

Definition of Enterprises

In this Chapter the definitions and basic elements of economic property rights theory (EPRT), that will be needed throughout this program are provided. They are based mostly on standard material of Hopf algebras with an emphasis on economic applications by appropriate economic interpretations. Some examples and exercises are also given to link EPRT with traditional economic models, primarily those within general economic equilibrium theory. More examples and concrete economic problems are discussed in Chapter 3 where we turn to the advances of the theory with emphasis on open enterprises. I would suggest that every reader work through the present elementary Chapter and at least the first part of the next Chapter in detail since these sections are central for understanding much of the later advanced and more complex material.

2.1 Basic Elements of Formalization

As already mentioned, what one, we may say Ann, is searching for refers to an institutionalized system of economic agreements, where ‘to institutionalize’ roughly means to shape the enterprise in the way that suits partners’ economic property rights (e.p.r.s) interests. Namely, the structures of agreements and coagreements are to be interrelated by certain economic rules or laws, that partners accept in an agreeable way. Each has some understanding of her/his economic rationality concerning her/his assets (capital and knowledge), as locally compact economic rules that each obeys. Their economic behavior implied from these rules then defines each one as an agent and partner. Some economic rules (accepted by both), that are going to shape their economic reality over their relations within an enterprise, are to be established. This also includes the duals of the rules. The general understanding is that in formation of a concept of an enterprise, as an e.p.r.s entity, one should first start with a simple rule or an economic game on a domain of economic claims of partners, as a general description of initial relations they are in. This original

object of their economic relations may later ‘disappear’, but it lives on in the various agreements associated with the economic environment they have built up. Having in mind dynamic setting of the e.p.r.s relations, an agent (Ann) should first replace a locally compact set of relations with a partner (Bob), defined by the rules of agreements, G , by schema of expansions of e.p.r.s that concern her, $C(G)$ together with the suitable co-rule of expansions of e.p.r.s that concerns a partner (Bob). This corule, which is actually a perception of extensions of e.p.r.s from partners’ (Bob’s) point of view, is determined by the rule of expansions of e.p.r.s concerning the agent (her). The idea is that in formalization of the problem, expansions/coexpansions of e.p.r.s are modeled by multiplication and comultiplication, respectively. In that way, one gets a concept of a biagreement, and if one has an economic characterization of these biagreements, one could presumably institutionalize them by replacing the agreements based on standard economic relations with the collections of extended economic agreements. Then the crucial point in defining an enterprise, in an axiomatic way, is that it should neither presuppose the existence of a fixed valuation concept of the e.p.r.s involved, nor the existence of mutual understanding among partners. The primary application of the valuation concept is to show that an enterprise has a non-trivial economic argumentation theory. Thus, a significant axiomatization should be accompanied by non-trivial argumentation/coargumentation theorems of an enterprise.

The following elements of an axiomatic construction of an enterprise considered as an e.p.r.s institution are to be defined:

- (i) How an agent, initiator of an enterprise (Ann), perceives structure of e.p.r.s in the enterprise - structure of an agreement;
- (ii) How a coagent, partner in an enterprise (Bob), perceives structure of e.p.r.s in the enterprise - structure of a coagreement;
- (iii) Partners’ (Ann’s and Bob’s) perception of an entrepreneurial structure of e.p.r.s in a dynamic setting - structure of a biagreement, and finally;
- (iv) Conditions for mutual understanding of partners in an enterprise or conditions of sustainability of e.p.r.s relations in an enterprise.

2.1.1 Agreement and Coagreement

Throughout this section we let \mathbf{h} be a field of economic claims of agents considered as a domain e.p.r.s on which agents are arranging their economic relations. Aggregation of e.p.r.s is built on an underlying assumption that agents’ economic rationality on their endowments (capital and knowledge) shapes the procedure. Formally it is built by tensor products over \mathbf{h} , unless stated otherwise. Later on modified tensor products will be in focus to model some particular forms in aggregation of e.p.r.s relations of agents involved.

Definitions

We first express the basic properties of an agreement initiated by an agent (let us say by Ann) via maps of e.p.r.s, so that we may dualize them.