POSITIONAL INVESTMENT THEORY AND THE ORIGIN OF CONFLICTS

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Abstract

The paper deals with the possibility of applying the concept of positional investing developed in the framework of cooperative game theory to analyse the causes of non-cooperation, the growth of non-cooperation into conflicts and subsequently to analyse the possibilities of conflict resolution. It is based on the theoretical assumptions of the economics of productive consumption, the supply and demand model of investment resources and investment opportunities, which it uses to describe the mechanism of positional investment. It uses the tools of positional investment analysis, in particular the function or line of neutrality of positional investment. Extends the Nash bargaining problem so that the distribution of payoffs in two-player games respects the neutrality requirement of positional investing. Based on this, it presents a concept of the causes of and possibilities for resolving difficult-to-resolve conflicts. To do so, it also uses the identification of interdependencies between certain types of games.

Keywords: *economics of productive consumption, positional investing, positional investing neutrality function, game theory, Nash bargaining problem*

1. INTRODUCTION

We call positional investing the transformation of an income advantage of one subject into a privilege or an instrument of discrimination through which one subject increases its income at the expense of another subject (or other subjects). It is a very general, or more accurately ubiquitous, phenomenon that occurs wherever the possibility of joint action arises through which the participants can increase their utility. Since this is a rather complex issue, we will narrow its initial interpretation to the case of two subjects. We will show that models of positional investment analysis can be extended to help analyze conflicts of various types and provide theoretical starting points in the search for their resolution.

In previous works, we have addressed the problem of how to use joint action to the benefit of all the actors involved (individuals, groups of individuals, firms, countries), with the important condition of respecting the neutrality assumption of positional investing when sharing the proceeds of joint action.

In this paper, we will show that one source of conflict is the phenomenon of positional investing, which, when it operates in the financial market sphere, is directed against the exploitation of investment opportunities according to their rate of return, i.e. against the equality of opportunities to exploit what the different actors have at their disposal. This can lead to discrimination, consequently to perceived aversions and, in its consequences, to conflicts that are very difficult to resolve. The paper we are presenting shows the general basis of the phenomena related to the above and results in recommendations on how to prevent conflicts of this type or how to resolve conflicts that have already arisen.

2. MATERIALS AND METHODS

We will work with the following concepts:

Positional investing (investing in social position) is a phenomenon in which one subject (if we look at the issue through the prism of game theory - the player) transforms its property or income superiority into instruments, conditions or means of discrimination against another subject (the player), and this discrimination concerns the possibilities of acquiring, preserving and applying its human capital. Here, we understand the term "position" in a more general sense than in financial market investing when

exploiting the effects of the difference between the present and future value of assets (Goldstein, Hastings 2019; Hirsch 1976; Walasek, Bhatia, and Brown 2018).

The economics of productive consumption assumes that even personal or household consumption is a form of investment (in social or human capital), i.e. that consumers or households (or otherwise aggregated larger or smaller groups of people) turn their current income into the creation and operation of a very wide range of assets consisting of, among other things, human or social capital, while at the same time maximizing the present value of future income (Černík, Valenčík, Wawrosz, 2020, Suen 1994; Steger 2002; Soumyanda 2014). In this case, the mechanism of orienting economic agents through utility (utility maximization) only performs a decision-making, not a goal-oriented function. In this view of economic reality, there is a constant transformation of some monetary into non-monetary returns and vice versa of non-monetary into monetary returns (Loomes 1999). At the same time, this approach offers a view of economic reality as a long-term reproductive process. Using and refining the tools of game theory, then, the above view makes it possible to consider all cooperative games as games with transferable utility or transferable payoffs.

The supply and demand of investment resources and investment opportunities (in terms of the economics of productive consumption in the conditions of the existence of positional investing, reduced for simplicity to two players) is based on a relationship between two entities (individuals or groups of persons of different sizes and connected in different ways), who are owners of investment resources and investment opportunities (what can be invested in monetary and non-monetary form and what can be invested in with a certain return), where the lender offers investment resources and demands investment opportunities, the borrower demands investment resources and offers investment opportunities. Assuming the individual rationality of the players, the Pareto optimum is reached, or the assumption of collective rationality is fulfilled, if and when the marginal return on the last realized investment opportunity of both players is equal, the creditor realizes his last investment opportunity from his own investment resources, the debtor from the creditor's resources (Mach, Pokorný, Valenčík 2023).

The basic question (of such a microeconomic model of the financial market) is why investment opportunities are not realized according to their rate of return, regardless of who owns them, or what prevents the Pareto optimum from being reached in this case, i.e. what are the additional conditions for the assumption of collective rationality to be fulfilled (Ball, et all 2001).

The quantity, function and neutrality lines of positional investing reflect the fact that not all payoff distributions are acceptable to both players under the conditions of existence of positional investing. In the general case, the acceptable distributions form a set if we consider the fact that each increment in one player's payoff must be matched by an increment in the other player's payoff, so this set can be viewed as a function or, for simplicity of interpretation, a line. This is a basic tool to be used in analyzing the role of positional investing (Mach, Pokorný, Valenčík 2023).

3. MICROECONOMIC MODEL OF SUPPLY AND DEMAND OF INVESTMENT RESOURCES AND INVESTMENT OPPORTUNITIES

Let us imagine a situation where someone has an opportunity to earn a certain amount of money because they have some profitable investment opportunity. This can take various forms:

- Getting an education.

- Undergo successful knee surgery and pursue a career as a top footballer.

- Begin manufacturing a brand-new product or technology.

- To start extracting a rare and expensive element from a deposit he discovered.

And we could go on. All of the examples are from what actually happened, in some cases repeatedly and in various modifications.

The problem with each of the examples is that the person who has the relevant high-yield investment opportunity may not have the investment means to pursue it. He can borrow those resources. This brings

us to the heart of the problem. How to recognize a situation in which both can increase their income in this way and how to share the result of the joint action?

To do this, we have developed a simple model that shows:

1. The condition of optimal use of investment resources. - This is that the return on the last unit invested in the last investment opportunity of each player must be equal.

2. This is the amount by which the joint income of the player's increases. - This is the sum of the differences (with a positive sign) between what each player would earn if he only pursued those investment opportunities for which he has investment resources (he could not borrow) and how much extra he would earn if he borrows some of his investment resources from a player who does not have sufficiently profitable investment opportunities of his own. That is, from what the investment opportunity for which the player borrows yields, we subtract how much the other player would have gained if he had not borrowed the money and pursued his own, albeit less profitable, investment opportunity.

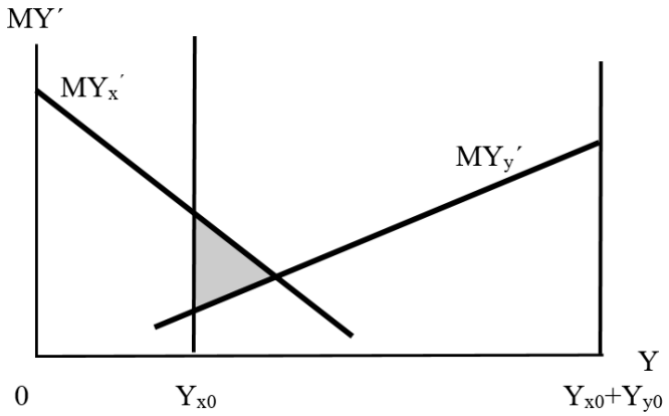

Fig 1. Supply and demand for investment resources and investment opportunities

Source: Own creation

Here:

Y	current income
Y_{x0}, Y_{y0}	investment resources available to players
MY´	future income in marginal variables
$MY_x´$, $MY_y´$	a function of the marginal return on investment opportunities available to players

The grey area on the Fig. 1. represents Pareto improvements that are generated by using one player's investment resources to pursue more profitable investment opportunities available to the other player. But how do the players share the returns generated by the joint action? This is not such a simple matter and the solution rather depends on the cost of the investment resources. It may not be determined by the return on the last unit of investment opportunities at the optimum point, because one of the players may have a stronger position. The phenomenon of positional investing occurs at this point. Following the presented Fig. 1., we can introduce the mechanism of positional investing as the curve or, in our example, the line $MY_x´$ moves downwards while the curve $MY_y´$ moves upwards. This represents the case when the player suppresses or limits the investment opportunities of the other player through positional investing, thereby simultaneously increasing the returns on their own investment opportunities, while decreasing the efficiency of the whole system. Is this just one case of positional investing, or is it a general case that is present in every situation of this type?

There are two ways to interpret the above model in terms of generality:

First alternative: This is one possible case of a relationship involving two players (potential participants in a joint action) that presupposes the existence of a financial market and the associated instruments of investment of one of the players to exploit the investment opportunities of the other player.

Second alternative: This is a general case of a relationship in which there are two players (potential participants in a joint action), whereby the absence of a financial market and the associated instruments for one of the players to invest in the exploitation of the investment opportunities of the other player is a manifestation not only of the underdevelopment of the financial market and its instruments in the area concerned, but also of the presence of the phenomenon of positional investing, which prevents the development of the financial market and its instruments in those directions in which this could increase the degree of equality in the exploitation of the investment opportunities available to the players.

The first alternative would seem to be supported by the fact that there may be conflicts of various kinds between players which have nothing to do with the functioning of the financial market, which mediates the supply and demand for investment resources and investment opportunities. These can be conflicts that escalate to acts of terrorism or warfare in their full hybrid spectrum, but also escalated relations between employees and employers that escalate to strikes and strike suppression efforts (Thomson, Lensberg 1989) in a broader context (Thomson 2003, 2010, 2015).

If we look at the sources of conflicts, we are able to find in virtually every case an inequality in access to the exploitation of investment opportunities available to the players, which is induced, perpetuated and usually exacerbated by positional investing, at the origin and subsequent escalation of conflicts. This is often rooted not only in underlying differences in wealth (which play a major role) but also in differences of national, ethnic, religious, etc. Financial market 'imperfections' then serve not only as a factor preventing the full exploitation of investment opportunities by players who are victims of the discrimination created by positional investing, according to their rate of return, but also as an area in which positional investing brings increasing benefits to those who are able to take advantage of the specific forms of the phenomenon of positional investing (Yuan, L, Ramsey, ST et all, 2023; Valenčík 2023). Aversion, hatred, conflicts, etc. are the result of the fact that the relationship between supply and demand for investment resources and investment opportunities does not work naturally and is not limited only by the natural and surmountable underdevelopment of the financial market in a given area, but specifically by positional investing. These aversions have their origins in positional investing, similar to the experimentally verified reluctance to accept "unfair" distributions in ultimatum games (Güth, Kocher, 2014; Vavra, Sanfey 2018).

4. THE INITIAL CONCEPT OF THE EMERGENCE AND RESOLUTION OF INTRACTABLE CONFLICTS

The role of concepts and models is important in the formation of imagination. It is one of the most important outcomes of game theory. For example, one of the main conflict theorists, T. Schelling (1960/2010; 1969; 1971), focused mainly on these outcomes - and they played a very important role in his time. Therefore, the cultivation of imagination is not just something secondary, but in some cases the most important one.

Recall that the set, function, and neutrality lines of positional investing express the fact that not all payoff distributions are acceptable to both players under the conditions of existence of positional investing. In the general case, the acceptable distributions form a set if we consider that each increment in one player's payoff must be matched by an increment in the other player's payoff, so this set can be viewed as a function or, for simplicity of interpretation, a line. Players may see what is acceptable (belongs to the set of acceptable payoffs) differently.

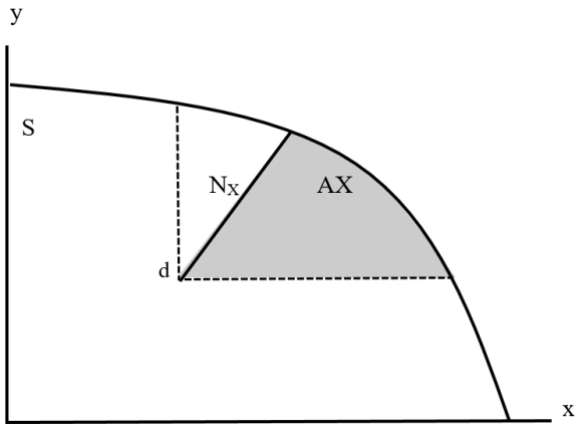

Fig 2. Points acceptable to player X (greyed out area AX)
Source: Own creation

S set of available payout distributions
d point of disagreement (situation before joint action)
AX points acceptable for player X
N_X line of neutrality as seen by player X

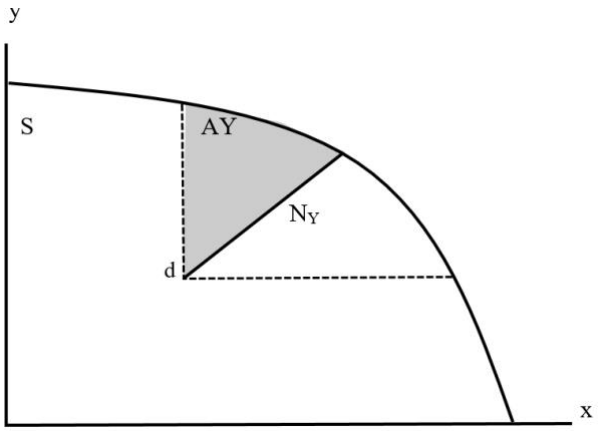

Fig 3. Acceptable points for player Y (grey area AY)
Source: Own creation

S set of available payoff distributions
d point of disagreement (situation before joint action)
AX points acceptable to player Y
N_X line of neutrality as seen by player Y

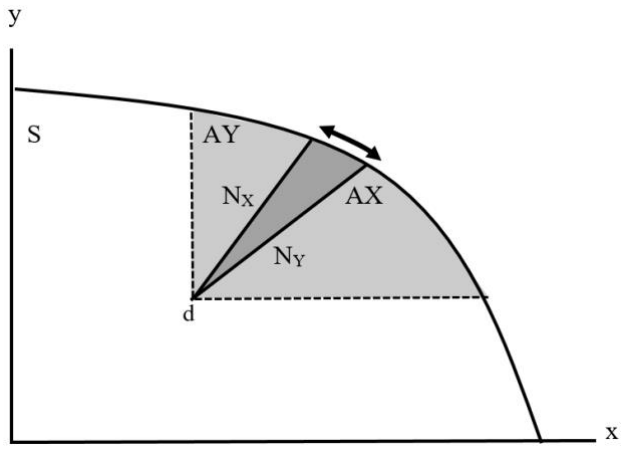

Fig 4. The case where there is room for agreement

Source: Own creation

The case where there is a region of points acceptable to both players (the above regions overlap):

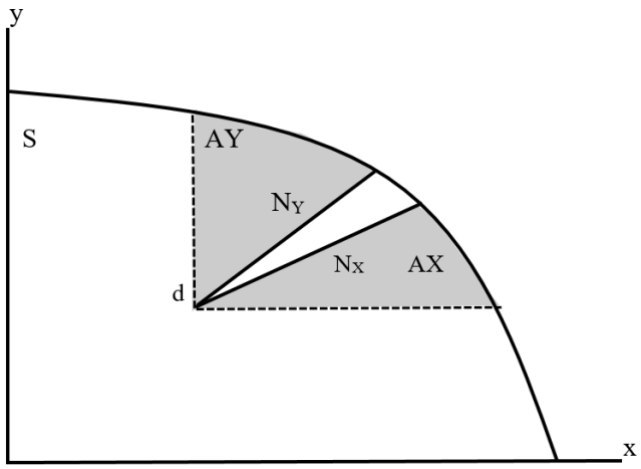

Fig 5. Case where there is no room for agreement

Source: Own creation

In reality, the boundaries between acceptable and unacceptable points are not sharp, for several reasons:

- Each of the participants has only a rough idea of what is acceptable and what is not, what they must reject or rebel against, what they can still accept and what they cannot.

- In most situations, the player is made up of a large group of people who usually have a different view of what is still acceptable and what is no longer.

In general, a gradual percentage change in the payoffs in favour of the second player reduces trust on the part of the first player, and can lead to full-blown distrust, animosity and, gradually, even hatred, including hatred that is so intensely embedded that it is transmitted even across generations.

5. FROM DISAGREEMENT TO CONFRONTATION AND FROM CONFRONTATION TO AGREEMENT

We will link the concept of the impact of positional investing on system efficiency and the concept of the impact of positional investing on trust or mistrust between players.

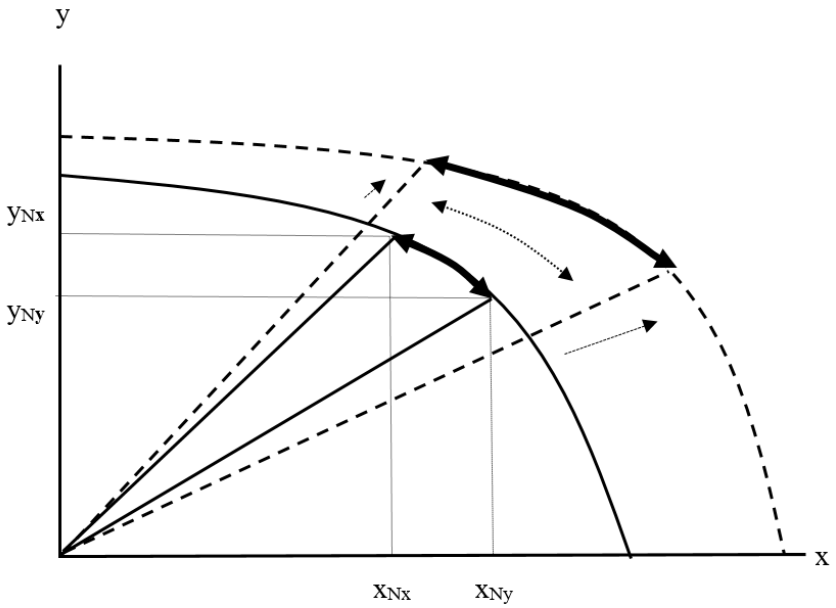

Fig 6. The case of player cooperation and the growth of willingness to cooperate

Source: Own creation

Here:

- By player X with payoffs x we mean those who do not have the option of positional investing and who are affected by the consequences of positional investing; by player Y with payoffs y we mean those who have the option of positional investing and who benefit from the consequences of positional investing.

- There is no sharp boundary between those who form these two groups; in some cases, they may move from one group to the other, which is reflected in a change in the slope of the positional investing neutrality lines as seen by the individual participants in the game.

The initial situation: $x_{Nx} < x_{Ny}$ and at the same time $y_{Ny} < x_{Nx}$, i.e. both players demand, in terms of how they see the neutrality line, a smaller payoff for themselves than the other player is willing to offer. In this case, there is room for agreement:

Player X sees the prospect of increasing the efficiency of the economic system and, consequently, the possibility of increasing his own payoffs. If the expectations are at least partially fulfilled, this has two positive consequences:

- The efficiency of the economic system grows (or its resilience to the stresses it is subjected to by external conditions grows), which can be expressed by a shift in the limit of the achievable distribution of payoffs. This is represented in the figure by the arrows and the dashed curve distinguishing the new frontier of the achievable distribution of payoffs from the original one.

- The slope of the neutrality lines of positional investing changes in the sense of widening the room for agreement.

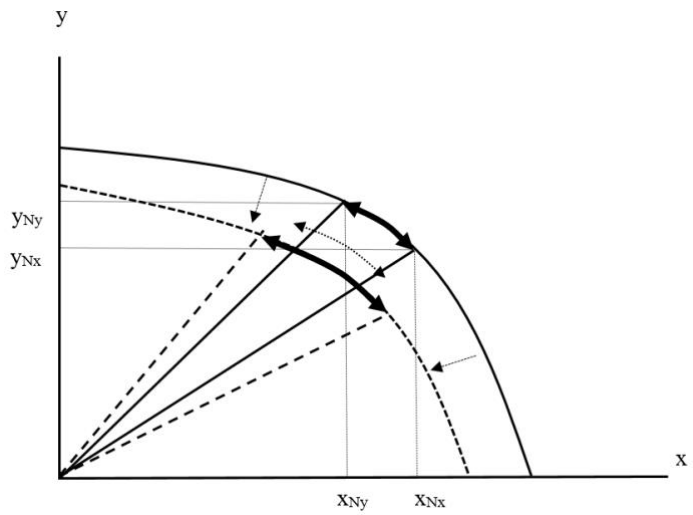

Fig 7. The case of player non-cooperation and the growth of unwillingness to cooperate

Source: Own creation

Initial situation: $x_{Nx} > x_{Ny}$ and at the same time $y_{Ny} > x_{Nx}$

The opposite case to the situation shown in Figure 5, i.e. both players demand, in terms of how they see the neutrality line, a higher payoff for themselves than the other player is willing to offer. In this case, there is no room for agreement:

1. Player X sees the danger of opening up even more room for positional investment. If the negative expectations are fulfilled, this has two negative consequences:

- The efficiency of the economic system decreases (or its resilience to the stresses it is subjected to by external conditions decreases), which can be expressed by shifting the bound on the achievable distribution of payoffs. This is indicated in the figure by the arrows and the dashed curve distinguishing the new frontier of the achievable distribution of payoffs from the original one.

- The slope of the neutrality lines of positional investing changes in the sense of moving away from the area of agreement.

In nature and in society we encounter processes that have an interesting property: they are inertial. As a rule, they are also of considerable importance. Inflation, for example, is an inertial social phenomenon. Uncovering the mechanisms that give the phenomenon of inflation the attribute of inertia is very important. The concept we have presented not only makes it possible to distinguish the opposing tendencies in the development of different systems, but also to identify the very essential components of the mechanisms of inertia of the emergence and intensification of conflicts.

Let us now look at the issue of conflict from the opposite point of view, i.e. from the point of view of increasing the payoffs to players when conflict is resolved. In doing so, we will build on the basic concept of supply and demand of investment resources and investment opportunities, which we have presented, inter alia, in the form of Figure 1. The concept of payoffs from conflict resolution must consider two types of interrelated payoffs:

- The return to the player from shifting investment in positional investment in the conflict (e.g., weaponization) to increasing its own economic potential to enable further development.

- The return to the player from the transfer of investment in positional investment within the conflict (e.g. armaments) into increasing the other player's economic potential as a result of stopping destruction and blocking its investment opportunities.

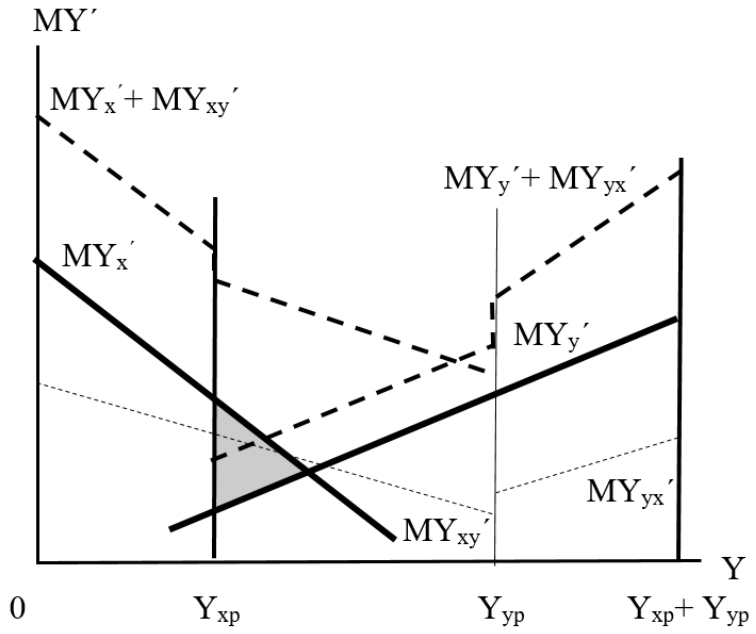

Fig 8. The concept of revenue from conflict resolution

Source: Own creation

Here:

Y, Y´ are the axes of current and future income (Y is not a player designation here, this awkward duplicity of designation arose in a certain tradition of interpretation; we solve the problem by differentiating through italics in the case of current and future income and bold in the case of player designations)

$MX_x´$ the income of player X from converting investments in positional investment in conflict (weaponization) into increasing his own economic potential to enable further development.

$MX_y´$ the return to player X from shifting investment in positional investment in conflict (armaments) to increasing player Y's economic potential as a result of stopping destruction and blocking his investment opportunities.

$MX= MX_x+MX_y$

Similarly

MY_y the return to player Y from converting investment in positional investment in conflict (weaponization) into increasing its own economic potential to enable further development.

MY_x the return to player Y from shifting investment in positional investment in conflict (armaments) into increasing player X's economic potential as a result of stopping destruction and blocking his investment opportunities.

$MY= MY_y+MX_x$

The gradual reduction in the size of the investment in positional investment that is the source of the respective effects is from left to right from the origin of the coordinates in the case of player X and from right to left in the case of player Y from $Y_{xp}+Y_{yp}$, i.e. the point of the sum of the resources invested in positional investment by one and the other player.

Reduction of the player's returns from positional investing due to the transfer of investments from positional investing in conflict (armaments) to increasing his own economic potential to enable further development. It must also be considered that there is an increase in risk for the player resulting from the

diversion of investment from positional investment in conflict (armaments) into increasing his own economic potential to enable further development. (The more he stops investing in his position in conflict, the more vulnerable he may become.) The possibility of creating (improving) the conditions in the relationship for the investment opportunities available to the players to be exploited according to their rate of return. (This is the form of cooperation that should be sought prospectively.)

Now we just need to shift it by the players' payoffs from closing the conflicts x_y and y_x, which we get from the previous figure.

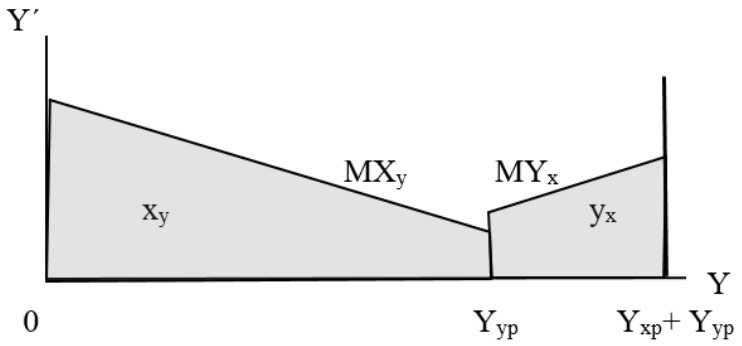

Fig 9. Players' payoffs from closing the conflicts

Source: Own creation

Shift the entire figure expressing Pareto solutions that allow the use of others' investment resources to realize their own investment opportunities (from the perspective of one player), which is the same as the use of their own investment resources to realize others' investment opportunities (from the perspective of the other player), to the point (x_y, y_x) and we have the total payoffs from conflict termination and cooperation establishment in the period of restoring the damage done by the conflict, see the following figure.

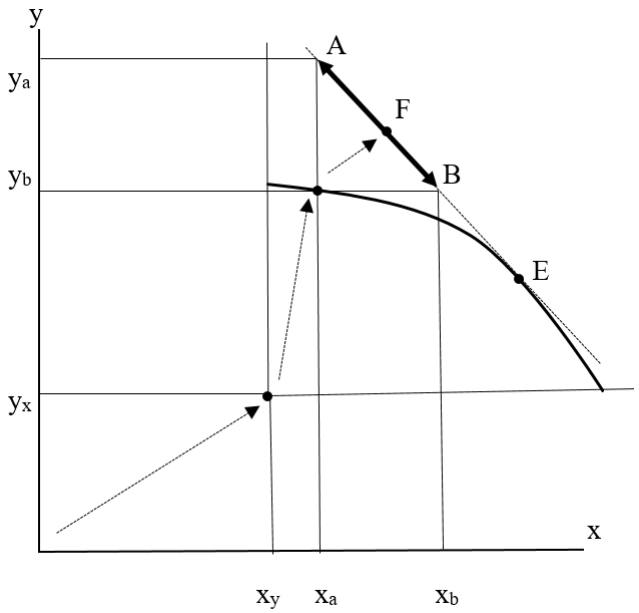

Fig 10. Players' payoffs from closing the conflicts

Source: Own creation

This figure shows very clearly the three steps of moving from a difficult conflict to full resolution and renewed cooperation:

- The first step is indicated by the arrow at the bottom left from the origin of the coordinates to the point (x_y, y_x), i.e. from the initial state to the improvement due to the cessation of mutual harm to the players in the form of the most harmful form of positional investing.

- The second step is shift indicated by middle arrow from the point (x_y, y_x) to the point (x_a, y_a), i.e. when players transfer their investment resources from positional investing (in the form of harming the opponent) to exploiting their own investment opportunities.

- The third step, following the second, is from point (x_a, y_a) to point F (the final point), which leads to the restoration of a situation in which one's own investment resources are used to realize one's own investment opportunities (from the perspective of one player), which is the same as using one's own investment resources to realize one's own investment opportunities (from the perspective of the other player).

Recall that the origin of the conflict is to be found in the unequal access to investment opportunities according to their rate of return, which is a consequence of positional investing in its milder forms, but is experienced as discrimination by the player who is a victim of the original forms of positional investing. His defence against the original forms of discrimination may then lead to the emergence and escalation of conflict. That is, ending the conflict with a third step is not just some extra effect, but an important prerequisite for a lasting resolution of the conflict and the elimination of the ground for its renewal. This is one of the very important and original results of the approach we propose to identify and analyze the phenomenon of positional investing. Without the apparatus we have developed, we would not have made this fact visible.

The use of others' investment resources to realize one's own investment opportunities (from the perspective of one player), which is the same as the use of one's own investment resources to realize others' investment opportunities (from the perspective of the other player), is also important because, as a result of an escalated long-term conflict, especially if one of the players is defeated (but this is not a necessary condition), its investment resources are exhausted. Therefore, the use of alien investment resources offers very high returns.

A prerequisite for using all three steps is a full change in the preferences of one or both players. The latter is the result of other games, which, although induced (excited) by the conflict, are then governed by their own logic. For the identification and analysis of such games, the concept we have proposed and presented in the previous and this sequel is important, e.g., in estimating the parameters of two-matrix games describing the dilemmas of the players involved in games associated with preference change, but it is not sufficient.

6. RESULTS AND DISCUSSION

We have presented a very general concept that shows that social reality can be viewed as a multidimensional space of interrelated and hierarchically structured conglomerates of games in which cooperation and non-cooperation, non-cooperation and the emergence of conflict, conflict resolution and the restoration of cooperation are closely related. The results of our approach are particularly useful in the area that is associated with the expansion of imagination in a similar way as the aforementioned T. Schelling, for example, tried to strengthen the rational elements of human decision-making.

The task of further investigation is to find out to what extent people of different ages, education, etc. include the following facts in their decision making, i.e., that in every joint action:

- It is the interaction of supply and demand of investment resources and investment opportunities between players.

- There are variously developed mechanisms for converting returns into a form transferable between players.

- There may be positional investing in the form of the use of investment resources to suppress investment opportunities available to one player by the other player.

- It is the distribution of the proceeds obtained by joint action between the players.

- Each of the players has a certain idea of the set (usually in the form of a function) of positional neutrality, which may be perceived differently by the players due to incomplete information.

- There is the possibility of a defense against positional investing by a player who is discriminated by positional investing.

- Defenses against positional investing can escalate into conflict, where players try to gain a stronger position by harming each other.

- These realities are reflected in the resolution of game dilemmas through which players perceive and judge reality.

- This creates certain preconditions for interaction with the environment in the form of coalition-building in the area of positional investing, both by those who use positional investing and those who are victims of it.

7. CONCLUSIONS

The results we have arrived at and presented in the summary can also be seen as a kind of ontology related to the field of game theory application, respecting the interaction of the different games. If we do not take into account the ontology of the game form of social reality outlined by the above concepts, we may miss the most important point when trying to apply game theory to specific practical tasks. The analysis of individual fragments of reality through a certain summation of methodologically unconnected models is a developmental stage of game theory that most theories in biology, elementary particle physics, etc. have already passed through in their development, from which game theory can learn lessons and take valuable experience. That the time has come for a certain shift towards concepts and, consequently, models that allow a more comprehensive approach to the use of game theory may be partly reflected in what this paper brings not only to experts but also to non-experts in game theory.

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