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Working Paper

The price system in international relations: A proposal

Diskussionsbeiträge, No. 63

Provided in Cooperation with:

Department of Economics, University of Konstanz

Suggested Citation: Frey, Bruno S. (1975) : The price system in international relations: A proposal, Diskussionsbeiträge, No. 63, Universität Konstanz, Fachbereich Wirtschaftswissenschaften, Konstanz

This Version is available at:

<https://hdl.handle.net/10419/75152>

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THE PRICE SYSTEM IN
INTERNATIONAL RELATIONS:
A PROPOSAL

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April 1975

1975 K 1399

Diskussionsbeiträge
des Fachbereichs Wirtschaftswissenschaften
der Universität Konstanz

Nr. 63

I. Present Conflict Management in International Relations

Today's international politics are characterized by an almost complete absence of use of the price system. There are no prices quoted and compensation is rarely paid for pieces of territory or for rights. This has not always been so: In medieval times territories, towns, villages and rights were freely exchanged and traded for money. The arisal of nationalism has put an end to such transactions using the price mechanism. Since then, international relations are dominated by the bargaining and diplomatic (i.e. the hierarchical) decision-making mechanism. In some areas of minor quantitative importance the price system is still used, such as when refugees are bought free or when development and military assistance is conditional upon some specified behaviour. Even international trade is guided by the price system to a limited extent, only.

The present state of the international system must be described as sad, judging by the huge costs of armaments and the human sufferings and deaths involved with its operation. To say the least: there is Pareto-Suboptimality; enormous possibilities for gains by all countries are not exploited. The situation is aptly represented by the Prisoners' Dilemma in which the dominant strategy consists of mutual armament and where the (stable) equilibrium results in the worst possible outcome.

II. Intention of the paper

This paper endeavours to present some unconventional ideas in order to bring about a more peaceful international system and a reduction of human sufferings and resource losses. These ideas are based on the application of the price system: It is suggested that the problem of international insecurity

may be solved by the introduction of a voluntary market insurance against foreign aggression and by inducing a reduction of armaments through granting appropriate subsidies. This International Insurance should be offered by private profit maximizing firms. It is an important characteristic of the proposal that it does not - unlike most other peace plans - presuppose the existence of a world government but rather uses positive incentives for voluntary cooperation.

Part III of this paper shortly reviews the general economic theory of insurance which in the next part is applied to the international system. Parts V and VI study the insurance guarantee and the international insurance companies' policy towards national armaments. The proposal is compared to existing conflict control (part VII). The paper ends with some remarks on the feasibility and possible effect of the proposal.

III. The General Economic Theory of Insurance

Insurance is a traditional way of coping with risk and uncertainty. Two theoretical approaches can be distinguished:

- (a) General equilibrium theory with contingent markets (see ARROW 1963, 1964; DEBREU 1959; RADNER 1970). If markets for all contingent goods and services existed, there would be no difficulty to reach Pareto-optimality. For a great many such goods no market exists, however, which in ARROW's (1963, p.961) view presents a clear case for government intervention.
- (b) Partial equilibrium theory using the traditional micro-economic tools of consumption and production theory (EHRlich and BECKER 1972).

For practical application, the latter approach seems more useful; it will be followed here.

Actions in the presence of risk and uncertainty

It is important not to consider (market) insurance in isolation but to view the whole spectrum of possible actions to deal with risk and uncertainty. The study of this comprehensive "insurance" decision leads to quite different conclusions from an isolated approach.

There are three major actions possible in the face of risk and uncertainty:

- (a) Market Insurance requires for efficiency an exact determination of the "risk class" of each insurance taker (see e.g. KIHLMSTROM and PAULY 1970, p.378). The supply of insurance will be the more likely, the greater the randomness of events, the more risk-averse the individuals, and the smaller the price elasticity of demand (see PAULY 1974, p.534).
- (b) Self-Insurance leads to a reduction of the size of losses, given the probability of various states of the world. By decreasing the chance of both good and bad outcomes it results in a reduction of dispersion.
- (c) Self-Protection leads to an increase of good outcomes and to a decrease of bad outcomes by reducing the probability of a loss. This reaction to risk and uncertainty is outside the scope of the state-of-the-world approach of general equilibrium which assumes that the probability distribution of the various states are completely determined by nature.

In many instances it is quite difficult to differentiate between the last two types of action; a clear distinction is, however, necessary for analytical purposes as there may be quite different relationships to market insurance.

Relationship between actions

Relationship 1 (R1): Self-insurance and market insurance are substitutes. An increase in the purchase of market insurance reduces the demand for self-insurance. (For a mathematical proof see App. A in EHRLICH and BECKER 1972). This result is not surprising as in both cases a redistribution from good to bad "natural" outcomes is effected.

Relationship 2 (R2): The usual view found in the literature (e.g. ARROW 1962; DEMSETZ 1969, p.7) is that market insurance discourages self-protection. The presence of this substitutive effect is based on the idea that market insurance induces insurance takers to be less careful which increases the probability of hazardous events. This deterrent effect on self-protection is known as "moral hazard" though it has nothing to do with (bad) morals but rather with a rational response to a change in relative prices (or costs). (See PAULY 1968)

A careful analysis shows, however, that the relationship is more complex (EHRLICH and BECKER 1972, p.637 et seq.). There are two opposite effects:

R2a: Market insurance leads to a decrease in self-protection because the latter becomes less worthwhile due to the reduced difference of utilities in the various states of the world. The relationship is substitutive and there exists moral hazard.

R2b: Market insurance and self-protection may be complements provided the insurance price (the premium) adjusts to the change in risk class effected through self-protection. If market insurance is taken, it may be worthwhile to undertake more protective expenditures if it is known that the insurance premium is reduced due to the lower risk.

Relationship 3 (R3): Self-insurance and self-protection are substitutes because the price (i.e. the cost) of self-insurance is fixed and will not be adjusted to a change in risk class brought about by an increasing effort for self-protection. There is again moral hazard.

It will be noted that the relationship between the various actions in the presence of uncertainty and risk depends crucially on how responsive the price of insurance is to the amount spent for self-protection. It is essential for any insurance agency to be able to clearly discriminate between the various risk classes in which the insurance takers place themselves. This information requirement also applies to the problem of "adverse selection" which only arises if the insurance agency is not able to charge more risky insurers with a higher premium than less risky ones (for this problem see AKERLOF 1970).

IV. Application to International System

The actions available to deal with risk and uncertainty and the results concerning the relationships between each other are now applied to the international political system.

- (a) Self-insurance can be identified with "passive defense" aiming at a reduction of losses when there is aggression from outside. An example of passive defense are underground shelters.
- (b) Self-protection can be identified with "active defense" aiming to reduce the probability of attack, i.e. avoiding the chance of getting involved in a war. This can be endeavoured by two different strategies:
 - (α) Non-aggressive and compromising behaviour intending to avoid any unnecessary conflicts.
 - (β) Increase of military defense in order to deter potential aggressors.

In practice, it will in many cases be difficult to distinguish between "passive" and "active" defense. It has, however, already been noted above that this applies to all forms of self-insurance and self-protection, and does not constitute a specific problem of application to international relations.

The application of the general economic theory of insurance is undertaken assuming that the countries react in similar ways to changes in relative prices (costs) as individuals. Countries may be considered for our purposes as compact entities with a utility function¹⁾. This approach has e.g. proved to be theoretically and empirically useful in a similar study concerning nations' reactions to various kinds of foreign aid with their armaments expenditures (FREY 1975). As Becker (1962) has convincingly shown it is not necessary to assume utility maximization. The same results can be analytically derived by just considering the changes in the opportunity set:

Use of relationship R3

According to the general theory of insurance, self-insurance and self-protection are substitutes. An increase of passive defense leads to a reduced incentive to avoid war²⁾. If self-protection consists in behaving peacefully (strategy α), the result predicts a more aggressive behaviour. Peace scientists have indeed come to the same conclusion when they stress the fact that defense weapons may increase the probability of war, perhaps even more than offensive armaments.

The United Nations backed by the major world powers provides another case: Nations know that in a case of local war

¹⁾ It is worth noting here that a very respectable political scientist suggests to turn over international negotiations to private firms (SINGER 1965). In that case it can be expected that the reactions are almost identical to those of an individual.

²⁾ This has been noted by EHRlich and BECKER (1972, p.643).

the UN will sooner or later intervene such that the expected loss is reduced. The UN thus provides a form of insurance¹⁾. Empirical Studies have shown an increase of small local wars since World War II (which may, of course, be attributed to many other causes).

If self-protection consists in military defense (strategy B), self-insurance leads to a reduction in such expenditures, thus cet.par. inviting potential aggression. The probability of war increases but in this case the overall expenditures used for military purposes are higher.

An increase in passive defense thus leads to an unwelcome result. The rational attempt of each country to reduce losses from potential outside aggression increases the chance of war and is likely to increase the total losses.

Supply of market insurance

In view of the widespread insecurity of nations in the international system it is worthwhile to consider the third type of action, namely market insurance offered by private insurance companies against the risk of outside aggression. By using appropriate policies (instruments), the insurance company guarantees territorial integrity as well as international rights, such as open passage through land corridors and on sea. The insured countries are charged a premium corresponding to their risk class. The insurance companies are competing among themselves by offering the cheapest insurance and by best fulfilling the guarantees given.

Countries which find it advantageous to sign such an insurance contract will have an incentive to reduce passive defense.

¹⁾ It cannot be called "self-insurance" because it is provided from the outside, but it is neither a market insurance as there is no premium for the services.

This follows from proposition R1 indicating that market and self-insurance are substitutes.

If the insurance companies are not willing or able to adapt the premium charged to the specific risk class of each country, there is (by relationship R2a) moral hazard: Active defense will be reduced; i.e. the insured countries will behave less peacefully and decrease their expenditures for defense. If, however, the insurance countries take the amount of self-protection into account and charge lower premia because of the reduced risk of attack, the insured countries may find it worthwhile to increase self-protection (see relationship R2b). The introduction of the option for market insurance leads in this case to a more peaceful behaviour and does not dilute the incentives for military preparedness against outside aggression. Thus the probability of war decreases.

The effect of the introduction of market insurance depends crucially on the state of information of insurance companies. Moral hazard may be interpreted as a result of an asymmetry of information (PAULY 1974, p.54): The insured knows the level of his preventive activity while the insurer does not. The prospective reduction of the price of insurance offers an incentive to every insured country to continually advise its insurance company on its state of active defense.

V. Guarantees and their fulfilment

Due to the competition among international insurance agencies the most efficient policies must be sought to prevent the insured nations from outside aggression. The following policy instruments are available:

- (a) Positive sanctions where peaceful and non-aggressive behaviour is rewarded. Though there is a very close

analogy to subsidies as used within nations to bring about changes in behaviour with a minimum of conflict, this specific use of the price system seems to be overlooked not only in practice but also in theory (see BALDWIN 1971). The economic theory of crime¹⁾ relies almost exclusively on punishment to deter illegal action. This constitutes an unnecessary restriction of the scope of instruments.

Though the use of subsidies to induce potential attackers to behave peacefully looks unorthodox today, history books tell of many cases in the middle ages where towns and castles successfully used this instrument.

(b) Compensation for loss

In many cases it may be a superior solution to compensate the insured nation for a (partial) loss of territory or right. It is easy to think of many cases in recent history and today, where it would have been much better to make such an arrangement instead of having a possibly prolonged open or guerilla war with heavy costs in terms of lives and resources.

(c) Negative sanctions

Punishment in the international system may take many forms reaching from calling back aid, to mild economic boycotts, to total blockades, to finally outright military intervention. As the insurance companies are non-government institutions, military actions would have to be undertaken by a volunteer army. It is interesting to note that the UN factually also uses the price system when it hires its "peace troops".

¹⁾ see e.g. BECKER (1968), ROTTENBERG (1973), TULLOCK (1974)

VI. Policy towards armaments

Because of its importance it is useful to specifically consider the insurance agencies' general policy towards military armaments. Their interests are conflicting: As long as it is "pure" defense it is welcome as it reduces the amount of loss and the probability of attacks from the outside. This reduces the chance of war and the expected overall human and material losses.

If, however, the armaments of a country are considered a threat to their own security, by other nations the insurance companies object to it if countries insured with them are negatively affected. Military armaments lead in this case to negative external effects.

Under the circumstances given, two instruments to overcome this externality offer themselves:

- (a) Taxation according to the decrease in security brought about by the subjectively offensive armament. However, no insurance company has the power to tax. It can at best try to tax those countries taking insurance with itself. For any given risk class this would amount to a higher effective premium for such nations, because the pure insurance price is increased by the externality tax. The relative price of insurance is distorted upwards compared to the situation of no market insurance, i.e. compared to self-insurance. The demand for market insurance is smaller than optimal.

The impossibility to tax all countries with offensive armament presents an inherent limitation to the use of taxation. If all nations could be taxed for the negative externality brought about, the relative price of insurance would be unaffected, because the (effective) premium would not vary with the amount of offensive armament.

- (b) Negative external effects can also be controlled by paying subsidies for their reduction. Contrary to taxation, every nation can be given such a subsidy in relation to the reduction in aggressive armament. This subsidy is separated from the price of market insurance and does therefore not distort its demand.

Various problems are connected with the use of subsidies to control negative externalities:

(i) It is not easy to fix a starting point from where on the subsidy is payed. Any potential receiver has at the beginning an incentive to appear to be more aggressive in order to be compensated for a reduction. This problem is quite general with this approach to negative externalities. It can be reduced by connecting subsidies to the length of time a country keeps to a lower level of armament.

(ii) Only empirical research can show whether the price elasticity of disarmament is sufficiently high such that the funds available to the insurance agencies have a sizeable negative effect on expenditures for offensive armaments, and thus represents a significant step towards ending the system of mutual military threats.

(iii) The major problem arises because of the public good effect of subsidizing disarmament by various insurance companies which are competing among themselves. Only if a nation's aggressive armaments are exclusively directed against another country also insured by the same company, there is no such effect: The company may increase profits if it offers a subsidy for disarmament because the positive effect is completely internalized through the reduction of risk experienced by the other country¹⁾.

¹⁾ It is possible that another insurance company now offers the less risk-prone nation an insurance contract with a lower premium. This latter company has a competitive advantage because it did not contribute anything to the subsidy. However, if this company now receives the contract it is forced to continue paying the subsidy because otherwise the country potentially benefitted would otherwise rearm again.

The case described is little realistic, however. In most cases the disarmament induced by a subsidy lowers the risk of attack of many other nations taking insurance from different companies. The subsidy brings about a public good from whose benefits there is no exclusion.

The public good problem would be partly solved if there existed only one insurance company. It would offer disarmament subsidies as long as the marginal gain through the reduction in risk is larger than the marginal cost of paying the subsidy. As long as not all countries are taking insurance (which, of course, cannot be expected) the amount of subsidy would still be suboptimal, because the insurance company cannot internalize all benefits of risk reduction. There is thus a conflict between the efficiency gains to be expected from many insurance companies competing, and the somewhat superior tractability of public goods.

VII. Comparison to present attempts at conflict control

The proposals here developed should for the following reasons lead to a more effective quest for peace than under existing arrangements:

- (a) There are specialized institutions - the insurance agencies - which take over that part of insecurity and risk in the international system which the individual nations are unwilling to take. From this division of labour an increase of efficiency in conflict solving can be expected.

Today, nations are discontinually and often quite rarely confronted with major threats to their security. Consequently, national political leaders are little prepared to, and have little experience in, dealing with such crises. This lack of competence may be one reason for the widespread use of negative (instead of positive)

sanctions in the international system: Threats and military force are easier to understand than the (indirect) working of the price system.

- (b) Due to the competition among insurance agencies the management will probably be more effective. With major inefficiencies no company can survive for any prolonged length of time. If there is only one insurance company, its performance can be measured and judged according to market criteria.

Compare this to now existing international organizations which are extremely bureaucratic. This is not surprising as there is little possibility (and little incentive to member countries) to measure output. There is at best a weak input control which distorts incentives into a wasteful direction.

- (c) The peace policy pursued by the insurance system is active; preventive measures are taken before a conflict has hardened or turned into open aggression.

Today's peace policy by world powers (if existing) and international organizations is reactive; it is undertaken only when a conflict has already lead to losses of lives and resources, and has correspondingly hardened.

- (d) A variety of instruments is used to achieve and maintain peace. Besides bargaining and military intervention, emphasis will be put on positive sanctions where appropriate.

VIII. Concluding Remarks

The World Insurance System proposed has some striking advantages over present conflict management. The comparison is between two comparative institutional arrangements and not relative to the nirvana of an omnipotent and utterly peaceful world government. Unlike the vast majority of peace plans the proposal here developed does not presuppose any central institution which has the power to coerce nations to peaceful behaviour. One may well argue that assuming the existence of a powerful world government begs the question it claims to answer. The main problems are "solved" by assumption and definition.

Disregarding purely management efficiency, it may be thought that only one insurance company is sufficient to achieve the goals stated. A single world insurance company may, however, achieve monopoly power, force unwilling nations to join the insurance or may even decide to maximize profits by an imperialistic policy. The existence of various competing insurance companies precludes this danger as a country which is threatened by one company may insure itself with a competing company as protection covers, of course, also attacks from insurance companies. Competition mutually checks insurance agencies but there is still the danger of cartelization. In order to avoid such a development as much as possible, steps must be taken to keep the insurance market as open as possible.

In view of the possible advantages of the proposal it may be asked why such an international insurance system does not yet exist, especially as ARROW (1962, p.612; 1963, p.961) argues that if insurance existed for every conceivable (possibly risky) event, an optimal allocation of resources would result. However, in the presence of transactions costs - especially asymmetry of information leading

to moral hazard and to adverse selection - the non-existence of insurance may be optimal (PAULY 1968, p.531; DEMSETZ 1969, p.7/8). Thus it is partly an empirical problem whether the transactions costs arising with the establishment of national security insurance are so high as to dominate the corresponding gains. Learning and reality testing in the international system are, on the other hand, extremely low (see BOULDING 1967) so that the extension of market insurance to the international system has for this reason not yet taken place.

The introduction of market insurance for the national security risk combined with an efficient peace management partly using the price system (subsidies) for the reduction of conflict is certainly not THE solution to the sad state of the international system. It must be kept in mind that NO solution - not even the use of the price system - is possible without costs.

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