The Economic Incentives of International Conflicts:  
A Theoretical Exposition

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Abstract

This paper explores the event in which a country imposes its power on another country to improve its welfare. It constructs a model of the economic incentives of international armed conflicts and investigates the role of power relations in the furtherance of national welfare. The central result is that in case of an armed conflict, the country with the higher probability of winning has greater wealth and will aim for a larger value of the stake from the armed conflict. Furthermore, as the probability of winning the war rises, the price of the stake the country is willing to pay increases.

Keywords: armed conflict, international economics, political economy

Introduction

The Philippines has been internationally commended for being the first country to be engaged in a legal skirmish with China in an attempt to peacefully resolve the ongoing territorial dispute between these two countries. The Philippines filed a case against China contending that China’s “nine-dashed line” claim over the South China Sea violates the United Nations Convention on the Law of the Sea (UNCLOS). The Arbitral Tribunal at The Hague began its hearing on the case on July 7, 2015 (Parameswaran 2015). This event is an example of resorting to the enforcement of property rights to determine the allocation of resources among members of a society, instead of these members engaging in brinkmanship, playing aggressive until the other yields. According to Simmons (2005), international borders clarify property rights and can therefore be understood as an institution. If profits for instance is a function of space (e.g., in Anderson and Neven 1991) and given the reduced transaction costs in settled international borders, firms will be moved across countries in a way that will give them a location advantage in producing the good (Markusen 1995).

Now this paper analyzes a different scenario. Country A declares war on country B and should Country A win, the other country loses its control of specific resources to Country A. On the other hand, if country B wins the war, it can acquire full control of resources of Country A. Thus, one way for a country to improve its welfare is for it to impose its power over another country and coerce that country to give in to the demands of the former. Now since international economic analysis will involve dealing with how nations interact with each other with a view to improve welfare, it definitely must take into consideration power relations.

This paper proposes that certain factors that impose stronger nations’ power over weaker nations affect the dynamics of international economy. It considers the case in which armed conflict is an economic activity wherein a country imposes its power over another, and this determines important international market dynamics. Here the “strength” of a nation is defined in relation to armed conflict.

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A model is presented about the economic behavior of imposing power over another country – one country imposing its power over another to improve its welfare by means of armed conflict. Power is defined as it was directly cited in Thomas Hobbes’ Leviathan, which is as a “present means to obtain some future apparent good” (Hobbes 1651). Therefore, the case in which one country makes itself better off by overpowering another, which can make the other country worse off is explored. International economic analysis is extended by building a model in which countries circumvent international trade processes and use their power against another to improve welfare, wherein armed conflict, as in Grossman (1991), is treated as an economic activity in which countries impose their power over others.

There are many ways for a country to use its power against another to improve its welfare. This paper deals with the use of military power through armed conflict. The model will be presented in Section II where the focus is on the effectiveness of declaring war to improve welfare, hence the use of war as an economic activity that influences international economic dynamics. From such, some insights are derived concerning what aspects of power struggle – in the case at hand engaging in armed conflict – are important in determining how such activity improves the welfare of a nation. Section III gives a summary of the results derived from the model presented in Section II. Section IV presents the conclusion.

Trends in Military - Related Activities

The preliminary findings of the Stockholm International Peace Research Institute (SIPRI) Yearbook (2015) indicate that there were more armed conflicts in 2014 than all the other years since 2000. These armed conflicts are categorized by the Uppsala Conflict Data Program (UCDP) into three types: state-based armed conflict, non-state conflict and one-sided violence. As far as conflict management is concerned, there were 62 peace operations in 2014, three more than the previous year. There was a 20% decrease in the number of deployed peace operations personnel. However, excluding from the total the International Security Assistance Force (ISAF) in Afghanistan, the number of deployed personnel increased by 4%. Africa hosted the greatest number of peace operations.

Furthermore, global military expenditure in 2015 was estimated at US$ 1,676 billion, representing an increase of about 1% in real terms from 2014, the first recorded increase in world military spending since 2011 (SIPRI Fact Sheet 2016). This increased continuously from 1998 to 2011, before decreasing slightly between 2011 and 2014. Total military expenditure was equivalent to 2.3% of global gross domestic product (GDP). The United States is the world’s biggest military spender, at US$ 596 billion in 2015, which is three times the level of China’s spending, the world’s second largest military spender. The amount of military spending in the two countries are followed by the spending of Saudi Arabia, Russia and the United Kingdom.

Military spending increased overall in Asia and Oceania by 5.4% in 2015, reaching US$ 436 billion. China had the largest military spending in the region, estimated at US$ 215 billion, or 49% of total regional spending, more than four times that of the region’s second-largest spender, India. Of interest is the significant increase in 2015 of military spending by the Philippines (25%), Indonesia (16%), and Vietnam (7.6%), reflecting the heightened tension with China over the South China Sea.
Japan also began to increase spending in 2015 after years of decline, reflecting perceived threat from China and North Korea.

The Middle East is another place where military expenditures are up. Iraq spending increased the most in the region and in the world – a whopping 536% increase in military spending from 2006 to 2015. Saudi Arabia continues to have the largest expenditure (US$ 87.2 billion in 2015). Furthermore, military spending in Europe increased by 1.7% in 2015. However, spending in Western and Central Europe fell by 0.2% in 2014. The main driver for this military spending growth therefore is Eastern Europe, increasing its expenditures by 7.5% in 2014. Of particular interest is the increase in military spending by Russia and Ukraine, 7.5% and 10%, respectively (SIPRI Fact Sheet 2016).

Review of Related Literature

Mainstream economics came relatively late to the subject of armed conflict, as economic theory in general paid considerable attention to the subject only in the 1990s (Cramer 2002). A pioneering work by Grossman (1991) developed a general equilibrium model that treats armed conflict as a form of insurrection and its deterrence as an economic activity along with production using scarce resources. The model features labor time allocation among working, soldiering for a ruler and engaging in armed conflict against the ruler and an income probabilistic distribution between the peasants and the ruler’s allies that depend on the technology of the armed conflict. A main result is that equilibria with more time allocated to insurrections and a higher probability of success have lower production and total income, but nevertheless can have higher expected income for the peasants. Collier (1999) presented a model of the economic effects of civil conflict and the post-war period, in which capital stock changes through capital flight. The latter can either be reversed or continue depending on the adjustment of the capital stock to conflict. Empirically testing the model, the key result is that after long civil wars the economy recovers rapidly, but continues to decline after short wars.

Furthermore, Collier and Hoeffler (1998) developed a model of the economic causes of civil war. The key feature of the model is that rebels will engage in civil war if the perceived benefits outweigh the costs of rebellion. The results of the model were tested using probit and Tobit regressions. Here, initial income, heterogeneity of population, natural resources and initial population size are the significant and strong determinants of the duration and the probability of civil wars. The paper also found that highly heterogeneous societies have no greater risk of experiencing a civil war than homogenous ones. This study was extended in Collier and Hoeffler (2004), wherein the causes of civil war were empirically analyzed using armed conflict data. The paper dealt with the “greed vs. grievance” theory of civil conflict: whether the latter is explained by “grievances”, e.g., ethnic and religious divisions, or by “greed”, i.e., whether the benefits of joining a rebellion outweighs the respective costs, to achieve a better outcome. The paper found that economic variables related to the viability of rebellion have more explanatory power than the political and social variables related grievances. A formal game-theoretic model is constructed in Azam (2001) in the treatment of armed conflicts in Africa. This model sheds light on the impact of redistribution on rebellious activity and the role of the government’s ability for credible commitments to its expenditure policy.
Finally, Neary (1997) compared a basic rent-seeking model with an economic model of armed conflict to analyze their structural differences and the corresponding equilibrium outcomes. The paper pointed out that these two models are concerned with a game in which players invest resources to pursue a desired outcome. The article found that the armed conflict model tends to involve greater relative expenditure on wealth-redistribution activities than does the rent-seeking model.

There is also a strand of related literature dealing with the relationship between armed conflict and economic interdependence. A pioneering work by Polachek (1980) tested the hypothesis of a negative relationship between armed conflict and trade, and found that indeed, countries with the higher trade level engage with less hostility. Pollins (1989) presented a bilateral trade flow model in which utility-maximizing importers pursue both international security and economic welfare objectives. This model includes the foreign policy orientation of importers as a determinant. It was found that trade flows are significantly influenced by political relations between nations. Countries adjust trade ties pursuant to security and economic welfare objectives.

Oneal and Russet (1997) found that economic interdependence is associated with peace, and also that democracies are relatively unlikely to become involved in militarized disputes with other democracies, while autocracies and democracies are prone to conflict with each other. However, Beck et al. (1998) pointed out that panel data points are likely to violate the time independence assumption of the ordinary logit or probit statistical model. The article went on to state that the results from Oneal and Russet (1997) are the products of the latter’s failure to account for time dependence. Oneal and Russet (1999) attempted to address the issues mentioned in Beck et al. (1998), and found evidence for the proposition that economic interdependence and democracy have peacemaking effects, but no evidence that asymmetric trade increases conflict.

**Modeling a Country’s Armed Conflict Behavior**

The model proceeds in an analytically similar fashion as that of Rothschild and Stiglitz (1976). In this model, the assumptions concern the nature of the country, the utility it will gain and costs it will incur from engaging in armed conflict. The assumptions are as follows:

1. There are two types of countries, described by the probability of winning the war. Let a country be an S-type if its probability of winning the war is \( p_S \). Call a country a W-type if its probability of winning is \( p_W \). Let \( p_S > p_W \), i.e., an S-type country has a better chance of winning the war than a W-type country. Therefore, the “strength” of a country is defined as the probability of it winning the war; the higher this probability is, the stronger the country.

2. A country has a well-behaved utility, i.e., \( U' (\cdot) > 0, U'' (\cdot) < 0 \), which is a function of its wealth, \( \omega_j \), hence \( U_i (\omega_j), i = S, W; j = 1,2 \) where \( \omega_{1i} = \omega - \tau x_i + x_i \), which is the wealth of a country if it wins the war, and \( \omega_{2i} = \omega - \tau x_i - x_i \), which is the wealth of a country if it loses the war. \( \omega \) is the total wealth available, \( \omega = \sum \omega_p \). Here, it is assumed that since a country can impose its power on another, the wealth of any other country is available to that country. \( \tau \) is the cost of the value of the stake, or loot, from winning the war, \( x_i \), for the \( i \)-type country, where \( \tau \in (-1,1) \).

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2 This is important because, in this model, we assume that a country will be better off if it wins the war.

3 Included here are the transaction costs of making the wealth of another country available to it.
3. Comparing \( \omega_{11} \) and \( \omega_{12} \), it is also assumed that the war is a zero-sum game, since it can be seen from the two equations that if the country wins the war, it gains the whole stake and loses it completely in case it loses the war.

4. Countries are strictly rational.

From Assumption 2, S-type country has the utility \( U_S(\omega_{Sj}) \), hence an expected utility \( EU_S = p_S U_S(\omega - \tau x_S + x_S) + (1 - p_S) U_S(\omega - \tau x_S - x_S) \). It then maximizes its expected utility with respect to \( x_S \):

\[
\frac{\partial (EU_S)}{\partial x_S} = p_S U'_S(\omega - \tau x_S + x_S) (1 - \tau) - (1 - p_S) U'_S(\omega - \tau x_S - x_S) (1 + \tau) = 0
\]

This FOC gives the optimal value of the stake an S-type country will wage war for, \( x^*_S \). By symmetry, the W-type country’s optimality condition is

\[
\frac{(U'_W(\omega_{1j}))}{(U'_W(\omega_{2j}))} = \frac{(1 - p_W)}{p_W} \cdot \frac{((1 + \tau))}{((1 - \tau))}
\]

and this yields \( x^*_W \), the optimal value of the stake for the W-type country.

**Results**

Here are the results obtained from the conditions stated earlier:

**Proposition 1:** \( \omega_{Si} > \omega_{Wj} \), i.e., the country with the higher probability of winning the armed conflict has greater wealth.

**Proof:** This is shown in the same manner it was shown in Macho-Statler and Perez-Castrillo (2001). By hypothesis, \( p_S > p_W \). Therefore, from (1) and (2), \( \frac{(1 - p_S)}{p_S} \cdot \frac{((1 + \tau))}{((1 - \tau))} \) from \( (U'_W(\omega_{1j})) \) and from \( (U'_W(\omega_{2j})) \). Here, it is either (a) \( U'_W(\omega_{1j}) > U'_S(\omega_{Sj}) \), or (b) \( U'_S(\omega_{Sj}) > U'_W(\omega_{Sj}) \), or both (a) and (b), assuming that for (a) \( U'_W(\omega_{W1}) = U'_S(\omega_{S2}) \), or for (b), \( U'_W(\omega_{W1}) = U'_S(\omega_{S2}) \) Hence \( \omega_{Si} > \omega_{Wj} \). Q.E.D.

**Proposition 2:** \( x_S > x_W \), i.e., the country with the higher probability of winning the armed conflict will aim for a larger value of the stake from the armed conflict.

**Proof:** From Proposition 1, we have

\[
\omega - \tau x_S + x_S > \omega - \tau x_W + x_W \quad (3)
\]

\[
\omega - \tau x_S - x_S > \omega - \tau x_W - x_W \quad (4)
\]

From (3), \( \omega + (1 - \tau) x_S > \omega + (1 - \tau) x_W \Rightarrow x_S > x_W \). By symmetry, the same result from (4) is derived. Q.E.D.
This means that a country with greater wealth will go for a higher value of the stake from the war, that is, it will try to gain more from the war. Now from Result 1, this means that the higher the probability of winning the war for a country, the more it will try to gain from the war, hence it will try to gain a higher value of the stake from the war.

Proposition 3: If $\omega_{i1} = \omega_{i2}$ then as $p_i \rightarrow 1, \tau \rightarrow 1$ and as $p_i \rightarrow 0, \tau \rightarrow -1$

Proof: If $\omega_{i1} = \omega_{i2}$ then from (1) and (2), $U'_i(\omega_1) = U'_i(\omega_{52})$. Then

$$(1 - p_i)(1 + \tau) = p_i(1 - \tau)$$

$$\Rightarrow p_i = \frac{\tau}{2} + \frac{1}{2}$$

(5)

From (5), it is clear that as $p_i \rightarrow 1, \tau \rightarrow 1$ and as $p_i \rightarrow 0, \tau \rightarrow -1$. Q.E.D.

This means that if a country were to be indifferent between winning and losing the war, as the probability of winning the war rises, the price of the stake the country is willing to pay increases. Now as the probability of winning the war falls, the price of the stake becomes negative, that is, as a country’s probability of winning the war falls, such a country will be needing subsidy in order for it to be indifferent between winning and losing. Indeed, country $i$ will pay higher price to acquire the stake increases with the probability of country $i$ winning the war; in fact, as the winning probability approaches unity, the price country $i$ will be willing to pay for the stake will approach the stake’s total value. With such, this country will be indifferent between winning and losing: the price it paid to obtain the stake is equal to the total value of the stake, hence country $i$ will be at a breakeven point. Similarly, a country whose winning probability is low enough (in this model, lower than 0.5) will need to get compensated for their potential loss from the war, and as the probability approaches zero, the needed compensation will also approach the value of the stake. Again with such, the country will be at a breakeven point, since what it lost in the armed conflict just equals the compensation it will get.

Conclusions

Some insights derived from this model are relatively intuitive. From Proposition 1, it is relatively straightforward to think that a country with a better chance of winning the war is in fact the richer country. From Proposition 2, we see that the richer country, because it is endowed with more wealth, will try to gain more loot from the war, i.e., a larger territorial area and larger industries controlled, among others. Combining this with Proposition 1, the country with a better chance of claiming victory will desire more loot.

In addition, from Proposition 3, as the chances of a country winning the war gets better, it will be more willing to finance its warfare; as the country becomes more and more certain that it will emerge triumphant, the more its armed conflict expenditures will explode to the total value of the war booty. Of course, as chances of getting defeated soars, the more the country will solicit for help. As it becomes more likely that the country will get trampled by its enemy, its desired aid will move toward the total value of what it will lose.
Now Proposition 3 can very well be derived from Propositions 1 and 2. The richer the country is, the more capable will it be to finance its armed conflict expenditures, and vice-versa. Also, the poorer the country is, the more likely will it ask for help from allies.

So from this model a sketch of the behavior of countries in wartime, in which armed conflict can be seen as an economic activity in which countries bypass the usual dynamics of international economics and use force against another country to improve their welfare, and in turn imposing their power on another can make the other country worse off. Here we have looked at armed conflict as an institution that drives the direction of some important international market processes.

One obvious limitation of this model is that here, the armed conflict considered involves only two sides. Also, the model assumed only two types of countries based on relative strength. It would be helpful if the model just presented would be extended, addressing the limitations. Another possible extension of this model would be to present the probability of winning the war as endogenous, as a function of some variables, e.g., military spending, population and alliances, among others. The probability of winning can even be extended as a function of time, which would allow the model to do a dynamic analysis. Lastly, a more appropriate model of armed conflict would include in the analysis the notion that economic agents, in this case countries, take into account the reaction of other countries or international institutions to their actions when making decisions. Hence, a game-theoretic approach would be appropriate.

References


