

# An economic analysis of peace keeping and peace enforcing

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## Abstract

*By means of the economic analysis of strategic behavior it is attempted to elucidate the decision making on peace support operations of the armed forces. The analysis reveals that the choice between peace keeping – based on the supposed agreement of the parties involved in the conflict - and peace enforcing – on the basis of escalation dominance – is systematically distorted by the “collective good character” of the intervention. Besides, the implicit economic-game theoretical interpretation of many conflicts as a problem of communication provides a justification for the inadequate employment of resources by the world community.*

## Introduction

In the decision making on a large number of peace operations the choice between a deployment directed at peace keeping or peace enforcing proves to generate a fundamental dilemma. Needless to say, peace keeping operations in themselves form a much more attractive alternative for the intervening parties than peace enforcing operations: the intervention requires less robust military means – with less risk attached for the intervening military personnel – and the attention can be focused more on providing humanitarian aid and rebuilding of the conflict area than on exercising violence. The dilemma emerges because the assessment of a conflict situation as being suitable for peace keeping must be justified and not based on wishful thinking. All too often, one is tempted to see things through rose-colored spectacles and thus assess the required military effort optimistically. The decision making on the deployment of the Netherlands armed forces in Uruzgan is an emphatic case in point.

The present chapter considers how the economic analysis of rational behavior can make a contribution to this decision making. This is not limited to consumer and producers trading individual goods in a market setting. It is also directed at the strategic behavior of rational subjects in pursuit of a collective interest.

Strategic behavior is characteristic for the situations in which military personnel execute their tasks. After all, they are conflict situations in which rational choices with regard to their nature depend on the actions undertaken by an adversary. Therefore,

the economic analysis of strategic behavior can also be applied to the military actions in those conflict situations. Combat as well as peace operations can be studied from an economic perspective for the rationality of the choices involved in them. In the analysis of the choice between peace keeping and peace enforcing in this chapter the economic analysis will be on peace operations in particular.

### **Choice of strategy from an economic perspective**

The economic analysis of rational choices of strategy is known as game theory. It is concerned with the choice behavior of parties (players) in game situations, i.e. in situations in which behavior of partners or adversaries (*allies* or *enemies*) must be taken into account. The economic analysis of these game situations presupposes that each player tries to reach an optimal result with the resources at his disposal. The results to be attained (the *pay-offs* of the game) depend on the utility functions of the players that are supposed to be given.

In game theory there is a distinction between zero-sum games and non-zero sum games. In a zero-sum game the sum of the pay-offs for the players is the same for every outcome. From an economic point of view a zero-sum game is merely a problem of distribution. In a non-zero-sum game there is a *common interest* at stake apart from the distribution problem. When applied to military-strategic problems, combat operations can be characterized as zero-sum games, as the outcomes in the end are either winning or losing. In peace operations, however, there is a non-zero-sum game situation. Apart from a common interest in keeping or restoring peace, each party involved in the conflict usually attempts to win a position of power for itself. Possibly the common use is highest when peace is maintained, although each party reaches the best result by subjecting the other.

In non-zero-sum games the sum of the pay-offs of the separate outcomes is not always the same. So, the comparison of those outcomes does not only form a problem of distribution; it is also possible to discern a common interest – a “common wealth”. This common interest need not always conflict with the partial interests of individual partners. In so-called *cooperative* games the choices of strategy of players exclusively focused on their own interest can nevertheless lead to a harmonious result through the pay-offs that ensue from the cooperation.

		Player B	
		Strategy 1	Strategy 2
Player A	Strategy 1	1,1	0,0
	Strategy 2	0,0	0,0

Table 1 Pay-off matrix: cooperative game

An example from the military is the classic half tent, an item of infantry equipment (which reduces the individual burden and serves as rain protection during the day). Only when two are used together will soldiers have a roof over their heads at night. Table 1 presents such a cooperative game in the abstract. In table 1 the pay-offs of both players are represented by number pairs, to the left row player A and to the right the column player B. In this case only cooperation - the choice for strategy 1 by both players – will yield a positive result. Many military training exercises aimed at reinforcing unit cohesion are based on the construction of such cooperative games.

An economic analysis of the choice behavior is really becoming relevant in a combination of common interest and conflicting partial interests in so-called non-cooperative games. In this combination the common optimum may become unattainable as a result of strategic behavior of parties. Such non-cooperative non-zero-sum games feature in many conflict situations that give occasion to peace operations. After a brief preview, three game forms will be applied to them.

### Peace keeping and peace enforcing

Following the Land Forces Doctrine Publication *Peace Operations* (LDP III 1999) and, incidentally, also the Netherlands Defense Doctrine (NDD, 2005:73), peace operations are considered to be conflict situations that lie somewhere between war and peace, in particular. Control of a conflict can entail different types of peace support operations, for example:

- *Peace making;*
- *Peace keeping;*
- *Peace enforcing;*
- *Peace building;*
- *Conflict prevention, and;*
- *Humanitarian operations.*

This section will concentrate on the contrast types of peace keeping and peace enforcing, which have a special significance in the international legal order, as they are explic-

itly embedded in the UN Charter, in Chapters VI and VII, respectively.

*Peace keeping operations.* These operations are 'directed at containing, decreasing or solving an (armed) conflict between or within states by intervention of a third impartial power' (LDP III, 1999: 16). Peace keeping activities 'are carried out after a peace agreement or cease-fire had led to an environment in which the (extent of) compliance by the parties is high and the threat of new hostilities low' (NDD, 2005: 76) and based on 'the agreement (or at least consent) of the parties involved' (NDD, 2005: 76).

*Peace enforcing operations.* These operations 'are carried out to restore the peace between parties, at least one of which does not agree with the intervention of a peace force' (LDP III, 1999: 17). Peace enforcing activities 'are carried out to restore the peace between the warring parties which – in principle – need not always agree with the intervention of the peace force. These activities ... are often characterized by a high intensity of violence or the threat thereof' (NDD, 2005: 76). Peace enforcing operations are based on superior power with regard to the parties involved.

As was said above, peace operations require a correct adjustment of the military activities to the nature of the conflict in which the intervention takes place. The assessment of which approach would be a correct response in any concrete conflict situation is difficult in these operations. Not only does one have to guard oneself against too small a commitment of resources, there is also the danger of using overwhelming force. Too robust an approach can, for instance, cause the warring factions to turn against the intervention force (together), which will only exacerbate the conflicts.

Peace keeping will normally only require limited military action. Information and communication by means of *observers* and *mediators* are often the most important tools for fostering mutual trust, thus lowering the tendency to use violence. Excessive show of force can sometimes hinder the building up of peace, as is illustrated in LDP III (1999: 71-72) with the following example.

*'The launch of this operation Restore Hope in December 1992 attracted a great deal of media attention. The first marines came ashore at Mogadishu in the full glare of the television lights. The basic principle of the American government was overwhelming force: UNITAF [Unified Task Force] had 37,000 personnel, the bulk of which – 21,000 men – came from the United States. France sent units from the Foreign Legion units and Belgium and Canada supplied parachute battalions. UNITAF confiscated weapons, secured strategic points and escorted convoys. On 4 May 1993, when the American government considered the situation in Somalia stable enough, UNITAF was succeeded by UNOSOM-II [United Nations Operations in Somalia]. This peace force, consisting of 28,000 military personnel, was to monitor the cease fire and guarantee the distribution of humanitarian aid throughout the country. [...] UNOSOM-II soon became embroiled in fighting with militias of the Somali warlords, who, faced with*

*UNITAF's the superior military force of the UN had kept relatively quiet until May 1993. On June 5, however, 24 Pakistani "blue helmets" were killed in an ambush by general Aideed's militia in Mogadishu. After that, UNOSOM declared open season on Aideed and offered a reward for information regarding his whereabouts. On 3 October 1993 this manhunt resulted in heavy fighting on 3 October 1993 between Aideed's militia, on one side, and the American Quick Response Force and UNOSOM units, on the other. 18 Americans lost their lives and there were hundreds of casualties among the Somali militia (and civilians). Almost immediately, the American government announced the withdrawal of its military personnel from Somalia. After this bloodletting, UNOSOM-II soldiered on for a while in a highly volatile environment. Between May and October 1993 a total of 69 members of the peace force were killed and some two hundred UN military personnel were wounded. Most western countries withdrew from UNOSOM-II at the beginning of 1994, leaving only Asian and African contingents. Any credibility in respect of the implementation of the UN mandate, however, was by then long gone. The last blue helmets eventually left Somalia in March 1995.'*

Peace enforcing, however, explicitly calls for escalation dominance during the intervention. When mutual distrust between the parties is at its deepest, it is only possible to prevent aggression by superior power. Acting too weakly makes the intervening outsiders a plaything in the conflict itself, with all its consequences. Another example, this time derived from Military Doctrine (MD, 1996: 194):

*'The warring factions in Bosnia-Herzegovina were continually the peace keeping UNPROFOR operation. Moreover, they had stopped conducting any direct peace talks since early 1994. In order to break the stalemate the international community decided in August 1995 to begin operation Deliberate Force: NATO airplanes attacked Bosnian-Serb targets on a massive scale. The immediate occasion was the shelling of Morale market in Sarajevo, which killed 37 people. These aerial enforcement actions were successful: the Bosnian Serbs pulled back their heavy systems from around Sarajevo and renewed peace talks soon led to the Dayton Accord on the political future of Bosnia. This accord had to be enforced by the NATO IFOR peace force.'*

In making the choice between peace keeping and peace enforcing operations, the existence of actual consent, or absence thereof, from the parties is essential. This consent cannot usually be supposed on the basis of the results of diplomatic talks only. After all, it is often only paid lip service to, even if it is not sincere at all. Therefore, intervening outsiders will have to come up with their own analysis of the conflict situation in order to arrive at an adequate response. The central problem in this is how to carry out such an analysis. Starting from the objectives that the parties aim at and the means at their disposal, economic game theory may be able to show which choices are rational.

Furthermore, the economic game theory can be a basis for formulating predictions about the outcomes of the conflict. Below, a number of non-zero-sum games from the literature will be considered to see whether they can shed some light on the problem of choice.

### Peace keeping in stag hunts

A *stag hunt* - a game described by Rousseau in 1754 - is a collective attempt of a group of hunters to hunt down a deer. The hunt lasts for an entire day and will only be successful if none of the hunters shirks from doing his duty, for instance, by going after a hare on his own as soon as he sees one. The deer will escape, but this hunter at least is sure of his supper.

In themselves the hunters will be inclined to cooperate, as they like a saddle of venison better than juggled hare. But out of fear that one of the others will not cooperate, they may want to be on the safe side and catch a hare or two. Table 2 presents the *stag hunt* game for the hunters in general terms.

		The others	
		Cooperative behavior	Non-cooperative behavior
I	Cooperative behavior	4,4	1,3
	Non-cooperative behavior	3,1	2,2

Table 2 Pay-off matrix: Stag hunt

In table 2 cooperative and non-cooperative behavior are the two distinctive strategies for each player. In the cooperative strategy the hunter focuses on the deer, in the non-cooperative strategy he goes after the hares. Given the preferences – saddle of venison over juggled hare – the utility levels 1(lowest) to 4 (highest) are attributed to the possible outcomes of the game.

The left-hand figure in each pay-off expresses the utility level of the left player, the I-figure. The right-hand figure expresses the utility level of the other hunters. It is supposed that a single hunter can catch more hares if the others remain focused on the deer, than if the hares are for everyone.

In principle everyone benefits from the outcome <4,4>, as there will be saddle of venison on the menu for everyone that night. If, however, the others show themselves to be untrustworthy partners, cooperative behavior will lead to the *sucker pay-off* <1,3>. While the others go home with one or more hares, you stay behind empty-handed.

The *stag hunt* allows us to characterize the choice of strategy of the players as a balanc-

ing between a *risky* and a *safe* alternative. The risky alternative is the choice of strategy that yields a utility level of 4 or 1. In this choice the player gambles on the greatest good (the saddle of venison), but he can also fall to great depths (an empty stomach).

The safe alternative yields a utility level of 3 or 2. The player does not have to fear a disaster scenario, but his dearest wish will never be fulfilled. No matter what, juggled hare – little or plenty – will be his share. This alternative is the result of the players employing the *maximin criterion*, i.e. choosing the strategy in which the lowest possible outcome is maximal (in this case 2 instead of 1). The optimum to aim for, <4,4>, will only be attained if the players are prepared to take risks. A safe strategy by all will lead to <2,2>. Given their common interest, the hunters will only choose the safe (maximin) strategy when they distrust the others. After all, in itself no one will benefit from that outcome.

When applied to peace operations, it can be said in principle that conflict prevention in *stag hunt* cases does not require a great effort. Peace keeping by observers who keep the parties focused is usually sufficient. The comforting information that the other party is not chasing the hares (either) keeps them both on the right path. Assessing a (potential) conflict situation as a stag hunt, brings with it the recommendation for *peace keeping*. At the same time, this is what makes this view attractive from an international political perspective. For instance, by interpreting potential civil wars as *stag hunts*, the international community relieves itself of the obligation to resort to tough measures. Often this interpretation is the basis – justified or not – for a symbolic contribution to conflict solution.

### Peace enforcing in chicken games

In a *chicken game* two young men (to be seen as *gang leaders*) are tempted into proving their metal by racing at each other in a car on the middle of the road at full throttle. The one who swerves to avoid colliding with the other is a *chicken* (coward) and suffers loss of face. Needless to say, such daredevil racing by both parties will lead to a fatal frontal collision. Table 3 presents a *chicken game* in general terms.

		Player B	
		Cooperative behavior	Non-cooperative behavior
Player A	Cooperative behavior	3,3	2,4
	Non-cooperative behavior	4,2	1,1

Table 3 Pay-off matrix: Chicken game

As with the *stag hunt* the *chicken game* has a risky and a safe alternative, and here, too, the greatest good can only be reached through a risky strategy. Safe behavior (swerving) at best yields a loss of face equal to that of the other. In this case, however, the best possible outcome- victory – can only be reached at the expense of the other.

The risky strategy here, therefore, is non-cooperative and does not so much entail the risk of a *sucker pay-off* as that of a body bag. Cooperation in the *chicken game* is safe behavior: swerving to avoid a collision, even if that leads to loss of face.

Armed conflicts can often be interpreted as *chicken games*. A well-known example is the Cuba crisis of 1962: Kennedy's threat of armed action if the Soviet Union does not remove its missiles stationed from the island. In this crisis Kennedy was victorious because Khrushchev eventually made the best of a bad job. In terms of table 3 this can be represented as an  $\langle 4, 2 \rangle$  outcome, with the United States being player A. The United States seems to like to play this game in other situations, too. Thus, it has been calculated that it was able to saddle up its allies – the Gulf States - with the cost of operation *Desert Storm* in Iraq, as the latter were afraid it would otherwise not come to an armed intervention. It seems that in the second Gulf war the United States tried to play a similar game with regard to Saddam Hussein's weapons of mass destruction, but their absence caused the (quasi) victory to fall short of the intended pay-offs of that outcome.

When the *chicken game* is applied to peace support, it can be said that high demands are made upon the intervention. After all, in this game situation parties tend to distrust each other by definition. Stationing observers will not negate the ambition to subjugate the other party – nor the fear that the other is planning the same on you. Therefore, in this case, it is only peace enforcement that can offer security guarantees. Safe behavior,  $\langle 3, 3 \rangle$ , as in table 3 can only be ensured by means of superior power. So, interpreting a conflict situation as a *chicken game* entails an unequivocal recommendation for *peace enforcing*.

### The prisoner's dilemma

The best known game form in the literature is without a doubt the *prisoner's dilemma*. After a brief description of this dilemma, its role in shaping peace operations will be discussed.

Two men suspected of committing a crime together arrested by the police and put in separate cells. Each suspect can confess or remain silent and they both know the consequences of their choice, which are as follows:

1. If one suspect confesses and the other does not, the former will become a crown witness. He will go free and the other goes to jail for twenty years;



2. If both suspects confess, they will both be locked up for five years;
3. When both suspects remain silent, they will be jailed for one year for illegal possession of arms.

It is assumed that there is not something like a thieves' code of honor and that each suspect worries exclusively about his own interest. What should the suspects do under these circumstances? The game is represented in table 4.

		Suspect 2	
		Confess	Not confess
Suspect 1	Confess	5 years, 5 years	0 year, 20 years
	Not Confess	20 years, 0 year	1 year, 1 year

Table 4: Pay-off matrix for the two suspects

In the prisoner's dilemma that rational choice for both prisoners would be to confess, this would come down to five years imprisonment for both of them – of course, not optimal in view of the possible outcomes of table 4. If both had remained silent they would have got away with one year. The dilemma, therefore, has a paradoxical outcome. By acting rationally and striving for an optimal result, the players will nevertheless reach a sub-optimal outcome. In general terms (and distinguishing four utility levels) the *prisoner's dilemma* can be represented as in table 5.

		Player B	
		Cooperative behavior	Non-cooperative behavior
Player A	Cooperative behavior	3,3	1,4
	Non-cooperative behavior	4,1	2,2

Table 5 Pay-off matrix: Prisoner's dilemma

What is characteristic for the dilemma – compared to the two games described above – is that both players have a *dominant strategy*. A strategy is dominant when, irrespective of the opponent's choice, it yields the best result for the player. This makes it impossible to weigh up a risky and a safe alternative, as is the case in the *stag hunt* and *chicken game*. In table 5 the non-cooperative strategy is dominant for both players. This choice of strategy for both players will lead to the pay-off <2,2>. This result, however, is not optimal, as with <3,3> they would have done better.

In armed conflicts, too, – for instance in case of an arms race – it often happens that the parties “burn their fingers” in this way. If several states are striving for hegemony, it can be supposed they will all try to maintain strong armed forces. This may lead to a balance of power which could also have been reached at a much lower level of armament

(and so a higher level of prosperity). The sub-optimal outcome of the *prisoner's dilemma* in case the players have to come to a solution for their conflicts themselves often raises the question how third-party intervention could prevent the choice of non-cooperative behavior and foster cooperative behavior, instead. In case of an armed conflict, therefore, this question relates to the successful approach of the intended conflict control. In all cases the key problem for the players lies in guaranteeing that cooperative behavior will be rewarded and not punished by others. If the parties were able to accept a binding agreement of cooperative behavior, an optimal outcome could be reached.

In that case the question is whether in armed conflicts it can be left to the parties involved to reach such an agreement with general consent by all, or that they have to be coerced. In the *prisoner's dilemma* both options are feasible. From the realization that the outcome  $\langle 3,3 \rangle$  is to be preferred to  $\langle 2,2 \rangle$ , the parties may accept coercion. This happens, for instance, when parties make an appeal together for a binding arbitration.

From an ambition to a pay-off of 4 and fear of a pay-off of 1, however, parties can also remain caught in the dilemma. This can be seen when, for instance, the common exploitation of natural resources in disputed border areas will flounder out of fear that the other party will clear (the majority) of the profits.

The interpretation of a (potential) conflict as a *prisoner's dilemma* will lead to the recommendation to ensure good *communication* between parties. This communication can ensure that the parties get a better eye for the common interest that lies in the optimum  $\langle 3,3 \rangle$ , and, correspondingly, reaching a mutually binding agreement can rely more on consent. A peace support operation that successfully focuses on communication, can stop at *peace keeping*, and need not go over to *peace enforcing*.

Like the *stag hunt*, then, the *prisoner's dilemma* offers the world community an easy way out when confronted with the necessity of an intervention. In virtually all conflict situations it is possible to think up arguments for a diplomatic approach which are difficult to refute. A military solution is only inevitable when real bad guys come into play – a *chicken game*.

### Participation in peace operations

Intervention in regional conflicts by the world community usually takes the guise of a joint action of a number of countries not involved in the conflict. Such alliances (like the Netherlands-German deployment as International Stabilization and Assistance Force – ISAF – in Afghanistan in 2003) will have to address strategic problems with regard to the participation in such a collective action. The economic analysis of that participation, too, can shed a light on why the military contributions made often appear to be too small

to allow an adequately robust intervention. For two equal counties these problems can be modeled as in figure 1 (with the simplified supposition that both countries also have the same preferences). Demand curve VA indicates the preferences of country A with regard to the size of the intervention and the contribution that has to be made for that (quantity and price), demand curve VB mirrors this for country B. The total quantity – size of intervention – is the same for A and B, the price per intervention unit is supposed to be constant (measuring unit is the number of personnel sent out).

In figure 1 the combined willingness-to-pay of country A and B for an intervention smaller than  $Q^E$  exceeds the costs ( $P < P_A + P_B$ ), for an intervention greater than  $Q^E$  it is smaller ( $P > P_A + P_B$ ). Only for  $Q^E$  it is true that  $P = P_A + P_B$ . The combined contribution of A and B are represented by the segment of the rectangle that belongs to the intervention size they have chosen. When A and B each pay for half of the intervention of their preference (so on the basis of  $P_A$  and  $Q^E$  and  $P_B$  and  $Q^E$ , respectively), these contribution also make up half of the total size of figure 1.

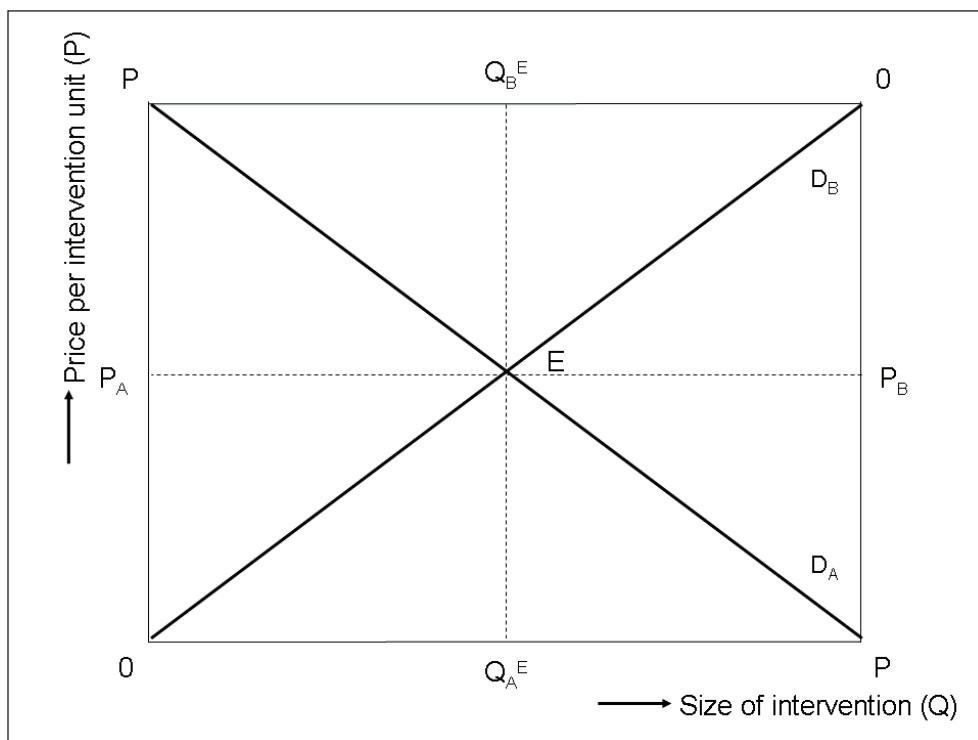


Figure 1 Participation in crisis response operations

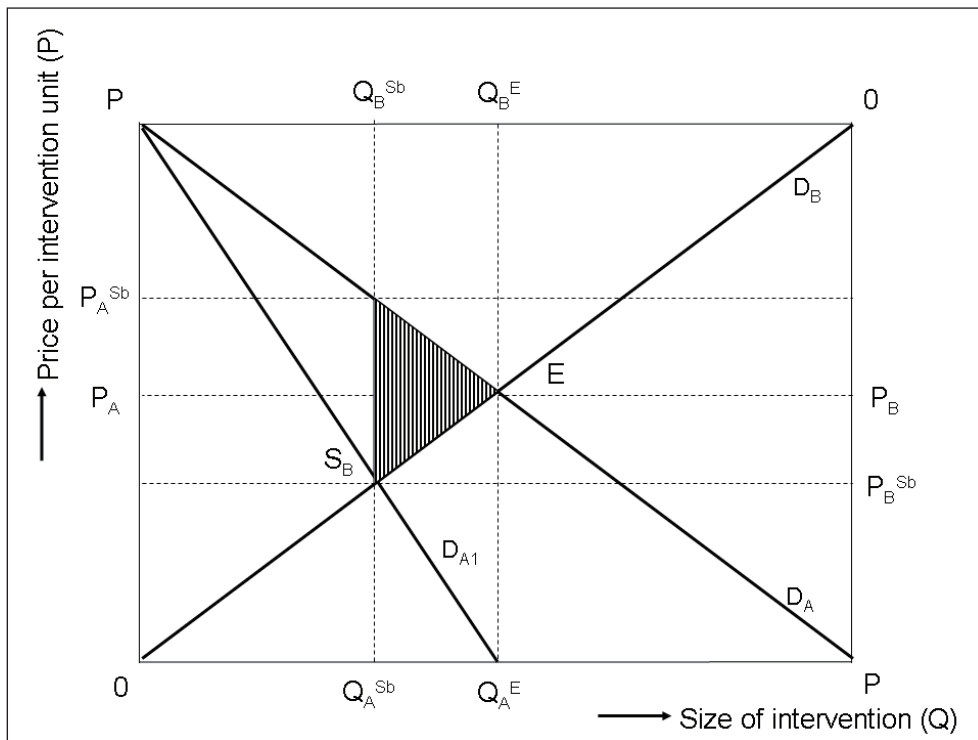
Demand curve  $V_A$  indicates the preferences of country A with regard to the size of the intervention and the contribution that has to be made for that (quantity and price), demand curve  $V_B$  mirrors this for country B. The total quantity – size of intervention – is the same for A and B, the price per intervention unit is supposed to be constant (measuring unit is the number of personnel sent out).

In figure 1 the combined *willingness-to-pay* of country A and B for an intervention smaller than  $Q^E$  exceeds the costs ( $P < P_A + P_B$ ), for an intervention greater than  $Q^E$  it is smaller ( $P > P_A + P_B$ ). Only for  $Q^E$  it is true that  $P = P_A + P_B$ . The combined contribution of A and B are represented by the segment of the rectangle that belongs to the intervention size they have chosen. When A and B each pay for half of the intervention of their preference (so on the basis of  $P_A$  and  $Q^E$  and  $P_B$  and  $Q^E$ , respectively), these contribution also make up half of the total size of figure 1.

In this participation both countries enjoy benefits to the extent of the segment under their demand curves at  $Q_A^E$  and  $Q_B^E$ , so the trapezoid O-P-E-Q (with  $Q=Q_A^E$  and  $Q=Q_B^E$ , respectively). Conversely, the countries also face costs to the value of the rectangles O- $P_A$ -E-Q and O- $P_B$ -E-Q, respectively. Thus, the result – benefits minus costs – is measured for both countries by means of the triangle  $P_A$ -P-E and  $P_B$ -P-E. This equilibrium is in principle ideal: the combined benefit is maximal for the intervention size Q ( $Q_A=Q_B$ ).

The resulting equilibrium can, however, be disturbed when either of the countries tries to optimize its contribution for itself on the basis of a supposed demand function of the other. The combined benefit will be smaller, then, but the share of the country that acts strategically will be bigger.

The economic analysis of strategic behavior can make this clear. Figure 2 represents the situation in which country B tries to achieve a strategic advantage, on the basis of assumed cooperative behavior of country A. Country B assumes that, in accordance with its preferences, country A will pay the price  $P_A$  that comes with demand curve  $V_A$ , irrespective of B's contribution - so, also if country B's contribution does not match its own. Country B can lower its contribution at the expense of country A. It is true, it does not benefit as much (either) from the intervention, but its costs decrease even more, so that on balance it profits from its strategic behavior.



Starting from country A's contribution in conformity with demand curve  $V_A$ , country B can interpret this demand curve as its own average cost curve  $GK_B$ : after all, B will always have to pay  $(P - P_A) = P_B = GK_B$  in order to realize the intervention. This allows B to deduce its so-called *marginal cost* curve  $MK_B = V_{AI}$ . This expresses for every intervention size what the extra costs of an expansion of the operation with extra one unit will be for B, so B's share in the costs of the sending out of one extra soldier. Country B's strategic optimum, then, lies in the balance of B's marginal benefits and costs, so at  $MB_B = V_B = MK_B$ . Moreover, B pays the lower price  $P_B^{Sb}$  for the smaller size  $Q_B^{Sb}$ , whereas A will have to pay a higher price  $P_A^{Sb}$  for the same size  $Q_A^{Sb}$ .

The societal consequences for countries A and B are reflected in the fluctuations of their results. The combined loss – with respect to the optimum  $Q_A = Q_B$  – is represented by the shaded triangle in figure 2. After all, the combined willingness to pay of A and B exceeds the necessary production costs for the units of the commodity between  $Q_A^{Sb}$  ( $Q_B^{Sb}$ ) and  $Q_A^E$  ( $Q_B$ ). This societal loss is the balance of an improved result for country B, which acts strategically, and a deteriorated result for country A.

More often than not, country A will not accept such strategic behavior in a two-party situ-

ation. A similar strategic reaction of this country will result in non-intervention ( $Q=0$ ), which nullifies the entire societal use of the intervention.

Many peace support operations seem to suffer from this shortcoming of strategic behavior. After an initial assessment for a minimal size for the intervention force, only a small fraction is made available in the actual composition. Often, in the hope that the very presence will curb belligerence, the intervention is limited to a symbolic presence in the conflict region. In fact, this is another example of the world community opting for the easy way out of peace keeping rather than peace enforcing. Such a situation occurred in Bosnia, where in 1992 it was generally believed, rising tension necessitated an intervention of a force of at least several tens of thousands. Only when it emerged that the United Nations could not field such a force, did the civil war actually break out. A similar situation perhaps applied to ISAF, where it was hoped that the exclusive presence in the capital Kabul would discipline the war lords in the entire country. The more robust mission that was established years later and in which the Netherlands also participates (Uruzgan), was supposed to put things right. The continual tribal wars in sub-Saharan Africa can serve as another example of failed funding of the collective good of maintaining international rule of law.

The failing interventions of the world community can be elucidated in a game theoretical sense by specifying the demand functions in figure 2. With those specifications it is possible to calculate the pay-offs of parties as their resultant balances of benefits and costs for the various outcomes. As an illustration the simplest form that demand functions can have is taken, in algebraic terms 1:

$$(1) P = -Q + 1$$

Figure 1 above presents a graphic picture of these demand functions, when the total price ( $P = P_A + P_B$ ) is assumed at  $P = 1$  and the maximum price at which A and B are still willing to contribute (with  $Q_A = Q_B$ ) at  $Q = 1$ . The cooperative balance in this figure gives  $P_A = P_B = 1/2$  and  $Q_A = Q_B = 1/2$ . In this balance A as well as B (as the aggregated marginal benefits of  $Q = 1/2$ ) enjoy the value  $3/8$ , whereas both only have to pay  $1/2 \times 1/2 = 1/4$ . So, their pay-offs consists of results to the values of  $\langle 1/8, 1/8 \rangle$ .

In case of strategic behavior of A and/or B the pay-offs change. When B uses A's demand function as its own average cost function, it will optimize in accordance with figure 2 at  $P_B = 1/3$ , with  $P_A = 2/3$  and  $Q_B = Q_A = 1/3$ . Its own (non-cooperative) pay-off amounts to  $5/18 - 1/9 = 1/6$ , with A's pay-off reduced to  $5/18 - 2/9 = 1/18$ . In case of non-cooperative behavior of both parties there is no collective good at all:  $P_A = P_B = 0$  and  $Q_A = Q_B = 0$ . Resorting to a matrix form once more, the following survey of all pay-offs of A and B can be given:

		Country B	
		Cooperative behavior	Non-cooperative behavior
Country A	Cooperative behavior	1/8, 1/8	1/18, 1/6
	Non-cooperative behavior	1/6, 1/18	0, 0

Table 6 Pay off matrix: participation in peace operations

So, the corresponding game form is the *chicken game*. In this way the failing intervention can best be explained as risk preference: with the alternative of high intervention costs the risk of (civil) wars is taken for granted in the hope that the region itself will find a solution for the conflict.

As the mirror image of the chicken game when providing a collective good, the *stag hunt* can explain situations of a threatening collective evil. In general, this holds for attempts to prevent escalation of conflicts through mediation. For example, the continual –though rather halfhearted efforts – the world community makes in the Israeli-Palestine problem is founded on the idea that both parties will eventually benefit from the same outcome (peace between Israel and an independent Palestine state). In this line of thought it would only be the deep-going mutual distrust- and ensuing from it, the reluctance of parties to take mutual security risks directed at peace – that would continue to frustrate the attainment of that solution

The explanation of sub-optimal outcomes should, therefore, not be sought too rashly in dominant non-cooperative strategies within the prisoner's dilemma. In many cases risk preference or risk avoidance can yield those results.

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