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**SUBSIDIARY DECISION MAKING AUTONOMY:
COMPETENCES, INTEGRATION AND LOCAL
RESPONSIVENESS**

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SUBSIDIARY DECISION MAKING AUTONOMY: COMPETENCES, INTEGRATION AND LOCAL RESPONSIVENESS

INTRODUCTION

The new, more heterarchical or horizontal understanding of multinational enterprise (MNE) management and subsidiary behaviour lends an increasing relevance to the topic of subsidiary autonomy. This is envisaged not just in the context of headquarters-subsidiaries unidirectional and hierarchical relationships, but especially from a subsidiary development standpoint. Our aim in this paper will be to pursue and extend the work by Taggart and Hood (1999) on the main determinants of subsidiary autonomy. A slightly different perspective on the determinants of autonomy will be provided, however. The rationale is that the level of autonomy is a consequence of the interplay among three main groups of factors: subsidiary competences; corporate embeddedness; and local embeddedness. The paper, and particularly the empirical analysis, will follow this three-legged approach. We think that our findings have relevant implications for both subsidiary management and host country inward investment policy.

Empirical work is based on a survey of 119 foreign owned manufacturing subsidiaries located in Portugal. Portugal is an interesting location, having in mind both her success in attracting inward investments in the ten years after entering EC (Simões, 1992; McDermott, 1997), but also the dominant “implementer” characteristics of such investments (Simões, 1992; Amin and Tomaney, 1998).

The paper is developed in six parts, excluding the present introduction. The first provides the theoretical background, focussing particularly on subsidiary roles, embeddedness and initiative as well as on decision-making autonomy. The conceptual framework will follow, leading to the formulation of research propositions, concerning the likely determinants of subsidiary autonomy. The third section addresses methodological issues, namely data collection, operationalization of variables, and statistical tools. The results of the logit regressions on the determinants of subsidiary autonomy will be presented next. These will provide the ground for a discussion of the main findings, and their compatibility with extant literature. The final section concerns policy implications – both at the subsidiary and host country levels –, and indicates the research issues stemming from the present work.

LITERATURE REVIEW

The presentation of the relevant literature on subsidiary autonomy will be developed in three steps. First, the early studies, covering the seventies and early eighties, will be reviewed. Though based on a hierarchical perspective of headquarters-subsidary relationships, they provide an interesting picture about the factors most likely to influence subsidiary autonomy levels. The second step broadly corresponds to a summary of the perspective of MNE as an “integrated network” which emerged in the late eighties. It is recognised that subsidiaries may also have an active role in upgrading the competitiveness and learning capabilities of the whole MNE. In the final step we will come back to the more recent literature on our subject, where “assumptions of (both) hierarchy and heterarchy” – to quote an well known article by Hedlund (1993) –, as well as autonomy and influence (Forsgren and Pahlberg, 1992) are taken into account and interact. The focus will be again on the main determinants of subsidiary autonomy.

The Early Studies

A significant amount of research has been done on subsidiary autonomy during the second half of the seventies and the first of the eighties (Welge, 1987). Such research was mostly concerned with autonomy in the context of corporate control management or, conversely, with the ways how a perceived excessive control by headquarters might be counterveiled, reducing its negative impact on host economies (see the work carried out under the ILO Multinational Enterprises Programme¹).

One of the most interesting studies was carried out by Hedlund (1981), who found that subsidiary autonomy was highest for human resources and lowest for finance decisions. According to his research, autonomy tended to be reduced for decisions which: (1) concern central resources (raising equity capital, dividend policy, expatriate personnel); (2) entail long-term obligations; and (3) involve standardization and the definition of common organizational routines (quality control, transfer pricing policies). The relationship between autonomy and the time scale implications of decisions was also pointed out by Yunker (1983). Garnier (1982: 895) argued that “the actual degree of autonomy granted to a given affiliate will reflect both the general policies set by the parent company for all its foreign affiliates and the specific

conditions (...) that characterize this affiliate”. In particular, this author found autonomy to be higher when MNEs were smaller, when the subsidiary was acquired, and marketed its products in the host country, and when it exhibited low intra-company purchases of products and components. The double perspective of corporate characteristics and subsidiary features was also considered by Gates and Egelhoff (1986). They concluded that corporate level factors (especially product diversity and the extent of foreign subsidiaries ownership) were more relevant in explaining centralization than subsidiary factors. Van den Bulcke and Halsberghe (1984), in their analysis of employment decision-making in MNEs, introduced a third vector – the characteristics of the general relationship between parent company and the subsidiary – which was not considered by the former authors, although it was somewhat implicit.

A general assessment of this early literature shows three shortcomings: (1) an hierarchical perspective, autonomy being “granted” (Garnier, 1982), not earned; (2) a functional bias, comparing autonomy in different functional areas (Hedlund, 1981; Gates and Egelhoff, 1986) or focussing on just one area (Picard, 1977; Van Den Bulcke and Halsberghe, 1984); and (3) a lack of convergence in the findings, in part due to different functional perspectives and sample bases (Welge, 1987; Gates and Egelhoff, 1986). Nevertheless, these efforts were very relevant in contributing to improve the understanding of headquarters-subsidiary relationships, as well as in identifying some key factors which influence the degree of subsidiary autonomy.

Heterarchy, Subsidiary Embeddedness and Subsidiary Competences: a New Background for the Autonomy Issue

In the last fifteen years there was a shift in the perspective of MNE management and behaviour. As a consequence of the convergence of different lines of research, a more complex view of the MNE emerged, expressed in the conceptualization of the MNE as an “heterarchy” (Hedlund, 1986; Hedlund and Rollander, 1990), an “integrated network” (Bartlett and Ghoshal, 1989) or an “horizontal organization” (White and Poynter, 1990). In a world where “knowledge and competence” (Winter, 1987), not the property of goods and rights, are the main strategic assets, learning and “combinative capabilities” (Kogut and Zander, 1992) become more important than control and possession (Caraça and Simões, 1995). The MNE organization, therefore, becomes more similar to “a flexible horizontal network, accompanied by lateral decision processes and, underlying it all, a common set of

shared premises upon which decisions are based and actions assessed” (White and Poynter, 1990: 98).

The integration/responsiveness framework of Prahalad and Doz (1987) is complemented with a new objective for MNE management – the promotion of Worldwide learning (Bartlett and Ghoshal, 1989). The centre, the headquarters, is no longer “the brain of the firm”: instead, the firm is itself conceptualised as a brain (Hedlund and Rollander, 1990). The subsidiaries are different, and have specific roles in the context of the MNE as a “differentiated network”. Subsidiaries are not just “implementers”, performing the tasks set down by the centre; they may also play an active role in the corporate process of Worldwide learning.

This conceptual change led to an increased research on subsidiary behaviour. Such a research followed three main inter-related strands: (1) the working out of typologies of subsidiary roles (Bartlett and Ghoshal, 1989; Jarillo and Martinez, 1990; Birkinshaw and Morrison, 1995; Simões, 1992; Taggart, 1997a and b; Taggart and Hood, 2000); (2) the emergence and characteristics of centres of excellence (Fratocchi and Holm, 1998; Moore and Birkinshaw, 1998; Surlemont, 1998; Holm and Pedersen, 2000); and (3) subsidiary development and initiative (Jarillo and Martinez, 1990; Birkinshaw, 1997; Birkinshaw and Hood, 1997 and 1998; Taggart, 1998; Delany, 1998; Andersson, Furu and Holmstrom, 1999).

The literature on subsidiary roles has, for the most part, an implicit or even explicit view of subsidiary autonomy. The correspondence between role relevance and autonomy, however, is not an easy one, since being more autonomous does not entail an improved role in the MNE network. It may even be the other way round, as Rugman and Verbeke (1999) or Mudambi (1999) suggest. So the sequence of increasing autonomy in Birkinshaw and Morrison’s (1995) typology (local implementer-specialized contributor-world mandate) may not be fully justified. The argument by Martinez and Jarillo (1991) that active subsidiaries will be the more closely controlled by headquarters, though not getting full empirical support, suggests a more complex, and maybe realistic, picture. In fact, the application of Prahalad and Doz (1987) integration/local responsiveness grid to the subsidiary perspective shows the existence of different combinations between these two dimensions (Jarillo and Martinez, 1990; Taggart, 1997a). Simultaneously, there is a recognition of subsidiaries’ capabilities: as Bartlett and Ghoshal (1989) aptly pointed out, subsidiary role is influenced not just by the strategic relevance of its location, but also by the

level of resources and capabilities it was able to develop. This leads to the importance of autonomy as a criterion for defining subsidiary roles. For Birkinshaw and Morrison (1995) as well as for Martinez and Jarillo (1991), the levels of autonomy (and coordination) stemmed from role characteristics. However, the work of Taggart considers autonomy as a basic criterion for assigning subsidiary roles, either in conjunction with procedural justice (Taggart, 1997b) or together with market scope and integration (Taggart and Hood, 2000).

The academic concern with centres of excellence is relatively recent. 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 and 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 other parts of the MNE to use subsidiary competence (Holm and Pedersen, 2000) or, in other words, the existence of subsidiary influence (Forsgren and Pahlberg, 1992; Andersson and Pahlberg, 1997) on other units of the MNE network. Autonomy is envisaged as a pre-condition for the subsidiary to develop and exploit its capabilities, and therefore to reach excellence (Forsgren and Pedersen, 1998; Holm and Pedersen, 2000; Ensign, Birkinshaw and Frost, 2000). Subsidiary capabilities and resources may then be used to influence the strategic behaviour of the whole MNE system (Forsgren and Pahlberg, 1992). Influence, however, demands some kind of integration in the MNE and network interdependence, which may lead to a reduction in subsidiary decision-making autonomy. To sum up, the research on centres of excellence has two implications for our work: (1) it stresses the importance of competence development at the subsidiary level, often associated with the notion of embeddedness (Forsgren, Johansson and Sharma, 2000; Andersson and Forsgren, 1993 and 1996; Forsgren, Pedersen and Foss, 1999); and (2) recognizes that the relationship between autonomy and network integration is a complex one, the balance between “the autonomous way” and the “integrative way” (Holm and Pedersen, 2000: 17) being difficult to draw.

The third research strand, which was already implicit in the literature reviewed above, deals with subsidiary development and initiative². Two contributions deserve a reference in this connection. First, Swedish research put the emphasis on embeddedness as a critical factor for subsidiary competence development.

Subsidiaries have to manage a triple embeddedness: corporate, concerning the relationship with the MNE network; business context, regarding the linkages with important customers, suppliers and other partners; and local environment, namely the national innovation system (Forsgren, Johansson and Sharma, 2000; Forsgren and Pedersen, 1998; Andersson and Forsgren, 1993). The second contribution stems from the conceptual model proposed by Birkinshaw and Hood (1997), who envisage subsidiary development processes as a consequence of the interplay of three kinds of factors, associated with the parent company, the subsidiary itself, and the host country. The development process has two main phases: establishing viability, and building sustainability; the idea of sustainability is implicitly associated with a relevant stock of resources, but does not necessarily entail autonomy. Particularly relevant is the fact that the process has to be headed by the subsidiary itself (Birkinshaw, 1997; Delany, 1998). It was even argued that “subsidiary initiative has the potential to enhance local responsiveness, worldwide learning and global integration” (Birkinshaw, 1997: 208).

Subsidiary Autonomy Revisited: A Review of Recent Research

The survey undertaken revealed that, while autonomy is generally envisaged as a relevant feature in understanding subsidiary strategy and development, the research specifically addressed to identify the main factors impinging upon subsidiary autonomy is relatively sparse. There are, nevertheless, several references which are very helpful for our purposes.

The influence of subsidiary roles on the levels of autonomy/control was studied by Birkinshaw and Morrison (1995), Martinez and Jarillo (1991) and Harzing (1999). The first authors found strategic autonomy to vary according to subsidiary roles, World mandate subsidiaries exhibiting the highest autonomy levels, and local implementers the lowest. The research by Martinez and Jarillo (1991) raised the challenging hypothesis that “active” subsidiaries (high in terms of both integration and responsiveness) would show the heaviest use of coordination mechanisms. The hypothesis was not empirically validated; the authors argued, however, that there were no purely active subsidiaries in the sample studied. The work by Harzing (1999) produced clearer results. In fact, she found that autonomous subsidiaries experienced lower levels of total control than both receptive and active subsidiaries.

Other research has addressed the issue of the influence of subsidiary embeddedness on autonomy. Birkinshaw and Hood (2000) analysed the characteristics of subsidiaries in “leading-edge clusters”. They found that subsidiaries in such clusters are more embedded in their local cluster and enjoy higher autonomy. Local business environment was considered as very relevant in helping to shape subsidiary characteristics although there were significant inter-cluster differences. It is not just cluster membership but the specific features of the cluster that influence subsidiary characteristics. Andersson and Forsgren (1996) tested the relationship between subsidiary corporate and external embeddedness, on the one hand, and the level of control perceived by the subsidiary³, on the other. These two dimensions of embeddedness were found to have opposite influences on perceived control. This increases with a stronger corporate embeddedness, and decreases with a deepening of external embeddedness. Curiously, the relationship between total (corporate plus external) embeddedness and perceived control was found to be negative, suggesting that subsidiary managers’ perception of headquarters control arises primarily from the relationships with extra-MNE actors. The extensive analysis undertaken by Harzing (1999) provides other interesting findings in this connection: (1) MNE nationality influences subsidiary autonomy, German subsidiaries seeming to be the least autonomous; (2) subsidiaries of MNE following multidomestic strategies experience less control than in the cases of global and transnational strategies; (3) control increases with corporate interdependence and decreases with local responsiveness; and (4) output-dependent subsidiaries have lower control than input-dependent ones.

For our purposes, however, the most interesting piece of research was written by Taggart and Hood (1999). They specifically focussed on the determinants of subsidiary autonomy, based on a sample of 141 German and Japanese subsidiaries in the United Kingdom and the Republic of Ireland. They found autonomy levels to be significantly influenced by subsidiary R&D complexity and export propensity, as well as (though not so strongly) by subsidiary sales and market scope. In contrast, factors such as the nature of product operations, intra-group trade, local sourcing, and subsidiary age were not significant. They also suggest that “the faster growing and more globally integrated the [MNE], the less may be the autonomy granted to be subsidiary” (Taggart and Hood, 1999: 234).

We are now better equipped to formulate a framework on the determinants of subsidiary autonomy, leading to launch the main hypotheses for empirical testing. This will be the subject of the next section.

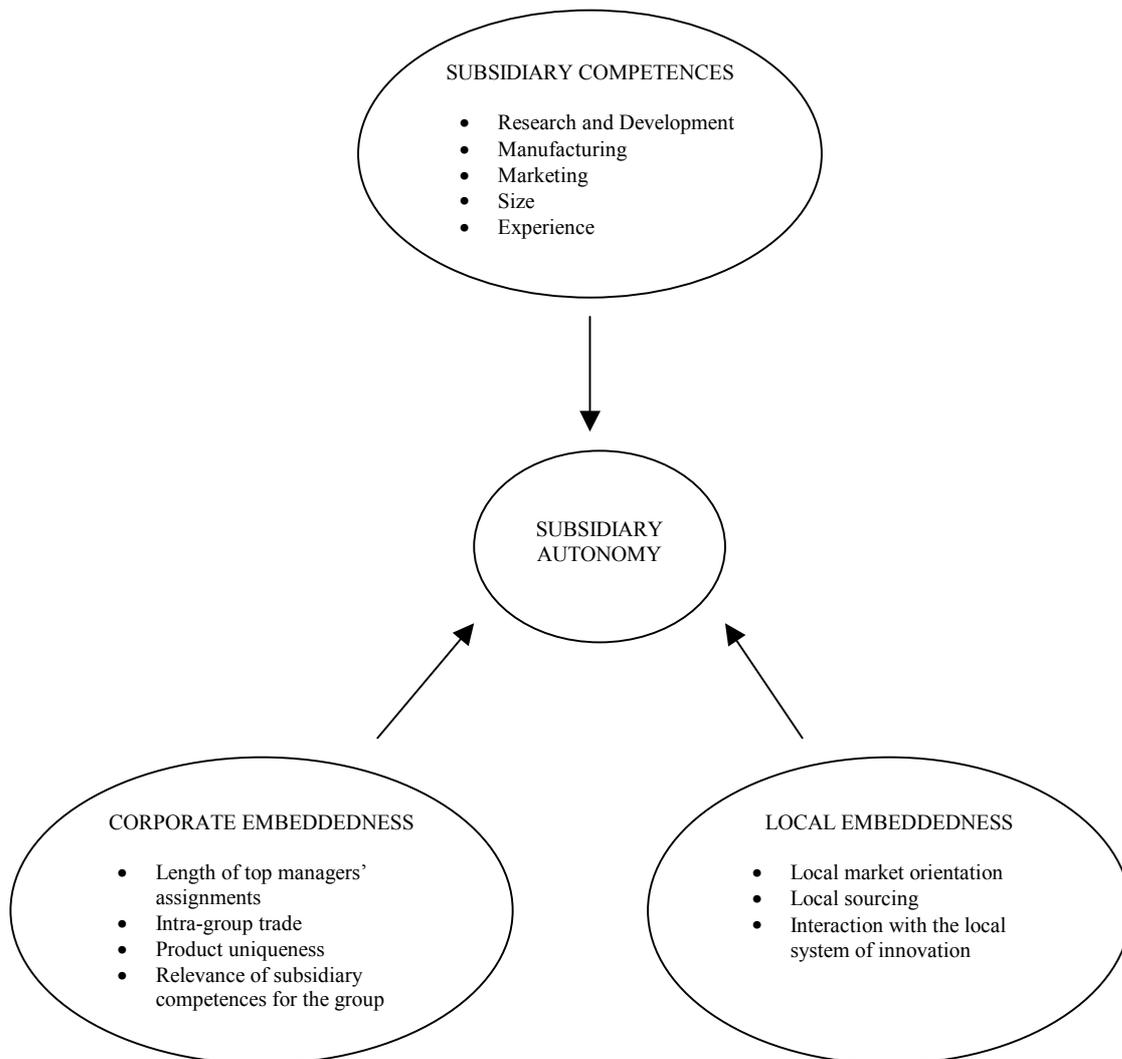
HYPOTHESES DEVELOPMENT

The Determinants of Subsidiary Autonomy: A Framework

Based on extant literature, we may envisage a MNE subsidiary as a “*double-faced*” organization. On the one hand, it is a member of an international group, which provides it with resources (financial, knowledge, trade marks, reputation), sharing common perspectives, and developing links and synergies with the other members. There is, thus, a face turned towards the group. On the other, the subsidiary is located in a given country, and develops relationships with other economic agents established there; such relationships concern, for instance, marketing outputs, purchasing inputs, assessing other firms knowledge, recruiting highly skilled people, and cooperating with research organizations. This is the second face, turned towards the recipient economy. The first face corresponds to the corporate embeddedness of Forsgren, Johanson and Sharma (2000). The second includes both local environment and business context embeddedness.

Being “*double-faced*”, a subsidiary is not, however, hollow. It has a knowledge base, historically developed through the interaction between group resources, local resources and subsidiaries’ in-house knowledge, “combinative capabilities” (Kogut and Zander, 1992), and initiative. Every subsidiary has a larger or smaller set of competences and resources which influence its behaviour and development. Subsidiaries’ activities are not just a mere consequence of the interplay between the two “faces” – corporate and local – pointed out above. There are also internal factors (Birkinshaw and Hood, 1997) to be taken into account. We call them subsidiary competences.

These three strands – subsidiary competences, corporate embeddedness and local embeddedness – are, in our opinion, the three main axes which influence subsidiary autonomy. Figure 1 portrays this three-legged perspective, which provides a framework for developing our hypotheses.



**Figure 1 – The Determinants of Subsidiary Autonomy:
A Framework**

Subsidiary Competences

There is no agreement in the literature with regard to the main features of subsidiary competences. A functional perspective, following Porter's value chain is appealing: design and development, manufacturing, and marketing capabilities. Taggart and Hood (1999) considered all these aspects, though manufacturing did not reach statistical significance in explaining autonomy. Two other relevant indicators of capabilities are size and experience (which may be related to age and to extra-group experience). In fact, taking into account evolutionary approaches to subsidiary development, time is needed to establish subsidiary viability and, then, to build sustainability (Birkinshaw and Hood, 1997). Research on Ireland also suggests a developmental pattern associated with subsidiary experience (Delany, 1998), as does the research on R&D laboratories (Pearce and Papanastassiou, 1996; Pearce, 1999).

The influence of subsidiary competences on autonomy may be generally envisaged as positive. However, the relationship may not be so straightforward: MNE groups may want to have a tighter control of high performing, capability-rich subsidiaries.

Taggart and Hood (1999) found R&D complexity to lead to higher autonomy. It seems logical that the existence of a minimum in-house R&D capability to be like a pre-condition for the subsidiary to have the capabilities needed to meld different knowledge streams, thus developing specific products or processes. Consequently it becomes less dependent on technological and marketing knowledge provided by headquarters or sister subsidiaries. The development of “creative subsidiaries” (Papanastassiou and Pearce, 1998; Pearce, 1999) provides a similar perspective. A counter argument may be the need for centralization of R&D activities, and the strategic sensitiveness of these (Bartlett and Ghoshal, 1989), leading to a stronger hold by headquarters. We think, however, that in general – and particularly in the case of Portugal – there are good reasons to rely on Taggart and Hood (1999) findings, thus suggesting that

Hypothesis 1.1. – *The stronger subsidiary R&D capabilities, the higher its autonomy will be.*

Early literature on subsidiary autonomy suggests that subsidiaries which manufacture final products instead of components, and which have complete manufacturing activities, instead of assembling only, would enjoy higher autonomy (Welge, 1987; Hedlund, 1981). In contrast, Taggart and Hood (1999) did not find any sound influence of the nature of production operations upon subsidiary autonomy. Therefore it is difficult to formulate an hypothesis on this regard. For this reason, together with a concern for parsimony, we will not consider manufacturing capabilities in this analysis.

Marketing capabilities and behaviour are likely to be more relevant than manufacturing ones. Remember that the literature on World product mandates suggested a close linkage with subsidiary autonomy (Birkinshaw and Morrison, 1995; Ensign, Birkinshaw and Frost, 2000). However, other research pointed in a different way. For instance, Garnier (1982) found that local market oriented subsidiaries enjoyed more autonomy. Similarly, subsidiaries created to serve markets larger than the country where they are established are more tightly controlled (Van den Bulcke

and Halsberghe, 1984; Welge, 1987). Taggart and Hood (1999) found export propensity to have a negative influence on autonomy, while a larger market scope led to higher subsidiary autonomy. Marketing capabilities are critical for the subsidiary to build sustainability, not only in terms of marketing existing products but also of developing new ones. The lack of such capabilities compels the subsidiary to rely heavily on other MNE units to market their products, and thereby creates dependence. The following hypothesis is thus put forward:

Hypothesis 1.2. – *Higher subsidiary marketing capabilities will lead to increased subsidiary autonomy.*

In principle, a larger size corresponds to a higher resource endowment. However, some small subsidiaries may be very relevant for capturing knowledge, having highly skilled and specific resources. The relationship between subsidiary size and autonomy is not simple. Earlier research is contradictory in this regard. Van den Bulcke and Halsberghe (1984), Hedlund (1981) and Picard (1977) found a negative relationship between subsidiary size and the level of control, while Gates and Egelhof (1986) and Harzing (1999) reported a positive one. Taggart and Hood (1999) used two indexes of size, again with mixed results: employment shows a positive influence on autonomy (but very far from being significant), while sales exhibits a negative and significant (at 10% level) sign. In spite of the lack of agreement of existing literature we purpose the following:

Hypothesis 1.3. – *In a given country, larger subsidiaries will, as a rule, exhibit higher autonomy levels than smaller ones.*

Research on subsidiary development shows, as pointed out above, that subsidiaries need some time to upgrade and consolidate their capabilities, through a process where increased experience leads to more autonomy. Welge (1987), Van den Bulcke and Halsberghe (1984), and Harzing (1999) all refer that control tends to be lower in older subsidiaries. Taggart and Hood (1999) also found a positive relationship between subsidiary age and autonomy, though with a very low coefficient and not statistically significant. Another way to envisage experience is by examining the mode of establishment: acquired subsidiaries have, in general, a more widespread experience than those created greenfield. Having a past, non-group history and possibly distinctive competences, the first type of subsidiaries may be more likely to

enjoy higher autonomy (Garnier, 1982; Van den Bulcke and Halsberghe, 1984; Harzing, 1999; Andersson and Forsgren, 1996). There is ground to suggest that:

Hypothesis 1.4. – *Subsidiary experience has a positive influence upon autonomy.*

Corporate Embeddedness

As indicated in Figure 1, four main features of corporate embeddedness were taken into consideration in our framework: (1) characteristics of subsidiary top management assignments; (2) subsidiary involvement in intra-group trade; (3) uniqueness of subsidiary products; and (4) relevance of subsidiary competences for the MNE group.

It is well known that managers' management is one of the most effective ways for headquarters to control subsidiaries (Edström and Galbraith, 1977; Prahalad and Doz, 1981; Harzing, 1999). International transfers of managers have been extensively used for the purposes of both keeping control of overseas expatriates, and promoting socialization and the sharing of corporate values. The characteristics of managers may have a strong influence upon subsidiary development and autonomy: Birkinshaw (1997) and Birkinshaw and Hood (1997) refer to subsidiary managers entrepreneurship and initiative; Delany (1998) as well as Amin and Tomaney (1998) stress how managers' commitment has contributed towards the development of Irish subsidiaries of MNEs. The frequency of subsidiary managers rotation may also have a bearing on autonomy: longer assignments are more likely to generate in managers a feeling of intimacy with the subsidiary fate, leading to an intertwining of both managers' careers and subsidiary development, thus enhancing autonomy (Birkinshaw and Hood, 1997; Birkinshaw, 1997; Simões, 1992; Harzing, 1999). Consequently, it may be argued that

Hypothesis 2.1. – *The higher subsidiary managers rotation frequency, the lower will subsidiary autonomy be.*

Intra-firm trade has been generally considered as one of the most relevant dimensions of corporate embeddedness (Anderson and Forsgren, 1996). Hedlund (1981) found that the level of interdependence between the subsidiary and headquarters, expressed in terms of exchange of material and immaterial goods, reduces subsidiary autonomy. Similar conclusions were reached by Garnier (1982)

and by Van den Bulcke and Halsberghe (1984). Birkinshaw and Morrison (1995) show that high strategic autonomy of subsidiaries is associated with low inter-affiliate purchases. A similar relationship was identified by Taggart and Hood (1999) who analysed intra-group exports and imports separately: they found the second to have a negative influence upon autonomy, very close to reaching statistical significance. Curiously, Harzing (1999) got a different result, control being tougher for output dependent than for input dependent subsidiaries. In spite of the differences identified, there is a strong convergence in the literature that infra-firm trade curtails subsidiary autonomy. The only dissonant voice is that of Gates and Egelhoff (1986), who found a negative relationship between intra-company purchases by the subsidiary and financial centralization, but not for marketing and manufacturing centralization. Extant literatures supports, therefore, the following:

Hypothesis 2.2. – *The higher the subsidiary involvement in intra-group trade, the lower its autonomy will be.*

When subsidiaries manufacture and market specific products, *maxime* when their products are unique, not existent in other units of the MNE, they are likely to have more room for manoeuvring. Birkinshaw and Morrison (1995) indicate that World product mandate subsidiaries are, as a rule, more autonomous. In the same vein, Birkinshaw (1997) and Birkinshaw and Hood (1997) associate subsidiary initiative and entrepreneurship, developing new and specific products not found elsewhere in the MNE, with autonomy. So,

Hypothesis 2.3. – *The higher the share of subsidiary output corresponding to specific products, not designed, manufactured and marketed by other subsidiaries, the higher its autonomy will be.*

The literature on centres of excellence has underlined the relevance of the influence of subsidiaries' competences for MNE competitiveness and development (Holm and Pedersen, 2000). This perspective is associated with Martinez and Jarrilo (1991) hypothesis that active subsidiaries would be more tightly controlled; this was somehow confirmed by Harzing (1999). In fact, those subsidiaries which have distinctive competences, used by the whole MNE and considered relevant for its competitiveness, may not enjoy a very high autonomy. "Integration in the [MNE] and

interdependence with other [MNE] units reduce the decision-making power in the subsidiary” (Holm and Pedersen, 2000:7). There is ground to suggest that

Hypothesis 2.4. – *Subsidiary autonomy will be lower when it has distinctive competences which are used by the MNE group.*

Local Embeddedness

It is widely recognised that when subsidiaries have a strong local anchoring, both in terms of inputs and outputs, they may be able to increase their autonomy. Such local anchoring may act as a countervailing power against headquarters centralization. However, the opportunities for developing local linkages depend not only on subsidiary management initiative and entrepreneurship (Birkinshaw and Hood, 1997), but also on the dynamics and capabilities of recipient country industrial fabric (Birkinshaw and Hood, 2000; Forsgren, Johanson and Sharma, 2000; Bartlett and Ghoshal, 1989). As shown in Figure 1 local embeddedness will be analysed along three dimensions: (1) local market commitment; (2) local sourcing; and (3) relationships between the subsidiary and recipient country’s system of innovation.

Garnier (1982) found that subsidiaries serving the local market are more likely to enjoy higher autonomy. This is consistent with the multinational perspective *à la* Bartlett and Ghoshal (1989), the need for flexibility in adapting to local market requirements yielding more autonomy. In this vein, Taggart and Hood (1999) found that export propensity had a negative, and highly significant, influence on subsidiary autonomy. There are, therefore, theoretical and empirical bases to argue the following:

Hypothesis 3.1. – *The higher the share of subsidiary sales addressed to the host country market, the higher the level of autonomy it will enjoy.*

Local sourcing has been usually envisaged as one of the main instruments for local embeddedness. Andersson and Forsgren (1996) use local sourcing as a key ingredient of what they call external embeddedness, and found it to have a negative relationship with perceived control. In the analysis of subsidiary development, the efforts to increase local sourcing are considered to be relevant in the formation and strengthening of local clusters, thereby enhancing decision-making autonomy (Birkinshaw and Hood, 2000). However, Taggart and Hood (1999) did not found local sourcing to be relevant in explaining autonomy of MNE subsidiaries in the British

Isles. In spite of this last finding, we are convinced that there are good reasons to maintain that

Hypothesis 3.2. – *An increased local sourcing by the subsidiary will strengthen its autonomy level.*

It is increasingly recognized that subsidiaries may be created to get access to strategic resources, namely organizational and technological knowledge (Cantwell, 1989; Bartlett and Ghoshal, 1989; Dunning, 1993). It may even happen that the subsidiary only becomes fully aware of host country advantages *a posteriori*, as a consequence of current interaction with local partners. In a globalized world, tapping into specific national systems of innovation (Lundvall and Borrás, 1997; Archibugi and Michie, 1997) or leading edge clusters (Birkinshaw and Hood, 2000) may contribute to strengthen the competitiveness of both MNEs as a whole and local subsidiaries. The establishment of linkages between subsidiaries and other organizations in the context of host country systems of innovation was found to have a positive influence on the latitude of subsidiary decision making (Andersson and Forsgren, 1996; Birkinshaw and Hood, 2000). Consequently, the following may be put forward:

Hypothesis 3.3. – *The stronger the linkages established with host country national system of innovation, the higher subsidiary autonomy will be.*

METHOD

Data Collection

The database used to test our hypotheses was derived from the replies to a mail survey on foreign investments in Portugal. The questionnaire was constructed in a way to include questions similar to those used in the projects on foreign subsidiaries in the British Isles (Taggart and Hood, 1999 and 2000) and on centres of excellence (Holm and Pedersen, 2000). The survey was undertaken in June 1999 and was addressed to 277 subsidiaries, selected in cooperation with ICEP, the organization in charge of attracting inward FDI to Portugal⁴. A bias towards more interesting and “appealing” cases should be acknowledged. Total number of replies was 150. However, a part of the subsidiaries did not supply information on all the topics relevant for our purposes in this paper. Consequently, this analysis was initially based

on 119 subsidiaries, response rate approaching 43%, still a very high figure for all standards.

A single-informant approach was followed in data collection. Paper questionnaires, together with a *diskette* to enable e-mail reply, were personally addressed to the managing directors of the subsidiaries. In most cases the respondent was the individual to whom the survey package was mailed.

A global analysis of respondent subsidiaries shows the following features: activity concentrated on medium-high technology intensive industries (accounting for around two thirds of total); 85% of subsidiaries have majority foreign ownership; subsidiaries mostly belong to European MNEs (around 70%, Germany alone concentrating 28%); high export propensity; limited value chains, mostly focussed on manufacturing; and low R&D expenditures.

Operationalization of the Variables

The dependent variable was constructed on the basis of the aggregation of subsidiary responses on eleven dimensions of decision-making processes, concerning different areas of subsidiary activity⁵. For each dimension, respondents were requested to identify the most appropriate situation: 1=decisions taken mainly by the parent company without consulting with, or seeking the advice of, the subsidiary; 2=decisions taken namely by the parent company after consulting the subsidiary; 3=decisions taken mainly by the subsidiary after consultation with, or advice by, the parent company; and 4=decisions taken mainly by the subsidiary, without consulting the parent⁶. An average score was computed, based on all individual dimensions (Cronbach α was very high, slightly exceeding 0.90). To enable a sharper contrast of autonomy conditions, a dichotomous measure of autonomy was constructed in the following way: a subsidiary was considered to be “low autonomy” when the score was below 2.4; instead, it was labelled “high autonomy” when the score exceeded 2.6. Subsidiaries with scores between 2.4 and 2.6 were excluded from the analysis. This procedure led to the selection of 108 cases: 77 where decisions were mainly taken by the parent organization (“low autonomy”), and 31 with subsidiary-based decision making systems (“high autonomy”).

Five variables were used to operationalize subsidiary competences, as show in Annex I. Research and development capacity was measured by the ratio of R&D

expenditures to total sales (R&D), using a 5 point Likert scale. Geographic scope of subsidiary marketing activities (AM-GLO) was used as a proxy for marketing capabilities, ranging from 1 (when the subsidiary does not carry out any marketing activities) to 5 (Worldwide marketing scope). Subsidiary turnover in the year 1998 was used as a measure of size (SIZE); turnover was expressed on a 7 point scale. Finally, two variables were considered to indicate subsidiary experience. One was the length of MNE ownership of the Portuguese subsidiary, in decades (AGE). The other was the mode of establishment of the subsidiary (MESTR), through a dichotomous variable: 1 for greenfield investment, and 0 for acquisition. These two variables were envisaged as alternatives.

Corporate embeddedness was operationalized through five variables. The first corresponds to the frequency of rotation of subsidiary general managers (FMR). Intra-group trade was measured by two variables – EXPGROUP and IMPGROUP – translating the shares of total exports and imports forwarded to, or coming from, other MNE units, respectively. Product uniqueness was operationalized by a dummy variable (PROUN), which gets the score 0 when there are no other units manufacturing the main product(s) of the Portuguese subsidiary, and 1 otherwise. The relevance of subsidiary competences for the group (SCEG) was measured by a 5 point Likert scale, based on the opinions of subsidiary managers about the consequences for the MNE of the non availability of the competences of the Portuguese subsidiary.

Three variables were used to operationalize the different dimensions of local embeddedness. The first is COMEXTEX, which corresponds to subsidiary export propensity, expressed on a 5 point scale; this may be envisaged as the counter-image of local market orientation. The second measures the level of local sourcing (LOCSOURC), also through a 5 point scale. The interaction between the subsidiary and the Portuguese system of innovation was operationalized by a dummy variable on the cooperation with Portuguese scientific and technological organizations (COPU).

Besides the variables corresponding to the three main axes identified (subsidiary competences, corporate embeddedness and local embeddedness), a control variable was also considered – the type of industry (ACT). This is deemed to translate the different levels of globalization of industries, and thereby different pressures for corporate control. We followed the suggestion of Harzing (1999), and used a dummy variable which had the value 1 when the subsidiary activity was in the fields of electronics, computer, automotive, petroleum, chemicals and pharmaceutical industry,

and 0 otherwise. The possibility of including another control variable referring to MNE home country was also explored, contrasting German subsidiaries with the others (COUNTR).

A summary of variable definitions and expected signs is provided in Annex 1.

Data Analysis

The purpose of this paper is to identify the main factors which influence subsidiary autonomy. Having in mind the characteristics of the variables used, with several dummies and an absence of continuous variables, and particularly the advantage of contrasting two different groups of subsidiaries, the most appropriate method was considered to be a binomial logistic regression. In fact, this method is designed for cases when there is a dichotomous dependent variable, as it happens in this work. Furthermore, it is very robust even when the scales are relatively limited and the variables discrete.

EMPIRICAL RESULTS

The results of the binomial logit regressions used to test the eleven hypotheses developed above are presented in Table 1. A positive coefficient means that the associated variable increases the probability that the subsidiary will be a “high autonomy” one; instead, negative coefficients mean that the variable tends to increase the probability of the subsidiary to be classified as “low autonomy”.

Besides the four models included in the Table, other specifications were run, particularly to investigate the advantages of considering the control variable COUNTR (Germany *versus* other countries). It was found that COUNTR has no significant impact upon autonomy; so it was decided to leave it out of the analysis. The rationale for presenting four models is very easy to explain. Models 1 and 2 are similar, except with regard to the measure of subsidiary experience. In Model 1 we used a measure of subsidiary age (AGE), the most common indicator of the extent of subsidiary experience. In Model 2 the alternative variable, translating the mode of establishment of the subsidiary (MESTR), was considered. Model 3 is a reduced version of Model 2, excluding EXPGROUP, the variable relative to intra-group exports. This was due to two reasons: first, for the quest of parsimony, the possibility of including only one measure of intra-group trade was explored; second, the research

by Taggart and Hood (1999) indicated intra-group exports to have a very slight influence on autonomy. Finally, Model 4 is still a more parsimonious specification, including only the seven variables which reached significance in the previous models and the type of industry control variable (ACT).

All the models are very satisfactory. In fact, they exhibit highly significant χ^2 ($\chi^2=0.0000$), and a percentage of observations correctly classified always exceeding 80%. Model 2 behaves slightly better than Model 1, both in terms of χ^2 value (49.9 against 49.2) and percentage of correct classifications (84,3% *versus* 84,1%); conversely, the sensitivity of Model 1 is much higher than that of Model 2. However, MESTR is significant at 5%, while AGE has no significance whatsoever. Model 3 exhibits χ^2 , -2LL and percentage of correct observations very similar to Model 2, indicating that the deletion of EXPGROUP had no negative consequences. Naturally, Model 4 has the lowest χ^2 and percentage of correct observations. It is a more parsimonious model but still very powerful, with more than 81% of observations correctly classified.

A look at sensitivity and specificity indicators shows that the latter are consistently much higher than the former. Such a difference is lowest for Model 1, which has a sensitivity level of 67%, against percentages around 60% for the other models. In contrast, the highest specificity is reached in Models 2 and 3. Our results are just opposite to those of Taggart and Hood (1999), in this respect. The explanation is simple. It is well known that logistic models tend to over-predict the largest category (Amemiya, 1981). In our case it corresponds to “low autonomy” subsidiaries (scored zero). In contrast, in Taggart and Hood study high autonomy subsidiaries were dominant.

DISCUSSION

A general finding is that in all models, with the exception of Model 1, there are significant variables from the three axes identified in our theoretical framework. Empirical data confirms, thus, that subsidiary autonomy cannot be fully explained by one dimension only. Rather, it is the result of the interplay among factors included in all three axes. More specifically, subsidiary dimension is influenced by variables

	Model 1		Model 2		Model 3		Model 4	
	Coeffic. ^(a)	Sig.	Coeffic.	Sig.	Coeffic.	Sig.	Coeffic.	Sig.
CONSTANT	-4.673	0.028**	-3.312	0.088*	-3.322	0.087*	-3.645	0.033**
R&D	-0.139	0.947	-0.092	0.659	-0.090	0.665	_____	
AM-GLO	+0.311	0.193	+0.454	0.057*	+0.448	0.055*	+0.486	0.027**
SIZE	+0.250	0.241	+0.166	0.395	+0.167	0.389	_____	
AGE	+0.034	0.910	_____		_____		_____	
MESTR	_____		-1.441	0.028**	-1.433	0.029**	-1.063	0.075*
FRM	+1.449	0.002***	+1.522	0.002***	+1.520	0.002***	+1.368	0.002***
EXPGROUP	-0.137	0.565	+0.027	0.905	_____		_____	
IMPGROUP	+0.005	0.984	-0.331	0.210	-0.319	0.190	_____	
PROUN	-2.872	0.003***	-2.555	0.006***	-2.525	0.005***	-2582	0.002***
SCEG	-0.676	0.005***	-0.712	0.003***	-0.710	0.003***	-0.721	0.001***
COMEXTEX	+0.088	0.694	-0.088	0.701	-0.079	0.715	_____	
LOCSOURC	+0.561	0.055*	+0.488	0.068*	+0.489	0.067*	+0.537	0.038**
COPU	+1.348	0.047**	+1.325	0.056*	+1.326	0.055*	+1.345	0.028**
ACT	-0.563	0.388	-0.061	0.924	-0.068	0.916	-0.232	0.689
Model χ^2	49.174		49.911		49.897		47.355	
Significance	0.0000		0.0000		0.0000		0.0000	
Degr. Freedom	13		13		12		8	
-2 Log Likelihood	77.793		79.576		79.591		82.132	
% Correct	84.11		84.26		84.26		81.48	
Sensitivity	66.67		61.29		61.29		58.06	
Specificity	90.91		93.51		93.51		90.91	
N	108		108		108		108	

(a) A positive coefficient means an increased likelihood of high autonomy.

Table 1 – Binomial Logit Estimations of Autonomy Models
(Dependent Variable: Subsidiary Autonomy Type, low *versus* high)

pertaining to: (1) subsidiary competences, particularly marketing capabilities (AM_GLO) and experience, measured by the mode of establishment (MESTR); (2) corporate embeddedness, especially the frequency of subsidiary top management rotation (FRM), product uniqueness (PROUN), and relevance of subsidiary competences for the group (SCEG); and (3) local embeddedness, expressed by the level of local sourcing (LOCSOURC), and interaction with other organizations of the national innovation system (COPU). The consistency of independent variables significance across models is remarkable. In fact, FRM, PROUN and SCEG are significant at 1% in all models; LOCSOURC and COPU are also significant in all models, at 5 or 10%; and MESTR and AM_GLO are significant in Models 2, 3 and 4.

Turning now to the analysis of the hypothesis formulated, it was found that Hypotheses 1.1. and 1.3. were not confirmed. The first suggested a positive relationship between subsidiary R&D expenditures and decision making autonomy. Although the sign corresponds to expectations, the relationship is not significant. To interpret the result, one should have in mind the low R&D propensity of foreign subsidiaries in Portugal. Their R&D activities do not reach, as a rule, the threshold needed to be deemed important by the group or to constitute the basis for relevant subsidiary initiatives. Comparing our findings with those of Taggart and Hood (1999), it may be argued that subsidiaries need to exceed some minimum level of R&D, in both absolute and relative terms, for R&D effort to have a significant influence on autonomy. Hypothesis 1.3. concerned size. Again the variable carries the expected positive sign, but is not significant. This finding is not at all surprising. It should be remembered that there was a lack of agreement in the literature on this regard, the argument against a positive relationship between size and autonomy being that larger subsidiaries demand a tighter control. An interesting question, however, might be why Taggart and Hood (1999) got a negative relationship while we found a positive one. The explanation may be that the curvilinear relationship suggested by Hedlund (1981) holds, Portuguese firms being smaller and thus closer to the space where larger size is associated with more autonomy (though without statistical significance), while British subsidiaries are larger, more concentrated in the space where a negative relationship develops.

As indicated above, two measures of subsidiary experience were used. Somewhat surprisingly AGE was very far from significance (but exhibited the expected sign), while MESTR achieved significance. This mean that Hypothesis 1.4.

is confirmed only when experience is measured by the mode of establishment. Our results concerning AGE are different from those of Harzing (1999), who found control to be more lenient for older subsidiaries; however, they are very similar to those of Taggart and Hood (1999). Acquired subsidiaries exhibit higher levels of control, in accordance with expectations as well as with the findings of previous research by Garnier (1982) or Harzing (1999), for instance. This confirms that subsidiaries are not *tabula rasa*. They have, as Bartlett and Ghoshal (1989) stressed, “administrative heritages” which cannot be erased and which provide them with “ways of doing things” that may entail distinctive capabilities and increased autonomy.

The wider subsidiary marketing scope, the higher subsidiary autonomy: this confirms Hypothesis 1.2.. In fact, AM_GLO is positive and significant, especially in the reduced model. This finding is in accordance with the literature on World product mandates, which suggests that these are associated with higher autonomy (for instance, Birkinshaw and Morrison, 1995). While there are very few World product mandates among foreign subsidiaries in Portugal, the results clearly indicate that firms which do not have marketing capabilities, relying on headquarters or other subsidiaries to market their products, have very low autonomy levels.

Only one of the four hypotheses developed concerning corporate embeddedness was not strongly supported: Hypothesis 2.2., concerning intra-firm trade. In fact, both EXPGROUP and IMPGROUP are not significant, and have erratic signs, confirming their low influence on autonomy. To avoid reciprocal influences, and having in mind Taggart and Hood (1999) findings, EXPGROUP was deleted in Model 3. This increased the significance of IMPGROUP, still lagging behind the 10% threshold, but carrying the expected negative sign. Our results do not lend full support to the expectation that intra-group trade reduces autonomy (Hedlund, 1981; Birkinshaw and Morrison, 1995). They are, however, relatively close to the findings of Taggart and Hood (1999).

Hypothesis 2.1., 2.3. and 2.4. were clearly supported. FRM is negatively associated with autonomy. This confirms that the longer the average stay of subsidiary top managers, the higher the probability of the subsidiary to be a high autonomy one. A high rotation frequency means that managers’ main loyalty is with the group: managing the subsidiary is just a short term stopover on a group-driven career. In contrast, longer term duties tend to create a stronger feeling of identification between

the manager and “his” company, so that he becomes more committed and willing to take initiatives and to gain room for manoeuvre. This is in tune with the literature on coordination and control mechanisms (Edström and Galbraith, 1977; Prahalad and Doz, 1981), as well as on subsidiary development (Birkinshaw and Hood, 1997; Birkinshaw, 1998; Delany, 1998).

When the Portuguese subsidiary manufactures goods which are produced elsewhere in the group, the probability of being a high autonomy subsidiary heavily declines, as shown by the negative sign of PROUN, which is significant at 1% in all models. Such a result confirms Hypothesis 2.3.. Similarly to what Birkinshaw and Hood (1997) suggested, it seems that also for Portuguese subsidiaries, increased autonomy is associated with the manufacturing of “unique” products. If the subsidiary is able to develop specific products, it shows distinctive capabilities which act as a lever of its position in the MNE network. However, a different interpretation may be also considered: such “unique” products may be close to the end of their life cycle, which indicates that the subsidiary is not relevant in the context of the MNE group, and therefore is not tightly controlled. While running counter the information provided by FRM, this interpretation is, however, consistent with SCEG.

In fact, the coefficient and high significance of SCEG point out that subsidiaries whose distinctive competences are used by the group as a leverage for its general competitiveness are subject to stronger control. This confirms Hypothesis 2.4. and is in accordance with the idea that active subsidiaries develop with the group a relationship of interdependence, but do not enjoy higher autonomy. We must confess that the behaviour of SCEG was a bit surprising for us. In fact, having in mind the characteristics of foreign subsidiaries in Portugal, we wondered whether the perceived relevance of subsidiary capabilities for the group would have an influence on autonomy. The results, however, show the development of interdependence relationships. These are in line with Bartlett and Ghoshal (1989) perspective of MNEs and with the arguments of Forsgren and Pahlberg (1992) and Holm and Pedersen (2000) on interdependence.

The third group of hypotheses concerned local embeddedness. Again, interesting results were reached. Hypothesis 3.1. indicated that subsidiaries selling in the Portuguese market would exhibit higher levels of autonomy. A negative sign for COMEXTEX (defined as export propensity) was thus expected. However, the hypothesis was not supported. While carrying the expected sign in Models 2 and 3,

COMEXTEX was consistently very far from reaching significance. This finding does not agree with that of Taggart and Hood (1999), who reported also a negative sign but a high influence of exports on autonomy.

The other two hypotheses were confirmed. In fact, both LOCSOURC and COPU show the expected positive signs and are significant. They indicate that the development of linkages between the subsidiary and the host economy – in terms of material inputs sourcing and relationships with scientific and technological organizations – enhances subsidiary autonomy. With regard to LOCSOURC, our results are similar to those of Andersson and Forsgren (1996), as well as Birkinshaw and Hood (2000). Local sourcing is instrumental in strengthening subsidiary's local embeddedness, making it less dependent on international inputs and providing it with more room for manoeuvre. The influence of the linkages with the national systems of innovation works along the same lines.

CONCLUSIONS AND POLICY IMPLICATIONS

As a general conclusion, it may be said that the empirical results lend clear support to our general framework. Subsidiary autonomy is significantly influenced by factors included in all the three groups of hypotheses formulated. The most relevant dimensions of subsidiary competences were found to be marketing scope and subsidiary prior experience outside the MNE group. Local embeddedness appears to have, as expected, a leverage effect on subsidiary autonomy, confirming the perspective that the subsidiary has to some extent a double face – one turned towards the MNE group and the other towards the host country. The empirical analysis shows, however, that – at least in Portugal – the main axis in explaining subsidiary autonomy is corporate embeddedness. Curiously, this runs counter Andersson and Forsgren (1996) findings for Swedish MNEs, but is in line with Gates and Egelhoff (1986). It is particularly striking that three (out of four) indicators in this field were highly significant. Subsidiary autonomy is reduced when subsidiary managers rotation is high and when it has an important contribution towards the whole MNE competitiveness. Conversely, subsidiary capacity to manufacture unique products tends to grant it increased autonomy. It should not be forgotten, however, that there are inter-actions between the three axes identified. They should not be seen on its own

only: its interplay is no less important. This comment leads us to the policy implications.

From a MNE perspective, the main lesson is the confirmation of the advantages of a more flexible approach to the design of coordination and control instruments. There is not an ideal level of autonomy generally applicable. Subsidiary autonomy is, of course, considerably influenced by corporate embeddedness. But this is not the only factor: subsidiaries have a life on its own, which may not be always fully convergent with MNE interests. Managers rotation appears to be a crucial mechanism. If the objective is to have receptive subsidiaries, tightly controlled and acting according to headquarters strict prescriptions, a high rotation is essential. But this reduces local interaction and curtails subsidiary initiative. If, on the contrary, it is desired subsidiaries to have a contribution on its own, developing specific competences and co-evolving with local environments, then longer manager assignments should be used. Only in this case, subsidiary initiative, entrepreneurship and local linkages (and learning) can blossom. This may be still compatible with interdependence, if complementary, more subtle instruments are used to ensure increased subsidiary competence and knowledge to be shared with the whole group.

This research has also implications for host country policy makers, in charge of attracting and monitoring foreign investments. Such implications are not straight forward, since our results show that several trade-offs and difficult-to-reach equilibria should be worked out. As Taggart and Hood (1999) pointed out, in more dynamic and globally-integrated MNEs the autonomy subsidiaries enjoy tends to be reduced. Consequently, subsidiary autonomy, while important, should not be seen as an end in itself. In this context, the results of SCEG are particularly interesting, since they show that when subsidiaries have capabilities which are relevant for the whole group, a relationship of interdependence might well emerge, leading to a higher sustainability of the subsidiary, thereby making it less vulnerable to divestment moves.

The results also indicate, however, that efforts to enhance the linkages between subsidiaries and local industrial fabric and system of innovation are fully justified. They promote subsidiary autonomy, and may eventually – if Birkinshaw (1997) and Birkinshaw and Hood (2000) are right – lead to increased subsidiary competences. Intra-firm trade, contrary to a widespread belief, does not appear to have *per se* a significant negative effect on autonomy. It also seems that neither parent country nationality nor type of industry have a clear influence on subsidiary

autonomy. On the contrary, if host country policy makers want to enhance foreign subsidiaries autonomy they should work in three areas. First, to encourage MNEs to have a lower subsidiary top managers rotation, since this increases autonomy and is more likely to generate a feeling of identification between managers and “their” subsidiaries. Second, creating enticements for subsidiaries to have marketing competences, particularly at a broad international level. The lack of marketing activities implies lower autonomy and creates dependence (on other MNE units) without interdependence, thereby impairing subsidiary sustainability. Third, by designing after-care programmes to help subsidiary managers to launch initiatives, as well as to increase subsidiary visibility and relevance for the whole MNE.

A final cautionary note should be made. This was just a first exercise in this field. While several points of agreement were found with previous studies, significant discrepancies still exist. Further work is needed, using more well defined and complex constructs and wider samples. In parallel, a better grasp of the development of the relationships between subsidiary autonomy and group interdependence needs to be gained. This feeling is shared with other researchers, working on subsidiary development processes as well as on centres of excellence. It opens promising and challenging avenues for further research.

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ANNEX I

VARIABLE CODE	VARIABLE DEFINITION	EXPECTED SIGN
AUTON (Dependent Variable)	Level of subsidiary autonomy Aggregation of subsidiary managers opinions on eleven dimensions of decision-making processes: product scope; range of products exported; selection of foreign markets; entry into new market segments in Portugal; definition of selling prices; investment in a new manufacturing plant; extension of existing plant; changes in subsidiary organizational structure; sourcing and subcontracting policy; admission of top managers; and R&D policy. For each dimension respondents were requested to identify the most appropriate situation: 1=decision taken mainly by the parent company without consulting with, or seeking the advice of, the subsidiary; 2=decisions taken mainly by the parent company after consulting the subsidiary; 3=decisions taken mainly by the subsidiary after consultation with, or advice by, the parent company; and 4=decisions taken mainly by the subsidiary, without consulting the parent.	
R&D	Ratio of subsidiary R&D expenditures to sales 0=No R&D activities; 1=R&D/sales below 0.5%; 2=R&D/Sales between 0.5 and 1%; 3=R&D/Sales between 1 and 2%; 4=R&D/Sales between 2 and 5%; 5= R&D/Sales above 5%.	+
AM_GLO	Scope of subsidiary marketing activities 0=No marketing activities; 1=Portugal only; 2=Portugal and Spain; 3=European Union; 4= worldwide marketing activities.	+
SIZE	Subsidiary turnover in the year 1998 1=Turnover below 1 billion PTE; 2=turnover between 1 and 2 billion PTE; 3=turnover between 2 and 5 billion PTE; 4= turnover between 5 and 10 billion PTE; 5=turnover between 10 and 25 billion PTE; 6= turnover between 25 and 50 billion PTE; 7= turnover above 50 billion PTE.	+
AGE	Subsidiary age, in decades 1=Created in the 1990s; 2= created in the 1980s; 3=created in the 1970s; 4= created in the 1960s; 5=created in the 1950s; 6= created before 1950.	+
MESTR	Mode of establishment of the subsidiary 0=Acquisition; 1=Greenfield investment	-
FRM	Frequency of rotation of subsidiary top management 1=Rotation at least every 2 years; 2= rotation period between 2 and 4 years; 3= rotation period of 5 years or above.	+
EXPGROUP	Intra-group exports 1=Intragroup exports below 10% of total exports; 2=between 11 and 25%; 3= between 26 and 50%; 4= above 50%	-
IMPGROUP	Intra-group imports 1=Intragroup exports below 10% of total imports; 2=between 11 and 25%; 3= between 26 and 50%; 4= above 50%	-
PROUN	Product Uniqueness Are there other MNE units manufacturing the same product of the Portuguese subsidiary? 0=No; 1=Yes	-
SCEG	Consequences for the group of the non availability of subsidiary competences 5 point likert scale: 1=No consequences; 5=very relevant consequences	-
COMEXTEX	Subsidiary export propensity 1=Exports below 10% of subsidiary turnover; 2=between 11 and 25%; 3=between 26 and 50%; 4=between 51 and 75%; 5=above 75%	-
LOCSOURC	Subsidiary local sourcing 1=No raw material, production inputs and components purchased in Portugal; 2= local purchases below 10%; 3= local purchases between 11 and 25%; 4=local purchases between 26 and 50%; 5= local purchases between 51 and 75%; 6= local purchases above 75%	+
COPU	Interaction with local scientific and technological organizations 0=No collaboration with such organizations; 1= collaborative activities with Portuguese S&T organizations	+
ACT	Industrial Activity of subsidiary 1=Electronics, computer, automotive, petroleum, pharmaceutical and chemical industries; 0=other industries	-
COUNTR	MNE home country 1=Germany; 0=other countries	-

END NOTES

- (1) See, for instance, Van den Bulcke and Halsberghe (1984), Young, Hood and Hamill (1985), and Dunning (1986).
- (2) It should be noted that the typological approaches of Taggart (1997b) and Taggart and Hood (2000) are also used as frameworks for analysing the evolution of subsidiary strategies.
- (3) Perceived control was defined as “the extent to which the subsidiary considers headquarters to exert influence on its behaviour” (Andersson and Forsgren, 1996: 493).
- (4) We thank ICEP and CESO for allowing the use for academic purposes of the database stemming from the survey.
- (5) For a detailed of the definition of all the variables (dependent and independent) used in the analysis, see Annex I.
- (6) The classification used here exactly corresponds to that of Taggart and Hood (1999).