
Representation Theory

One of the main motivations of the theory of enterprises is that they provide the generalization of the e.p.r.s rules. This continues also in formation of e.p.r.s institutions of more complex structure through an aggregation. Namely, as it was already shown in Chapter 2 by Example 2.35, if an enterprise is represented in a simple form by vector spaces V, W then it is also represented in an aggregate simple form by economic space $V \otimes W$. One may say that the representations of the enterprise allow aggregation among themselves. This is one of the main properties of e.p.r.s rules representations, and is also very important property for enterprises as elementary e.p.r.s institutions. This property has already been used several times in constructing some of the enterprises in previous Chapters. In this Chapter it is studied more precisely and the theory of economic clubs within EPRT is developed.

From formal point of view, theory of e.p.r.s clubs is actually an application of the category theory into economic phenomena of interest. An economic club is just a collection of members (economic objects, i.e. enterprises and their representations in this case), and a specification of what it is to be an allowed economic relation or transaction between any two of them. This approach allows us to introduce a notion of an e.r.p.s appropriation (being a functor) and a notion of an e.p.r.s transformation or economic implementable policy (natural transformation) in order to explain what should be meant by a characterization of being 'economic natural' for certain economic transactions and/or e.p.r.s institutions in the club. This will also help us to avoid mistaking notions of an economic equality for isotransactions. In addition, in dealing with e.p.r.s institutions one faces necessity to adopt the working compromise of an intuitive or naive approach in developing theory of e.p.r.s institutions to traditional economic theory, a complete rigorous axiomatic development being out of reach. At the same time careful examination of the foundations is required if one wants to avoid paradoxical situations. From point of view of game theory this will allow us to overcome some of conflicts in the sustainable way and to deal with the complexity of wealth flows within and among different e.r.p.s institutions.

In Section 4.1 a few fundamentals of club theory are given, trying to be informal and nontechnical as much as possible. Beside necessary definitions, some properties of general clubs and leading clubs are studied. One may recall that according to the traditional economic theories economic agents and/or institutions are either efficient, profitable, winners or not; there is not much more to be said. The idea of a club concept is to allow more sophisticated economic analysis where members may carry elements of imperfection and inefficiency, but still to be ‘the efficient in a way’. In other words unequal e.p.r.s collections may be considered in an exchange but still be supported by an economic transaction which is an isotransaction. Even better one can keep track of the way they are efficient: the isotransaction itself. This underlies the modern concept of economic laws: as a member can be ‘economic efficient and itself carrying elements of inefficiency’, it has an e.p.r.s symmetric rule that internalize these elements of imperfection forming its rule on autotransactions. It is important to note that in a club this careful distinction between economic equality and isotransaction breaks down when we study the general economic transactions. Transactions in a club are either efficient or inefficient and the problem can be overcome by appropriate extension of a club. Here are also given some theorems about general leading clubs, not necessarily coming from a biagreement or an enterprise, such as the construction of a dual leading club.

In Section 4.2 the generalizations of open biagreements or open enterprises, as the continuation of Chapter 3, are discussed. The structure of opening or universal ‘market relations’ is new ingredient and it appears that it is just what is needed to ensure an economic equality between any two representations in a coherent way. One takes such quasisymmetries for granted in case of simple economic rules representations, where they are just usual permutations at the level of underlying vector spaces. However in the general case of e.r.p.s rule they are more complicated since permutation itself carries an e.r.p.s inequality. In this way, the club of representations becomes a leading club with transfers, transferred leading club, or quasiaggregate club, that incorporates sophisticated economic transactions among its members and other clubs. Here the idea is to show how many of e.p.r.s phenomena and constructions in previous chapters can now be understood very conveniently in these club terms, enabling one to follow economic concepts that underlie them rather than to use some formulae. In particular, the club rationality about standard agreements, or system of e.p.r.s covariant rules, is developed. As was already mentioned in Chapter 2, a standard agreement just means an agreement which is a member in the club of representations of an e.p.r.s. rule. So each e.p.r.s rule generates a club or ‘economic universe’ in which its covariant agreements are valid. The extensions of these ideas are going to allow us to examine the covariant agreements that allow transfer statistics. For example, one become able to construct superagreements with private-public statistics. These being forms of agreements which are elements of the club or economic universe generated by a nontrivial e.p.r.s rule of private investments combined with public (‘welfare’) risk transfers. Thus, here conditions are examined for unifying notions