Belgian Subsidiary Strategic Evolution in China

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This article is about multinational enterprises (MNEs) and their subsidiaries' strategies in China. The specific focus of the research is on a variable referred to as subsidiary strategy, defined as the foreign subsidiary's local responsiveness, global integration and multinational network embeddedness. As this strategy varies among subsidiaries and across time, the focal interest of this study is the processes of subsidiary strategic evolution. On the basis of a survey of subsidiaries in China, the results show that most subsidiaries in China are a quiescent-type of firm, which is clearly a stepping stone towards other more strategic roles as quiescent subsidiaries move out this category towards autonomous-type or receptive-type firms and eventually active-type subsidiaries. The most prevalent trajectory of strategic evolution by multinational subsidiaries in China is by increasing the integration in the multinational network before gaining more local embeddedness towards a more active role within the multinational network.

Introduction

This article is about multinational enterprises (MNEs) and their subsidiaries' strategies in China. The article addresses the questions "How does the network in which the subsidiary is embedded influence its role? And how does subsidiary strategy evolve over time?"

It is widely agreed that subsidiaries contribute to the competitive advantage of the MNE (Ghoshal and Bartlett, 1990; Birkinshaw and Hood, 1998). A familiar mode of analysis has been to suggest that MNEs transfer their existing competitive attributes, such as the technology and expertise to produce established goods, in order to improve the efficiency of their use through a combination of local, standardized and cost-effective inputs (Vernon, 1966; Kojima, 1977). MNEs are often considered as highly efficient vehicles for the transfer of technologies and skills suited to existing or static factor endowments in host economies. They are able to adapt a particular technology to very different levels of scale and complexity in different locations, depending on market orientation and size, labor skills, technical capabilities and supplier networks (OECD, 2002).

However, the view of the modern multinational enterprise as a dynamic differentiated network, operating through subsidiaries that have scope for evolution and development, provides a diversified basis for the analysis of the contributions of multinational subsidiaries. The broad conceptualization of the contemporary MNE that underpins the arguments of this article is essentially that of the heterarchy (Hedlund, 1986, 1993; Hedlund and Rolander, 1990; Birkinshaw, 1994), the horizontal organisation (White and Poynter, 1989, 1990), or the transnational firm (Bartlett and Ghoshal, 1989).

Therefore, in order to accommodate the new realities of multinational subsidiaries as part of a diversified network, and the resulting relations that subsidiaries may have globally and locally, and inside and outside the multinational group; a three dimensional framework is suggested on the basis of Taggart (1998). As such, subsidiaries are categorized according to local responsiveness, global integration, and multinational embeddedness.

In exploring these research questions, we seek to make at least two important contributions. First, we make a conceptual contribution in order to overcome the limitations of previous research. A model is developed in which the various aspects of a subsidiary's network, i.e. local, global and multinational relations, are taken up. It resolves the problems put forward by Taggart (1998) of the two dimensional global integration-local responsiveness models, by adding intra-organizational multinational network embeddedness. Second, we make an empirical contribution in determining the changes in subsidiaries' strategies over time. As such, lessons can be drawn for subsidiary managers of how subsidiary roles can and do change over time. In particular, the Chinese context provides for a fertile seedbed of fast changes and progress.

The article will subsequently discuss the literature background and develop the conceptual model. Next, the data and methodology are discussed, before analyzing the results. The text ends with the most compelling theoretical, conceptual, empirical and managerial conclusions.

Literature background and conceptual development

After Levitt (1983) focused attention on global strategy, a number of paradigms were developed to identify, evaluate and explain strategy at corporate level in MNEs. The best known and most strongly underpinned by empirical evidence is the integration-responsiveness framework proposed by Prahalad and Doz (1987).

In essence, Prahalad and Doz concluded that one of the cornerstones of hierarchy, namely the omniscient centre, could not be satisfactorily applied to the MNE. They developed the integration-responsiveness (IR) framework which describes a spectrum of strategies balancing local demands and global vision. They showed that by managing the context of

decision-making, the actual decisions and activities of the MNE could be delegated to those who best understood them (Prahalad and Doz, 1981, 1987).

A related body of research by Bartlett (1983) and Bartlett and Ghoshal (1987) argued that the key strategic capability for an MNE was the ability to create an organisational structure that simultaneously addressed the demands for local responsiveness and global integration. They termed the transnational organisation as the model solution. The similarities with Prahalad and Doz's work are unmistakable. However, with regard to subsidiaries, Bartlett and Ghoshal's research (1986) indicates a much more proactive role. They refer to legitimising diversity as a major element of the transnational company. This rests on the premise that the subsidiary has a clearer understanding of its current and future role than its parent.

Built largely around the work of Prahalad and Doz (1987) and Bartlett and Ghoshal (1989), the central concern of the global strategy literature was the need to simultaneously integrate operations globally while retaining a responsive posture to local markets. At the subsidiary level this meant gaining a local identity and creating a set of products that met local requirements, while still remaining integrated within the multinational network.

The incessant search by MNEs for sustainable competitive advantage led to an increasing attention on the roles and/or strategies of manufacturing affiliates of these multinational corporations (Porter, 1990; Yip, 1992). As part of this process, proactive MNEs seek –and the reactive ones are forced to seek– a variety of ways in which their foreign affiliates can help increase the vibrancy of corporate strategy (Bartlett and Ghoshal, 1986). Appropriately, some of the early investigations into the role and impact of foreign MNEs was carried out in Canada and Scotland, sometimes called branch plant economies, both dominated by large neighbouring economies. For example, the importance of world product mandates to Canadian subsidiaries of US headquarters was emphasised by Poynter and Rugman (1982) and Rugman and Bennett (1982). In addition, White and Poynter (1984) stressed the importance of subsidiary's decision-making by reference to its scope to service a variety of markets, add or delete products from its offering, and add value through its

operations. All three of these aspects were found to be central to the question of subsidiary strategy. Rugman and Bennett (1982) identified increased subsidiary autonomy as a necessary condition for the adoption of a world product mandate, which was confirmed by Poynter and Rugman (1982) and White and Poynter (1984).

Subsidiary companies were also shown to be able to contribute to the firm-specific advantages of the MNE (Birkinshaw, Hood et al., 1998) and even develop subsidiary-specific advantages (Moore and Heeler, 1998; Rugman and Verbeke, 2001). Headquarters are no longer seen as the brains of the firm. Instead, the MNE is conceptualised as a brain (Hedlund and Rolander, 1990). The different subsidiaries have specific roles and strategies in the context of the MNE as a differentiated network. A related strand of research with regard to subsidiary competences deals specifically with centres of excellence. Its conceptual roots may be traced back to the Canadian research on world product mandates (Rugman and Bennett, 1982; Etemad and Dulude, 1986), as well as to the Swedish studies on foreign based centres (Hedlund, 1986; Forsgren, 1989, 1990). However, while the literature on world product mandates suggests that autonomy and competence are essential to get such mandates, recognition of a subsidiary as a centre of excellence requires subsidiary influence on other units of the multinational network (Forsgren and Pahlberg, 1992; Andersson and Pahlberg, 1997; Holm and Pedersen, 2000). Autonomy is envisaged as a precondition for the subsidiary to develop and exploit its capabilities, and therefore to reach excellence (Forsgren and Pedersen, 1998; Holm and Pedersen, 2000; Ensign, Birkinshaw et al., 2000).

The primary research questions follow from the specific conceptualisation of the Integration-Responsiveness (I-R) framework (Prahalad and Doz, 1987, Bartlett and Ghoshal, 1989, Jarillo and Martinez, 1990, Taggart, 1997a, 1998). Prahalad and Doz (1987) formally described the integration-responsiveness framework, within which direct trade-offs between the two strategic dimensions could be detected in a number of MNEs. This notion of a spectrum of strategies on the reverse diagonal of the model (high integration-low responsiveness to low integration-high responsiveness) was given empirical validation in a

multi-industry survey by Roth and Morrison (1990) and in a single industry study by Johnson (1995).

A somewhat different approach to subsidiary roles was developed by Bartlett and Ghoshal (1986, 1989) who focused on the differential strategic importance of country markets in terms of the MNE's overall objectives, and linked this with the level of competence of the local affiliate in each case. They identified four roles for the subsidiary, based on the strategic importance of the local environment and the competence of the subsidiary. The roles were labelled strategic leader, black hole, contributor, and implementer. They suggested that the global effectiveness of the MNE could be enhanced through a more complete understanding of the capabilities and potential contributions of each subsidiary. However, this four-quadrant strategy model is perhaps more useful to a MNE at corporate level. A similar perspective was taken by Ghoshal and Nohria (1989, 1993) and Nohria and Ghoshal (1994) who modelled subsidiaries on a two-by-two matrix according to their access to local resources and the complexity of the local environment relative to sister subsidiaries. These affiliate roles were shown to be linked to overall corporate performance and appropriate management processes. The level of local resources is very closely associated with the concept of local responsiveness (Prahalad and Doz, 1987).

With its roots embedded in global strategy –built largely around the work of Prahalad and Doz (1987) and Bartlett and Ghoshall (1989) – a new research stream on the subsidiary role propelled earlier work in new directions. A first group of studies looked specifically at the issue of subsidiary strategy (White and Poynter, 1984; Crookel and Morrison, 1990). Drawing largely from the Canadian experience with subsidiaries of MNEs, these studies focused on the resources and capabilities of the subsidiary, and its ability to create a distinctive role for itself within the MNE. In particular, White and Poynter's (1984) work was based on three strategic dimensions: market scope, product scope, and value-added scope. They developed a very comprehensive typology of subsidiary strategies, such as miniature replica, rationalised manufacturer, strategic independent, and product specialist. The key element of these models is that it gives proactive subsidiary managers a range of ways of

developing the role and network importance of a particular subsidiary over time. In the same tradition, D'Cruz (1986) developed six subsidiary strategies based on the extent of market involvement and the decision-making autonomy of the subsidiary.

Jarillo and Martinez (1990) and Martinez and Jarillo (1991) studied 50 Spanish subsidiaries of large MNEs that mirrored Bartlett and Ghoshal's multinational types and Porter's (1986) multinational strategies. Using the integration-responsiveness framework, they proposed three generic strategic roles for subsidiaries: autonomous (as part of a multinational strategy), receptive (as part of a global strategy), and active (as part of a multifocal strategy). Corresponding to the 'global organisation' of Bartlett and Ghoshal (1989) and the global businesses of Prahalad and Doz (1987), they first identified a cluster which they termed 'receptive subsidiaries.' These are likely to belong to global firms competing in global industries. Here, value chain functions would be performed within the host country for other markets, and the affiliates would be highly integrated within their multinational networks. Based on Bartlett and Ghoshal's 'multinational organisation' and Prahalad and Doz's locally responsive businesses, they also labelled a group of subsidiaries 'autonomous,' likely to be competing in multidomestic industries. These affiliates are strongly decentralised with respect to their headquarters and sell a high proportion of their manufactured output in the host country. The third cluster is called 'active subsidiaries,' and may be linked to Bartlett and Ghoshal's 'transnational organisation,' though they lack an obvious parallel in the Prahalad and Doz's typology. This strategy implies the location of a substantial number of value chain activities in the host country, though these are explicitly coordinated with similar activities in other parts of the international network.

While accepting that a subsidiary may occupy any of the four quadrants of their model, Jarillo and Martinez do not give a name or description to the low integration-low responsiveness variant. Neither did they find any examples within their sample of companies. The Jarillo-Martinez model was later improved and extended by Taggart (1997b, 1998) who also identified a group of affiliates, which he entitled 'quiescent,' in the low integration-low responsiveness quadrant. Corresponding to Bartlett and Ghoshal's 'international

organisation,' this type of subsidiaries bears a strong resemblance to aspects of White and Poynter's (1984) miniature replica subsidiary, adopter type.

Furthermore, typologies indicate that evolution of strategy types is likely (Prahalad and Doz, 1987; Jarillo and Martinez, 1990; Malnight, 1996; Taggart, 1998). Intuitively, very few subsidiaries indeed are likely to remain unchanged over time. A number of empirical studies (Roth and Morisson, 1990; Jarillo and Martinez, 1990; Johnson, 1995) have indeed determined that integration and responsiveness are mutually orthogonal dimensions. However, autonomous subsidiaries show gains in both integration and responsiveness, while receptive affiliates lose on each dimension. This suggests that on the leading diagonal the dimensions may be functionally related. The opposite argument applies for decreases on the reverse diagonal.

In order to make sense of this situation, a developed three-dimensional form of the I-R framework is required. While this then allows a functional relationship between global integration and local responsiveness on the leading diagonal, it does so at the expense of introducing a third dimension to the framework to allow for the curved surface. It was suggested by Taggart (1998) that network responsiveness may provide this third dimension. Swedish research also put the emphasis on embeddedness as a critical factor for subsidiary development (Forsgren, Johanson et al., 2000; Forsgren and Pedersen, 1998). Subsidiaries thereby have to manage corporate, business and local embeddedness.

Therefore, in order to accommodate the new realities of multinational subsidiaries as part of a diversified network, and the resulting relations that subsidiaries may have globally and locally, and inside and outside the multinational group; a three dimensional framework is suggested on the basis of Taggart (1998). As such, subsidiaries are categorized according to local responsiveness, global integration, and multinational embeddedness. Global integration thereby refers to the international scope of the subsidiary. Local responsiveness refers to the degree of localization. Multinational embeddedness refers to the interdependence of the subsidiary with other group subsidiaries. In general, it should be clear that all subsidiaries demonstrate, to some extent, each of the three dimensions.

The following research hypotheses can be put forward with regard to the profiles of the different groups of subsidiaries. *Quiescent* subsidiaries aim to provide the most cost effective way of securing profits from the supply of already well-established goods of the parent company, either for cost- and/or market-seeking purposes. Quiescent subsidiaries are dependent on the centre of the group for strategic decisions and resources, but almost totally independent of other subsidiaries in the group, with whom they neither collaborate nor compete for group resources or status. The functional scope for this type of subsidiary is strongest in terms of production and marketing. Management's decision scope is relatively routine and based on an awareness of an essentially dependent position as far as strategic and creative decision-making is concerned, given its limited global integration. There may be some elements of limited creative autonomy in quiescent subsidiaries beyond adopting group technology, either in terms of adapting products in minor ways to respond to differences in local tastes or altering production processes in order to reflect local conditions. The application of these adaptation processes may even result in the presence of a local R&D unit. This, though, would normally only result in a modest degree of essentially locally targeted creative autonomy, given its limited local responsiveness. Quiescent subsidiaries are dependent on the centre of the group for strategic decisions and resources, but almost totally independent of other subsidiaries in the group, who they neither compete with for group resources or status nor collaborate with in pursuit of symbiotically generated efficiency improvements.

Autonomous subsidiaries pursue a purely market-seeking imperative. They concentrate on the subsidiary's own needs, as autonomous affiliates are least sensitive to the market needs of sister subsidiaries when developing new and improved products. Autonomous subsidiaries are largely independent of the centre of the group for strategic decisions and resources, yet also independent of other group subsidiaries in the group, although they might compete for group status. They have fairly well-developed R&D facilities. Their research efforts, however, seem to concentrate on the subsidiary's own needs, as autonomous affiliates are least sensitive to the needs of sister subsidiaries when developing new and improved products, given its limited

network embeddedness. They are supposed to have the lowest levels of marketing coordination within their respective networks, the highest level of subsidiary-based purchasing activity, and the most affiliate-oriented level of key skills and resources. Although the core innovation of new products and processes is still perceived as a centralized function, adaptation is almost always carried out locally, given its extensive local embeddedness. Thus, autonomous subsidiaries are largely independent of the centre of the group for strategic decisions and resources, yet also independent of other group subsidiaries in the group, although they might compete for group status.

Confederate subsidiaries pursue an efficiency- and/or resource-seeking imperative. Confederate subsidiaries are very much networked and become part of an MNE's global strategy, which aims to secure efficient supply by encouraging the generation of specialized and complementary production responsibilities in individual subsidiaries. This strategic posture in MNEs creates interdependence among subsidiaries. Confederate subsidiaries are largely dependent of the centre for strategic decisions and resources, but also interdependent with other group subsidiaries, which they collaborate with in pursuit of symbiotically generated efficiency improvements. This strategic posture in MNEs creates interdependence among subsidiaries and hence a high network embeddedness. A purely confederate subsidiary focuses on the cost-effective production of a relatively small range of goods. Its enhanced efficiency is expected to derive from both an ability to fully realize economics of scale, and the scope for the MNE to allocate it responsibility for the supply of goods whose production technologies require inputs in which the host country has an existing comparative advantage. The potential for this, in turn, derives from the very wide market scope provided to the confederate subsidiary by its position in the multinational group's international supply network. The functional scope will be rather truncated, as the management role would normally be reduced to that of executing decisions made elsewhere. This positioning removes any scope for the proactive marketing of the goods it produces. Given its extensive global integration and limited local embeddedness, the local market is, at best, only one area to which the confederate subsidiary's goods are supplied, thereby excluding locally responsive

product adaptation. Though some adaptation of production processes, in order to better utilize local inputs, is possible, even this would probably be limited by the MNE's aim of selecting supply bases for particular goods that already match the needs of the proven manufacturing techniques. Thus, confederate subsidiaries are largely dependent on the centre for strategic decisions and resources, but also interdependent with other group subsidiaries, which they collaborate with in pursuit of symbiotically generated efficiency improvements.

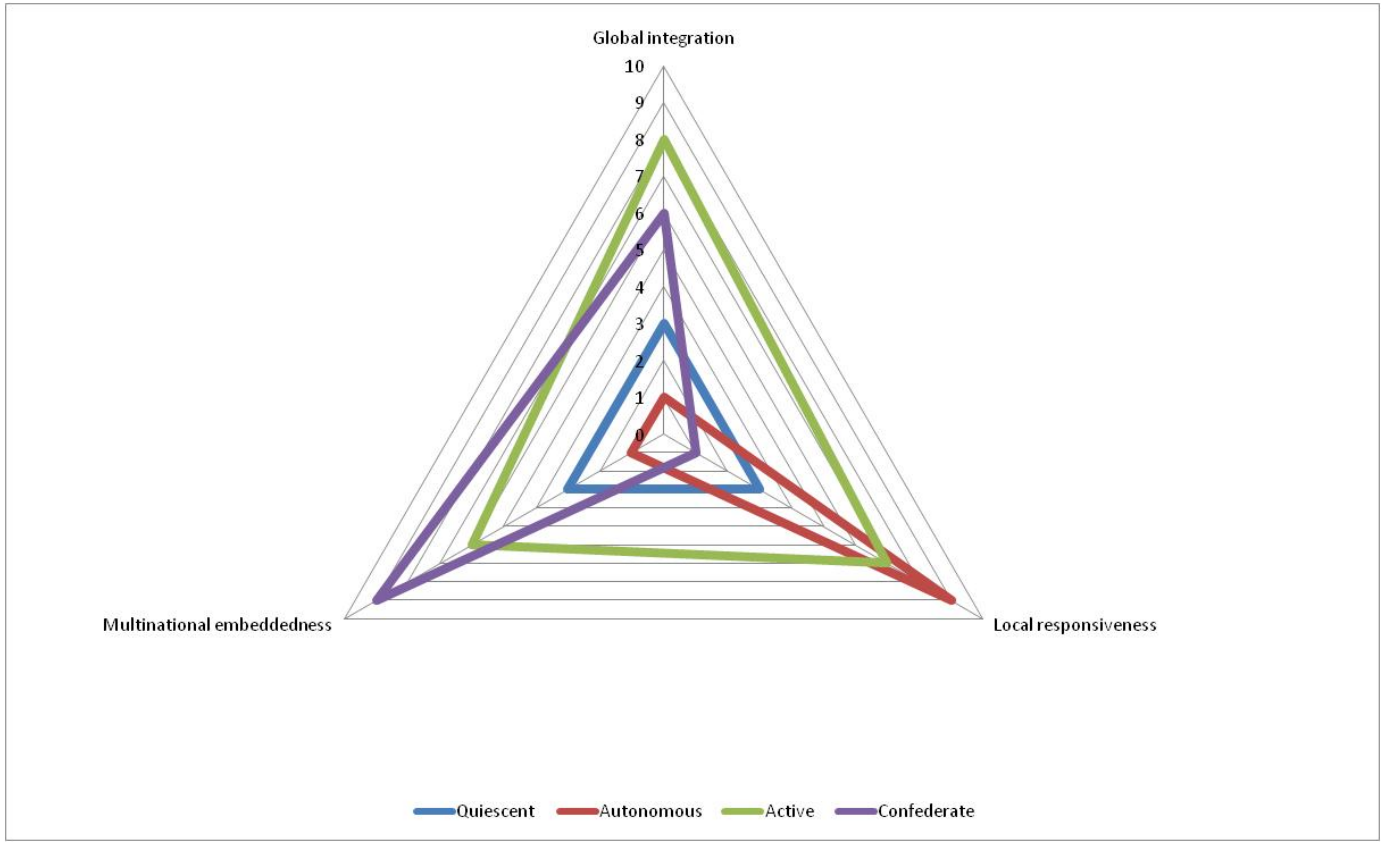
Active subsidiaries pursue a strategic asset-seeking imperative. Active subsidiaries receive or take responsibility for the creation, production, marketing and further development of products and processes. Their claim to such status ultimately derives from the active subsidiaries' ability to internalize distinctive local competences that are key inputs into the product development process. This can cover existing local technology, unique elements of research capacity in the local science base, and distinctive competences in human capital. The defining feature of the active subsidiaries is the possession of substantially enhanced functional scope. At the core of this will be a much more entrepreneurial approach to management, embodying elements of strategic decision-making capacity. The competitive aims of management needs not only secure the success of their products in final markets (extensive global integration), but also to defend and/or enhance the status of the subsidiary itself in the evolution of the multinational group's overall scope and competences (extensive network embeddedness). An in-house R&D unit is likely to help build the individualized elements of the active subsidiary's knowledge scope. Thus, active subsidiaries are largely independent of the centre for strategic decisions and resources, but to some extent dependent of other group subsidiaries, with whom they both compete for group resources and supply with group products.

Figure 1 illustrates graphically the expected degrees of local responsiveness, global integration and multinational embeddedness for the different types of subsidiaries. Quiescent subsidiaries are likely to have fewer value chain activities than autonomous subsidiaries. The quiescent subsidiary may also have significantly fewer linkages with the remainder of its internal network than the confederate subsidiary, which carries global integration and network

embeddedness high in its banner. Autonomous subsidiaries develop local expertise and capabilities. They seem to concentrate on the subsidiary's own needs as autonomous affiliates are most sensitive to the host market needs when adapting or developing new and improved products. Autonomous subsidiaries typically are highly involved in the host country economy, and have a high degree of independence from the multinational group. Active subsidiaries also bring localization, but also expand the international linkages in and beyond the multinational group. As such, active subsidiaries have an enhanced market and functional scope, while retaining a high degree of localization without neglecting the market needs of sister subsidiaries. Confederate subsidiaries bring even more enhanced international linkages, specifically embeddedness within multinational networks, but have little local autonomy or responsiveness.

The second research question is inherently more speculative and deals with prospective subsidiary evolution. The study will therefore evaluate the subsidiary development over a ten-year period in order to ascertain whether there has been any subsidiary development within and between types of companies. Changes in the strategic setting and operations of MNEs occur over time because of the dynamic patterns and changing interactions of firm- and country-related factors and policies, especially when the host economy is involved in a rapid transformation process such as China.

Figure 1. Three dimensional framework of subsidiary strategy



Data and methodology

Data

The research is based on the results of a questionnaire sent to Belgian subsidiaries in China. This is based on a list of subsidiaries in China, for which firms in Belgium were responsible when established, and which were operational in 2000. The list of subsidiaries was drawn from several sources, including information provided by the Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC), the Belgian Embassy in Beijing and the Consulate in Shanghai, employers' federations, and the financial press. Because none of these sources provided a comparable or comprehensive listing, the sample polled in this research cannot be said to be the entire population of Belgian subsidiaries in China, though it is believed to be very close. The questionnaire was sent to over one hundred companies. At the end of this information gathering process 48 valid responses were obtained from Sino-Belgian manufacturing plants. Two manufacturing companies refused to cooperate. Given that the initial failure rate of foreign companies has reached 80 per cent (DiPaola, 2003), at least some of the non-responding companies are not believed to have survived. Some may even have been born-dead, for instance, because of restrictions in access to raw materials (Van Den Bulcke and Zhang, 1992).

Methodology

The research methodology is based on interdependence techniques in order to explore, simplify and better understand the available data. The analysis consists of three stages. Initially, a principal factor analysis was carried out on the three dimensions (host localization, global integration, and network responsiveness) to ensure that the selected variables loaded significantly and uniquely on the appropriate dimensions. In order to categorize subsidiaries according to their responsiveness in the host country, global integration and network embeddedness, a construct was developed for each of these three dimensions. Dozens of analyses were run in order to determine the principal factors with the

highest internal and external consistency and significance. For each of the three dimensions, the two best variables were as such retained.

Second, and with respect to the proposed framework, both hierarchical and non-hierarchical cluster analysis was used to assess and identify the underlying group structure of the sample. Hierarchical clustering was used to determine the number of underlying clusters of affiliates in the sample, using the cubic clustering criterion. Average linkage cluster analysis was used as this is particularly efficient when the sample contains natural and distinct clumps of firms. This was checked by non-hierarchical K-means clustering.

Third, while multivariate analytical techniques –using the host localization, global integration and multinational embeddedness constructs– may yield a classification of subsidiaries, it is necessary to classify these strategies according to "control" variables. In order to validate the typology, it should be tested with alternative variables. The typology is tested for robustness by evaluating how it differentiates across a range of key related organizational variables that may be expected to change in some systematic manner with the different states of the typology. The different classifications in a conceptualized typology may consequently be regarded as a derived taxonomy if significantly different values of the alternative variables are associated with each classification. A valuable concomitant of this approach is that it yields rich interpretative material that may be used to assess the overall relevance of the classification. This allows for a richer interpretation of the results (Harrigan, 1983; Venkatraman and Grant, 1986; Roth and Morrison, 1992). Therefore, analysis of variance is used to identify significant differences between the clusters across the alternative variables, as an assessment of research question 1. As this represents an assessment of systematic variation across subsidiaries rather than assessing a hypothesis, a post hoc procedure, such as Duncan's multiple range test, is the appropriate tool for evaluating significant differences between pairs of clusters (Roth and Morrison, 1990).

The typology will be tested for a number of control variables, including age, size, exports, value-added activities, production complexity, ownership, sourcing, and decision-making autonomy. Hypotheses with regard to the age of the subsidiaries are not

straightforward. Given that quiescent subsidiaries are typically set up for resource-seeking reasons for well-established products, they are expected to have been established most recently. However, if no strategic evolution occurs in their role, they could be stuck in this role indefinitely before footloose exit occurs towards less expensive locations. Autonomous subsidiaries have developed local linkages, leading to the assumption that they will be older than quiescent subsidiaries. As active subsidiaries have developed local as well as global linkages, these subsidiaries are expected to be the oldest. The assumption with regard to confederate subsidiaries is unclear. As they should also develop their role in the multinational network, it is hypothesized that they take up an intermediate position.

The size of the subsidiary, measured in sales (million Yuan) and number of employees is also expected to vary according to the type of subsidiary. Confederate subsidiaries are expected to be the smallest, as a purely confederate subsidiary focuses on the cost-effective production of a relatively small range of goods. This is definitely expected to be the case in terms of sales, but also in terms of employees. Although there might generally be some skewed results over employees as a result of the acquisitions of labor-intensive SOE plants. Active subsidiaries are expected to be the largest, while autonomous and quiescent subsidiaries should take up an intermediate position.

The export propensity, measured as a percentage of overall sales, is expected to be highest for confederate subsidiaries. This derives from the wide market scope provided to the confederate subsidiary by its position in the multinational group's international supply network. Autonomous subsidiaries are expected to export the least, as they have been set up for local market-seeking purposes. Active and quiescent-type subsidiaries will take up an intermediate position, although active subsidiaries are supposed to provide more scope for inter- and intra-group export than quiescent subsidiaries.

The extent of value adding activities –from marketing and sales over manufacturing to research and development– is expected to be the lowest for quiescent subsidiaries. This is supposed to be higher for the other types of subsidiaries. Although the value adding activities

are probably of a different nature for the remaining types of companies, the extent as such is not likely to differ all that much.

The level of production complexity, measured on a five-point Likert-type scale ranging from assembly only to fully fledged manufacturing, is expected to be highest for autonomous subsidiaries, although active subsidiaries might not be far away. And also in line with the typology hypotheses, production complexity should be the lowest for quiescent subsidiaries and confederate subsidiaries.

The level of ownership, measured as a percentage of equity, is supposed to be highest for confederate subsidiaries and lowest for autonomous subsidiaries. As autonomous subsidiaries are purely market-seeking affiliates, the likelihood for the need for a joint venture partner is much higher. Conversely, for a confederate subsidiary, which carries out production and research and development for the multinational group, it is much more important to have control. The position of active and quiescent subsidiaries is unclear but is likely to be intermediate.

Autonomous subsidiaries are expected to use acquisitions more frequently than other types of affiliates, especially confederate subsidiaries, because of speed of entry, pre-emption, local partner, existing marketing channel and market share, etc. Other types of subsidiaries could acquire existing companies for strategic asset seeking motives. Given the condition and state of the Chinese SOEs that are for sale, this is unlikely to be the case.

The extent of R&D, measured as a percentage of total sales, is expected to be the highest for active and autonomous subsidiaries. Not only quiescent subsidiaries, but also confederate subsidiaries are supposed to carry out substantially less R&D. However, whenever confederate subsidiaries carry out R&D it will be in function of the world market or on behalf of the corporate parent. The nature of R&D was measured on a six-classification scale, ranging from: none, customer technical services, adaptation of manufacturing technology, development of new or improved products for Chinese customers, development of new products and processes for world markets, generation of new technology for the corporate parent. Quiescent subsidiaries will presumably have the lowest level of R&D. Autonomous

and active subsidiaries will take up an intermediate position, although active subsidiaries are expected to surpass autonomous subsidiaries with respect to research and development.

The sourcing strategy, measured by purchases from local suppliers, Asian suppliers, other foreign third party suppliers, subsidiaries of the multinational group and finally headquarters, is also expected to demonstrate particular behavior for the various types of companies. Autonomous subsidiaries will have high local sourcing and low group sourcing, while confederate subsidiaries are supposed to have low local sourcing and high group sourcing. Active and quiescent subsidiaries are likely to attain a higher and lower intermediate position for both aspects, respectively. The sales strategy, measured by sales to customers in China, in Asia, in the rest of the world, to affiliates belonging to the group, and headquarters, is anticipated to show a similar pattern. Table 1 gives a short overview of the expected relationships between sourcing and sales locally and within the group.

Table 1. Research hypotheses with regard to sourcing and sales

	Active	Autonomous	Confederate	Quiescent
Local sourcing	+	++	--	0
Group sourcing	+	--	++	0
Local sales	+	++	-	0
Group sales	+	--	++	0

The final variable to determine whether a robust taxonomy can be derived is the decision-making autonomy. In general, autonomous subsidiaries will have the highest autonomy, while confederate subsidiaries should have the lowest. Active subsidiaries will possess a higher intermediate position and quiescent affiliates a lower intermediate autonomy.

However, significant differences might also depend on the type of decision. Autonomous subsidiaries will have the highest autonomy on most areas of decision, such as product range, changes in product design, production capacity, advertising and promotion, human resources. However, active subsidiaries tend, for instance, to have the highest decision-making

autonomy with regard to the market area served, manufacturing process and technology, and research and development. Confederate subsidiaries are expected to have the lowest decision-making autonomy across the board. Quiescent subsidiaries are rather situated in a lower intermediate position.

Results and discussion

About a dozen variables measuring host localization, global integration and network embeddedness were subjected to principal factor analysis using an orthogonal varimax rotation, and the best three factor solution was used. The factor analysis thereby retained three factors by default. All the variables load significantly and uniquely above the 0.75 threshold, while none of the residual correlations are significantly higher than the 0.2 threshold. The total variance explained is more than 75 per cent, giving good confidence in the model.

In the second stage of the data analysis, hierarchical clustering was used to make an assessment of the number of clusters. This approach indicated that four natural clusters of affiliates seemed to be present, as the cubic clustering criterion jumped from 2.72 for three clusters to 7.11 for four clusters, surpassing the final seeds criterion. This was verified by the non-hierarchical K-means clustering method. Again, the four clusters solution was the first where the cubic clustering criterion was higher than the final seeds criterion, indicating that four clusters are the most appropriate solution.

The means of the host localization, global integration, and network embeddedness are shown in Table 2. The four cluster solution yields a group of 21 quiescent, 5 autonomous, 9 confederate and 13 active subsidiaries. However, there seems to be an overrepresentation of quiescent subsidiaries in comparison to the other categories, which is probably due to the relatively recent opening up of the Chinese market and the resulting limited existence of most of the subsidiaries (average year of establishment: 1994). There are also surprisingly few purely autonomous subsidiaries.

Table 2. Cluster analysis: Means of four cluster solution

Variable	Cluster 1, Active n = 13	Cluster 2, Autonomous n= 5	Cluster 3, Confederate n = 9	Cluster 4, Quiescent n = 21
Local responsiveness	52.50	85.00	4.67	24.61
What percentage of products, sold by the subsidiary, has been created or substantially modified by the Chinese subsidiary?	76.67	100.00	6.43	38.89
What percentage of R&D, incorporated into the products sold by the subsidiary, is actually performed by the subsidiary itself?	28.33	70.00	2.90	10.33
Global integration	3.67	1.84	1.73	2.30
Manufacturing decisions that involve the subsidiary are made with a view to provide international market linkages for this subsidiary.	3.58	2.00	1.67	2.40
Product specifications developed and coordinated by this subsidiary serve many of the corporate parent's geographically defined markets.	3.75	1.67	1.78	2.20
Multinational embeddedness	3.50	2.17	3.17	2.42
Technology development is carried out in many locations throughout the multinational group, with each location specializing in a specific technical area or product line. This output is shared by all subsidiaries.	3.17	2.17	3.33	2.75
Substantial movement of (semi-)finished products exists between the subsidiary and other subsidiaries of the same multinational group.	3.83	2.17	3.00	2.09

Note: Higher scores signify higher local embeddedness, global integration or network embeddedness, respectively.

The quiescent subsidiaries seem to be poorly localized with a low percentage of products created or substantially modified for the local market and with a low percentage of R&D (incorporated into the products sold by the subsidiary) actually performed by these subsidiaries. They are neither globally integrated nor responsive to their 'sister subsidiaries' needs. Autonomous subsidiaries are, however, even less globally integrated or responsive to other subsidiaries in the multinational group, but are highly localized with extensive R&D and production complexity. Active subsidiaries also have high localization, but not all the R&D that they perform is targeted at the host country economy. Confederate subsidiaries are not locally responsive, but they are highly integrated and internally responsive.

In stage three of the data analysis, ANOVA and Duncan's multiple range tests were carried out across the alternative variables, and the results are shown in Table 3. The model is generally well corroborated by the multitude of variables, as all variables are effective in some way, except for the year of establishment. No intelligible conclusion could be drawn on the age of the subsidiary.

The data on the size of the subsidiaries, both in terms of sales and employees, to a large extent support the hypotheses put forward. Confederate subsidiaries are found to be the smallest, with an average 150 million Yuan of sales and a staff of about 50 people. Active subsidiaries have the highest average of annual sales (486.5 million ¥), and, together with autonomous subsidiaries (552), the highest number of employees (504). The autonomous subsidiaries sell substantially less than the active subsidiaries, but also less than quiescent subsidiaries. This supports the hypothesis that quiescent subsidiaries can be characterized as supplying an extensive part of the existing product range of the MNE. This is also supported by the significant difference for the export intensity compared to autonomous subsidiaries. Quiescent subsidiaries export about 20 per cent of sales, while autonomous subsidiaries sell a meager four per cent of sales abroad. Active subsidiaries sell more abroad with a ratio of 30 per cent, while confederate affiliates export even half of their output.

In terms of value added, the quiescent type of companies reported the least extensive activities, with little, if any, R&D, with a significantly lower score of barely two. The

quiescent subsidiaries also have the least production complexity. Autonomous subsidiaries have the most value added activities and the highest production complexity. The results are largely as anticipated.

The foreign companies in autonomous subsidiaries register the lowest equity participation, while confederate subsidiaries attain the highest equity participation by their foreign parent companies. Confederate, together with quiescent type of companies rarely use acquisitions, while the former has the highest propensity to take over Chinese companies. Active subsidiaries take up an intermediate position, with three acquisitions out of 13 subsidiary companies.

Autonomous and active subsidiaries reach the highest R&D expenditures, although these are directed towards the development of new or improved products for Chinese customers and the development of new products and processes for world markets, respectively. Confederate subsidiaries are clearly developing new products or processes for world markets or generating new technology for the multinational group (average: 4.5). Quiescent subsidiaries have the least sophisticated R&D, only consisting of customer technical services or perhaps some local adaptation of manufacturing technology.

Local sourcing is highest for active subsidiaries with approximately 60 per cent. Although autonomous subsidiaries were expected to source most from local suppliers, they reach somewhat less than 60 per cent locally. Confederate subsidiaries source only one fourth from local companies, but purchase 60 per cent of inputs within the multinational group. These confederate subsidiaries also sell less than half of their output in the local market. Autonomous subsidiaries on the other hand sell virtually all of their output on the Chinese marketplace. Active and quiescent subsidiaries take an intermediate position, although active subsidiaries do have a somewhat higher level of sales to group companies.

Table 3. Comparison of means of alternative variables among four clusters of Belgian subsidiaries in China (2000).

Variable	Cluster 1, Active n = 13	Cluster 2, Autonomous n= 5	Cluster 3, Confederate n = 9	Cluster 4, Quiescent n = 21	F-statistic	Differences between clusters
Sales	612	243	280	488	1.97	1,4>2,3
Employees	615	462	173	367	2.22	1,2,4>3
Exports	25	3	38	18	2.01	3,1,4>2
Value added	2.6	2.5	2.1	2.0	2.37	1,2>3,4
Production	4.83	4.83	3.67	3.77	1.92	1,2>3,4
Equity participation	2.1	1.6	2.5	2.1	1.91	2<1,3,4; 3>1,4,2
Acquisition	0.23	0.6	0.1	0.1	2.99	2>1,4,3
R&D (%)	2.1	2.3	1.6	0.8	2.92	1,2>3,4
R&D	3.6	3.0	4.3	1.5	3.39	3,1,2>4
Local sourcing	60.41	56.67	26.67	35.71	2.18	1,2>4,3
Group sourcing	18.33	0	60.0	15.47	2.57	3>1,4,2
Local sales	79.4	96.0	45.0	75.57	2.31	2>4,1,3; 2,4,1>3
Group sales	13.60	0	45.0	6.67	3.95	3>4,2,1
Autonomy	3.375	3.7955	2.3636	3.0574	4.02	2,1,4>3; 2>1,4,3;

Note: *Sales* in million ¥; Exports as % of sales; *Value added*: marketing and sales (1), manufacturing (2), research and development (3); *Equity participation*: minority JVs (1), majority JVs (2), and WOS (3); *Acquisition*: greenfield (0), acquisition (1); *R&D*: none (0), customer technical services (1), adaptation of manufacturing technology (2), development of new or improved products for Chinese customers (3), development of new products and processes for world markets (4), generation of new technology for the corporate parent (5).

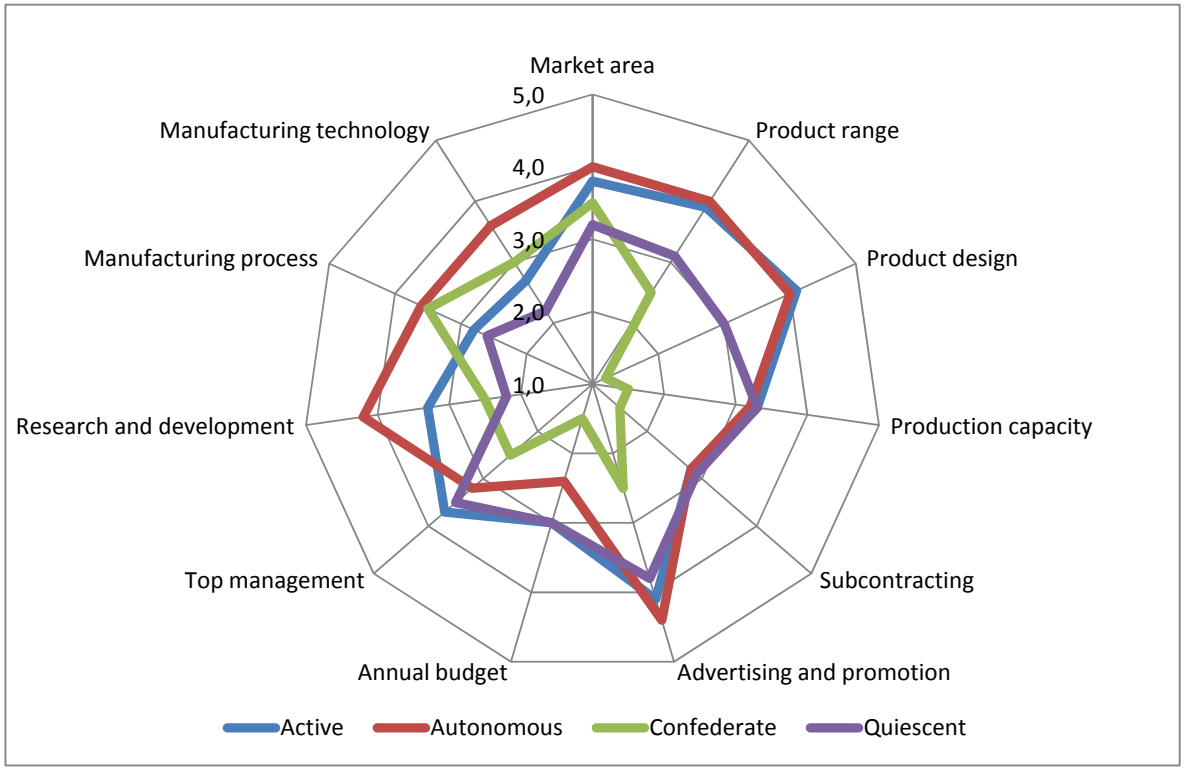
The decision-making autonomy was measured on a five-point classification scale, and the average results on the decision-making autonomy are also largely as expected. Confederate subsidiaries have the lowest average autonomy; quiescent subsidiaries take up a low intermediate position and active subsidiaries a high intermediate position, while autonomous subsidiaries enjoy the highest decision-making authority.

Confederate subsidiaries have a relatively high autonomy over the market area served, especially compared to most other decisions (see further). As these companies are mostly set up for the benefit of the multinational group, it is helpful that they have international linkages, although it is somewhat surprising that they enjoy (partial) autonomy over their market area. Autonomous subsidiaries have the highest decision-making authority over their, admittedly local, market area. Quiescent subsidiaries operate with the lowest autonomy in the market they serve.

The product range and, especially, the product design in the confederate subsidiaries is, in line with expectations, clearly 'dictated' by headquarters. Active and autonomous subsidiaries have the most influence over these decisions. Quiescent types of companies occupy an intermediate position with decisions taken jointly. Production capacity and subcontracting are decisions with a relatively low autonomy for most subsidiaries. Again the confederate type of companies scores the lowest.

Decisions with regard to advertising and promotion are the ones with the highest average autonomy, which was to be expected given China's language and cultural differences. Some autonomous subsidiaries even have been granted complete authority over these decisions. Only the confederate type of affiliates demonstrates a significantly lower autonomy over their advertising and promotion.

Figure 2. Decision-making autonomy for various types of decisions according to different clusters of subsidiaries.



Interesting results are also found about the approval of the annual budgets. Although confederate subsidiaries again have the lowest score, autonomous subsidiaries also rank quite low according to this measure. As autonomous subsidiaries are given much leeway in running their business, they are apparently being more formally controlled, for instance by the approval procedure of the annual budgets. Another way of control is the hiring of top managers in autonomous subsidiaries. Quiescent and active subsidiaries have relatively more decision-making autonomy for hiring managers.

In terms of research and development, autonomous firms have the most decision-making autonomy. Although confederate subsidiaries carried out R&D for the multinational group (see above), they do not have much say over it. Quiescent subsidiaries have even less influence over the R&D, if any, that they perform. Active subsidiaries are situated in an intermediate position both in terms of the R&D that they perform and the autonomy thereof.

A final set of decisions concerns the manufacturing process and the manufacturing technology. Unsurprisingly, the autonomous subsidiaries again have the highest authority for these decisions. However, confederate subsidiaries are a close second. As these latter companies have been set up for the benefit of the multinational network, they are authorized to adapt and even innovate the manufacturing process and technology to local circumstances, capabilities and advantages without too much intervention from the parent company. Active subsidiaries have relatively little impact on their manufacturing process and technology. Quiescent type of companies cannot switch to a new manufacturing process or manufacturing technology without the explicit consent of the corporate parent or headquarters.

In sum, local sourcing reaches the highest level in autonomous and active subsidiaries, while confederate subsidiaries source the most from other group subsidiaries. Autonomous subsidiaries sell most of their output on the local market, while confederate subsidiaries export almost half of their output to other group members. Active and quiescent subsidiaries are situated somewhere in between these categories.

Active and autonomous subsidiaries spend the most on R&D, measured as a percentage of sales. Autonomous affiliates thereby can decide mainly by themselves to develop new or

improved products for Chinese customers. Active subsidiaries thereby develop new products and processes for world markets, although they have less autonomy thereof. Confederate subsidiaries spend very little, if any, on R&D. If they do, it is for the development of new products and processes for world markets or the generation of new technology for the corporate parent.

Another interesting result is the differences in mode of entry and degree of ownership. Autonomous subsidiaries have the highest propensity for acquisition, with the lowest degree of equity ownership. Autonomous subsidiaries obviously prefer to enter the Chinese marketplace quickly and even pre-empt local competition by acquiring a local company. Confederate firms register the highest ownership degree, with no acquisitions at all. For them, partners and existing distribution channels and customers are not as important as control over the subsidiary's contribution in terms of products and processes to the multinational network.

The analysis confirms that decision-making autonomy is the lowest for confederate subsidiaries, with most of the decisions being taken by the corporate parent or headquarters after consulting with or seeking the advice of the subsidiary. They do have quite some autonomy over decisions with regard to the manufacturing process and technology, as this might benefit their contribution to the multinational network. As expected, autonomous subsidiaries take most of their decisions themselves, sometimes after consulting with or seeking the advice of the parent company or headquarters. They are, however, formally controlled by budgets and top management inspections and appointments from the parent company.

Strategic evolution

A first observation is that the quiescent type of subsidiaries forms the largest cluster of companies in China. They represent more than half of the sample of subsidiaries in 1995. The second largest group of subsidiaries is the active cluster of companies with eleven affiliates, followed by seven confederate subsidiaries. The smallest group is represented by autonomous subsidiaries with only four companies.

As was mentioned, autonomous subsidiaries perform particularly well on local responsiveness. Most of the products they produce are either developed or substantially modified for the local marketplace. They also mainly engage in research and development that goes into producing these products. Active subsidiaries also carry out most research and development for their products, but they do not merely cater to the local needs because they are also responsive to developments in international markets and other group subsidiaries. Confederate subsidiaries are intertwined with sister subsidiaries but do not have the local embeddedness and global integration of active subsidiaries. Quiescent subsidiaries follow a half-hearted approach, without any clear orientation towards global integration or combined local or network responsiveness.

In 2000, quiescent subsidiaries lost some ground compared to five years earlier. On the one hand, they are the only cluster in which the number of subsidiaries that qualify for this group has decreased, i.e. from 26 to 21 companies. Managers of 17 quiescent subsidiaries continue to have only limited scope for any virtuous progress in their strategic role by the year 2005.

Although most of the subsidiaries did not change their operational and strategic profile during the period 1995-2000 enough to warrant a shift from one cluster of subsidiaries to another, there is also movement between some of the types of companies. Three changes can be clearly identified, i.e. from quiescent to confederate, from confederate to active, and between quiescent and autonomous subsidiaries. According to Figure 2, eleven subsidiaries changed strategy between 1995 and 2000. Five moved into the confederate quadrant, four became active affiliates, and two became autonomous subsidiaries.

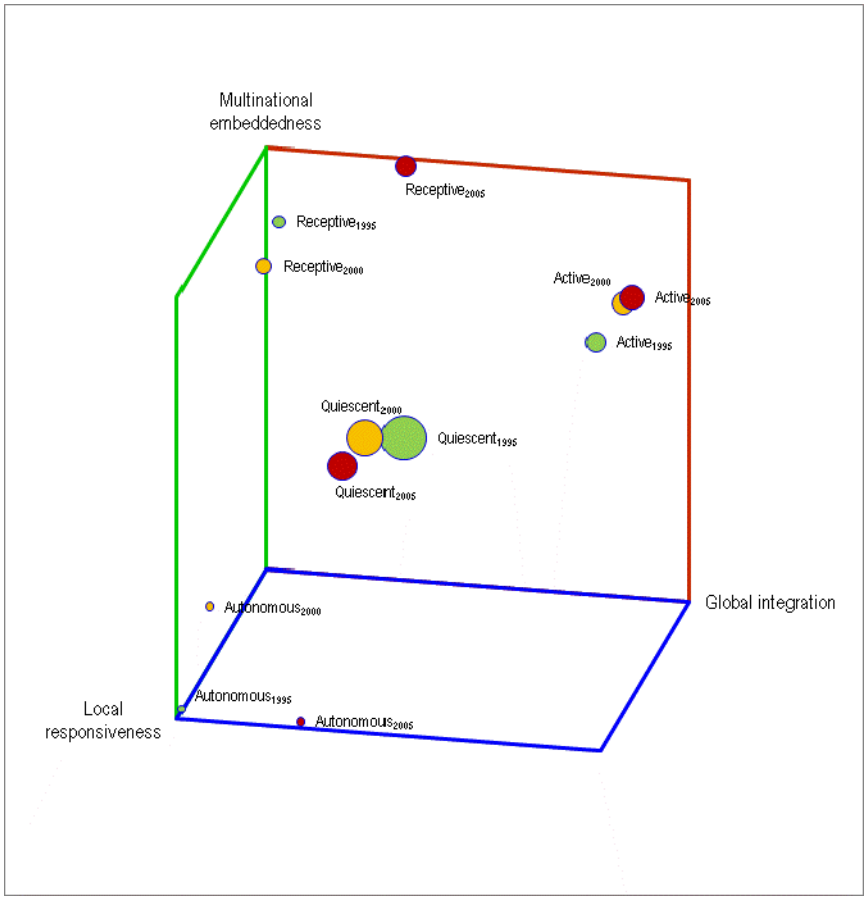
Quiescent subsidiaries escape the lower regions of the framework first and foremost by increasing their multinational embeddedness. A second prevalent shift in strategy occurs when confederate subsidiaries become more embedded in the local economy, and qualify for the cluster of active subsidiaries. They seem to intensify the research and development activities, and increase local embeddedness to some extent. A third and last shift in strategy is

between the quiescent and autonomous cluster of subsidiaries. This has everything to do with increasing local responsiveness.

Managers largely indicated the same shifts during the 2000-2005 period as identified in the previous five-year period. Quiescent subsidiaries are again the only cluster to lose out in terms of numbers, although they remain the largest group with 17 constituents. They are closely followed by 14 active subsidiaries and 12 confederate subsidiaries. Both of these latter types of companies have gained some subsidiaries. Confederate subsidiaries have attracted another three quiescent subsidiaries, while gaining some local as well as network embeddedness. The same is true for active subsidiaries. Only one quiescent subsidiary will increase its local embeddedness to such an extent that it will qualify as an autonomous subsidiary.

In general terms, however, there is a trend for most (except perhaps the autonomous) subsidiaries to follow a clockwise evolution. Taggart (1998) had, however, registered an anti-clockwise evolution, whereby some confederate subsidiaries slid into the quiescent cluster. He suggested that this reduction in local responsiveness was pushed by headquarters rather than volunteered by the affiliate in order to cope with cost pressures. This conclusion seems linked to the changes in mature industries and product life cycles in developed markets (the focus of Taggart's study), as suggested by Prahalad and Doz (1987). The evolution of the Sino-Belgian subsidiaries is probably also linked to the emerging nature of the Chinese market and industry. Due to the relatively recent opening of China's economy to foreign investors, much clockwise progress is not only necessary but also possible.

Figure 3. Strategic evolution of Sino-Belgian subsidiaries, 1995-2000-2005.



Conclusion

A three dimensional typology, in line with the view of the multinational enterprise as a dynamic diversified network, based on local embeddedness, global integration and network responsiveness was developed to assess four different clusters of companies: quiescent, autonomous, active and confederate type of subsidiaries.

Autonomous subsidiaries exhibit high value-added activities, including substantial research and development, extensive decision-making autonomy, and local sourcing. Active subsidiaries also exhibit most of the above-mentioned characteristics, but additionally offer international linkages in terms of global integration and multinational embeddedness. The latter characteristics of network embeddedness are also typical for the confederate type of subsidiary companies. The last and largest category of companies is the cluster of quiescent subsidiaries.

This type of firm is clearly a stepping stone towards other more strategic roles, as most subsidiaries move out this cluster towards autonomous or receptive firms and eventually active subsidiaries. There are apparently two ways out of this quadrant. The more prevalent trajectory is by increasing the integration in the multinational network. The gradual drift of this type towards the confederate strategy space is likely to be at the negotiated instigation of headquarters. Although at the initiative of headquarters, it is believed to be driven by the increased capabilities of the subsidiary. In addition, these confederate subsidiaries exhibit an integration effect when they become part of the parent's strategy to maintain a competitive position in world markets that provides more rapid upgrading of products, processes, technology and quality.

Movement of confederate subsidiaries towards the active type of subsidiary results from a quest for increased autonomy by augmenting the localization of these subsidiaries. Although confederate subsidiaries are globally interconnected, localization can probably be improved as they do have some decision-making autonomy over manufacturing processes and technology.

Movement in the active category itself seems to consist of increasing local and network embeddedness. This is believed to be at the initiative of the subsidiary management as a result of the extensive affiliate capabilities and decision-making autonomy, though the agreement of headquarters is required on most accounts.

A second, yet apparently, more difficult escape route out of the lower quiescent quadrant is to become more closely linked with the host market. The more successful this strategy, the more likely the subsidiary is to end up on the autonomous quadrant. Autonomous subsidiaries themselves are already highly responsive. Managers of autonomous affiliates seem to be quite settled in their strategic posture, so any long-term change is likely to be a function of evolving corporate priorities. The gradual shift towards the active strategy space is likely, therefore, to be at the behest of headquarters. In any case, headquarters may be more amenable to the demands of active than to autonomous affiliates.

As was mentioned, changes in the strategic setting and operations of MNEs occur over time because of the dynamic patterns and changing interactions of firm- and country-related factors and policies, especially when the host economy is involved in a rapid transformation process, such as China.

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