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IMPACTS OF INTER-ORGANIZATIONAL NETWORKS ON INDUSTRIAL UPGRADING AT THE FIRM LEVEL: EVIDENCE FROM THE ROMANIAN FOOD PROCESSING INDUSTRY

1. Introduction

Over the last decade transition in the Central and East European Countries (CEECs) has altered the industrial structure of traditional industries, not only due to the system change from centrally planned economy to free market economy but also due to the strong globalization effects. Although transition is a gradual process, the aspiration of accession to the EU has provided an impetus to rapidly harmonize with the global economic system in these countries. Therefore, they have actively engaged in international business and their firms are compelled to position themselves quickly in the new markets. As is well known, in the last two decades, economic globalization has influenced the growth of multinational enterprises and the CEECs have competed for as large a piece as possible of this cake. Within the region, we observe differences among the countries due to different reasons, which are out of the scope of this paper.

The corresponding institutional changes are not automatic and take more time than predicted, and their delay produces co-ordination failures. The Multinational Enterprises (MNEs) have been affected by this immature structure of institutions. For instance, they faced a lack of information on business partners as well as on how to conduct business in CEECs. Most of the foreign investment has stayed away from the Eastern European countries (EECs) until clear regulatory frameworks and a secure business environment were provided (which did not happen until the mid-1990s in most of those countries). Data on FDI inflows to the CEECs presented in the 1999 EBRD report demonstrate how Poland, Romania and the Czech

Republic began to attract FDI after 1995-6, whereas Hungary had reached to its maximum after 1995 as a result of its clearly leading position with respect to FDI inflows immediately after transition in 1989 (see also Meyer, 2001).

Foreign firms are often seen as ideal sources for the investments required for industrial restructuring and enterprise transformation, as it is common sense that the expertise at the firm level resides in foreign firms (Casson, 1994). FDI brings a package of finance, marketing and technology to the enterprises, thus it has to be encouraged. As will be discussed below, FDI has penetrated the CEECs in the food processing industry primarily with the market-driven motive, and market-driven FDI has a significant share in the total FDI in these countries. There are two issues here. The first is how to direct these capabilities of FDI to the benefit of the domestic firms (e.g., via complementarities and forward and backward linkages) instead of competition with them, which leads to negative spillovers. The second is how to create a suitable and attractive environment for FDI, since the business environment in CEECs is often substantially different from that in developed market economies. Casson (1994) argues that the change from centrally-planned to market economy needs to begin with a top-down approach, to be complemented by a bottom-up approach needed to resolve the problems at the enterprise level. On the other hand, the foreign firms that have entered to the market first have obtained some first-mover advantages (Lieberman and Montgomery, 1988) in influencing the business environment at least at local level.

This paper will discuss the level of industrial upgrading in the Romanian food processing industry and the role of inter-organizational networks in achieving this upgrading by means of empirical investigations of MNE subsidiaries and domestic firms. It links networks as a growth strategy in transition economies (see Peng and Heath, 1996) to industrial upgrading at the firm level by answering the research questions: what is the level of industrial upgrading of food companies in Romania, and to what extent do networks play a role in this level of industrial upgrading? The findings demonstrate that MNE subsidiaries in the Romanian food processing industry achieves to a high level of industrial upgrading via strong links with parent firms in knowledge acquisition, but that its network development strategy is limited to production networks where the direction of knowledge flow is from the subsidiary to farmers. The most striking finding concerns the Romanian food firms, for which knowledge network development is a must for high-level industrial upgrading. If they fail to

engage in this, they are locked into low-level industrial upgrading trajectories.

The paper is organized as follows. In the next section, the conceptual framework will be elucidated in separate sections where industrial upgrading is defined and articulated in terms of sources, both internal and external. In the third section, the food processing industry is examined in terms of the communist legacy, FDI, its significance in the Romanian manufacturing industry and its special characteristics. In the fourth section, the research methodology, followed in this paper, is described. The fifth section provides the brief case studies and empirical analysis of the industrial upgrading-networks relationship in the Romanian food processing industry. Finally, the sixth section concludes.

2. Conceptual Framework: Sources of Industrial Upgrading at the Firm Level with Special Emphasis on External Sources

After the transition, both government policies and academic studies have focused on the shift from centrally planned economy to market-based economy and ownership and corporate governance issues related to privatization. However, in reality, growth processes involve a much richer and more complex array of elements. The multi-dimensional processes include systems, networks and, if possible, their alignment.

2.1 What is Industrial Upgrading at the Firm Level?

Industrial upgrading is a newly evolving concept in the literature, hence it is necessary to clarify a few points regarding this concept. First, it cannot simply be equated to productivity or performance of the firm. The latter can be measures for upgrading but do not exhaust the concept of upgrading. Second, the word 'industrial' might give the impression of 'upgrading at the industry level'. However, the term broadly covers the upgrading process at several levels. In the literature, it has been mostly examined at the country and industry levels, instead of at the firm level. In this context, Ernst (1998) has defined industrial upgrading as substantial changes in a country's *specialisation* and *knowledge base* that increase its capacity for value generation. According to him, "industrial upgrading

needs to *complement* the current emphasis on financial and corporate restructuring”¹ (Ernst, 2001:1). He states that “industrial upgrading attempts to model the link between innovation, specialisation and Hirschman-type linkages (‘industrial deepening’), and possible consequences for economic growth through induced improvements in productivity” (Ernst, 2001:4; Hirschman, 1958). Moreover, the sources of innovation and growth have to be considered in a broader frame of reference that “includes the firm itself, its relationship with other organisations, and also government policy”.

Ernst (1998, 2001) puts forward four features of industrial upgrading:

- It implies a broader definition of innovation which covers not only R&D and patenting but also engineering, technology purchases, expenditures on licensing and consultancy, and technology search, as well as the accumulation of tacit knowledge required to absorb imported technology;
- It is a context-specific concept whose characteristics differ across industrial sectors and countries;
- It involves the possibility of a vicious circle of truncated industrial upgrading;
- It focuses on co-evolution of industry structure and firm behaviour as a result of the consensus that industry structure is insufficient to explain the dynamics of innovation and that firm behaviour (including organisation and strategy) has an important bearing on the strength as well as the kinds of innovation activity.

In pursuit of operationalisation of the concept, Ernst has proposed to a taxonomy which distinguishes five forms (below) alongside criticizing the studies that focus on only the first two forms of industrial upgrading and therefore fail to produce convincing results.

- *Inter-industry* upgrading within a hierarchy of industries that proceeds from low value-added industries (e.g., light industries) to higher value-added industries (heavy and higher-tech industries);
- *Inter-factorial* upgrading within hierarchy of factors of production that proceeds from “endowed assets” or “natural capital” (natural resources and unskilled labour) to “created assets”, i.e., “physical capital”, “human capital” (specialised skills), and “social capital” (a region’s support services);
- Upgrading of *demand* within a hierarchy of consumption, that proceeds from “necessities” to “conveniencies”, to “luxury goods”;

- Upgrading along *functional* activities within a hierarchy of value chain stages. That proceeds from sales and distribution to final assembly and testing, to component manufacturing, engineering, product development, and system integration; and
- *Industrial deepening* within a hierarchy of Hirschman-type forward and backward linkages, that proceed from tangible, commodity-type production inputs to intangibles, i.e., a variety of knowledge-intensive support services (Ernst, 2001: 4).

He also gives emphasis on the last two forms where the fourth form is *firm level* upgrading and the fifth is, in his words, the lifeblood for the individual upgrading firm (Ernst, 2001: 5).

Gereffi (1999) has made a significant contribution to the upgrading debate by examining the Asian and Mexican apparel value chains. He defines industrial upgrading as

a process of improving the ability of a firm or an economy to move to more profitable and/or technologically sophisticated capital and skill-intensive economic niches.

In this definition, industrial upgrading becomes a process of gradual shift from lower to higher value added activities within the value chain.² He proposes to examine industrial upgrading at different levels, mainly taking the apparel industry as the basis for his analysis: *within factories* – upgrading involves moving from cheap to expensive items, from simple to complex products, from small to large orders; *within inter-firm enterprise networks* – upgrading involves moving from mass production of standardised products to flexible production of differentiated products; *within local or national economies* – upgrading involves moving from simple assembly of imported inputs to more integrated forms of production (such as OEM and OBM), involving greater use of forward and backward linkages at the local or national level; *within regions* – upgrading involves shifting from bilateral, asymmetrical, inter-regional trade flows to a more fully developed intra-regional division of labour incorporating all phases of the commodity chain from raw material supply, through production, distribution and consumption. His analysis is strongly constrained by the evolution of apparel industry.

Gereffi emphasizes the necessity of ‘learning’ by the firm throughout the upgrading process. Taking the necessity of learning for granted, Ernst

uses innovation as one of the features of industrial upgrading, whereas Kaplinsky and Readman (2001) try to distinguish industrial upgrading from innovation. According to them, innovation is the development of new products/processes or improvement of existing products by the firms compared to their previous position, whereas upgrading is how fast the firm reacts to its changing environment in comparison to its rivals. This definition brings in *dynamics* analysis to the industrial upgrading concept, which I try to grasp through dynamic capabilities (internal to the firm) and networks (external to the firm).

Kaplinsky and Readman (2001) have worked on industrial upgrading at the firm level (at small and medium-sized enterprise [SME] level) and associated it with the value chain concept.³ They distinguish four types of upgrading:

- Process upgrading: *increasing the efficiency of internal processes* such that these are significantly better than those of the rivals, both within individual links in the chain (for example, increased inventory turns, lower scrap), and between the links in the chain (for example, more frequent, smaller and on-time deliveries from suppliers).
- Product upgrading: *introducing new products or improving old products faster than rivals to reap a market advantage*. This involves changing new product development processes both within individual links in the value chain and in the relationship between different chain links.
- Functional upgrading: *increasing value added by changing the mix of activities* conducted within the firm (for example, taking responsibility for, or outsourcing accounting, logistics and quality functions) or moving the locus of activities to different links in the value chain (for example, from manufacturing to design).
- Chain upgrading: *moving to a new value chain* (for example, Taiwanese firms moved from the manufacture of transistor radios to calculators, to TVs, to computer monitors, to laptops and now to WAP phones).

They have suggested that 'standards'⁴ have become crucial parameters determining the upgrading of process or product or both, due to their role as qualifying requirements for participation in global product markets and value chains. For this reason, upgrading follows a logical path, starting with process upgrading to decrease costs and improve quality. On this

upgrading trajectory, process upgrading is followed by product upgrading, then functional upgrading and finally with chain upgrading (Readman, 2002) that resembles to upgrading path in the Asian electronics or clothing firms. Process upgrading is particularly critical at the early phase of the upgrading trajectory since it paves the way for production network development via production sharing or a division of labor in the production cycle (for example, firms making complementary products or components for each other).

The context of Eastern Europe calls for addition of a prior category of upgrading to the four categories of industrial upgrading put forward by Kaplinsky and Readman (2001). I call it *managerial upgrading* and define it as improving the efficiency and effectiveness of production and non-production activities by acquiring new forms of organizational and managerial methods, such as training, teamwork, involvement of workers, application of ISO certificate and Hazard Analysis and Critical Control Point (HACCP) – in the food industry –, use of consultancy, etc. It constitutes the re-organization of the managerial activities so as to increase the efficiency in the firm, and development of the base for knowledge acquisition, accumulation, and integration through giving emphasis to means of internal and external learning. This must precede the other upgrading types in the context of CEE firms, in order for them to follow the trajectory suggested by Kaplinsky and Readman.

Therefore, *industrial upgrading* is part of a process of gradually acquiring, or enhancing the deficient intangible assets of the enterprises, that enable the enterprises to shift from lower to higher value added products and activities. Due to the specificities of the Central and Eastern Europe, enterprise transformation (ET) has become one of the major issues after privatization of State Owned Enterprises (SOEs) by either foreign or domestic investors. This is the process whereby the firm changes its shape, initially inherited from the communist era, via managerial and organizational changes and capability development. Doczy and Meyer (2000) define ET as

the process of changing an organization previously adjusted to perform according to the performance criteria and rules of the game of the real existing socialism to perform competitively according to the performance criteria and rules of the game of a market economy.

This definition underlines the necessity of managerial upgrading as the prerequisite for the continuation of the upgrading trajectory laid out by Kaplinsky and Readman. Consequently, managerial upgrading has its roots within ET but is not as broad as ET.

In addition to the universally applicable examples of functional upgrading given by Kaplinsky and Readman, two forms of functional upgrading that this research applies for the specific situation of the food industry value chain are the extension of the firm's activities to include systematic nation-wide distribution and consultancy to farmers.

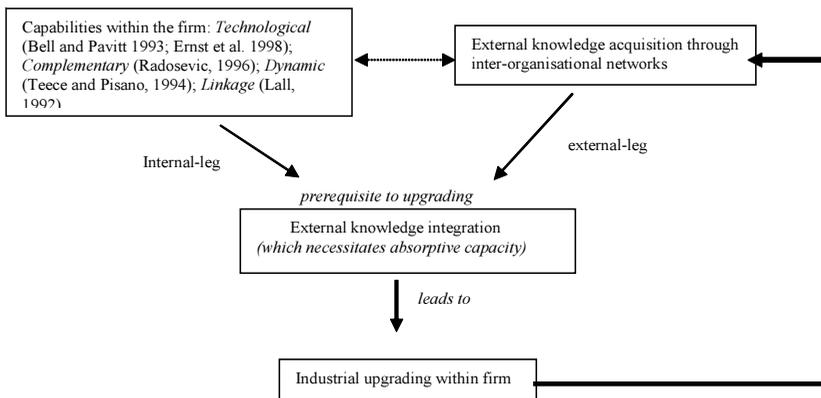
In a 1991 paper, Ozawa discusses how the changes in both the domestic market conditions (i.e., demand side) and in the manufacturing sectors (i.e., supply side) lead to a *new dynamo of industrial upgrading* in Japan.⁵ The above studies have put more emphasis on the supply side of the industrial upgrading, as the present study does. Yet the demand side deserves to be mentioned briefly, since Romania's low GDP per capita, coupled with increasing poverty and a growing informal economy, lead to imbalances in the demand and supply conditions in the food industry. The market conditions are mostly determined and controlled by the foreign investors rather than the demand, needs and preferences of Romanian consumers. The penetration of Western FDI after transition, alongside trade liberalisation, has introduced new and expensive products into the Romanian market. However, the capacity of Romanians, trapped by low real wages with decreasing purchasing power to respond to these products is limited. The local producers have evaluated the demands of Romanian consumers better than the foreign producers. Because they are not faced with consumers demanding luxury or innovative products but with the needs/aspirations of Romanian consumers to acquire diversified products at affordable prices – products which are not new on a global scale but are new for the Romanian market. Thus, the production of new products (mainly via the imitation of the new products introduced by foreign food companies into the Romanian market) with affordable prices has become one of the driving forces for the Romanian producers competing against foreign producers in Romania. These changes are gradually pushing domestic producers "to improve and move into newer and more advanced segments of the food industry over time, often upgrading competitive advantage in the process" (see Porter, 1990: 89) once they gain the necessary organisational capabilities.

As discussed in the above-mentioned literature, on the supply side, the installation of the latest possible machinery and equipment and the

acquisition and maintenance of up-to-date technology (which depends, of course, on the available capital) has helped the increase in productivity in the Romanian firms. Moreover, organisational improvements are complemented by managerial upgrading (i.e., change from rigid top-down to collaborative mentality), bringing about openness to complementing market relationships (i.e., buyer-supplier relations) with non-market relationships (i.e., networks).

The conceptual framework for this research, emerging from the discussion summarised above, is shown in Figure 1 below.

Figure 1: *Conceptual framework: Two-legged feeding mechanism of industrial upgrading*



2.2 Explaining Industrial Upgrading at the Firm Level by Resources and Capabilities within the Firm: Internal Dynamics

To understand “industrial upgrading at the firm level”, I will make use of the approaches on the growth of the firm (Penrose, 1995; Chandler, 1996). These approaches stress the resources, capabilities, and motivations within the firm, which prepare the backdrop for understanding industrial upgrading at the firm level (Kaplinsky and Readman, 2001). Resources transform inputs into outputs in terms of quality as well as quantity,⁶ whereas capabilities appear as each firm’s idiosyncratic ability to utilize these resources (Yoruk and von Tunzelmann, 2002). The theory of the

growth of the firm is essential in understanding not only allocation of resources and development of capabilities within the firm but also the modes of growth of the firm. I refer to the former as the internal dynamics of the firm. The latter comprises internal/generic expansion, mergers and acquisitions, and networks (Peng and Heath, 1996), as will be discussed in the case studies below.

Differing capabilities reflect the heterogeneity of firms in terms of their efficiencies when they are working with roughly similar resources. In the literature, different types of firm capabilities are examined in order not only to ascertain why firms differ but also to explain how these differences matter. These capabilities are complements rather than substitutes and they help in understanding the internal dynamics of the firm as a “processor of knowledge” (Fransman, 1994).

The key issues for this research are the underlying reasons behind the heterogeneity of firms and how changes in capabilities over time influence firm growth through external dynamics. As Kay (2000) summarizes Penrose’s argument (1959, 1995),

[T]he firm is a collection of resources, and its expansion is dictated by the interplay between internal resources and external opportunities. The emphasis is on the role played by productive resources, especially *management*.

The direction and extent of expansion is limited by the nature and availability of internal human (managerial) resources. Penrose points out that firms typically find it cheaper and less risky to concentrate on their existing products, *ceteris paribus*, but may expand into new areas in pursuit of growth (Kay, 2000: 82-84) (This will be demonstrated by two Romanian firm case studies below). She emphasizes that such choices are influenced not only by external opportunities but also by the nature of the internal resources available to pursue these expansion opportunities. In particular, human resources are firm specific and their effective combination with other resources (inside or outside the firm) is what makes for the firm’s competitiveness. So, it is up to the firm to develop and manage the resources and the core competences (Prahalad and Hamel, 1990) to create internal knowledge that paves the way for internal growth. Chandler (1996) also stresses *the capabilities of managerial hierarchies*. While acknowledging the crucial importance of the functional and strategic capabilities of the firm to compete for market share and profits,

he argues that it is the internal dynamic provided by the organizational capabilities of the firm that allows it to continue its growth.

Besides managerial capabilities, firms also develop other sets of capabilities that are highly important in firm growth. The concept of technological capabilities has been developed by Bell and Pavitt (1993) by making a useful distinction between production capacity and technological capabilities, where the former

incorporates the resources used to produce industrial goods at given levels of efficiency and given input combinations: equipment (capital-embodied technology), labor skills (operating and managerial know-how and experience), product and input specifications, and the organizational methods and systems used,

and the latter

consists of the resources needed to generate and manage technical change, including skills, knowledge and experience, and institutional structure and linkages.

Ernst et al. (1998) have identified six categories of technological capabilities in the context of traditional industries in developing countries: strategic marketing, production, investment, linkage, minor and major change capabilities. Investment capabilities refer to the knowledge and skills needed for the expansion and/or modernization of the existing production facilities or the identification, preparation, design, setting up and commissioning of a new investment. This capability is extremely important in the CEE firms for a fresh start with higher productivity levels and lower production costs. Production capabilities, as distinct from production capacity above, relates to the knowledge and skills within the firm applied to both process and product technologies and industrial engineering such as repair and maintenance as well as monitoring and controlling of the functions during production. Besides ensuring smooth functioning of the technologies in use, production capability refers to utilization of the in-house abilities for the absorption of the new technologies bought or imitated from other firms (Lall, 1992; Ernst et al., 1998). For Ernst et al. (1998), minor change capabilities include the firm's abilities to improve and adapt continuously its products and processes, whereas major product change capabilities are those needed for creating

new technology, i.e., major changes in the design and core features of products and production processes (pp.18-20, 22).

CEE firms have special needs with respect to complementary capabilities related to finance, marketing, quality, and organization as opposed to technological capabilities. Radosevic (1996) argues that these enterprises have relatively well developed production capabilities, yet lack system integration at the product level and network building at the enterprise level. Nevertheless, re-configuration of capabilities within firms is taking place, irrespective of their lack of strategic awareness in some areas. The main interest of this paper is to find out what are the networking impacts on this capability development en route to upgrading.

In line with the 'dynamic' definition of upgrading above, this paper also refers to 'dynamic capabilities' (Teece et. al., 1997), a concept which is defined as the ability to achieve new forms of competitive advantage, elucidating the change in capabilities over time, often characterized as unique and idiosyncratic processes that emerge from path-dependent histories of individual firms. The authors describe what they want to emphasize with the use of these terms as follows:

The term "dynamic" refers to the capacity to renew competences so as to achieve congruence with changing environment; certain innovative responses are required when time-to-market is critical, the rate of technological change is rapid, and the nature of future competition and markets (is) difficult to determine. The term "capabilities" emphasizes the key role of strategic management in appropriately adapting, integrating, and re-configuring to match the requirements of a changing environment. (Teece et al., 2000:4)

In light of the above definition, Eisenhardt and Martin (2000) elaborate the definition of dynamic capabilities as "the organizational and strategic routines by which firms achieve *new resource configurations* as markets emerge, collide, split, evolve and die" (p. 1107). They articulate the definition by a list of exemplary types of dynamic capabilities based on extensive empirical research and management applicability: strategic decision making (concerning the strategic moves of the firm); (internal) knowledge creation routines; alliances and acquisition routines for gaining new resources or altering their resource base from external sources; and exit routines in the case of a market change.

A significant element in sustaining dynamic capabilities in the firm consists in ‘gatekeepers’ – individuals that maintain active communication with scientists in other firms, government laboratories, and universities. Communication of this type, which represents the bulk of relationships of Romanian food firms with the universities, generally takes place on an informal basis. The gatekeeper is usually the production or technical manager, who is a graduate of a particular university and maintains his or her relationship with staff of that university with regard to consultancy, new knowledge acquisition, product development, and the like. However, neither this kind of network development through gatekeepers nor the presence of gatekeepers themselves in most of the Romanian firms is a strategic decision.

According to the dynamic capabilities discourse, the main point is not the capabilities themselves but the use of these dynamic capabilities for new resource configurations by managers. Therefore, to gain competitive advantage, dynamic capabilities are necessary but not sufficient conditions; resource re-configurations, as combinations of tightly woven, synergistic activities, are also needed (Eisenhardt and Martin, 2000).

Linkage capabilities are of special interest to this research. Lall (1992) defined linkage capabilities as the skills needed to transmit information, skills, and technology to, and receive them from, component or raw material suppliers, subcontractors, consultants, service firms, and technology institutions. Ernst et al. have divided the mutual transmission of the knowledge mentioned by Lall into three levels, namely within a firm, from one enterprise to another, and between the firm and the domestic science and technology infrastructure. This research adopts a combination of the two definitions but will not restrict itself to domestic science and technology institutions. The international dimension of the relationships is significant in understanding the global impacts of the networks.

There are two crucial points here. The first is that resources and capabilities might provide the potential of *having* knowledge but they are not justified as long as this potential is *used* (Ritter and Gemuenden, 2002) in pursuit of better performance. The second is that in addition to technological and dynamic capabilities, to which most attention is devoted in the literature, complementary and linkage capabilities that are directly linked to managerial capabilities are also highly significant in shaping the growth strategies of firms in the CEEC context.

Drawing upon this background of what I call the internal dynamics of the firm and following the Penrosian approach, I argue that networks constitute a key external element/tool in such learning and knowledge transfer processes. It thus becomes necessary to understand the firm in both its internal and external relations. However, it is not easy to separate networking from the issues of modes of governance, which have been employed in the generation of resources and products, and had impacts on the development of capabilities within the firm. Governance can be defined very broadly as 'organizing collective action' (Prakash & Hart, 2000). Conventionally, modes of governance are divided into markets, hierarchies (both corporate and political), and networks. The process of transition in the CEE countries is most simply regarded as a shift from political hierarchies to markets as the predominant governance mode. However, my concern in this research is more with the networks, without ignoring the corporate hierarchies. The former are seen as critical to the interlinking of resource accumulation and production activities. The latter is a dominant feature of the multinational enterprises (MNEs) studied in this research to form a basis for comparison with Romanian firms.

Hence, industrial upgrading at the firm level appears to be a function of technological, complementary, dynamic and linkage capabilities as well as absorptive capacity. The latter is defined by Cohen and Levinthal (1990) as a function of the prior level of related knowledge and background history. This refers to the acquisition and/or assimilation of information by an organization as well as the organization's ability to exploit it. Absorptive capacity does not simply depend on the organization's direct interface with the external environment, but on the transfers of knowledge across and within sub-units. Thus, the need to access the external environment for external knowledge acquisition and/or transfer requires linkage capabilities within the firm.

Therefore, this paper argues that the internal dynamics are important but not sufficient for the growth of the firm and thus industrial upgrading within the firm. The capabilities that constitute internal firm dynamics create an important backdrop for understanding the evolution of industrial upgrading at the firm level "(t)hrough the recombination of knowledge, ... partly by the generative logic of their capabilities but also by the opportunities and influences of the external environment" (Kogut and Zander, 1996: 503). Firm dynamics benefit from external elements like networks with other organisations in order to bring the external knowledge into the firm.

2.3 Explaining Industrial Upgrading at the Firm Level by Strategic Networks: External Dynamics

The growth of the firm in transition economies has been divided into three categories by Peng and Heath (1996): first, generic expansion, as discussed by the resource-based view (Penrose, 1959; Wernerfelt, 1984; Chandler, 1996) and followed by the capabilities literature; second, mergers and acquisitions (minor or major) where the firms create bigger oligopolistic units by merging or subsidiaries or affiliates (i.e., holding-type structures) by acquiring shares in an existing firm; and third, networks which are treated as either the intermediate form between market and hierarchy in transaction cost economics (Contractor and Lorange, 1988) or a new phenomenon in their own right (Chesnais, 1996). Recently internal growth generated by the capabilities discussed above has become a *sine qua non* for firms to operate on the frontier of the market, if not of the technology, in the CEECs. Generally, in the last two decades there is a global tendency for the reinforcement of enterprise growth strategy to be strongly predominated by networks; in the most developed countries, moreover these networks are increasingly characterized by non-market activities. Also, in the 1990s, to some extent, the MNEs have transformed/decentralized their internal structures, becoming networked firms (Buckley and Casson, 1998). Yet, as will be shown, the MNEs in the CEECs – particularly in the food processing industry – hardly provide evidence of this transformation into ‘networked MNE’ structures.

In the 1980s, scholars have been interested in the simple buyer-supplier relationships that inspired the huge business networks literature, which in particular focuses on the co-operative marketing activities of firms, and the mechanisms by which they stimulate the development of further networking activity (e.g., in the areas of production specialisation, knowledge and technology transfer, etc.). In the 1990s, the profile of the networks has been altered in response to the demands of the developing knowledge-based economy, as firms have begun to search for new external knowledge through differing means than they have employed inside the firm. As mentioned above, the purpose of various types of networks is to enhance and facilitate the ability/potential to extract knowledge from these relationships and then absorb/integrate it into the pool of knowledge within the firm. The crucial role of knowledge integration (as well as acquisition and accumulation) has been emphasized in the knowledge management literature.

There are no clear-cut types and definitions of 'networks' in the literature. As early as 1983, Haegg and Johanson edited a book called *Firms in Networks*, in which they introduced the concept of networks as a mode of organization, that is neither a company nor an "intermediate form"; this concept was to serve as a tool for understanding the relationships in the industrial market in order to understand the industrial development. Though they restricted their description of the scope of networks to buyer-seller relationships, they pointed out the importance of long-term and stable relationships between buyers and sellers for the exchange of information and also noted the differences between domestic (more extensive, more intimate and informal contacts) and international relationships.

In his book on strategic networks, Jarillo (1993) starts by making a broad definition: "...a set of companies that work together towards a common goal" and ends up with the definition of "an arrangement by which companies set up a web of close relationships that form a veritable *system* geared to providing product of services in a coordinated way." Gulati et al. (2000) very broadly defines strategic networks as a "...firm's set of relationships, both vertical⁷ and horizontal,⁸ with other organizations – be they suppliers, customers, competitors, or other entities – including relationships across industries and countries". There are many approaches to networks from different disciplinary backgrounds that define various types and dimensions of networks that *overlap* to a great extent in the real world, such as *business networks, industrial or production networks, innovation networks, knowledge networks*, and so on.

In this paper, networks are defined as inter-organizational relationships without (as much as possible) hierarchical control, i.e., formed by large firms to develop non-market flows, which are often aimed at changing quality rather than quantity. I differentiate here between two types of relationships: equity (where the partners are linked by ownership – shareholding, i.e., pecuniary relationships) and non-equity (i.e., not based on ownership) relationships. This research does not totally exclude equity relationships but includes third party relationships such as joint venture and acquisitions (resulting from growth strategies as discussed above). The non-equity type of relationships includes subcontracting, alliances with suppliers and customers, licensing, research consortia, strategic alliance, cooperation with potential competitors; the first two are vertical relationships and the rest are horizontal.

Vertical relations in a network help develop exchange/transfer of knowledge from one stage of production to the next stage in the value chain (from upstream to downstream); here firms play complementary roles – one can think of it as a division of labor. Horizontal relationships, on the other hand, facilitate the improvement of products, processes, etc. through dissemination of knowledge among companies, with more or less similar capabilities. By its nature, the firm always seeks to create diversity by combining bits of information on the cutting edge and benefiting from coping with the ‘unknown’. But tacit knowledge is not costless and not easily transferable, and its dissemination necessitates interaction as it is embodied in human, in firm, and so on.

There is also another dimension of the networks, which is the spatial/regional dimension: local, national, international (or global) networks. This dimension is analyzed in the literature mostly from the international networks viewpoint via the operations of the subsidiaries of the multinational corporations in the host countries, i.e., East European countries. The multi-level structure of governance has also yielded these three regional levels of networks. Subsidiaries of multinational corporations are often recognized as important for the development of international business. They represent one of the hierarchical governance structures. By interacting with their own networks at the international level, they shape the networks in the host country. What impact the subsidiary’s competence has on the development of the foreign corporation or on the development of the host country’s industry climate and vice versa is not deeply analyzed.

MNE growth is not analyzed in categories substantially different from those used in the general discussion of the growth of the firm. Yet, it has been generally explained through Ownership-Location-Internalization (OLI) advantages by Dunning (1994), where it is examined alongside the internationalization process. In terms of the OLI framework, FDI is undertaken if these three advantages are met simultaneously. As Narula and Dunning (2000) discusses in the context of developing countries, there are opportunity costs on which MNEs and the CEECs base their relative bargaining power in developing international business. FDI flows to transition economies are based on the demand for the firm-specific assets of foreign firms in transition countries (Meyer, 1997). In his OLI framework, Dunning refers to these firm-specific assets that MNEs possess as ownership advantages. On the other hand, the host countries possess the location advantages, including policies and incentive systems, natural

assets, created assets, and agglomeration economies (Meyer, 1997), that lead to four distinct type of FDI: resources-based, cost-reducing, R&D-driven, and domestic-market-driven (Radosevic, 1997).

Although the Dunning model is static (that is, it does not cover the impact of changing environment due to liberalization of markets, privatization, and so on), it does provide insights into what FDI might bring to the transition economies in the sense of improving the existing situation at the firm level. Recently there have been studies that investigate the co-ordination of knowledge transfer (backward or forward) between the MNE and its subsidiaries (Cohendet et al., 1999; Gammelgaard, 2002). In the Romanian food industry we observe mostly the internal flow of resources – namely, product, capital, knowledge and technology – within the MNE network from the parent to subsidiary. Thus, the subsidiary or the affiliate becomes a ‘resource user’; that is, there is low outflow from the subsidiaries to the rest of the MNE network but high inflow of resources from the rest of the MNE to the subsidiaries (Randoy and Li, 1998).⁹ A reversal of this situation, making the subsidiary a ‘resource networker’, necessitates improvement of its own, independent capabilities. Failures to achieve this constitute one of the most frequently criticized points regarding the operations of MNEs in developing countries (see Ariffin and Bell, 1999).¹⁰

Not only firms are active agents in knowledge production and distribution. Local institutions also contribute to the process of socialization of information and knowledge. This has led to a discussion of local level networks. For this reason, at this stage, this research does not exclude other organizations from the analysis.

The recent literature has mainly concentrated on understanding the formation of networks, seeking to explain its determinants as well as the motives of the firms for engaging in such activity. This is an area where there is very limited research on Eastern Europe. The aim of my research is to identify patterns of the knowledge transfer among firms and other local, national, or international organizations through networks and the impacts of the networks on the firm itself. So, assuming that knowledge is created within and/or acquired from the networks, this research attempts to find out how these networks affect the indigenous firms in Romania by trying to answer the questions to what extent the indigenous firms are involved in networks, to what extent they are capable of acquiring and absorbing the knowledge from the network they are involved in, and what are the consequences of knowledge acquisition and absorption in

integrating into further networks after achieving some level of industrial upgrading.

3. The Food-Processing Industry

3.1 General Assessment of the Food-Processing Industry in the Communist Period with Special Reference to the Romanian Food Processing Industry

As we have analyzed elsewhere (Yoruk and von Tunzelmann, 2002), food processing in Romania before the transition was shaped by the dominance of political hierarchies. Due to supply and self-sufficiency policies, priority and subsidies were given to *production of basic consumer products*, but not to a level of processing that would differentiate products in the market, to packaging for marketing purposes, to distribution (run by the state), and to quality (kept at an inferior level). The industry was sacrificed in favor of the expansion of other industries, such as heavy industry and extractive industries. Therefore, when the system collapsed, the food-processing industry was underdeveloped, with an enormous need for investments to update the obsolete machinery and equipment as well as to catch up with European standards. Under these circumstances, a severe crisis after the transition was inevitable. For this reason, Hanzl (2000) calls the period between 1989-1993 a ‘transformational recession’, which was coined by Kornai (1995), in the context of food industry. The liberalization of markets and trade, coupled with the change in the political system, has encouraged the imports of high quality food products as well as FDI from the West. Subsidies from the government have come to a halt. The strong and airtight ‘state-run network’ between the large collective and state farms (*kolhoz* and *sovhoz*) and large combined food processing factories (*combinats*)¹¹ has disappeared. We see this as a context characterized by widespread ‘network failure’.

This network failure is due to the socialist period’s top-down science and technology policies in which the monopolization of co-ordination mechanisms by hierarchical relationships precluded horizontal co-ordination (Pavitt, 1997). After the transition, with the evolution of the enterprises through restructuring, privatization, and corporate governance, a bottom-up system has started to emerge. The existing national innovation system, which was predominantly state-dominated, has shown signs of

conversion into a market-oriented one. However, there appears to be a danger of switching from one network failure (state domination) to another: domination by foreign firms. Both the old and new networks show disconnectedness within the system. In the upstream segments of the food industry (i.e., agriculture), the state ceased to be a system integrator with the fall of the communist system. The problems of agriculture have become more severe, and old vertical relationships were all destroyed (OECD, 1998; OECD, 2000).

The food-processing industry is strongly linked to agriculture, which functions as its main raw material supplier. There were significant differences between the structure of the food chain in the capitalist system and that in the communist system. In the West, farmers were typically small producers in competitive conditions, while processors were large producers in oligopolistic or even monopolistic market conditions. Therefore, the retailers, who were generally also small units operating under competitive conditions, were driven by the processors. The recent tendency is towards the dominance of large firms with a fringe of smaller ones, but driven by oligopolistic retailers, like Carrefour, Metro, Tesco, etc., who control not only the food manufacturers but also the agricultural growers. This is strongly related to the high saturation and fierce competition in the downstream of the food industry in the West and reflects the shift from being supplier-dominated to being demand-driven (cf. Gereffi, 1999, buyer-driven value chain literature).

In very general terms, in the communist era, the collectivization of agriculture was not only an obstacle to competition but also determined the organization of the food industry. Instead of agriculture being dependent upon the processing firms, the processing factories were dependent upon the agricultural collective farms; thus, in contrast to the West, the upstream was favored in lieu of manufacturing. The retailing part of the industry was oligopolistically or monopolistically state-run and driven by the state processors (OECD, 2000). A stagnating and supply-driven industry was left to be revitalized primarily by the inflow of foreign technology following transition (von Tunzelmann & Charpiot-Michaud, 2000), at least in the mid-term.

3.2 Foreign Direct Investment and Its Expected Impacts

After transition, the targets and associated strategies of domestic firms have been shifting, into line with western values and perceptions, and these shifts have of course radically altered business practices. The food processing industry has experienced restructuring through privatization of the former state-owned enterprises and entry of MNEs to the region, although this has occurred relatively late in Romania compared to other CEECs. This restructuring is strongly influenced by the pace of changes, though slow, in the agricultural system, and the rebuilding of networks with the drive coming from the food processing companies, instead of the state.

Especially at the beginning of the transition, the food-processing industry was performing badly in almost all CEECs. Yet, it has attracted significant amounts of FDI (Duponcel, 1998), which was focusing on market-seeking strategies in the internationalization policies of MNEs. The latter have mainly been attracted by domestic market share rather than export opportunities. This has helped to decrease competition in Western Europe by allowing for production and export within the CEEC region, if appropriate. However, investors have preferred factories with more advanced technology, a quasi-monopolistic position, relatively good organizational features, and favorable location (Hanzl, 2000). It is also argued that FDI has positive effects on the restructuring of the domestic enterprises and the reorganization of the structure of the industry in the transition economies, through stimulating the competitive environment and bringing new technology and new managerial know-how. The domestic companies are compelled to adopt cost-saving and quality-improving production processes as well as to learn and apply marketing and advertising. This has paved the way for increasing efforts by domestic companies to catch-up with the European standards of food quality and safety all along the food chain and to obtain ISO certificates, not only to retain their market shares against the foreign competitors but also to be able to penetrate to foreign markets, particularly in Western Europe. Attracting FDI is also related to government policies. For instance, the stock of FDI in the Czech Republic, where priority was given to privatization to domestic owners via voucher scheme in lieu of attracting FDI, was less than half that of Romania at the end of 1996 (Duponcel, 1998).

Foreign investors are selective concerning which sub-sectors to enter (OECD, 1998). In Romania, we see foreign investment mainly in edible-oil, confectionery, sugar, beer, and tobacco, but not much in primary-processing sub-sectors like dairy, bakery, and meat. They have chosen the industries that are profitable, are state monopolies, or have easily obtainable market share, and in which brand ownership is decisive. At least at the beginning of the transition, they stayed away from the sub-sectors where the exportation to the CMEA was high since these sub-sectors experienced overcapacity problems.

A phenomenon worthy of special attention is the expansion of (already penetrated) foreign investors' operations by the continuous acquisition of new firms. This does not leave any room for newcomers and makes it difficult for the Romanian firms to compete in the market. Finally, Duponcel (1998) argues that the industries where less cooperation with the agricultural suppliers is required are also preferred by foreign investors in the food-processing industry. But four years later, our data provide evidence to counter this claim.

3.3 Significance of the Food Processing Industry in the Romanian Manufacturing Sector

Although the significance of the food processing industry varies from country to country within Central and Eastern Europe (CEE) (Duponcel, 1998), in general terms, it is a central part of manufacturing, both in terms of production and employment (Hanzl, 2000). In 1989, the food processing industry played a major role in almost all the CEECs, while in 1999 only Poland, Romania, and Bulgaria¹² have remained specialized in this industry. In Romania, after 1990 almost one fifth of the manufacturing industry has been composed of food and beverage industry (Table 1). However, after 1993 it has shown negative growth in contrast to other CEECs, which can be explained by supply and demand side effects, i.e., the stagnation in agricultural production due to late privatization or restitution on the supply side, and restricted access to the foreign markets due to quality factors and the low purchasing power of the Romanian consumer in the domestic market on the demand side. Romania has become a net importer in agro-food sector while it was a net agro-food exporter under the communist regime (OECD, 2000).

Table 1. Structure of industrial production in selected significant sectors in Romania (percentage)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Manufacturing total	100	100	100	100	100	100	100	100	100	100	100
Food and beverage	16.8	17.7	18.0	22.9	20.0	20.2	20.9	20.4	23.1	18.7	20.3
Textiles*	14.3	13.6	10.7	10.2	8.5	9.1	8.7	7.9	8.9	9.4	8.4
Metallurgy	9.9	11.5	13.0	10.4	11.9	12.9	12.7	14.7	12.3	12.1	14.4
Crude oil processing Chemistry and synthetic and manmade fibres	8.0	7.8	8.2	10.2	9.7	9.6	7.8	10.5	8.0	10.6	12.7
	8.5	9.3	10.8	8.7	9.4	10.8	9.5	9.1	7.4	7.8	8.8

* Textiles include 'textiles and textile products', 'textile, fur and leather wearing apparel', and 'leather goods and footwear'.

Source: own calculations from the data of INSSE, Annual Yearbook, 2001

Table 2 shows the growth in the share of food and beverage industry employees in total manufacturing employment, and Table 3 shows the growth of investments and intangible fixed assets in the Romanian food and beverage industry. Discernibly, in these terms, the share of the food industry in total manufacturing has shown acceleration after the transformational recession period.

Table 2. Average number of employees in Romanian food and beverage industry

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Manufacturing total	100	100	100	100	100	100	100	100	100	100	100
Food and beverage	7.5	8.0	8.6	9.8	10.1	10.5	10.2	10.5	11.2	11.3	10.8

Source: INSSE, Annual Yearbook, 2001

Table 3. Indices of investments and tangible fixed assets in Romanian food and beverage industry 1990=100

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Investments	105.3	147	159.9	138.6	327.7	352.6	252.8	290.3	219.2	219.2
Tangible fixed assets	104.7	109.9	117.6	125.9	156	161.9	163.7	237.5	249.4	326.9

Source: INSSE, Annual Yearbook, 2001

3.4 Special Characteristics of the Food Processing Industry

The food processing industry contains a diverse and very heterogeneous collection of sub-industries, some approaching perfect competition, others decidedly imperfect (cf. Sutton, 1991). Moreover, it is often overlooked as a major segment of manufacturing in the West, where studies have

recently tended to focus on the 'high-tech' industries. It is regarded a traditional, backward-looking and low technology industry. However, the industry has not only played a major role in the early stages of industrialization in a number of advanced countries, like the Netherlands, Denmark and Switzerland, but has proved to be an evolving industry with increasingly capital-intensive technology (particularly in the West, though to a lesser extent in Eastern Europe) and provides impetus for growth (von Tunzelmann & Charpiot-Michaud, 2000).

It is true that food-processing firms do not carry out much of their innovation 'in-house', which eliminates them from the R&D intensive industry categories (as, for instance, in the OECD classification). Innovations have predominantly been process innovations and thus mainly come from suppliers of machinery and equipment. This has pushed the industry into the "supplier-dominated industry" category of the much-used Pavitt taxonomy (Pavitt, 1984). The process innovations in the mechanical engineering industry have not always targeted the food-processing industry, but machinery producers for the food-processing industry have benefited from the advances in machinery that are destined for different users. Moreover, the food industry is a beneficiary of scientific advances in mathematics, chemistry, physics, computer science, and biotechnology. For instance, the modification of milk to produce healthier butter is a matter of choice among various available techniques, including the physical, the chemical, the biotechnological, or the agricultural techniques (changing the feed of the cows). These techniques are integrated into the processing techniques in the food industry, in cooking, pasteurization (UHT milk), in freezing, in production integration and in packaging. Process innovation is at the middle of the shift from supply-driven to demand-driven (the latter including changes due to the shifts in socio-economic patterns such as the increase in the number of working women, etc.).

The product innovations, on the other hand, can be divided into two categories: new products and new ingredients. New products include more exotic foods such as ready made dishes; more prepared foods such as sauces, microwave foods; more casual foods such as snacks; healthier foods such as low calorie, low fat foods. Examples of new ingredients include the substitution of natural for artificial ingredients (replacement of E-number additives with more nature-identical flavorings) and the replacement of 'bad' ingredients (protein alternatives to fats, alternatives to sugar). There are also demand changes that affect product innovations,

like rising incomes, homogenization of tastes (demand for ethnic foods); rising employment of married women (ready-made meals); increased pressure and stress in life (snacking); global competition among producers for market share restructured tastes in the world (Coca Cola, McDonald's, etc.). For example in packaging, the new processes are designed to meet consumer demands for (i) ease of use (e.g., ring-pull cans and tear-strip openings), (ii) new eating habits (as for ready meals), (iii) food safety (e.g., avoiding the 'migration' of packaging into the product), (iv) environmental friendliness (e.g., avoiding non-biodegradable and wasteful packaging). In these respects, the process changes have aligned with product innovations as responses to shifting consumer demands (for details see Christensen et al., 1996).

The permeation of food-processing technology by industries such as biotechnology, pharmaceuticals (e.g., to develop special vitamins that are not destroyed at high temperatures), advanced materials (whose use in the packaging industry has generated product innovations, especially in the cases of frozen food and ready-made products) and other high-tech industries has been a recent phenomenon that mitigates the backwardness of the food-processing industry in terms of research and development. This has introduced and strengthened the need for collaboration with other firms and industries, encouraging horizontal spillovers of technological know-how.

4. Research Methodology

The conceptual framework of this research is tested through empirical work with data collected from four multinational and four Romanian large food enterprises as well as one special case (a small Romanian university spin-off firm). In order to achieve a comprehensive understanding of the industrial upgrading (at the firm level) and networks relationship, this research was conducted at the firm level instead of the industry level, but it will place firms in the context of the mezzo environment of the 'industry' or 'sub-sector' that surrounds them, not least because this is a key determinant of their strategy (cf. Porter, 1990). Because the food processing industry is a very competitive industry, I have coded the company names.

I will make use of what the historian Eric Hobsbawm calls "grass root history", i.e., gathering information not only from information codified in

the history but also from personal memory and experience. For this reason, face-to-face interviewing is the main technique used to shed light to the research question this paper examines.¹³ Information used to select the companies has been collected on the basis of a two-page questionnaire sent to the firms. Using the results of this questionnaire, firms were selected for case studies on the basis of their networking activity. The sample was chosen in such a way as to include both firms with or without networks. Information for empirical testing of the framework was collected through interviews, site observation, company annual reports, and secondary sources such as business magazines, journals, newspapers, and the Internet. The interviews were conducted with people at top and intermediate managerial levels (see Table A.1) in both question-answer and discussion form. When necessary, native interpreters have been used.

In the next section, I present this empirical analysis, focusing on the interface of the network development strategies of the firms and their level of upgrading. In line with the framework of this research, the interview questions have sought first to ascertain the existing resources and capabilities as well as capability development with the firms interviewed. Then the spatial dimension of network development of the firms is analyzed, i.e., networks at local, national, and global level as well as with the EU, as a supranational organization. Finally, the upgrading is analyzed in terms of the four categories discussed above, namely managerial, process, product and functional upgrading.

5. Empirical Findings in the Industrial Upgrading – Networks Relation in Romanian Food-Processing Industry

In this section, I begin with brief presentations of nine companies (Table A.1 in Appendices). Then the analysis follows in the light of the model. The role of network development strategy (Table A.2) in the industrial upgrading of foreign and Romanian food companies (Table A.3) is discussed taking into account the resources and capabilities (Table A.4) within the firms.

5.1 Concise Company Presentations:

Foreign Firms

FOR1 can be seen as an example of upgrading without networking, and is, additionally, a good example of the expected positive effects of FDI (see discussion above on FDI) on the host. The company has undertaken enormous investment in production facilities, modernizing and introducing state-of-the-art technology. These changes have covered new product launch in the domestic market, for which know-how has been brought by the parent company. Profound change has taken place in the managerial activities, in organization, and especially in the distribution system as FOR1 produces a consumer product (beer). Training for the Romanian managers and engineers has become priority, yet the top management is still composed of foreign managers who have worked in the other companies of the Group in other countries. The company seems to cooperate with the subsidiaries of the other MNEs in Romania in its market-based relationships. It is not involved in the global networks of the mother company whatsoever, yet its needs are determined and met via coordination of the mother company with other companies within the Group. Synergies within the Group seem to be under control of the mother company, with a highly hierarchical structure.

FOR2 produces an intermediate good (malt) for breweries and bakeries, which requires secure raw material procurement. The firm has penetrated CEECs using differing modes of entry, taking the situation of the production facility as its choice criterion. The two Romanian factories in which production is carried out are technologically obsolete. For this reason, two factories have been rented for five years instead of bought, and FOR2 plans to make a greenfield investment after the rental period ends. This makes a difference for its approach to process upgrading. The priority of the company during this rental period is to establish its supplier base through strong, long-lasting, and trust-based relationships with farmers and secure its raw material stock. The general manager was working in the home country before being promoted to Romania, and the Romanian agronomist has been sent to the home country for training. The know-how and the agricultural techniques are guided by the parent company, which specializes in agricultural procurement, and by the French consultants it appoints for its subsidiaries. The firm uses experimental fields where it gathers the Romanian farmers to demonstrate good and bad practice as well as new agricultural techniques and their outcomes.

The most striking feature of this company is the effort of the general manager to develop systematic and efficient interaction among actors within the sector, and to coordinate them in hastening urgently needed agricultural reforms by getting the support of the ministries. The synergies between the Romanian and other CEECs subsidiaries are coordinated and well managed by the parent company. These companies are integrated into the global network of the mother company, especially in the outsourced R&D facilities.

FOR3 produces sugar for industrial and consumer consumption. In 2001, they started to produce branded sugar, which is an innovation in the Romanian market. The firm has modernized in the infrastructure of the factories and introduced its own know-how (five-step technology) with the existing machinery and equipment. The Romanian subsidiary is unique among the CEE subsidiaries in that the raw material is supplied through world markets. This is due to the deterioration in sugar beet production in Romania since transition (OECD, 2000). However, a project is underway to develop a local supply chain and work with contracted farmers under their supervision. Apart from these plans for the near future and market-based transactions, the firm has no particular relationships with other organizations. Its main customers are other foreign firms in the Romanian food industry, like Coca-Cola, Kraft Jacobs, etc. On one occasion, a Romanian research institute was contacted to solve a machinery problem. The main links are developed with, and under the control of, the mother company. There are no obvious synergies between the CEE subsidiaries, possibly because of the raw material importation in Romania. It is aware of the importance of ISO certification and aims at getting it soon.

FOR4 produces processed cheese (cream cheese) with the raw material (milk) supplied by Romanian farmers. This forces the firm to cope with some of the predicaments of agriculture in Romania. In order to ensure the hygienic condition of the milk, they have made some investments in the collection points as well as in training of the farmers as to how and when to milk and bring the milk to the collection points. It made a further acquisition with the aims of securing the raw material and specializing the factory in *cașcaval* (Romanian cheddar). Again, the relationships are mostly restricted to its mother company and to other foreign firms in Romania with whom the mother company works. There are some market-based relationships with big Romanian firms. ISO certification is a policy of the mother company as well, and the Romanian

subsidiary, and expects to get it soon. The first acquisition was a state dairy factory, which has been rebuilt in accordance with the new production process and technology brought by the mother company (this was second-hand but relatively new technology). The Romanian technical and quality control employees have been trained in the home country. Since FOR4 started operations in 1998, they have launched many new varieties of processed cheese and *cașcaval* on the Romanian market. The general manager, who is Romanian, aims at getting funding from the EU through the SAPARD program for the restructuring of agriculture in the region.

Romanian Firms

ROM1, in the milling and bakery industry, is a success story in itself. It was privatized through a management-employee buyout (MEBO). Although the management has not changed since the privatization, ROM1 has undergone significant organizational change with the establishment of new departments (in which CEE firms are generally deficient), from 1993 to 1996. These included marketing and sales, distribution, economic analysis, and strategy departments. The finance department has also been re-organized. Exceptionally, in 1993, ROM1 has set up an in-house R&D unit and got patents for its inventions in four products. This unit has paved the way to development of strong relationships with Romanian universities as well as European research institutes (like the Dutch ATO) and to getting involved in EU-financed programs and obtaining funding from the Romanian government for these involvements. It is a vertically integrated firm. Since privatization, ROM1 has extended its activities to bread improvers, frozen pastry products and catering facilities, but it is not engaged in upgrading raw material procurement with a view to obtaining higher quality raw materials. It has solved this problem by developing a correction technique in its processing technology, developed by its R&D unit. Lately it has established a joint venture with a Danish company and has acquired 41% of a Bucharest bakery company. It obtained ISO certification in 2000, and aims at exporting to West European markets as well as establishing networks with West European firms. It cooperates with local Chamber of Commerce in training and marketing, and with the University of Galati in R&D activities. It also works with Romanian and foreign training and consultancy agencies.

ROM2, a dairy company, is highly reserved in its contacts with other organizations and has almost no explicit links with any organization apart from buying and selling activities. A team of five people in the management makes decisions on product and process development. ROM2 does not hold any patents but is the exclusive producer of two products whose processing is very specialized. It exports overseas through an intermediary trade company in Bucharest, just as in communist times. No managerial changes have been made since privatization. A hierarchical structure is combined with the sceptical attitude of the firm's management towards any kind of collaboration with other organizations, owing to distrust of its foreign and domestic competitors. New investments have been made in order to expand the business to new production areas within the dairy industry (e.g., ice cream). The only inflow of knowledge is from universities; though not through collaboration, but rather through the enrolment of its managers in masters and PhD programs at the universities. Through these links, one of the production managers has been working on HACCP. ROM2 is a vertically integrated firm, having its own farms for milk supply and its own distribution system for the entire county.

ROM3 is a very good example of mismanagement, though the firm has a good historical record, with potential to upgrade. It was a successful company, which was conducting product development under the development plans of the ministry, functioning in a broad range of sectors within the food industry. During the privatization process, the government sold its shares to one of the company's local competitors, which brought an end to the successful improvements. The decline of ROM3 helped the competitor company that acquired it to replace its market share. Until that time, ROM3 had been producing 12% of the confectionery in Romania. The engineers of the company, who are still with the company, successfully introduced expanded cereal for the first time to the Romanian market and developed a new product in 1997 in interaction with a customer. Yet the investments to modernize the technology of the company have been very restricted, undertaken just before transition and in 1996. Now they are cautious as to whether an investment in technology will be rewarding. Therefore, in attempts to stabilize the position of the company in the regional market, the first aim is to diversify their products with the existing process technology. During those years, ROM3's international cooperation has been limited to exporting attempts and technology acquisition. Before the onset of mismanagement, the

local Chamber of Commerce helped ROM3 in making contact with a foreign vitamin producer firm operating in Romania, to realize its new product development plan: cereals with vitamins (which was new to the Romanian market at that time). Today, its main collaboration is with the local university, with whose co-operation it is gradually introducing HACCP and becoming a partner in PHARE projects as a processing company. The technical director, who is a part time lecturer at that university, would like to get funding through SAPARD in the future.

ROM4 is an edible oil producer, which underwent a turnaround in the vision of management of the company after the privatization in 1998. The focal point of the firm's strategy is the sales organization as well as expansion (horizontal diversification). For this reason, the marketing manager has recently been transferred from FOR3. ROM4 has recently acquired an edible oil factory in the north west of Romania, and a rice and sugar packing plant in Bucharest. The main shareholder of the company is a Romanian construction company. Just before privatization, modernization in the process technology had been undertaken to some extent. The managerial change and ongoing organizational restructuring have taken place after the privatization. Due to the entry of MNEs into the edible oil market, ROM4 has lost its market share and stepped back to fourth place among its competitors. New acquisitions have targeted capturing more market share. There is no serious network development strategy except market exchanges, generally with Romanian firms. ROM4 works with agencies for market research and recruitment purposes. Distribution has been outsourced to a Belgian-Romanian company since the privatization, so the focus is on manufacturing and marketing, but there is no product differentiation at the moment. The plans for the future do not involve networking.

Romanian Firm - Special Case

ROMX, a small business, is a university spin-off founded by Romanian and German university professors, a Romanian medical doctor, and an agronomy engineer. The mastermind is a Romanian professor teaching and researching in the biochemistry department, who has her own patent for a bread additive from Romanian Patent Institute (OSIM). The other products of ROMX are all registered by OSIM. All the technological capabilities are embedded in two employees, who are a doctoral student (specialist on plants and seeds) of the above-mentioned professor and a

chemist (responsible for technology creation) – and the founder professors. The products are based on plant extracts, since the objective is avoiding use of chemical additives by using the bioactive components of plants and keeping their natural molecular environment as natural additives for food, animal feed and cosmetics. For monitoring of product quality, ROMX works with German labs, due to mistrust of Romanian labs. For testing of its cosmetics products, it cooperates with the hospital of the Medical University in its region for four-year testing periods before launching the products. ROMX monitors the suppliers of seeds and plants. The Institute of Horticulture cultivates the flowers. The Forestry Department at the University collects some special seeds from the forest. Farms, which are state owned, are under the monitoring of the doctoral student, who intends to extend this co-operation to private farms. ROMX participates in projects as a processing unit through its founder, who works as the scientific consultant of the company. She has made applications for EU and World Bank projects with several international partners from universities and research institutes as well as foreign and domestic companies in Romania.

5.2 Results

The sample of enterprises displays interesting features in terms of our model. First, there is a clear pattern whereby the Romanian firms that choose networks as part of their growth strategies gain in terms of industrial upgrading. This pattern is less clear for the foreign firms (see Table 4 and Figure 2). The unidirectional knowledge flow from mother to subsidiary within the foreign firm does bring industrial upgrading regardless of additional network activity (note the accumulation of the foreign subsidiaries in the right hand corner of Figure 2). However, it is not easy to conclude that upgrading comes only with the internal growth of the foreign firms backed by their parents. In some sectors, there are externalities that the firm cannot control, compelling it to establish network relationships so as to secure its raw material. The latter is the guarantee of its long-term presence in the country. For this reason, a shift from the short-term measures taken by successive Romanian governments to date to a program of hastened agricultural reforms aimed at long-term solutions to the deficiencies in Romanian agriculture would attract knowledge-seeking FDI. In our sample, there are subsidiaries such as FOR2 that

have shown significant network developments that have helped to upgrade both the firm and its partners within the chain (Table A.3).

Table 4. Overall assessment of the relationship between network development strategy and industrial upgrading in MNE subsidiaries in Romania and the Romanian firms.

	MNC subsidiaries				Romanian big firms				University spin-off
	FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
network development strategy	closed	half open	closed	half open	open	(implicitly) open	half open (open to possibilites)	closed	open
level of industrial upgrading	high	high	medium	medium	high	high	low	low	high

Source: Interviews conducted by the author.

Second, the Romanian firms have a tendency to develop knowledge networks with the universities, to which they have easy access, whereas the foreign firms focus on the raw material procurement and thus establish production networks with the upstream agriculture thereby helping in the upgrading of agricultural production. On the one hand, the low quality of domestic agricultural produce, together with declining quality of agricultural technology with the fragmentation of the farms and inadequacy of technical support from agricultural extension services after the fall of the communist regime, have become a focal point of attention for foreign entrants, once they move beyond importing some or all of the materials (e.g., FOR3 in Table A.3). There are problems in securing hygiene of the milk collected in the dairy industry due to the lack of milking machines and fully equipped collection points, which are awaiting foreign investments. In effect the foreign investors have been sucked into trying to revive the upstream end of the industry, by having to teach the farmers how to obtain the quantity and quality of output which they need for downstream processing (Yoruk and von Tunzelmann, 2002). On the other hand, the foreign firms do not want to diffuse their know-how to domestic organizations through co-operation whatsoever if they are not convinced that they will get something in return by way of reciprocity. Figure 2 clearly reveals this unidirectional knowledge flow within the MNE itself.

The biggest shortcoming is the weakness of the national and local networks in the form of cooperation among firms and between firms and the industrial research institutes, which existed under the communist regime and have made very few adjustments since the transition. This is partly the result of weak governments, which are faced with large co-ordination problems when pursuing a variety of conflicting objectives (Radosevic, 2002).

Knowing all the drawbacks in Romanian agriculture, Romanian firms have concentrated their limited financial and other resources on efforts to upgrade their complementary capabilities. They are faced with a dilemma posed by fierce competition from foreign firms: to die or to survive. Only the development of capabilities opens the windows of opportunities for integrating into international production and knowledge networks. Thus, the Romanian firms that have developed organizational capabilities (Table A.4) search for opportunities to approach foreign organizations for knowledge transfer. To date, the only example of success in this venture is ROM1, with its integration into production networks through a joint venture with the Danish firm Palsgaard and into knowledge networks through involvement in EU-financed projects with foreign research institutes like the Dutch ATO (Table A.2).

The firms that are laggards in terms of developing networks and achieving industrial upgrading, like ROM3 and ROM4, provide good examples for the initial preferences of the Romanian firms. These preferences are product differentiation and marketing to gain market share. This is followed by technology acquisition abroad. Only after obtaining complementary and technological capabilities to some extent do they begin to concentrate on overcoming technological dependence by accessing knowledge through various links and by getting training from different organizations, i.e., developing linkage capabilities. We should also note that firms under the former regime were excessively vertically integrated. Thus, the vertical integration of ROM1 and ROM2 does not represent a post-transition choice but rather a legacy from the former regime. Being vertically integrated, they do not need to be involved in and play a role in shaping production networks in Romania.

From the FDI point of view, there are some other conclusions. First, we observe that the foreign firms have benefited from first mover advantages in their respective sectors. FOR4 is the only foreign processed cheese producer, FOR2 is the only foreign malt producer, FOR3 is the first to launch branded sugar in paper packs in Romania, and FOR1 is

one of the first international breweries that have penetrated Romanian market. FOR3 and FOR4 have advantageous positions in brand recognition, whilst FOR2 has obtained the chance to influence the local environment in its own favor.

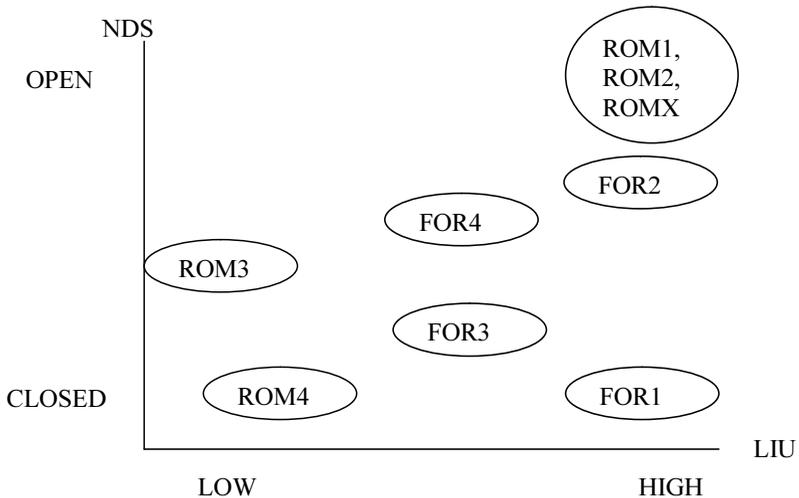
Second, the structure and strategy of mother companies are strongly shaping the depth and the extent of industrial networks that the subsidiaries establish in the host country as well as the type of upgrading. Industrial networks are most often vertical and dyadic, i.e., involving parent company and local subsidiary (Radosevic, 2002). Otherwise, as discussed above, they are shaped according to the needs and priorities of the subsidiary. This is strongly related to the kind of sector the subsidiary is operating in. The FDI that targets the final consumer (i.e., that produces final products) and FDI that targets industrial consumer (i.e., that produces intermediate good) exhibit differences in terms of developing production networks and (functional) upgrading. The former has given importance to development of its competitiveness countrywide in distribution, leading to a change in the functions of the firm (FOR1), whereas the latter has given priority to the quality and quantity of the raw material, leading to establishment of trust relationships with farmers based on consultancy (FOR2, and to some extent FOR4). As mentioned before, the need to function as consultants to the farmers appears as a direct result of the insufficient and ongoing restructuring in agriculture.

Third, as discussed in the FDI literature, the foreign firms interviewed have to some extent been the vehicle selected for replenishing and augmenting much-needed capital for the restructuring and modernization of the Romanian food processing industry (see Table A.3), while also bringing in managerial and technological skills (Yoruk and von Tunzelmann, 2002). However, they have maintained market-seeking motivations in their penetration of the Romanian market and have not shown any signs of a move towards efficiency or knowledge seeking. Hence, the strategies pursued by foreign firms have remained limited to production networks with farmers. Their growth strategies also rely on horizontal expansion through acquisitions and greenfield investments that bring about consolidation and thus reinforce the oligopolistic market structure in the industry (see Table A.1).

Moreover, foreign firms show less variation in their level of upgrading, since this heavily depends on the investments in improving the technology of the acquired firms as well as the sector in which they are operating (as discussed above). Figure 2 displays the distribution of the firms according

to their level of upgrading in relation to their network development in a two-dimensional scale as opposed to the one-dimensional ranking of Table 4. Thus, Figure 2 helps us better visualize the variation between foreign and Romanian firms.

Figure 2. The Distribution of the Firms on the Network Development Strategy (NDS) – level of industrial upgrading (LIU) graph



A seemingly strict evaluation of the level of upgrading (i.e., high-medium-low) has been used. This evaluation puts Romanian firms into extreme camps: either at the managerial upgrading stage (ROM3, ROM4), or active shake up (ROM1, ROM2, ROMX). The linkage capabilities – in other words, the ability to grow based on networking (notably with universities and foreign partners) – seem to be important for the upgrading of Romanian firms (e.g., ROM1). There is room for upgrading without networking with foreign partners (e.g., ROM2), however for full upgrading to be achieved, firms have to escape from sticking to the managerial habits of the centrally planned system (Table A.3). As suggested in the framework, the Romanian firms are most likely to gain the greatest benefits if they follow the upgrading trajectory (discussed above).

The special case of ROMX contributes to the analysis as a small business that has overcome difficulties through being a research-based company. Although as far as the founders are aware, ROMX is the only university spin-off company in the country, it is a good example that of how SMEs have served as the motor of industrial development in the transition, and it therefore indicates a need for further research on role of SMEs in the food processing industry.

6. Conclusion

This research examined the level of industrial upgrading in the Romanian food processing industry and the role of inter-organizational networks in achieving this upgrading by means of empirical investigations of MNE subsidiaries and domestic firms. Strikingly, the results have shown that Romanian firms are very much open to knowledge networks, especially with Romanian and (if possible) foreign universities as external sources of knowledge, and that such networks can help these firms achieve high levels of industrial upgrading. MNE subsidiaries, on the other hand, are more inclined to maintain their internal flow of knowledge within the Group and have no tendency to establish knowledge networks with Romanian organizations. Since they are strongly market-driven, they give the main emphasis to revival of agriculture in their own segment of production; therefore, they are engaged in production networks with Romanian farmers.

In general, the food processing industry is a sector with low/medium opportunity but with medium appropriability and cumulativeness¹⁴ (see Malerba and Orsenigo, 1995). It is also an industry that is moving from low to medium technology. This makes it a potentially promising sector in many respects even in the CEECs, provided that national networks develop that would generate a diversified knowledge base and restructure upstream agriculture, and that the EU food market fully open up to CEE firms (Radosevic, 2002, Yoruk and Von Tunzelmann, 2002).

There seem to be two choices for the domestic producers, either to stay in the 'low-tech niches' of the industry, or to try to imitate the 'up-market shift' of the West. The former option seems to be a dead end. Moreover, there is little alternative to the latter. For this reason, although I am talking about industrial upgrading and not innovation, for this upgrading to be achieved, there is considerable need for the highly skilled

human capital specialized in the scientific advances (such as mathematics, physics, biotechnology) that work for the food industry. This seems to be the only way for transition countries like Romania to achieve comparative advantage, at least in some sectors. Yet, in order to achieve this, the wake of basic deficiencies of the top-down research systems of the Eastern countries have to be abolished in favor of bottom-up, market driven research and development. This basic deficiency – the disconnected research and development units and production – represents a situation which is precisely the opposite of what Romania needs today – namely, to build necessary institutions and to reorganize the networks in order to interconnect them. Furthermore, in order to move forward, Romanian firms already possess the necessary dynamics, but need some direction and support from well thought-out, consistent, and stable industrial policies.

Table A.1. Basic information about the firms studied in this research

Code of the firm	MNE subsidiaries				Romanian big firms				University spin-off
	FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
Sub-sector within food industry	beer	malt	sugar	melted cheese	milling and bakery	dairy	confectionery	edible oil	human food and animal feed additives
Firm structure	processing and distribution	processing	processing	processing and distribution	vertically integrated	vertically integrated	processing and distribution	processing and distribution	processing and distribution
Finance and Ownership	96% foreign owned	wholly owned subsidiary	80-86% for owned. The rest SOF and individuals.	wholly owned subsidiary	98% MEBO, 2% individuals	39% MEBO, 61% individuals	51% individual, 20% employees, 29% individuals	91.2% Romanian construction firm	physical persons / shareowned
Nationality	South Africa	France	Austria	Germany	Romanian	Romanian	Romanian	Romanian	Romanian
Year of privatisation/ entry to the CEECs	1996	1998	1998	1998	1995	Became an SA in 1990	started in 1995	1998	N.A.
Type of investment/ privatisation	brownfield / acquisition	brownfield / rent	brownfield / acquisition	brownfield / acquisition	MEBO	Mass Privatisation Program	Mass Privatisation Program	sales of large blocks of shares	de novo
Total number of employees in Romania	less than 1500	80	more than 1200	N.K.	1900	1450	635 in 1996, 1000 in 1998, 100 in 2000	375	3 in production, 3-4 in distribution
Total number of factories in Romania	4	2	3	2	21	5	2	3	1
Market share	10%	market leader	32-35%	70-82%	26% Rom retail mkt, 18% ind cons, 78-80% local mkt	market leader in its county	Until 1998, 12%	11-13%	N.K.
Growth policy*	acquisitions	greenfield investments	acquisitions	acquisitions	generic, acquisitions and networks	generic	generic	acquisitions	generic and networks
Strategies pursued**	market-seeking	market-seeking	market-seeking	market-seeking	market- and knowledge-seeking	market-seeking	market-seeking	market-seeking	market-seeking
Person(s) interviewed	Financial manager	GM, agronomist and PM in both factories	FM in Buch.GM and PM in one of the factories.	General Manager	Vice-President, Mrktng M, Prod chef in Constanta factory	Production Manager of one of the factories	Technical Manager	General Manager and Marketing Manager	Scientific Consultant

N.A. not applicable

N.K. not known

*According to the categories of Peng and Heath (1996) in transition economies: generic (internal), mergers and acquisitions and networks.

** According to the categories of Dunning (1994) with regard to the strategies of MNEs in the host countries: market-seeking, efficiency-seeking, and knowledge-seeking.

Source: Interviews conducted by the author.

Table A.2. Type of networks the Romanian food companies are involved in

	MNE subsidiaries				Romanian big firms				University spin-off
	FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
CEE LOCAL NETWORKS	Not present.	Strong upstream.	Planned upstream.	Developing upstream.	Chamber of Commerce. Local university.	University - PhD programmes only.	Local university. Chamber of Commerce.	Not present.	Local university
CEE NATIONAL NETWORKS	Other foreign firms in Romania. University of Galati.	Other foreign firms in Romania. Efforts of GM.	Other foreign firms in Rom. Rom research institutes.	Other foreign firms in Romania.	Rom and for training and consultancy agencies. Minor acquisition of a Rom bakery.	University of Galati.	Not present.	Rom agencies in distribution, mkt research, recruitment	Not present.
GLOBAL NETWORKS	Parent-subs synergy	Integration into the Group networks.	Only with the parent. No synergies with the other subs.	Integration into the Group networks	JV. Foreign research institutes. EU-financed projects.	Apart from technology acquisition, no links.	Not present.	Machinery and equipment acquisition.	Foreign Universities
EU	No role.	EBRD - finance links	No role.	Intention to get funding through SAPPARD	EU financed projects	No role.	No role.	No role.	EU financed projects for CEE researchers
Motivation for network development	Not present.	Secure quality raw material. Establish strong presence in CEE.	Secure raw material	Secure quality raw material. Establish strong presence in CEE.	Technology and knowledge acquisition to develop process and new products.	Knowledge acquisition to develop process and new products	To develop stability and prospect for the firm.	Not present.	To develop process technologies and new products.
Assessment of network development	Restricted to Group network.	Upstream and Group network	Group and planned upstream network	Upstream and Group network	Networks as source of knowledge.	Informal personal (implicit) networks.	Potential and willingness to develop networks	No awareness of networks.	Strong university link. Research-based firm.
Network development strategy	closed	half open	closed	half open	open	implicitly open	open to possibilities	closed	open

Source: Interviews conducted by the author.

Table A.3. Level of Industrial Upgrading in Food Companies in Romania

	MNE subsidiaries				Romanian big firms				University spin-off
	FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
managerial upgrading	highly satisfactory	highly satisfactory	highly satisfactory	highly satisfactory	highly satisfactory (in Western terms)	satisfactory (still preserves elements from former regime; e.g. hierarchy and scepticism)	not present (recently starting)	a weak presence	satisfactory
process upgrading	highly satisfactory (within the firm)	highly satisfactory (within the value chain)	satisfactory (within the firm)	satisfactory (within the firm)	satisfactory (within the firm)	satisfactory (within the firm)	a weak presence	a weak presence	highly satisfactory (within the firm)
product upgrading	satisfactory	satisfactory	satisfactory	highly satisfactory	highly satisfactory	highly satisfactory	a weak presence	not present	highly satisfactory
functional upgrading	satisfactory (distribution)	satisfactory (consultancy to farmers)	not present	a weak presence (consultancy to farmers)	satisfactory (distribution)	a weak presence (distribution)	not present	a weak presence (distribution)	not present
level of industrial upgrading	high	high	medium	medium	high	high	low	low	high

Source: Interviews conducted by the author.

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Table A.4. Internal Dynamics: Resources and Capabilities within the firm

Table A.4.1. Technological Capabilities

		MNE subsidiaries				Romanian big firms				University spin-off
		FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
Technological capabilities	investment capabilities	New acquisition and subsequent investments	Greenfield investment is under progress	Local supply chain management project	Acquisitions to improve supply base	JV with foreign partner. Acquisition of a bakery firm. Establishment of strategy unit. New product development projects.	New product development projects. Investments in increasing production capacity of a particular product.	No capital available.	Acquisition of an edible oil factory. Acquisition in line with extension of the production areas.	New product development projects are under progress.
	production capabilities	State-of-the-art technology. Training to engineers.	Use of old technology. Own know-how.	Use of old machinery. Application of own technology.	Second-hand machinery. Relatively new technology.	Gradual modernisation of all production technology through foreign cooperation.	Based on existing technology.	Based on the existing old technology.	Based on the existing old technology/ Several machinery acquisitions after 1995.	Research-intensive laboratorial production
	minor and major change capabilities	Strong in both.	Successful in minor change capabilities.	Successful in minor change capabilities.	Active in minor change capabilities.	Strong in both.	Strong in both.	Efforts in improving minor change capabilities.	Depends on the machinery and technology used.	Strong in major change capabilities.

Source: Interviews conducted by the author.

Table A.4.2. Complementary Capabilities

		MNE subsidiaries				Romanian big firms				University spin-off
		FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
Complementary capabilities	Finance	Strong position.	Strong position.	Backed by the mother.	Strong position.	100% Romanian capital. Strong position.	100% Romanian capital. Strong position.	100% Romanian capital. Awaiting improvements via new management strategy.	100% Romanian capital. Improvements after privatisation.	100% Romanian capital. Small budget. Gradual development.
	Marketing and distribution	Strong mktng policy. Countrywide distribution.	No mktng. Distr from the factory to industrial customers.	New brand launch. Distr from the factory to industrial customers.	Mktng office in Buch. Distr outsourced to a Romanian firm.	Mktng unit since 1993. Countrywide distr. Strong in the county.	Mktng unit since 1997. Own distr in the county and outsourced for the country.	Prior strategy focus on mktng. Weak distr.	New orientation on marketing. Outsourcing distr since 1997.	Distribution by individuals on commission basis.
	Quality	In-house quality control laboratory.	In-house quality control laboratory.	In-house quality control laboratory. Getting ISO soon.	In-house quality control laboratory. Getting ready for ISO.	ISO (2000)	In-house quality control laboratory. Working on HACCP.	Collaboration with the University Cluj to implement HACCP.	In-house quality control laboratory. Intention to get ISO.	HACCP

Source: Interviews conducted by the author.

Table A.4.3. Dynamic Capabilities

		MNE subsidiaries				Romanian big firms				University spin-off
		FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
Dynamic capabilities	reconfiguration of resources	Strongly relevant.	Strongly relevant.	Relevant.	Strongly relevant.	Relevant.	Moderately relevant.	Not relevant.	Weakly relevant.	Strongly relevant.
	availability of (informal) gatekeepers	German connoisseur and technical director	General manager and agronomists	Not present.	Not present.	in-house R&D unit (since 1993)	GM and technical director.	Not present.	Not present.	Phd Student and professors.

Source: Interviews conducted by the author.

Table A.4.4. Linkage Capabilities

		MNE subsidiaries				Romanian big firms				University spin-off
		FOR1	FOR2	FOR3	FOR4	ROM1	ROM2	ROM3	ROM4	ROMX
Linkage capabilities	within firm	unidirectional (from mother to subsidiaries)	unidirectional (from mother to subsidiary)	unidirectional (from mother to subsidiaries)	unidirectional (from mother to subsidiary)	Teamwork between departments	A team of 5 people from the administration	Attempts to develop a sustainable strategy.	At administration level.	Appropriated by the owners and employees within the firm
	between firms	Restricted to foreign firms in Romania.	Strong links with Romanian farmers.	Planned upstream links.	More links with German firms than with Romanian firms.	Successful orientation towards West Europe.	Market exchanges with Romanian firms.	Market exchanges with Romanian firms	Market exchanges with Romanian firms.	Not present.
	with other organisations	Traditional link with University of Galati.	Efforts of GM to develop systematic and efficient interaction among actors in the sector.	Through links of parent company. Problem-solving purposes.	Not present.	Romanian Universities. Foreign research institutes. EU - financed projects. Chamber of Commerce. Training and consultancy agencies.	University - master and PhD programmes only.	University. Chamber of Commerce.	Market research, recruitment, financial agencies.	Regional University. Foreign Universities.

Source: Interviews conducted by the author.

NOTES

- 1 Unless otherwise mentioned, italics are my emphasis in quotations.
- 2 Gereffi (1999) first works on 'global commodity chain' concept, on which he has recently agreed naming it as 'value chain' as other scholars working on the subject matter.
- 3 The value chain is the full range of activities, which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Kaplinsky and Readman, 2001).
- 4 These are standards that are imposed by importing countries in lieu of dismantled trade barriers, by global producers on the production organisation and by MNEs to ensure compatibility between processes and procedures throughout their global chains, and that are process-packages like ISO certification and industry-specific standards like HACCP in the food industry (Kaplinsky and Readman, 2001).
- 5 His focus is more on the overseas Japanese investment as a vital catalyst of industrial upgrading in Japan in the late 1980s.
- 6 The mainstream economics deal only with the quantity side of the matter, taking the quality side granted.
- 7 Vertical relationships are composed of backward and forward relationships within an industry. These relationships occur as a result of the preference of the firms to cooperate with the supplier or customer firms in its production chain. For instance in food industry, a cooperation between agricultural raw material supplier and the food processing company, or a cooperation between the food processing company and the spice supplier.
- 8 Horizontal relationships are composed of cooperation of the companies in the same, similar or complementary industries. For instance in food industry, a cooperation between a food processing company and biotechnology company.
- 9 The study of Randoy and Li (1998) examines the alternative roles of MNE subsidiaries in accordance with the resource flows from the MNE network to subsidiaries (outflow) and vice versa (inflow). They determine four cases: Resource independent (low inflow, low outflow), resource provider (low inflow, high outflow), resource user (high inflow, low outflow) and resource networker (high inflow, high outflow).
- 10 The other criticism is that these subsidiaries do not generate technological externalities of 'spillovers' to local firms (see Ariffin and Bell, 1999 for further references).
- 11 The structure of these *combinats* differed from country to country. For instance in Poland, there were large enterprises that owned smaller production units in their vicinity, whereas in Romania the enterprises were structured as country-wide horizontal integration of one large enterprise in

an industry controlling the factories functioning in that industry. Therefore the privatisation methods have shown differences after the transition. In Poland, each enterprise has been privatised with its small production units, yet in Romania, factories under the large enterprise have been privatised as separate entities.

¹² Hanzl (2000) mentions the 'reagrarization' in Romania and Bulgaria has been taken place in recent years due to an employment crisis in industrial production and limited absorption capacity in services. However, she also mentions that a large agricultural sector does not necessarily mean that there is a large and successful food industry.

¹³ As another method, sending postal questionnaires could be applied, however it requires total reliance on the firms' own assessments. Also, questionnaires provide much more limited information. Face-to-face interviews give opportunity to the interviewer to compare the firms visited and to assess them objectively, being an observant at least for a short time period.

¹⁴ By which we mean "*Opportunity*, the possibilities open for benefiting from emerging (technological) conditions; *Appropriability*, the extent to which they can capture such benefits; *Cumulativeness*, their track record of development in the field (as in the Penrosian approach); and the *Knowledge base*, as the underlying ability to comprehend and foresee advances." (Yoruk and Von Tunzelmann, 2002).

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