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AN ATTEMPT TO CREATE A MULTIDIMENSIONAL THEORY OF THE FIRM:

Taking a Generalised Perspective

J. KAPÁS

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The paper proposes a possible method for further developing the theory of the firm in a generalised way. It argues that a more general theory of the firm, called multidimensional theory of the firm, has to be built upon more realistic behavioural assumptions. As such an assumption, the Misesian human action concept is proposed, whose main advantage is that – as an integrated action – it encompasses both the calculative and the entrepreneurial elements in human behaviour. Four dimensions are established, the first three (core, market, entrepreneurial dimensions) represent the essential components of content for the understanding of the firm, and the fourth one (time dimension) makes it possible to consider the firm as something operating in real time. It is also shown how these dimensions are interconnected.

Keywords: firm, market, entrepreneurship, transaction cost, knowledge co-ordination

JEL classification index: B53, D23, L22

1. INTRODUCTION

While admitting that both the contractual and the evolutionary-competence-based theories of the firm provide significant explanation for the essence and nature of the firm, this paper presses forward a new perspective in the theory of the firm. Accordingly, the problem is that the existing theories give only a part of the explanation for the existence and the boundaries of the firm. The danger is that if the two branches of the theories continue to develop on their own, separately from each other, we will have only partial explanations of the firm, which are valid only for given circumstances. A theory combining more aspects to give a more generalised explanation of the firm is necessary.

Correspondence: J. Kapás, Department of Economics, Faculty of Economics and Business Administration, University of Debrecen, Kassai u. 26. H-4028 Debrecen, Hungary. E-mail: jkapas@delfin.unideb.hu

The paper aims to sketch a more general theory of the firm, called multidimensional theory of the firm.

The paper is organised as follows. In Section 2, I discuss the reasons why a new approach is needed in the theory of the firm. In Section 3, as a starting point for the theory, the Misesian human action concept is presented (Mises 1949). In Section 4, I establish the four dimensions of a more general theory. These dimensions, i.e. core, market, entrepreneurial and time dimensions are analysed in Sections 5 to 8. Section 9 gives a brief summary and makes some conclusions as regards the interconnection of the dimensions.

2. WHY A NEW APPROACH?

The *contractual theories*[1] and the *evolutionary-competence-based*[2] *theories* of the firm represent the two main branches of the theory of the firm (Foss 1993; Augier et al. 2000), which are alternative theories in the sense that they address the same issues. More recently some authors (Foss 1994b; Hodgson 1998a, 1998b) argue that these two branches also complement each other, and both could be richer by implementing certain views of the other theory. There are attempts to make a bridge between them (Langlois 1992; Noteboom 1992; Teece et al. 1997). These authors, not satisfied with the contractual theories, try to inject some dynamic aspects into it. Therefore, the overall theory of the firm has become more accurate, but the basic problem of the theory of the firm is still not solved.

The contractual theories and the evolutionary-competence-based theories of the firm must be regarded persistently as two alternative theories of the firm. Both are developing mainly within their own framework without any intellectual contact with the other one. In many special areas concerning the problems of the theory of the firm, we are given more detailed answers, but the truth is that nei-

[1] Four major, (relatively) homogeneous groups of theory can be distinguished (Foss 1993): (1) the nexus of contracts view (Alchian and Demsetz 1972; Jensen and Meckling 1976; Cheung 1983), (2) formal principal-agent theory (Holmström 1979), (3) the theory of transaction costs (Williamson 1985, 1996), and (4) the theory of property rights (Hart 1995).

[2] This branch of theories of the firm is not a homogeneous one, it consists of views that share some common features. The main building blocks of this theory are the following: (1) Nelson and Winter's evolutionary theory (1982), (2) competence theory (Pelikan 1988; Eliasson 1990), (3) resource-based theory of the firm (Peteraf 1993), (4) Austrian theory of the firm. It is not my intention here to discuss whether the Austrian theory of the firm is or should be developed. There is no doubt that some authors (Foss 1994a, 1997; Dulbecco 1998; Garrouste 1999, 2001; Ioannides 1999a, 1999b; Dulbecco and Garrouste 2000) have come up with ideas about the firm in the Austrian tradition.

ther of them can answer the grand questions of the theory of the firm[3] in a general way, which is moreover desirable for reasons I will argue later. Alternative theories are always specific (not general) ones, and they are valid only in a limited number of cases.[4] Consequently, intensive efforts should be made to develop a general theory.

We do not have a single methodological criterion to judge any economic theory true or false. Therefore, some economists (Friedman 1953; Caldwell 1983) talk about better or worse theories as compared to other ones. Caldwell (1983) proposes several criteria for the evaluation of theories, which should always depend on the purpose of the theory in question. Such criteria can be predictive adequacy, simplicity, generality, heuristic value, mathematical elegance, and plausibility (Caldwell 1983, p. 824). In order to develop any theory into a better one, one has to determine a criterion first on the basis of which the theory can be improved. In the case of the theory of the firm, generality could be such a criterion.

A more general theory of the firm should be based on less strict, i.e. more realistic assumptions. Accordingly, the realism of assumptions – at least in the theory of the firm – is an important issue,[5] the distance between theoretical propositions and reality (empirical evidences) is the measuring-staff of the "goodness" of the theory.[6] The issue of the realism of assumptions is related to the "fine-tuning" of the theory, which leads to a more general theory.

Any specific theory has its own logic, structure, categories, and explaining apparatus its character depends on. These things result from the initial assumptions of the theory. Once we make strict assumptions, the theory must inevitably be a specific one. Being specific, a theory has a restricted angle to consider the thing in question. This restricted consideration of the firm must be regarded as an important issue. This means that the contractual and the evolutionary-competence-based theories of the firm strive to answer the questions of the theory of the firm only from a single point of view. This can only be solved by using a new framework or perspective combining some new concepts.

The above-mentioned theories address only one issue to explain the firm, namely the character of the problem the firm solves. All propositions of these

3 These are the following: (1) existence, (2) boundaries, and (3) the internal organisation of the firm (Foss 1993).

4 This is due to the fact that these theories are based on strict assumptions.

5 Economists do not share the same views regarding the realism of assumptions. Friedman's position is perhaps the most known in this matter. He argues that the falsity of assumptions does not matter if the consequences are true (1953, p. 19). All this leads Friedman not to refuse the use of false assumptions. His famous "as if" theory refers to this issue.

6 A more general theory of the firm is consistent with Smith's opinion: "Better theory that narrows the distance between theory and observation is always welcome" (Smith 1989, p. 152).

theories result from the answer to the following question: What kind of economic problem is solved by the existence of the firm? This is only one of the dimensions to consider the three questions of the theory of the firm. I term the contractual and the evolutionary-competence-based theories of the firm one-dimensional theories.

The problem considered to be solved by the existence of the firm is the transaction cost problem in contractual theories of the firm, and it is the use and creation of tacit knowledge in the evolutionary-competence-based theories. The answers of both theories to the three fundamental questions of the theory of the firm are given in the spirit of the perspective determined by these two problems. The whole problem is irremediable in the framework of the above-mentioned theories and is the result of the missing dimensions in both theories.

Contractual theories, namely the transaction cost theory, are heavily criticised by the evolutionary-competence-based perspective. What is of great importance in this criticism is that it attacks only an element of the theory (opportunism, neglect of technological point of view, neglect of dynamic aspects); as a consequence, the overall theory is regarded complementable or improvable. This method of improving the theory of the firm is not able to solve all theoretical problems, because the theories persist to be based on the same grounds. But after having identified the basic theoretical problem, all other critiques *vis-à-vis* the existing theories seem to be inferior.

I attempt to provide a theoretical framework that leads to a more general theory of the firm.[7] In order to develop such an approach that I propose to call the multidimensional theory of the firm, one has to (1) bring together some elements already elaborated on separately in the field of the theory of the firm, (2) determine the mutual connections among them, and (3) redefine some concepts and categories.

We know a lot about the details, but little about the whole. The multidimensional approach of the theory of the firm offers a perspective that makes us see the whole. Though almost all components of the multidimensional theory of the firm are already developed, they are not brought together yet.

Another interesting question is whether the theory of the firm as a single theory exists, or different schools exist dealing with altering aspects of the issues of the theory of the firm.[8] The term "theory of the firm" encompasses all theories aim-

[7] It seems to me that Hodgson (1998b), and Hodgson and Knudsen (2000) support my effort in building a general theory of the firm, which combines aspects of both branches of the theories. Hodgson (1998b, p. 246) writes: "Hybrid or plural explanations are thus plausible and legitimate, as long as they are mutually complementary and do not contradict one another."

[8] I am indebted to an anonymous referee for calling my attention to this issue.

ing at providing an explanation for at least one of these important questions, which indeed can also be called theories of the firm. The theory of the firm consists of part-theories of the firm. These part-theories, however, seek to explain the firm within a given environment and given institutions, by making reference to a given agents' behaviour. Consequently, these specific theories may belong to different schools of economics. A general theory of the firm, by nature, should encompass part-theories of the firm dealing with specific issues of the theory of the firm. In this sense, it is not a single theory of the firm. The general (multidimensional) theory of the firm is rather a perspective for how to consider the firm. Elaboration of the multidimensional theory of the firm means further development of the part-theories and development of new ones in accordance with it. To sum it up, the multidimensional theory cannot replace the above mentioned theories of the firm. Rather, it must serve as a framework and coexist with them.

3. BEHAVIOURAL ASSUMPTIONS

The behavioural assumptions are of primary importance in the theory of the firm. A general theory of the firm must be based on realistic assumptions. Neither the Simonian bounded rationality, nor other bounded rationality concepts are suitable for the theory of the firm.[9] The important thing is to determine the behavioural assumption of the theory of the firm according to the immanent, anthropological character of human beings in order to escape from a methodological debate relative to the criticizability of behavioural assumptions. Boland (1981) points out that there are only two types of criticism concerning behavioural hypotheses: (1) one can argue against the possibility of the hypothesised behaviour (possibility criticism), or (2) one can argue against the empirical truth of the premise of the assumption (empirical criticism). In general, the authors agree that one cannot prove the logical impossibility of any behavioural assumptions (e.g. maximisation). The problem of empirical criticism is much more delicate. The refutation of the hypothesis on this ground raises the question of how it is to be known whether the hypothesis is true or false, since the behaviour itself is not directly testable, only the outcome of the behaviour is testable.[10] The method-

9 I discuss the issue of behavioural assumptions in detail in a separate paper (Kapás 2002a). Here, I only make reference to its most important proposition: the major shortcoming of the behavioural hypothesis of the models of bounded rationality is that they consider the character of human behaviour purely calculative by nature.

10 When testing the theory's assumptions about agent behaviour, experimental economics can test the observed behaviour as a function of the environment and institutions (Smith 1994, p. 113), and not the behaviour itself.

ological problem of refuting any behavioural assumptions is that of constructing a convincing refutation.

The behavioural assumption – the Misesian human action concept (Mises 1949) – brings us out of this impasse: behavioural hypotheses, which are the basic axioms of human behaviour and which are a priori true should not be tested empirically because they do not have empirical content. The issue of an assumption that is realistic and is beyond methodological question is of great importance regarding the further development of the theory of the firm.

Why does the Misesian human action concept have to be considered a realistic behavioural assumption? The reason is that it takes into account the creative, non-calculative aspects of human behaviour. It is not questionable that human beings are by nature creative and use their imagination. The theory of the firm must not neglect this aspect of human behaviour. The human action concept of Mises (1949) depicts human behaviour in a general way, and that is why I propose to admit it as a behavioural assumption in the theory of the firm.

According to Mises (1949), human action is an action by which any individual aims to improve his/her economic situation. It encompasses two elements: (1) a purposive, and (2) an entrepreneurial element. For Mises, the essential element in action is goal pursuit, not maximisation (like that of Robbinsian economising), not allocative efficiency, or anything else. The second element is related to subjectivism including the insight that any ends-means framework relevant to a human action has itself been actively chosen in the course of that action. According to these two elements, the individual fulfils two tasks: (1) he/she identifies the relevant ends-means framework (entrepreneurial element), (2) within this ends-means framework he/she strives to achieve the goal. Mises argues that these two elements constitute an integrated action, they are combined in different proportions.

Nevertheless, I propose another interpretation as regards the purposive element of human action, which is, however, I think, consistent with the original Misesian thoughts.[11] In my interpretation, the purposive element of human action encompasses a relatively wide range of actions, like maximisation, satisficing, rule-following, i.e. all kinds of calculative behaviours (Kapás 2002a).[12]

[11] When Mises published "Human Action" in 1949, the different models of rationality (e.g. bounded rationality) were not yet developed. That is the reason why he refers only to Robbinsian maximisation.

[12] Note that this concept necessitates a new perspective of rationality in which rationality – as Dulbecco and Dutraive (2002) points out – should not be restraint to deliberation and conscious calculation.

The fact that calculation and entrepreneurship are present together in any action is related to the fact that knowledge is incomplete[13] but not in an absolute sense, on the contrary, knowledge imperfection, i.e. the intensity of ignorance differs in every individual and in every particular field of economy. In a simple environment, i.e. in a given ends-means framework, the degree of ignorance is the smallest because the decision-maker faces only an information problem. In these environments one must rely mainly on calculation in decision-making, but creativity, imagination and instinct – entrepreneurial elements – also play a role since these originate in human nature. Therefore, when the environmental changes are radical where the ends-means framework has to be identified first, entrepreneurial elements in human action become dominant and calculation remains second.

The human action concept offers multiple advantages *vis-à-vis* the behavioural assumptions of the contractual and the evolutionary-competence-based theories of the firm. These are the following:

(1) Such "beyond-rationality" elements, like co-operation, trust, altruism, hostility, threat, which could not be taken into account in the above-mentioned theories of the firm, but which are indeed important elements in the life of any firm, could be applicable in a coherent way for the explanation of the firm. It follows directly from this fact that the firm could be explained in a more general way.[14]

(2) Building a theory on this realistic behavioural assumption allows us to integrate such issues in the theory of the firm, like learning, co-operation, and trust, which all have a time dimension (e.g., taking into account real time in the sense of O'Driscoll and Rizzo 1985).

(3) The subjective character of individual action involves the fact that human beings inherently differ (Garrouste 2001). As human action contains an entrepreneurial element, an anthropological meaning is given to entrepreneurship. The anthropological point of view of entrepreneurship allows us to define it in a more general way, and to extend it to all firm members. This has a significant implication for the understanding of the firm: all individuals inside the firm are entrepreneurs, but in different fields and to a different degree. This view helps us not to mystify entrepreneurship as contractual theories do.

[13] Incomplete and distributed knowledge are taken here as axioms (Hayek 1945).

[14] Some researches (Powell 1990; Adler 2001) have demonstrated that trust, co-operation, and so on became dominant behavioural elements in hybrid forms (networks). A deeper understanding of this governance structure does not seem possible if these elements are neglected.

4. DIMENSIONS OF THE THEORY

The evolutionary-competence-based theory of the firm has two features that are important from the point of view of the multidimensional theory of the firm. First, this branch has developed its views to a large extent on the basis of the criticism relative to the contractual theories of the firm. Secondly, it argues for the complementarity of the two lines of the theories of the firm (Teece et al. 1994; Langlois and Robertson 1995). All this means that the first steps have already been taken within the evolutionary-competence-based theory of the firm in the direction of the multidimensional theory of the firm.

These two branches developed a set of coherent views within their own framework, while both have their limits originating from the framework itself. The important thing to note is that not all issues addressed by the theory of the firm can be integrated in both theories. For example it is difficult to integrate such issues into the contractual theories, like innovation or learning. Therefore, one can encounter attempts to combine the ideas of the contractual and the evolutionary-competence-based theories (Noteboom 1992; Langlois and Robertson 1995; Teece et al. 1997). All this means that the focus on the complementarity of the theories represents a significant issue in the development of the theory of the firm. However, I think that in order to develop a theory in a coherent way, one must break with the framework of both theories. One must enlarge the perspective that enables him/her to take into account several aspects at the same time:

(1) *Core dimension*.
What kind of economic problem is solved by the existence of the firm?

(2) *Market dimension*.
What is the relationship between the firm and the market? Does the firm have market-like characteristics? And vice versa? How to consider hybrid forms?

(3) *Entrepreneurial dimension*.
In what sense entrepreneurship as an element of human behaviour should be connected to the firm?

(4) *Time dimension*.
What are the consequences of the passage of time for the firm?

5. CORE DIMENSION

The core dimension is related to the question of what kind of economic problem the firm faces. According to the contractual theories, the firm exists because it diminishes the transaction costs and contributes to resolve the problem of initiation. The evolutionary-competence-based theories argue that the firm constitutes an efficient solution for the use and creation of tacit knowledge. Both theories are pure in the sense that they hold there is only one problem the firm is to solve. Both are only parts of the explanation for the existence of the firm.

However, the firm faces two problems simultaneously: the transaction cost problem and the knowledge co-ordination problem. In the framework of the multidimensional theory of the firm, these two problems can be seen as persisting in parallel. The point here is that the intensity of the transaction cost and that of the knowledge co-ordination problems differ significantly in different circumstances. In any particular situation there is a specific combination of these two problems depending on the characteristics of the situation.

In order to provide a convincing basis for this claim, the fact that the transaction cost and knowledge co-ordination problems are always present has to be proved. As Hayek (1945) pointed out knowledge available in any economy is inevitably incomplete and distributed among individuals, i.e. the knowledge co-ordination problem always persists. Distributed knowledge has to be co-ordinated. According to Hayek, this has to be done through the price system (market). Others (Knight 1921; Foss 1999) emphasise that not all types of knowledge can be co-ordinated through the market: largely tacit knowledge (entrepreneurial judgement in the Knightian sense among others) needs to be co-ordinated inside the firm. So, there exist two mechanisms to co-ordinate distributed knowledge: the firm and the market.

The role of the firm in knowledge co-ordination was first discussed by Malmgren (1961), who pointed out the need to co-ordinate subjective individual plans. This is the same issue Hayek emphasised, but Hayek regarded the market process as the only efficient mechanism to do this job. The significant point is that there exist two efficient mechanisms for knowledge co-ordination, the market and the firm, and there is no *a priori* reason to assume the supremacy of one type over the other.[15]

[15] Of course, firm and market are not the only forms of co-ordination. Many authors (Richardson 1972, 1995; Williamson 1985; Powell 1990; Hodgson 2002) point out that a hybrid form (called also relational exchange or network) exists as well. Here, it is not necessary to discuss which of them is the correct term, and whether this is a combination of elements of market and firm or a distinctive form. Although, these are important issues and connected to the market dimension discussed later, for a theoretical understanding it is sufficient here to consider the two ideal types, i.e. market and firm. "Recognition of the fuzzy character of the reality does not imply the abandonment of ideal types. Indeed, without clear conceptual axes to mark out the space of possibilities the fuzziness itself would be beyond our perception" (Hodgson 1998b, pp. 243–244).

The knowledge co-ordination problem is only one of the problems the firm inevitably faces. The other one is the transaction cost problem. Nevertheless, the concept of transaction cost has to be broadened. The transaction cost concept of the contractual theories of the firm is too narrow,[16] and this restricted concept directly derives from a false concept of the market and that of the exchange. In the literature, one cannot find a single, clear-cut definition of transaction cost. Coase (1937) was the first to make reference to this type of cost without explicitly calling it transaction cost. According to him, transaction cost is the cost of using the price system. Williamson used this category without clearly defining it. By quoting Arrow (1969, p. 48), he talks of "costs of running the system" (Williamson 1985, p. 18), later he defines transaction costs as "the equivalent of friction in physical systems" (Williamson 1985, p. 19).

Dahlman (1979) offers a largely accepted definition of this notion: it is defined as the cost of defining, negotiating, monitoring and enforcing all contracts. At first sight this seems to be an unambiguous definition since it is related to the notion of contract but this is not the case. The focus of these concepts of transaction cost is erroneous because transaction costs are different from production costs that are related to the physical process of production. When we think of the transaction costs we have to refer to all costs not directly related to the process of production. This means that transaction costs have to be connected to the exchange itself. I propose to regard transaction costs simply as the costs of exchange.

The first step in redefining transaction costs in a broader sense is to make a clear-cut distinction between market and exchange. Loasby (1999) and Hodgson (2001) argue that the notion of market and that of exchange are confused,[17] although they are quite different things. The exchange is an action (event), the market is the arena where exchanges take place.[18] It is clear now that the market is a (public) good and not a natural given, it is the product of the economic activities.

[16] At this point I am opposed to Hodgson and Knudsen (2000), who argue that the concept of transaction cost is defined too broadly. However, I agree with them in that "the concept of transaction cost has been widened and diluted compared to Coase's marketing cost" (*ibid.,* p. 3). But this does not mean that the concept is too broad. I do not think that the first concept of any category should be considered a reference for ever, which cannot be modified. It is quite natural that concepts have to be broadened or narrowed as the theory evolves.

[17] This confusion has severe implications for the market concept of the contractual theories of the firm, which consider the market as a given.

[18] Ménard's definition of the market (1995, p. 170) is also written in this spirit: "... a market is a specific institutional arrangement consisting of rules and conventions that make possible a large number of voluntary transfers of property rights on a regular basis, these reversible transfers being implemented and enforced through a specific mechanism of regulation, the competitive price system".

The points where I am opposed to Loasby concern the question of whether (1) the market is the only place in which exchanges take place, and (2) whether only goods can be exchanged. My answer to both questions is no. The arena of exchanges cannot only be the market, but the firm as well, and not only goods, but information and explicit (codified) knowledge can also be exchanged. Relying on this revised notion of exchange, it is possible to broaden the notion of transaction costs of the contractual theories as well, which allows us to consider the transaction cost problem the firm faces in a general way. I propose to broaden the notion in two directions:

(1) *According to the subject of the exchange.*
In this sense all costs associated with knowledge/information transfer, knowledge acquisition, centralisation or decentralisation of knowledge are transaction costs[19] irrespective of the space where they occur. The rationale for this is that all these transactions are exchanges of a special goods, namely that of knowledge/information. In my view, this is exactly the type of transaction cost that Langlois (1992) refers to under the rubric of his dynamic transaction cost. Dynamic transaction costs are the costs of acquisition and co-ordination of the knowledge of production. To put it in another way, these are the costs of not having the capabilities the firm would need at any moment of time.

(2) *According to the arena where the exchanges can take place.*
In this sense, exchanges can take place in the market or inside the firm.[20] This means that some exchanges within the firm not associated with the production process may also involve costs. These costs, not being production costs, must be regarded as transaction costs. In complex, large firms both goods and knowledge/information are exchanged inside the firm, i.e. between divisions. These exchanges are not free of costs. This means that the costs of functioning the information system in multidivisional firms are transaction costs, so they are the costs of negotiating and that of co-ordinating between divisions.

According to this broadened concept, transaction costs can emerge both in the market and within the firm due to exchanges of both goods and information or

19 These costs are the so-called communication costs (Malmgren 1961).

20 As Demsetz (1988) emphasises organisation and management costs also become transaction costs. That is, transaction costs exist both inside and outside the firm.

knowledge.[21] The traditional concept of the transaction cost is a special one, where both exchanges inside the firm and the use and transfer of knowledge are free of cost.

Like the knowledge co-ordination problem, the intensity of the transaction cost problem also depends on the characteristics of a given situation. According to the above arguments, the firm always faces a combination of these two problems; and depending on the particular characteristics of the situation one of them might become dominant.[22] Different devices (prices, incentive systems, fiat, and so on) have comparative advantages[23] for different combinations of problems. Firms must always choose between them according to the principle of comparative advantage (Kapás 2002b).

6. MARKET DIMENSION

In the multidimensional model of the firm, the market dimension refers to the relationship between the market and the firm. The two kinds of economic problems (knowledge co-ordination and transaction cost problem) the firm faces are not only the problems of the firm, but also those of the market. This view implicates that the explanation of the nature and the role of the firm and those of the market must not be given separately, but connected to each other. It is not possible to understand the firm without understanding the market and the relationship between them. In this respect it is important to analyse the common features of the two institutions and those that distinguish them. It seems to me that the key factor for the further development of the theory of the firm is whether one can build a general theory of institutions in the framework of which the firm and the market have to be explained simultaneously.

6.1. "The market as a given" view

Following Coase (1937), the theories of the firm (including the evolutionary-competence-based theories as well) try to explain the firm by considering the

[21] Klaes (2000) and Malmgren (1961) tried to broaden the transaction cost concept by regarding the cost of information collection and that of communication as its two types. It seems to me that these insights can be paralleled with my concept.

[22] "If so, some demarcation tests are required to consider whether firm-specific learning effects (*i.e. the use and creation of tacit knowledge – J. K.*) or transaction costs are more important in specific empirical circumstances" (Hodgson and Knudsen 2000, p. 2).

[23] I use the term comparative advantage in a general meaning.

market as a given. The contractual theories embody two different points of view. The nexus of contracts view (Alchian and Demsetz 1972; Cheung 1983) cannot see any difference in the nature of the firm and that of the market. As opposed to this, in the Coasian and Williamsonian analyses of the firm, the market is seen as the reference type of economic co-ordination. "In the beginning there were markets" (Williamson 1975, p. 20), the firm emerges later. Both consider that these two institutions are alternative allocation mechanisms. For Coase (1937) the question of why firm exists is equal to that of why the price system does not allocate all transactions. The evolutionary-competence-based theories of the firm – while taking the firm as a given –, emphasise that the firm has different capabilities than the market, consequently, the two institutions complement each other.

Theoretical dilemmas – described below – which arise from these theories of the firm support the view that the essence of the firm is not understandable without the introduction of market dimension into the theory. These dilemmas are as follows:

(1) One can also pose the reversed Coasian question: why does the market come to existence.[24] Indeed, according to Loasby, Coase posed the wrong question:[25] it is not the firm that has to be explained, on the contrary, it is the firm that has to be applied in the explanation of the market (Loasby 1999, p. 87).
(2) If one can talk about market economy, why should not one talk about organisational economy (Simon 1991, p. 42). The organisational economy raises the question of why the most important part of economic activities is carried out by organisations (firms), and what role the market plays that links organisations.[26]
(3) May we explain the specific and distinguishing attributes of the firm in terms of another category (the market)? May this lead to identify the immanent attributes of the firm (Fourie 1993)?
(4) What is the relationship between the market and the firm?

[24] "Markets are much too important, and much too amenable to economic analysis, to be treated as primitives" (Loasby 1999, p. 112).
[25] This does not mean that one would like to diminish Coase's merits. Posing his question of why firms exist at all he was an avant-garde in his age since his contemporaries took the firm as a given.
[26] The Williamsonian view of "in the beginning there were markets" is reflected in the notion of market economy in which market has a primacy; as opposed to this, the organisational economy presumes that firms have primacy. In other words, the labels refer to the order of the institutions. In my view, neither of these two labels is correct since the two institutions mutually determine each other and depend on each other.

(5) Are they solutions to the same or to different problems?
(6) Does the question of which came first have any sense in the firm-market context?

The answers to some of these dilemmas are evident. It is not in the sense of the market that the firm has to be defined, since it would be equal to take the market as reference. The question of which came first, the chicken or the egg, has no sense either, because there is a mutual determination and dependence between the two things in question. This is the problem of infinite regress, such an analysis can never be completed. The other part of the above-described dilemmas is open questions that need to be answered. They press us to think of the market and the firm in a different context compared to those of the contractual and the evolutionary-competence-based theories of the firm. The two extreme views – according to which, on the one hand, firm and market are inherently different in nature, completing totally different functions,[27] and on the other hand, they are basically similar things – are not acceptable. Nowadays, it is a widely accepted view that market and firm partly substitute and partly complement each other (Langlois 1994; Loasby 1999; Peneder 2001). The only way to understand their nature, essence and role is to demonstrate these substitution and complementary relationships between them. The market dimension allows us to do this job, it is exactly about this issue.

6.2. A missing theory: theory of the market

What is of great importance as regards our theory of the firm is that the theory of the market process does not provide an explanation for the nature and the essence of the market, it is the theory of the market that can do this job. The reason lies in the fact that the theory of the market process is about the dynamics of the market and not about what the market is as such. Thus, the problem is answers of this type, i.e. when we describe the working process of something we do not tell anything about what the given thing is by nature. Explaining a working mechanism of something is not the same thing as determining its essence.

Therefore, we have to conclude that the issue of what the market is, does not fall under the scope of study on the theory of the market process. The reason why the theory of the market process is not able to answer this question is that it is about how market process works, and to understand the mechanism of the mar-

[27] The argument supporting this view is that the firm is capable of production while the market is not (Fourie 1993).

ket, it is sufficient to suppose that the market does exist. It is important to note that we do not have the theory of the market,[28] we have to create it. But the first steps have already been taken by Hayek.

The Hayekian views relative to the spontaneous order (Hayek 1973) have also opened another route – in parallel with the theory of the market process – which has to be termed theory of the market, and which has to be developed further. Researches in this direction, i.e. ones on the development of the theory of the market bring us out of the modern Austrian economics inevitably, and push us towards the new institutional economics. Hayek's aim (1973) was to explain the nature of spontaneous order (market) as an institution. By doing so, he opened a wide door to the new institutional economics as he was also obliged to give an explanation on the firm to some extent, and also on the relationship between market and firm in order to be able to explain the market.

A significant point is that while both theories in question (theory of the firm; theory of the market) focus on their basic problems (what is a firm and why does it exist; what is a market and why does it exist), they must tell something about the other institution as well, although only roughly. To put it in another way, the theory of the firm has to incorporate the market, and similarly, the theory of the market has to incorporate the firm. All this means that the original statement of the problem of both theories is incomplete, the issue of "what is the relationship between the market and the firm" occurs as well. This is the reason why I have said above that it seems to me desirable to build a general theory of the institutions, i.e. the explanation of neither institution can rely on their separate analysis. We should break with the concept of explaining market and firm separately.

6.3. Attacks on the market–firm dichotomy

Thus, the market–firm dichotomy and the view according to which the firm is strictly distinguished from the market are present both in the theories of the firm and in the Austrian tradition. Recently, the contradictions of the Hayekian views[29] have been discussed by some authors, which help to clarify a few problems.

[28] The study of the question why we do not have the theory of the market is beyond the scope of this paper, however, it is a very exciting and important issue. Interestingly, the definition of the market is rather vague, which, in my view, is the rationale for the fact that such theories like industrial organisation or game theory are not capable to give any explanation for the nature of the market. Instead, they take the market for granted and explain the mechanism of the market. Accordingly, the question of what the market is, remains unanswered.

[29] Hayek's distinction between spontaneous order and organisation is based on the fact that there are different kinds of rules behind them.

Garrouste (1999) highlights that the Hayekian distinction between abstract and concrete rules[30] is not relevant. Considering a continuum between abstract and concrete rules, the strict distinction between spontaneous order (market) and organisation (firm) could not be acceptable.[31]

Another misinterpretation of the Hayekian views is related to the analogy between firm and centrally planned economy. Hayek argued that the decentralised price system has enormous advantages over the planned economy regarding the use of knowledge and that of information. The declaration of the superiority of price system over planned economy constitutes the most important element of the so-called calculation debate. If one extends this view to the market–firm dichotomy, one can conclude that market is superior to firm. This claim can be criticised for many reasons, first of all for the fact that the analogy between planned economy and firm is erroneous. The acceptance of this analogy would be equal to the claim that the firm is a kind of planned economy.

What was meant by planned economy in the calculation debate? It is a type of economic system where the central commanding authority co-ordinates economic activities through the centralisation of knowledge. That is, the commanding authority tries to centralise knowledge, as opposed to this the price system (market) leaves it decentralised. If the firm were a planned economy, its major role would be to centralise knowledge. But this is not the case, as the firm has to co-ordinate (and not to centralise) distributed knowledge similarly to the market. This view is largely supported by the fact that the knowledge problem is also present within hierarchical organisations, just like in the market, individuals have subjective, local and tacit knowledge inside the firm as well (Sautet 2000). As a consequence, there always exists "knowledge of particular time and space" within the firm, which is not known by top managers, so the Hayekian knowledge problem is also present inside the firm.[32] The firm faces the same co-ordination problem as the market: planning which takes place inside the firm is not identical with that of the planned economy. The major difference between them is that the firm is not totally for centralising individuals' knowledge, it is for creating an "atmosphere" where individuals can use their capabilities and knowledge.[33]

A similar conclusion is offered by Langlois (1994), but on different grounds: the firm and the market are not for economising on knowledge in the presence of

[30] According to Hayek, a rule is general if it can be used in any situation, and concrete if it can be used only in a given situation.

[31] Dulbecco and Dutraive (2002, p. 249) also point out that the Hayekian dichotomy is not correct because the market consists of both organisational and spontaneous characteristics.

[32] Sautet (2000) calls it double Hayekian knowledge problem.

[33] Ioannides (1999b) terms this activity indoor entrepreneurship. This issue will be discussed later.

change in general, but both are relevant for different types of knowledge and for different types of change.[34] In his view, this means that the firm decentralises knowledge – like the market – rather than centralising it.

What is the conclusion of this story for our theory of the firm? As the firm does not resemble any centrally planned economy, the claim of the calculation debate according to which market is *a priori* superior to planned economy is not applicable for the firm. The questions are the following: (1) Why are there two efficient solutions to the knowledge co-ordination and the transaction cost problems? (2) What determines which one co-ordinates in a particular situation? This cannot be accidental.

6.4. How to consider firm and market?

It is necessary to distinguish and separate logically co-ordinating devices[35] from governance structures (market, firm, hybrids), which should be seen as the outcomes of the combined use of these devices (Ménard 1994).[36] To accept that firm, market and hybrid forms[37] are the complexes of co-ordinating devices, does not mean at all that they are identical by nature. The different proportions of co-ordinating devices in each form are not only a matter of quantity.[38] Differences in quantity – beyond a certain degree – lead to the apparition of the distinguishing attributes of firm, market and hybrids. All this means that there are essential differences between them. They are different things while being also identical to

[34] This question is discussed in detail by Langlois and Robertson (1995).

[35] The literature does not provide a single clear-cut definition of co-ordinating devices. Different views can be found in Loasby (1994), Ménard (1994), Richardson (1995) and Adler (2001). Albeit, the divergence of views is not so important. Almost every author acknowledges that there are three devices – labelled differently by the different authors – and each of them dominate in one of the three institutions. For a discussion see Kapás (2002b).

[36] It is much more important when thinking of the proliferation of hybrid forms. The transaction cost theory's explanation for this governance structure seems to be less and less satisfactory because of the multiplicity of these forms. The analysis of the nature of hybrid forms is an issue of great importance that must be discussed in more detail, and that is why it remains outside the scope of this paper.

[37] Some authors (Richardson 1972, 1995; Powell 1990; Hodgson 2002) argue that a third, distinctive co-ordination mechanism, a network exists besides firm and market that is neither market, nor hierarchy.

[38] Surely, Zenger and Hesterley (1997, p. 219) make reference to this when writing: "Markets continue to be more market-like than hierarchies, and hierarchies more hierarchical than markets. Markets will continue to afford more effective price incentives than hierarchies. Similarly, hierarchies have access to a greater range of hierarchical features than markets."

some extent. It implies that firm and market partly substitute and partly complement each other at the same time. The substitutability is based on their similar nature, i.e. they are solutions to the same problems (co-ordination of distributed knowledge and transaction cost problem) and they have the same co-ordination mechanisms behind them. However, the differences in the proportions of these co-ordination mechanisms will lead to significant differences in the nature of the firm and that of the market. All this means that the firm and the market have comparative advantages[39] in the solution of different partial problems. In this sense they complement each other.

To sum it up, the following three theoretical problems present in the contractual and evolutionary-competence-based theories of the firm can be solved in the framework of the market dimension, which leads to a better understanding of the firm:

(1) The approach to the firm and to the market was not correct. The explanation of one of them should inevitably refer to the other as well, in this sense the theory of the market is partly the theory of the firm, and *vice versa*.[40]
(2) We have to abandon considering the market as a basic type of co-ordination, i.e. reference. The market is not a natural given, exchange and market are different things (Loasby 1999).
(3) It is extremely important to distinguish the co-ordinating devices from the outcome of the co-ordination. In the theory of the firm both market and firm are taken in general as co-ordination mechanisms, which makes it difficult to understand hybrid forms.

The essence of market dimension in the multidimensional theory of the firm provides a basis for a theory that is more consistent with observations of the real word, i.e. the proliferation of hybrid forms. According to the market dimension, it is not possible to understand the nature and the role of the firm without understanding those of the market. While being different, in different situations the firm resembles the market to a different extent, and *vice versa*.[41] The two institu-

[39] The existence of these comparative advantages is proved by the fact that firm and market persist in parallel.
[40] This does not mean that only one of these two theories could be sufficient. We need both theories, i.e. theory of the firm and theory of the market. The reason lies in the fact that the relationship between the two institutions is only one element in the understanding of the institution in question.
[41] Dulbecco and Dutraive (2002) seem to support this view. See footnote 31.

tions substitute and complement each other at the same time. There is a continuum regarding the combination of the substituting and complementing effects,[42] which leads to the great diversity of the different hybrid forms.

7. ENTREPRENEURIAL DIMENSION

Contractual theories of the firm neglect the role of entrepreneurship. Neglecting the entrepreneurship is also connected to the equilibrium approach: in equilibrium there is no competition, which means there are no profit opportunities to reach. The evolutionary-competence-based theories of the firm consider entrepreneurship a major element in the explanation of the firm (Penrose 1959; Witt 1998a, 1998b; Sautet 2000). In spite of trying to build a theory of the firm with an entrepreneurial flavour, this branch has not succeeded in developing a coherent theory of the entrepreneurial firm either. A major problem with these attempts is that they have too many concepts of what entrepreneurship is. Although these views share many common features, no consensus has been reached regarding the essence of entrepreneurship,[43] and no general theory of entrepreneurship exists.

For a general theory of the firm to be coherent a general concept of entrepreneurship is needed.[44] Building a general theory of entrepreneurship is beyond the scope of this paper, but I would like to provide some substantial insights through the entrepreneurial dimension about how to integrate entrepreneurship into the theory of the firm. I propose a framework that brings together three elements – independently of each other – already elaborated on in the literature.

The *first element* that should be taken as an important building block of the entrepreneurial dimension is the behavioural assumption. In the Misesian view, decisions are not merely mechanical calculations, human action includes the calculative behaviour and the entrepreneurial element (Mises 1949). Every individual acts in an integrated way, and his behaviour can be analysed according to both components (calculation and entrepreneurship). The importance of this issue is that any individual action always embodies an entrepreneurial element. Accord-

[42] One can say that pure firm and pure market do not exist, they are only theoretical extremes. In spite of this, it is important to make a conceptual distinction between firm and market, "it is important not to confuse conceptual model with real-world muddle" (Hodgson 1998b, p. 242).

[43] Demsetz (1983) argues that the reason why entrepreneurship is not integrated in any economic theory is that there is no single entrepreneurial function as such.

[44] Boudreaux and Holcombe (1989) also emphasise that entrepreneurship is needed for gaining a comprehensive view of the firm.

ing to this view, every individual is an entrepreneur in a broader sense of the term. The advantage of this concept of entrepreneurship – as I already mentioned above – is that it is beyond any criticism, since it refers to the anthropological character of human beings. In this respect, all individuals are entrepreneurs, that is, all firm members can act entrepreneurially.[45] Although – as Ioannides (1999b) points out – every member within a firm seeks to act partly in an entrepreneurial way, this does not mean that they are all equally able to act so. The other part of their actions consists of optimising. There is a combination of optimising–entrepreneurial elements in individuals' actions, and all combinations are specific with regard to the individual and his situation. In accordance with the Misesian human action concept, all firm members (individuals) should be located in the continuum between optimising behaviour and entrepreneurship.

The *second element* to be taken into account is the distinction between indoor and outdoor entrepreneurship proposed by Ioannides (1999b). According to Ioannides, outdoor entrepreneurship refers to the firm as a whole, acting as an alert individual in the market who strives to discover new profit opportunities.[46] Indoor entrepreneurship makes reference to the ability of the entrepreneur,[47] which influences the outcome emerging from the interactions of firm members' entrepreneurial actions. Indoor and outdoor entrepreneurship are closely interrelated: indoor entrepreneurship is an activity aiming to structure the entrepreneurial actions of firm members in order to make it compatible with outdoor entrepreneurship (Ioannides 1999b).

One of the major advantages of indoor–outdoor entrepreneurship is that it allows us to regard the firm as an entrepreneurial "individual" in the market, whose activity is driven by the business concept of the entrepreneur (Witt 1998a, 1998b, 2000). Entrepreneurial ability to informally influence employees' actions in a favourable direction, i.e. indoor entrepreneurship is in service of the pursuit of the business concept of the entrepreneur. This distinction between indoor and outdoor entrepreneurship should be considered a remedy for the traditional theo-

[45] Knight (1921) has already argued that there is always room for entrepreneurship, since even the more routinised work could not be fully specified.

[46] Here an interesting question arises: whether the firm should be considered an individual or not. According to Khalil (1997), the firm-as-individual means to see it as a purposeful actor in the sense that it seeks to act entrepreneurially. Ioannides (1999b) seems to support this view.

[47] Once we accept that all firm members can act entrepreneurially, the term entrepreneur might seem vague. Neither Witt, nor Ioannides determines it explicitly. Witt (1998a, 1998b, 2000) makes reference to his/her activity under the rubric of cognitive leadership, Ioannides under entrepreneurial leadership. I propose to call entrepreneur an individual inside the firm who exercises leadership based on his/her business concept.

ries of entrepreneurship, which all conceptualise entrepreneurship only in a very limited sense, only in its outdoor meaning. The introduction of the concept of indoor entrepreneurship allows a better understanding of the internal structure of the firm.[48]

According to the *third element* entrepreneurship has to be seen as a non-homogeneous activity, i.e. there is no single, unambiguously determined entrepreneurial activity (Harper 1996). Since the characteristics that define (outdoor) entrepreneurship[49] can be present to a different extent and combined in different proportions, the entrepreneurial activity can incorporate a relatively wide range of activities from arbitrage to innovation. In different situations a different degree of imagination, creativity, and so on is needed depending on the complexity, indeterminacy and changeability of circumstances. Entrepreneurship originating in human nature is present in every situation to a different extent, thus this element will be present in preponderance in human actions in a world of structural uncertainty in the sense of Langlois (1986). This means that although entrepreneurship originates in human nature, it is also indispensable because of ignorance.

The fact that entrepreneurship is not a homogeneous activity also derives from the human action concept: human action is always a combination of an entrepreneurial and a maximisation element of behaviour. Since there is a continuum as regards this combination, the entrepreneurial element is always present to a different extent in every particular situation.

In short, (1) the human action concept, (2) the distinction between outdoor and indoor entrepreneurship, and (3) the heterogeneity of entrepreneurship are closely interconnected and interrelated. One of its important consequences is that entrepreneurship has to be regarded as an immanent element in individuals and in the firm as an individual. All this constitutes the entrepreneurial dimension in the multidimensional theory of the firm. Taking into account the entrepreneurial dimension allows us to abandon seeing entrepreneurship as a kind of mythical thing that characterises the theories of entrepreneurship in general.

[48] Here an important question arises: if all firm members act entrepreneurially partly pursuing their private interests, what is it the firm puts together. According to Ioannides (1999b), it is indoor entrepreneurship that unites the firm.

[49] These characteristics are as follows (Harper 1996): (1) the nature of uncertainty, (2) the nature of time, (3) the degree of complexity and the emergence of novelty, (4) the degree of indeterminacy.

8. TIME DIMENSION

Time dimension is different in nature from the above-described core, market and entrepreneurial dimensions, which are the three important components of content for the understanding of the firm. It is time dimension that makes the theory of the firm dynamic. Time dimension interlaces the other three dimensions and harmonises them with the passage of time.

8.1. Dynamism in the theory

A good theory of the firm must be dynamic: the firm does not operate so that everything goes its own way without changes once the firm is established (Dulbecco 1998). On the contrary, the firm has to be continuously redesigned and reconstructed. In Dulbecco's opinion, such a dynamic model should exist in historical time, which encompasses three elements: (1) the sequential causality, (2) the irreversibility of the passage of time, (3) the indeterminacy of the outcomes. Accordingly, the problem of time is not a question of short or long run, it refers to the question of whether the theory can take into account the passage of time, which is not questionable.[50] One can say that contractual theories of the firm cannot take into account the passage of time,[51] while the major effort of the evolutionary-competence-based theory is to make itself a dynamic theory. The multidimensional theory of the firm incorporating the time dimension allows us to take into account historical, i.e. real time seriously (O' Driscoll and Rizzo 1985).

The essence of the real time concept is that actions are always oriented towards the future (Mises 1949), which means that they not only follow each other in time without connection between them – as it is presumed by the Newtonian time concept – but each depends on previous actions, that is, there is a causal connection between them (Hicks 1976). This means that the passage of time plays a role in the decisions of the firm, since they are based on past experiences and on future aims determined by actual actions (Dulbecco and Dutraive 2002).

In real time individuals have to cope with ignorance, which has two important implications. First, learning – in terms of the revision of individual cognitive capabilities – becomes an indispensable element in analysing individual behaviour

[50] I completely agree with Dulbecco (1998) in saying that in this perspective of time the distinction between short and long run does not seem to be so important.

[51] Some critiques (Noteboom 1992, 1999) refer exactly to this shortcoming of transaction cost economics.

(Dulbecco and Garrouste 2000). That is to say, time dimension in the theory of the firm makes it possible to consider learning, which has a time dimension, an integral element of human behaviour. In this perspective, learning is associated not only with the deliberate and conscious elements of individual behaviour, but also with the entrepreneurial element, which leads to unconscious learning. Secondly, errors and Shacklian surprises (Shackle 1972) can occur, that is, the emergence of novelties is endogenous. It implies that individuals are not passively constrained by the environment, but they are able to interact with it (Dulbecco and Garrouste 2000).

8.2. Time dimension as an interlace

The core, the market and the entrepreneurial dimension are connected to the time dimension.

According to the *core dimension*, the firm ensures a solution for two kinds of problems simultaneously, namely, the co-ordination of distributed knowledge and the transaction cost problem. The co-ordination itself of these two problems occurs in time. On the one hand, the distribution of knowledge has to be regarded as an outcome of economic processes, that is, every particular state of knowledge distribution is path-dependent. With the passage of time the distribution of knowledge will change, since individuals learn and acquire new knowledge at a different pace because they are different.

On the other hand, the transaction cost has no sense without time. When we think of the costs of exchange we have in mind a process that will take place in time. But what is more important in this respect is that the transaction costs will diminish with time – as Langlois and Robertson (1995) argue – because actors doing similar transactions in time will learn more about the typical characteristics of the outcomes. The transaction costs the two authors talk about are transaction costs relative to the exchanges in the market. As regards the broader concept of transaction costs I proposed earlier, it means only one side of the coin. Transaction costs that occur inside the firm have to be analysed as well. With the passage of time, activities become more and more routinised inside the firm including all exchanges of information/knowledge or goods. All this means that transaction costs within the firm also diminish with time. However, if one ignored other aspects, this tendency would lead to the total disappearance of transaction costs in an infinite horizon. This is certainly not the case. The transaction costs for some kinds of exchanges diminish with time, while new kinds of exchanges emerge that also involve transaction costs.

According to the *market dimension*, the understanding of the nature and of the role of the firm has to be connected with those of the market. In different situations the firm resembles the market to a different extent, and vice versa. Any combination of the firm's market-like and firm-like characteristics should be seen as something reflecting the history of the firm. These characteristics change with time: "as organisations become more complex and abstract, the rules governing their operation cannot but tend to become more abstract" (Ioannides 1999a, p. 878). If this is so, it raises an important question: why does the firm not transform completely into market? The fact that this is not the case proves that this process has its limits. It is the entrepreneur who assures the balance between the market and the firm (Ioannides 1999b), through indoor entrepreneurship the entrepreneurial activities of firm members could and must be constrained. This is guaranteed by the fact that entrepreneurial leadership has authority for co-ordination within the firm and can informally influence members' cognitive frameworks (Ioannides 1999a).

The *entrepreneur* acts in historical time: based on his/her previous experiments, anticipating some constellation of the future events, he/she makes decisions in the present. The entrepreneurial activity is not only responsible for the creation of the firm – by pursuing the realisation of the business concept of the entrepreneur – but for the survival of the firm as well (Ioannides 1999b, p. 90). Entrepreneurship is inherent in all activities of the firm acting in real time.

It has been shown how the time dimension connects the core, the market, and the entrepreneurial dimensions. The time dimension is not a characteristic feature of the firm, like the three others, but it is a perspective of how to consider the firm as a whole operating in historical time.

9. SUMMARY

This paper aimed to sketch a more general theory of the firm, called *multidimensional theory of the firm*. The behavioural assumption taken as a starting point for the theory was the Misesian human action concept. The main advantage of building upon this behavioural hypothesis is that it takes into account not only the calculative aspect (maximisation) of human behaviour but also the creative, imaginative aspects (entrepreneurship) as well, which allows us to regard human behaviour as an integrated action.

Four dimensions were established, the first three (core, market, entrepreneurial dimensions) represent the essential components of content for the understanding of the firm, the fourth one (time dimension) considers the firm as something operating in real time. The core dimension describes the economic problems the firm solves. It was argued that the firm simultaneously faces two kinds of problems, namely the co-ordination of distributed knowledge and the transaction cost problem. These problems are present in different situations to a different degree, and that is the reason why different organisational forms have to emerge to solve any particular combination of these two problems. It was pointed out that these two problems do not concern the firm only, but the market as well. This means that firm and market face the same economic problems, which leads to the market dimension.

Since firm and market are both solutions for the same problems, they partly substitute and partly complement each other, and its consequence is that the firm has also market-like characteristics and respectively, the market has firm-like features. That is, pure market or pure firm are theoretical extremes. There is a continuum regarding the combination of the firm-like and market-like characteristics the firm can have.[52] This explains the multiplicity of hybrid forms.

On the basis of the human action concept, entrepreneurship was given an anthropological character, which allows us to consider it in a more general way. Entrepreneurship has a meaning at two levels. "Indoor entrepreneurship" refers *au fond* to the level of individuals, that is, all firm members act partly entrepreneurial (Ioannides 1999b). "Outdoor entrepreneurship" refers to the firm as a whole. Entrepreneurship has to be regarded as a heterogeneous activity. This is due to the following factors: (1) entrepreneurship is only one of the two elements of human behaviour, these two can be combined in different proportions, (2) every situation is particular, which necessitates different types of action.

The fourth dimension, the time dimension is different in nature from the first three ones, because it is not an element of content, instead, it offers a perspective to connect the other dimensions with the passage of time, which makes the theory dynamic.

The four dimensions of the multidimensional theory of the firm are interconnected in a multiple way. First, to admit that all firm members behave entrepreneurial contributes to the occurrence of the knowledge co-ordination and the transaction cost problem within the firm, like in the market. This issue is reflected in the core dimension, i.e. the entrepreneurial dimension is in connection with the core dimension. Secondly, the extent to which individuals can act entrepreneurial is reflected in the market dimension, i.e. the intensity of the firm's market-like characteristics, as the co-ordination of the knowledge of individuals acting entrepreneurial within the firm is similar to that of the market. If acting entrepre-

[52] Whether this continuum is continuos or consists of discrete points has to be analysed in detail. My hypothesis is that there cannot be any combinations of these two types of features. There exist discrete forms within hybrids as well.

neurial is more restricted by the entrepreneurial leadership, i.e. the tasks of individuals are more routinised, the firm will rely more on firm-like co-ordinating devices. This shows the effect the entrepreneurial dimension has on the market dimension. What has to be noted is that the degree of freedom given to firm members to behave entrepreneurially has an important impact on the extent to which market-like characteristics occur within the firm and on the need for co-ordinating devices more attached to the market than to the firm.

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