Economics of International Relations: A General Model of Decision Making

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Abstract

International Relations are a field in Social Sciences that is characterized by a variety of theoretical approaches applied. At the same time economics has never been a separate research method or conceptual framework here despite of the fact that it has been successfully used in interpretation of various kinds of social activity of human for the last decades. This paper demonstrates an attempt to formulate a concept of international relations based on basic methodological assumptions of economics. This conceptualization finds its extension in the general economic model of decision making in international relations.

Keywords: international relations; economics

1. Introduction

The International Relations are usually considered as a special field of research within the political science. The evolution of knowledge here has been always characterized by the domination of concepts associated with political issues. The latter eventually led to the emergence of many theoretical approaches, none of which has become dominant (see Walt, 1998; Snyder, 2004). The "science of international relations" has failed to go beyond the multiplicity of theories that not only differ by their philosophical and methodological assumptions, but also demonstrate various visions of international affairs. The variety of existing theories in international studies leads to the lack of consensus among the scholars and to the fragmentation of knowledge about international relations. As a result, the field always has had ideological color in much greater extent than any scientific field with common methodological guidelines. This all raises the question: Are there any general rules that describe the processes on the international arena? The answer to this question may be found either by the synthesis of the empirically proved theoretical assumptions of the existing concepts, or by the use of alternative research instruments. Economics may be considered here as one of such alternative instruments.

For economists international relations have never been a special area of research. For many years they were concerned with only certain aspects of international interactions: primarily with the problem of coordination of different macroeconomic policies.[1] The attempts to generalize the methodology in this area that were taken during all the second part of the XX century led to the emergence of such a field as *international economics* (Kindleberger, 1953-1973; Salvatore, 1976-1996; Kindleberger, Lindert, 1978, 1982; Salvatore, 1983-2010; Lindert, 1986, 1991; Krugman, Obstfield, 1988-2009; Lindert, Pugel, 1996; Pugel, Lindert, 2000 and others) that is traditionally divided into a number of subfields like the international trade theory (or international trade relations), international finance, international monetary relations and so on. The multiplicity of research interests as well as the variety of theoretical models used in the international economics indicates the absence of a general theoretical approach (or conceptual framework) to the study of international relations in the economic science. Moreover the question of a separate theoretical approach to the study of international relations has never been raised here.

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[1] It should be noted here that the attention of economists to this or that macroeconomic policy has been usually determined by the economic development of the world. After the Second World War and until the 70's these were the questions of trade relations and balance of payments (see e.g. Viner, 1950; Mundell, 1960; Balassa, 1967). In 70's the issues of harmonization of monetary and exchange rate policies came to the fore (see e.g. Bryant, 1980; Williamson, 1983; Branson et all., 1990). From the late 90's the openness of national economies and the regulation of international capital flows became of interest (along with the need to reform the international monetary and financial system) (see e.g. Rogoff, 1999; Sercu, Upal, 2000; Stiglitz, 2010).

It should be noted however that in 70's when economic issues became to dominate on the international political agenda (the collapse of the gold-dollar standard, a global oil crisis and etc.) the economic research on the macroeconomic policy coordination allowed to fill the vacuum between the mainstream international relations theories and the changes that the world faced in reality. By the end of 80's attempts to integrate economic models into the political science based paradigms of international relations had led to the emergence of a new school in international studies - *the political economy of international relations* that is usually considered as "the study of interplay of economics and politics in the world arena" (Frieden, Lake, 2000: 1). Though the first publications in the field appeared decades ago (Gilpin, 1987; Frieden, Lake, 1987; Lairson, Skidmore, 1992) there is still no solid methodological core. The last can be explained by the fact that at least three factors different in their nature can be identified in the formation of the modern political economy of international relations: the methodological expansion of economics in social sciences; the evolution of international economics; the 'renaissance' of the political economy itself as a separate social discipline.

A variety of theoretical models used in international economics and political economy suggests that there is no general economic paradigm of international relations. The main reason is the attention of economists to only certain aspects of international relations. As a result international relations remain to be a kind of "terra incognita" for economics in theoretical sense. In this paper I want to step aside from the existing theoretical approaches in international studies and to construct a general conceptual framework of international relations based on key methodological assumptions of economics. To avoid any confusion I say straight away that this paper is not concerned with questions about the economics contributions to the research field of international relations or reviewing the methodological developments of economic science in study of international issues. It is mostly the result of logical consideration of international relations as a sphere of human activity through the prism of the basic assumptions of economics. These considerations presented in Section 2 find their extension in Section 3 in the general economic model of decision making in International Relations.

2. Economics of International Relations

In scientific literature one can find many different definitions of "international relations". Not appealing to either of them the further analyses would be based on the etymological meaning of the words "international" and "relationship" and as a consequence on the following definition of international relations: *International relations - the interactions that go beyond the jurisdiction of sovereign states.*[2] The emphasis on the state here is made due to its role as a key model of social organization on the present stage of human evolution, or its formal (legal) independence to choose the path of its development (political, economic, etc.), i.e. sovereignty. At the same time this definition allows recognizing not only sovereign states as the actors in international relations but also non-state actors (multi-national corporations, non-state international organizations, NGOs, terrorist groups, etc.) as well as any individual when the consequences of its actions go beyond one country.

Economic analysis implies the use of a certain theoretical model as the main research method. An important aspect here is that any economic model directly or indirectly is methodologically based on the economic model of human behavior. This "methodological individualism" of economics does not mean a further emphasis on individuals as the key (if not the only) actors of international relations. First of all its application leads to a formal statement that all actors in international affairs (including state and non-state actors) should be considered as actors whose actions are derived from human decision-making. In other words the use of the methodology of economics in analysis of international relations lets to identify at least three levels of actors in international relations: the level of individuals; the level of groups of individuals (interest groups, business entities, non-governmental organizations and so on); the level of sovereign states (national governments, intergovernmental organizations). The last two levels can be considered either as an aggregate result of the collective human actions (microeconomic modeling), or as the economic systems (macro-economic modeling).

According to economics, the nature of any subject whose actions are 'human-based' is rational. The question of rationality is one of the most debating in the methodology of economics but in all interpretations the rationality is understood as actions that match subjective preferences or more precisely the satisfaction of individual needs within the existing constraints: subjective capabilities and environment conditions.

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[2] This definition should be considered primarily as a methodological assumption for the further conceptualization. I realize that within the frameworks of the mainstream international relation theories this definition can be criticized and rejected as untenable.

As a result, any individual, group or subject whose actions are based on human decisions can be viewed through three basic aspects: needs, capabilities and environment, where the needs are the subjective perception of certain goods (material or non-material) as required; the capabilities are the ratio of costs and benefits of subjective actions; the environment is external conditions in which the subject acts. Needs, capabilities and external conditions of an individual or a group of individuals form subjective preferences – the evaluations of certain goods in comparison with other goods.[3] International relations would have a similar rational nature from the economic point of view. The actions here are to be focused on obtaining results that meet the subjective preferences. The basic economic aspects of actors of international relations can be defined as follows: needs - as the total demand of a sovereign state or a non-state actor in particular goods; capabilities - as material resources (eg, human resources, financial resources, the availability of certain natural resources and etc.) and non-material resources (such as membership in an international organization) of a sovereign state or a non-state actor; external conditions - as the geo-status (political and economic) of a sovereign state or any other actor in international affairs.

Since all actors in international relations are unique in their needs, capabilities and external conditions the differences in the latter form different subjective preferences that in practice are articulated by national governments, governmental or non-governmental organizations, transnational corporations and so on as official or private interests. If these interests complement each other (ie, an object of interest is the so-called 'private good'), the international relations would be market in their nature and would be determined by demand and supply for the object of interest. In the academic literature these relations are usually referred to the *world economy*. If the interests of actors are partially or completely mutually exclusive (ie, the object of interest is a 'public good') the interactions between them would not be market-oriented and would require an additional negotiation on subjective interests. Such processes are usually referred to the sphere of *world politics*.

The main outcome of any interactions in international affairs would be a process of redistribution of goods in a more advantageous (preferred) 'balance' for actors. The processes of redistribution in international relations may be a result of aggressive activity which usually occurs in the form of military conflicts. However the most rational way for the solution of any conflict in international relations would be an agreement on mutual rights and freedom of actions in respect to the object of the conflict. The latter allows to restrict the reciprocal actions and therefore to reduce the transaction costs and to move to a more effective level of relationship. In international relations these agreements form *the system of international institutions* - the rules of interaction between actors in international relations and mechanisms for their implementation. In addition, as the "rules" international institutions can regulate membership of the interacting subjects in an international organization.[4]

Thus the primary economic conceptualization of international relations leads to the following conclusions. First, international relations are the projection of human decisions. Second, there are three levels of actors in international relations: the level of individuals; the level of groups of individuals (interest groups, business entities, terrorist groups, non-governmental organizations); the level of a sovereign state (national governments, intergovernmental organizations). Third, actors in international relations have different interests, as a consequence of their unequal status (needs, opportunities and external environment), which leads to conflicts of interest between them. Forth, any conflict of interest in international relations results in the process of redistribution between the actors in international relations. Fifth, actors in international relations are ultimately interested in the harmonization of their interests since the institutionalization of international relations allows reaching a better level of distribution of goods between them. Conflict of interest, redistribution process and institutional process are inherent to any interaction in international affairs. At the same time international relations may have either economic (market) nature (if the interests of interacting subjects are complementary) or political (if interests are characterized by partial or complete mutual exclusion).

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[3] The described mechanism of preferences is a synthesis of existing views on the matter in economics. See e.g. Simon, 1956, Buchanan, 1975; Becker, 1976.

[4] The international organizations are considered in this paper as a special case of international institutions involving the presence of a mechanism of collective decision making along with constraints of the rights and freedoms of participants. This interpretation of international organizations coincides with the point of view that exists in the legal literature (see e.g. Schermers, Blokker, 1995: 23). It is important that in such approach international organizations are treated as independent subjects of international relations because they can make decisions (collectively within the organization) that affect the other subjects of international relations.

In the latter case the negotiation of the subjective interests is required, ie creation of an international institution.

3. An Economic Model of Decision Making in International Relations

Subsequent theoretical analysis of international relations in terms of economics requires a model of decision making of actors that interact. The key methodological assumption of this model would be the maximization of subjective utility functions. Therefore the condition for any action in international relations would be an excess of a subjective expected utility (welfare level of an actor) from such action over the expected utility from alternative behavior. Taking into account that the key alternatives in the process of international interaction are agreed or coordinated (with the interests or preferences of the other actors) and independent (from the other actors and their interests) actions this condition may be written as follows:

1)   For the independent (autonomous) actions:

$$E(U_i^S) > E(U_i^I), \text{ or: } E(U_i^S) - E(U_i^I) > 0$$

2)   For the coordinated actions within an institutional framework:

$$E(U_i^I) > E(U_i^S), \text{ or: } E(U_i^I) - E(U_i^S) > 0 \qquad (1)$$

where $E(U_i^I)$ is the expected utility of actor *i* from the institutionally constrained (coordinated) actions; $E(U_i^S)$ is the expected utility of actor *i* from the independent (autonomous) actions.

Suppose there is a situation when any of actors of international relations consider the possibility of coordinated actions in a particular area (i.e., concluding an international agreement or creation of an international institution). The basic parameters of the actors are known (needs, opportunities, and external conditions) and the consequences of their actions are observable. Each actor seeks to satisfy its interests which finds their expression in an aggregate target variable of subject's actions T_i^p that in accordance with the methodology described above is a function of subjective needs through the prism of subjective opportunities and external conditions:

$$T_i^p = \alpha_i \times \beta_i \times \gamma_i$$

where α_i is needs of actor *i* in the area considered, β_i, - opportunities of actor *i* to satisfy the existing needs (α_i), γ_i - external (international) conditions of actor *i*.

The actual implementation of the subjective interests will be:

$$T_i = T_i^p - \upsilon_i \,,$$

where υ_i is a temporary deviation of utility (welfare) of actor *i* (such as a country's GDP from purchasing power parity (PPP), if the actor is a state) as a result of random (independent of the ongoing policy of the actor) event or events (for example, rise in prices for necessary goods in foreign markets or changes in policies of another actor, or a natural disaster).

A single-level approach to modeling international relations is not sufficient to explain the processes of interaction in the modern world which requires expanding the range of factors considered that influence on the policy[5] and actions of the actors in international affairs. In other words, an important condition for understanding the nature of the international relations today is the incorporation of internal social constraints of foreign policy actions in theoretical models. In addition, the model of decision making in international relations must take into account how external (international) factors alter the picture of the interests inside the actors in international relations (e.g., a picture of the interests in society within sovereign states, or the interests of non-state actors in international relations). This determines the use of a multi-level utility function in economic models of decision making in international relations like the following:

$$U_i = b_i(T_i - T_i^e) - \frac{1}{2}(T_i - T_i^*)^2 \,,$$

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[5] Here and after the word "policy" is used in its universal meaning and includes not only the actions of sovereign states, but also of any other actor in international relations.

where T_i^e is the level of expectations of actor i concerning the implementation of its policies / actions; T_i^* is the ideal level of satisfaction of the preferences / interests for actor i; b_i – preferences of actor i for the deviation of its utility (welfare) in case of a random event or events.[6]

The random events can be correlated across subjects within any one period:

$$E(b_i) = \beta_i, E\left[(b_i - \beta_i)^2\right] = \sigma_i^2, E\left[(b_i - \beta_i)(b_j - \beta_j)\right] = \sigma_{ij}$$

$$E(\upsilon_i) = 0, E(\upsilon_i^2) = \tau_i^2, E(\upsilon_i \upsilon_j) = \tau_{ij}, E(b_i \upsilon_j) = 0$$

1. Independent (autonomous) International Relations

In the absence of any agreement between the actors in international relations variable T_i^p is chosen by each of them on the basis of subjective expectations regarding the results of T_i^p realization. The last is a function of actor i needs, opportunities and external conditions with respect to random events. The sequence of events within each period is as follows: (1) the subject forms expectations, (2) the random events are observed, (3) the subject chooses T_i^p.

Given expectations and random events the choice of T_i^p will be determined by maximizing of the utility function with respect to the chosen policy variable:

$$\frac{\partial U}{\partial T_i^p} = b_i - (T_i^p - \upsilon_i - T_i^*) = 0$$

In this case the welfare function is maximizing when the variable T_i^p is equal to the ideal level of satisfaction of interests for an actor corrected by the random events

$$T_i^p = T_i^* + b_i + \upsilon_i$$

Then the actual policy of actor i is:

$$T_i = T_i^* + b_i,$$

and its rational expectation is:

$$T_i^e = T_i^* + \beta_i.$$

Therefore the utility function under independent actions (autonomous interaction) is as follows:

$$U_i^S = \frac{1}{2}b_i^2 - b_i\beta_i - \frac{1}{2}\upsilon_i^2$$

and the expected utility from independent policy depends on the characteristics of the distribution of random events:

$$E(U_i^S) = \frac{1}{2}(\sigma_i^2 - \beta_i^2 - \tau_i^2) \qquad (2)$$

2. Institutional International Relations

In case when the actors in international affairs decide to conclude an agreement or, in other words, to limit their actions in relation to each other within an institutional framework, there should be common interests (or preferences), otherwise such an agreement would not be on the agenda. The level of these common interests T would be defined similarly to the situation of the autonomous behavior of the actors: with respect to the level of expectations - T^e. Expectations are formed by rationally looking ahead to the fulfillment of T. In each period, the sequence of events is similar to the situation of the independent interactions.

The economics stipulates the aim of any institution as maximization of the common expected utility for participants. The last is the average of the weighted welfare sum of participants:

$U = \omega_1 U_1 + \omega_2 U_2 + \ldots + \omega_n U_n,$

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[6] This utility function is one of a kind. Here it is based on the logic of R. Barro and D. Gordon model, describing the relationship between private expectations and social objectives [See Barro, Gordon 1983] and is similar to one formulated by A.Dixit [Dixit 2000] as a further generalization of Barro-Gordon model.

where n is the number of agreement (institution) participants; ω_i are the weights of the actors within the institution ($\omega_i > 0$, $\omega_1 + \omega_2 + \ldots \omega_n = 1$).

As a result the optimal choice of T at given expectations and random events would be defined by maximizing the common welfare function with the respect to common interests' variable:

$$\frac{\partial U}{\partial T} = \sum_i \omega_i \left[b_i - (T - \upsilon_i - T_i^*) \right] = 0$$

So the optimal policy variable T is equal to the sum of the ideal levels of satisfaction of interests for the subjects corrected by the random events weighted by the actors' ω:

$$T = \sum_i \omega_i (T_i^* + b_i + \upsilon_i)$$

The level of actual realization of interests for each of the actors would be:

$$T_i = \sum_{j=1}^{n} \omega_j (T_j^* + b_j + \upsilon_j) - \upsilon_i ,$$

and its rational expectations:

$$T_i^e = \sum_{j=1}^{n} \omega_j (T_j^* + \beta_j)$$

Therefore the utility function for actor i within an institutional framework is as follows:

$$U_i^U = b_i \sum_{j=1}^{n} \omega_j (b_j + \upsilon_j - \beta_j) - b_i \upsilon_i - \frac{1}{2} \left[\sum_{j=1}^{n} \omega_j (T_j^* + b_j + \upsilon_j) - \upsilon_i - T_i^* \right]^2$$

and its expectation will depend not only on the characteristics of the distribution of random events (as in independent interactions), but also on the weight of each actor in an international institution and their ideal levels of interest satisfaction:

$$E(U_i^U) = \sum_{j=1}^{n} \omega_j \sigma_{ij} - \frac{1}{2} \left[\sum_{j=1}^{n} \omega_j (T_j^* + \beta_j) \right]^2 - \frac{1}{2} \sum_{j,k=1}^{n} \omega_j \omega_k (\sigma_{jk} + \tau_{jk})$$

$$- \frac{1}{2} \tau_i - \frac{1}{2} (T_i^*)^2 - \sum_{j=1}^{n} \omega_j \tau_{ij} - T_i^* \sum_{j=1}^{n} \omega_j (T_j^* + \beta_j) \qquad (3)$$

$$= \sum_{j=1}^{n} \omega_j (\sigma_{ij} - \tau_{ij} - T_i^* T_j^* - T_i^* \beta_j) - \frac{1}{2} \left[(\sum_{j=1}^{n} \omega_j (T_j^* + \beta_j))^2 + \sum_{j,k=1}^{n} \omega_j \omega_k (\sigma_{jk} + \tau_{jk}) + \tau_i + (T_i^*)^2 \right]$$

3. The basic conditions for decision making in international relations

As postulated above the economic condition for the subjective choice in international relations between two main alternatives of actions namely independent actions, or institutional-limited actions is the excess of the expected utility of one alternative over another. Combining the expressions (2) and (3) with the condition (1) we get the following conditions for decision making in international relations:

    1) Condition for independent (autonomous) actions:

$$E(U_i^S) - E(U_i^U) = \frac{1}{2} \left[\begin{array}{c} \sigma_i^2 + \beta_i^2 + \tau_i^2 - (\sum_{j=1}^{n} \omega_j (T_j^* + \beta_j))^2 \\ - \sum_{j,k=1}^{n} \omega_j \omega_k (\sigma_{jk} + \tau_{jk}) - \tau_i - (T_i^*)^2 \end{array} \right] - \sum_{j=1}^{n} \omega_j (\sigma_{ij} - \tau_{ij} - T_i^* T_j^* - T_i^* \beta_j) > 0$$

2) Condition for institutionally-bounded actions:

$$E(U_i^U) - E(U_i^S) = \sum_{j=1}^{n} \omega_j (\sigma_{ij} - \tau_{ij} - T_i^* T_j^* - T_i^* \beta_j) - \frac{1}{2} \left[\begin{array}{l} (\sum_{j=1}^{n} \omega_j (T_j^* + \beta_j))^2 + \sum_{j,k=1}^{n} \omega_j \omega_k (\sigma_{jk} + \tau_{jk}) \\ + \tau_i + (T_i^*)^2 + \sigma_i^2 + \beta_i^2 + \tau_i^2 \end{array} \right] > 0$$

The above conditions for independent and institutionally-bounded international relations are based on the theoretical approach the main thesis of which can be formulated as follows: *if changes in external environment experienced by any actors in international relations are asymmetric - an autonomous behavior for these actors would be more effective than institutionally-bounded.* Model variables *v* and *b* simultaneously reflect the symmetry of externalities for the actors and the availability of effective adaptation mechanisms (like the flexibility of internal policy, the internal institutional system and etc.). Thus, the described model can to some extent be regarded as the optimum of potential or existing international institutions or, in other words, as the criteria of efficiency in question of institutionalization of international relations.

4. Conclusion

The approach to the analysis of international relations constructed in this paper is very general. It rather demonstrates a separate methodological "prism" that let to step aside from the traditional views on international processes than a ready-to-apply model. Moreover it suggests further research.

First, the decision to establish an international institution should consider not only the conditions at the time of consideration of this decision, but the expected consequences of the reverse step after the establishment of the institute (the incentives to withdraw from the international agreement). The costs associated with termination of international agreements (not only economic but also political) can be high. As a result the conditions for maintaining an international institution may be less rigid than the conditions for its creation.

Second, the described model takes into account the interaction between actors during one period. This model, however, can be generalized to a dynamic model, where the participating actors expect that the cooperation between them will continue in the future. Thus, the expected benefits and costs in future periods will be weighed with respect to each new period.

Third, the above analysis suggests that the structural parameters of actors are known, and the consequences of random events are observable. At the same time, there can be information asymmetries. If actors have additional information over their well-being (e.g., about situation in national economies) they may provide distorted information in order to influence the policies of another actor or actors in the direction they need. Such behavior may reduce the effectiveness of the existing institutional framework of their relations.

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