest that geography matters and mountainous terrain is significantly related to higher rates of civil war (Fearon & Laitin, 2003; Collier *et al.* , 2004). To this end we use the log of the proportion of the country that is "'mountainous"' included in Fearon & Laitin (2003) dataset. We also include some standard control variables widely used in the civil war literature, which may possibly affect the likelihood of external intervention, such as the degree of ethnic and religious fractionalization and a dummy that indicates when a state has noncontiguous territory.[3] This data comes from Fearon & Laitin (2003) and should reveal whether ethnic or religious diversity, or a noncontiguous territory, make an intervention more challenging, and thus more unlikely.

Nature of the economy

The archetypical profitable good in the microeconomic literature is oil. Therefore we take the level of production of oil (in millions of barrels per day) from Humphreys (2005).[4] We include

[2]For example a variety of rebel groups in Myanmar, managed to survive for long periods by basing themselves in the rural areas of the state, often avoiding detection by living on steep hills (DeRouen & Heo, 2007).

[3]Countries with territory holding at least 10,000 people and separated from the land area containing the capital city either by land or by 100km of water were coded as noncontiguous.

[4]The oil data is derived from measures reported in the BP Statistical Review of World Energy/BP Statistical Review of the World Oil Industry (various years), PennWell Corporation's Oil & Gas Journal, the U.S. Department of Energy, the OPEC Bulletin, and Petroleum Economist.

the global GDP growth rate as an indicator for the world demand for oil: higher demand for oil should affect the incentives to military intervene. A country's per capita GDP is taken as a proxy for the level of wages. We also add, as a control variable, the value of export of primary commodities, ranging from agricultural products to crude materials. This aggregate measure is taken from Fearon (2005) and includes food and live animals (e.g. wheat, coffee, sugar), crude materials (rubber, wood), mineral fuels, lubricants (e.g. oil, coal, natural gas) and nonferrous metals (e.g silver, copper, nickel, aluminum, lead). The scope is to show that the presence of a valuable good - rather than a general measure of trade or export - influences the likelihood of external military intervention.

Measuring state strength poses a challenge. We rely on a simple interaction specification to test the idea that a third party intervention in a country with a profitable industry depends on the degree of stability of this country. To this end, we use the measure of Humphreys (2005), which is a combination of Fearon & Laitin (2003) political instability - whether a state has undergone a large change in its political institutions over the past three years, thus indicating weakness of state structures - and their "anocracy" measure (1 if a state is a robust democracy or a robust dictatorship and 0 otherwise). This measure allows us to exclude countries where an investment in the oil sector is highly dangerous and possibly at risk. Approximately 25% of oil-producing countries in our sample have a low state stability/strenght. All our economic variables reflect pre-civil war levels (i.e. lagged one year prior to the civil war).

4 Econometric model

The main purpose of this analysis is to assess how robust some of the theoretical predictions are when important econometric issues are taken into account. Therefore we need to clarify our research design. We use the country at war-year as the unit of analysis and examine whether certain conditions increase the probability of an intervention. The choice of this unit of analysis is due to the difficulty of identifying all relevant dyads, including those that may have considered intervening but chose not to. Using the dyad as the unit of analysis poses the question of which dyads to use. If we use all possible dyads, then there is an obvious bias toward the non-involvement decision. If only cases of conflicts with interventions are chosen, then there is a strong bias to-

ward the intervention decision, and we would never know which countries ultimately rejected this option after considering it. A dyadic analysis might be more meaningful if we had a method to determine the population of potential interveners in each conflict. In order to select the countries which considered but did not enacted an intervention, we should look for an indication of threats to intervene that were not executed. However, we do not have information on threats to intervene. The potential for selection bias - either over or under sampling - is acknowledged, but the counterfactual question of who considered intervening but chose not to is too difficult to conceptualize theoretically and to disentangle empirically. Although not ideal, focusing on the conflict does allow us to draw useful inferences about the decision process of potential interveners through the evaluation of the hypotheses derived from our theoretical framework. As already pointed out by Regan (1998), this approach to understanding political outcomes is a well-used strategy throughout the study of world politics.

Most of the existing empirical literature on the topic suffers from an omitted variables bias which we try to address. The majority of studies use a pooled panel without controlling for unobserved heterogeneity. This is a serious issue, as the variation between civil wars that experience third party interventions and those that do not can be driven by factors that are difficult to observe. A good way to address this concern would be to include country fixed effects. However, we could not do this as some key explanatory variables such as the percentage of mountainous terrains are not time-varying.

In our econometric model, a third party decision to intervene is modeled according to the following reduced form model for participation:

$$\Pr[y_{it} = 1|x_{it}, \alpha_i] = \Phi(x'_{it}\beta + \alpha_i) \qquad i = 1, ..., N; t = 1, ...T \tag{16}$$

where x is a vector of strictly exogenous observed explanatory variables and β is the associated coefficient vector. The covariates vector x includes information on the conflict, its actors, and the economy of the country at war. The model also has a random intercept α_i to account for individual-specific unobserved characteristics. Φ is the cumulative distribution function of a standard normal variate.

However, the standard uncorrelated random effects model assumes α_i to be uncorrelated with

x_{it}. Following Mundlak (1978) and Chamberlain *et al.* (1984), we allow for a correlation between α_i and the observed characteristics by assuming a relationship of the form $\alpha_i = \overline{x}_i' a + \varepsilon_i$ and with ε_i independent of x_i'. Thus the model may be written as:

$$\Pr[y_{it} = 1 | x_{it}, \alpha_i] = \Phi(x_{it}'\beta + \overline{x}_i' a + \varepsilon_i) \quad i = 1, ..., N; t = 1, ...T \tag{17}$$

5 Results

In column 1 of Table 1 we report the benchmark model, a random effect probit modeled according to equation 17, where we include all the relevant variables. This model contains only the multiplicative terms (oil and primary commodities weighted by state stability) because we are solely concerned with the effect of the interaction terms, and we therefore do not include the levels. Properly interpreted, this interactive term reveals how the effect of exported goods (either highly profitable or not) on the likelihood of intervention varies with changes in the state stability, or, alternatively, what is the effect of oil/primary commodities on intervention at any level of state stability. Therefore, the coefficients in this interactive model describe the relationship between the variables in different terms than do the coefficients in an additive model (i.e. oil + state capacity) - as conditional relationship rather than general relationship (Friedrich, 1982). The other reason why we do not include the levels is the strong multicollinearity between levels and interaction. However, in column 6 we do include both terms to see whether there is any change in the sign of the coefficients. The results in this last column must be taken with a lot of caution because of the high correlation among these terms. To check for robustness of the random effect probit, we run a random effect complementary log log specification (column 2), which takes into account any asymmetry in the distribution of the dependent variable. Finally, to relax the distributional assumption about the unobserved heterogeneity parameter, we estimate a linear probability model with fixed effects (column 3). As said above, the covariates which are not time-varying drop out of the equation. We use a variety of additional checks through the exclusion/inclusion of some covariates (column 4-6) to assess the robustness of our findings.

Results in Table 1 confirm most of the arguments derived in the theoretical framework. The weakness of the opposition forces is a main explanatory factor of external intervention in civil

wars. The separatist dummy is positive and significant as we expected, therefore the opposition's separatist claims - and the ensuing government resolve not to relinquish power over its territory - are more likely to attract external military forces in the dispute. Since partitioning the civil war state can be assumed to constitute the government's least preferred outcome, we should expect a considerable government investment in fighting effort and therefore a relative military superiority. This result is very strong across different model specifications. When civil wars occur in areas that raise the strength and elusiveness of the opposition forces, such as in regions with conspicuous mountainous terrains, the probability of intervention decreases. However, this result is significant in only two models, even though it retains the predicted sign. Inquiring into particular cases suggests that conflicts in locations such as Nepal, Pakistan or Chechnya feature very strong rebel movements (or opposition forces) and long term civil wars, with few efforts to develop a peace process and little external involvement in the affairs of those regions. The standard variables explaining the onset (and possibly duration) of a civil war, such as the ethno-linguistic and religious fractionalization and the non-contiguity index, are never statistically significant in explaining the occurrence of external interventions. Our main contribution lies in the identification of some economic forces driving the decision to intervene. The interaction term between oil production and state strength is positive and significant over different specifications, and validates our prior that the profitability of the exporing industry, weighted by the capacity of the state to enhance the investment "feasibility", is a strong factor determining the decision to interfere in a civil war. While this interaction term is always positive, and fails to be significant only when we include the levels (i.e. oil + state strength), as expected due to the high collinearity, the levels alone (column 5) are insignificant. This supports are theoretical arguments and shows how a multiplicative-dummy formulation can provide a more detailed description of the relationships in a set of data and increased explanatory power (see Friedrich, 1982).

To show that this result is neither driven by the choice of the proxy for state capacity nor by export-based measures - or just by the openness or the level of trade of the country - we control for the value of primary commodity exports, interacted with the state strength. The coefficients are close to zero and mostly insignificant, thus suggesting that the quantity of the valuable good produced by the country at war is the main economic determinant of intervention. Our model sheds also light on the role played by the global demand for the profitable industry's production

in the decision to interfere in an ongoing civil conflict. As previously mentioned, we use the global GDP growth rate, which indicates the world's appetite for energy, notably oil and other raw materials. The coefficient is positive and significant in the random effect probit and complementary log log, but it fails to attain statistical significance in the linear probability model, even though it has the predicted sign. Finally, our theoretical expectations on the level of wages are also supported by the empirical findings. The GDP per capita is negative and significant in all the alternative specifications: therefore lower wages are associated with higher odds of third party intervention. Overall, our results do not show relevant exceptions, and the signs of the coefficients point in the direction predicted by the theoretical arguments.

6 Conclusions

We have built a model of civil conflict in which the government and the opposition forces struggle for the control of the territory and can engage in fighting. We define two states of the world, with or without a third party intervening in the dispute, and identify a set of parameters, mostly linked to the economic profitability of the country at war, which are likely to prompt external military intervention. The existing literature on third party intervention rarely endogenizes the presence of a third party actor in a two-party civil war environment and devotes no attention to the effect of economic factors on the incentives to intervene, such as the presence of natural resources or the level of state capacity. Since the decision to actively participate in the fight is explained by a number of economic and strategic conditions that constrain choices and influence the decision process, we draw inferences on how these conditions affect the intervention calculus. We include in the analysis new variables - e.g. on oil production and state strength - that play a crucial role in our model, but have been largely neglected in the existing literature. We find that the interaction between state strength and the size of a profitable industry (i.e. oil), tends to increase the incentives for external military involvement. In contrast, the strength of the opposition forces is found to decrease the scope for involvement.

The rhetoric for intervention, or its stated goal, is usually controversial and has been debated over the years. The contrasting recent events in Libya, where intervention has occurred, and in Syria, where, to date, intervention has not been on the agenda, call for a more thorough under-

standing of the conditions under which third party states are willing to dispatch military forces in an ongoing civil strife. Our theoretical framework and empirical analysis shed light on some of the economic and strategic conditions predicting the likelihood of intervention. In this sense, we think that integrating two-party economic models of conflict in a simple and tractable way may serve as a useful guide for how observable strategic, economic and political factors determine the probability of an external intervention, and possibly the outcome of the conflict.

Table 1: Random effect probit, complementary log log and linear probability model with fixed effect for intervention probability in civil wars

	(1) RE Probit†	(2) RE clogclog†	(3) LPM	(4) RE Probit†	(5) RE Probit†	(6) RE Probit†
Separatist	1.944***	2.442***	0.246***	1.973***	2.051***	2.095***
	(4.08)	(4.20)	(4.99)	(4.05)	(3.78)	(4.07)
Mountainousness	-0.415	-0.557		-1.633*	-1.291	-1.759**
	(-0.81)	(-0.86)		(-2.14)	(-1.92)	(-2.59)
Ethno Fraction.	-0.982	-1.269		-4.531	-3.486	-4.797
	(-0.45)	(-0.46)		(-1.63)	(-1.34)	(-1.81)
Religious Fraction.	-0.450	-0.276		1.753	2.079	2.346
	(-0.16)	(-0.08)		(0.60)	(0.68)	(0.71)
Noncontiguous	-0.317	-0.348	-0.0846	1.857	1.678	2.755
	(-0.20)	(-0.16)	(-0.29)	(1.14)	(1.07)	(1.49)
Commodity*State Strength	-0.310	-0.633	-0.0358			
	(-0.32)	(-0.53)	(-0.30)			
Oil*State Strength	2.380**	2.826**	0.131*	1.822**		5.495
	(3.10)	(2.98)	(2.59)	(2.75)		(1.82)
World GDP growth rate	0.562*	0.652*	0.0256	0.484	0.309	0.481
	(2.15)	(2.32)	(0.97)	(1.93)	(1.19)	(1.71)
GDP per capita	-22.63***	-24.84***	-1.785***	-17.05**	-10.16*	-15.06**
	(-3.72)	(-3.93)	(-3.51)	(-2.72)	(-1.96)	(-2.65)
State Strength					0.223	-0.210
					(0.59)	(-0.49)
Oil Production					-0.301	-5.913
					(-0.50)	(-1.89)
_cons	-0.351	-1.224	0.392***	3.844	-7.677*	-2.129
	(-0.15)	(-0.44)	(4.37)	(1.24)	(-2.39)	(-0.51)
$\ln \sigma_\alpha^2$	1.700***	2.145***		2.556***	2.137***	2.692***
	(3.40)	(4.42)		(4.38)	(3.68)	(5.04)
N	382	382	382	395	395	395

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Correlation between ε_i and the observed characteristics is allowed by assuming a relationship of the form: $\varepsilon_i = \overline{x}a + \alpha_i$,where $\alpha_i \sim iidN(0, \sigma_\alpha^2)$.

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