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MANAGING FOREIGN SUBSIDIARIES: AGENTS OF HEADQUARTERS, OR AN INTERDEPENDENT NETWORK?

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In this study, two different theoretical perspectives are used to develop sets of hypotheses regarding the mechanisms used to manage foreign subsidiaries of multinational corporations. First, agency theory serves as the basis for a model that predicts the use of monitoring mechanisms and incentive compensation. Then, it is argued that these mechanisms are insufficient for managing subsidiaries characterized by high levels of intra-firm international interdependence, the management of which is critical to many of today's complex global firms. A second set of hypotheses is argued, linking international interdependence to several social control mechanisms. Primary and secondary data from U.S. based multinational corporations were used to test both sets of hypotheses. The results indicate that agency theory, although a useful foundation for studies of control within MNCs, is limited in its ability to explain fully the phenomenon of foreign subsidiary control, however, the model based on intra-firm interdependence had much greater predictive ability. Copyright © 2000 John Wiley & Sons, Ltd.

The past decade has been characterized by profound changes and advancement in technology and an increased rate of globalization. As a result, there have been dramatic shifts in the way businesses are organized and how they compete. These rapid changes in the nature of global competition have caused international managers and international management researchers alike to search for new ways to frame problems and answer questions about how to manage complex multinational corporations most effectively. For researchers, it has meant developing new theoretical perspectives with which to examine issues such as the management of a set of foreign subsidiaries with diverse external environments and a range of internal skills and competencies.

International management researchers have suggested that several extant organization theories can be applied to multinational firms and that 'scholars of MNC management have underexploited the theories available to them' (Doz and Prahalad, 1991: 161). Early research on the MNC, particularly explanations for the existence of multinationals, was dominated by economic theories, such as transaction costs, which focused on markets versus hierarchies in explaining the existence of firms that operate across borders (e.g., Hennart, 1982; Hymer, 1960). More recently, some of these economic explanations have been suggested as holding promise for increasing our understanding of the internal management of MNCs. For example, agency theory has been used to understand foreign market entry decisions (Tihanyi and Ellstrand, 1998) and foreign subsidiary compensation strategy (Roth and O'Donnell, 1996), while transaction costs theory has been used to explain foreign ownership decisions (e.g., Hennart and Park, 1994) and the management of

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international joint ventures (Reuer and Miller, 1997).

However, as global competitive conditions have changed, international management research has witnessed a shift away from a dyadic, hierarchical view of the MNC headquarters and its subsidiaries, toward a perspective in which the multinational organization is viewed as a web of diverse, differentiated inter- and intra-firm relationships. Theories that have been used to examine these relationships include evolutionary theory (Kogut and Zander, 1993), network theory (e.g., Ghoshal and Bartlett, 1990), and theories of the learning organization (e.g., Hedlund, 1986, 1994). A common link among these theories is their focus on lateral relationships within the MNC, and the view that the multinational organization as a whole can benefit greatly from transferring within the firm resources and competencies that were originally developed at different international locations.

An important step in building theory in international management research is to apply and test different management theories in the unique context of MNCs in an attempt to contrast their predictive ability and limitations in such a setting. This study uses two different theoretical perspectives in an attempt to explain the mechanisms used to manage foreign subsidiaries within the MNC. First, agency theory, which is based on economic assumptions of self-interest and opportunism, is applied to the headquarters–foreign subsidiary relationship to develop and test a model of foreign subsidiary control. Agency theory has been widely used in management research for some time, but recently, it has begun to appear more frequently in research involving multinational firms (e.g., Gedajlovic and Shapiro, 1998; Nohria and Ghoshal, 1994; Roth and O'Donnell, 1996; Sanders and Carpenter, 1998; Sharp and Salter, 1997). Next, a different perspective, one based on cooperative international, intra-firm relationships within the MNC, is used to develop a second, contrasting set of hypotheses. Data collected from U.S.-based MNCs and their foreign subsidiaries are used to test both sets of hypotheses. The results inform our knowledge of the management of foreign subsidiaries within MNCs, while simultaneously indicating the relative predictive ability of two contrasting theoretical perspectives.

AN AGENCY THEORY MODEL OF FOREIGN SUBSIDIARY CONTROL

As pointed out by Jensen and Meckling, 'the problem of inducing an "agent" to behave as if he were maximizing the "principal's" welfare is quite general. It exists in all organizations, and in all cooperative efforts—at every level of management in firms' (1976: 309). In the context of the MNC, headquarters, as the principal, delegates responsibilities and decision-making authority to the management of a foreign subsidiary. An agency problem exists if subsidiary management makes decisions that are not congruent with those desired by headquarters, due to goal incongruence between headquarters and the subsidiary and self-interested behavior on the part of subsidiary management. According to agency theory, to resolve the agency problem the principal can use monitoring, which limits the ability of the agent to engage in self-interested behavior, or incentives, which serve to align the goals of the principal and agent (Jensen and Meckling, 1976).

The use of monitoring to manage foreign subsidiaries

Agency theory suggests that monitoring results in increased information about agent behavior, and thus, leads to increased efficiency by reducing the risk that the agent will engage in behavior that is not in the interest of the principal (Holmström, 1979). In the MNC context, *monitoring* can be defined as activities or mechanisms used by headquarters to obtain information about the behaviors and decisions of subsidiary management. The most direct form of monitoring is the personal supervision of managers (Eisenhardt, 1985; Ouchi, 1977). However, in the case of the MNC, the absence of proximity makes it difficult for headquarters to supervise directly the behavior of foreign subsidiary managers. Thus, it is likely that activities other than direct supervision will be used to monitor foreign subsidiary management.

Research has examined the use of expatriates in top management positions at the foreign subsidiary as a means of control through monitoring, in which the expatriate top manager is considered an extended form of headquarters supervision (Boyacigiller, 1990; Egelhoff, 1984). The use of expatriate managers as the operationalization of headquarters monitoring of subsidiary man-

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agement is similar to the use by management researchers of the variable 'outside members on the board of directors' (Baysinger and Hoskisson, 1990; Beatty and Zajac, 1994; Walsh and Seward, 1990; Zajac and Westphal, 1994). In both cases, outsiders who act in the best interests of the principal monitor the actions of the agent so as to limit self-interested behavior. Thus, in the context of the foreign subsidiary, one form of monitoring is *headquarters supervision*, defined as the presence at the foreign subsidiary of MNC headquarters personnel in positions that enable them to monitor subsidiary management behavior. More specifically, headquarters supervision refers to members of the subsidiary top management team who are from corporate headquarters.

Another way that headquarters can monitor subsidiary management behavior is through the use of bureaucratic mechanisms, including rules, programs and procedures (Galbraith, 1973). Bureaucratic forms of monitoring have been used by international management researchers in discussing MNC headquarters–subsidiary control issues (Doz and Prahalad, 1981; Mascarenhas, 1984; Roth and Nigh, 1992). In this study, *bureaucratic monitoring mechanisms* are defined as information collected by headquarters concerning subsidiary management's actions and decisions. Through both headquarters supervision and bureaucratic monitoring mechanisms, headquarters increases the amount of information it has regarding the actions of subsidiary management, thus limiting subsidiary-level behaviors and decisions that are not congruent with those of headquarters. Although nearly all foreign subsidiaries will be monitored by headquarters through these mechanisms to some extent, there are conditions under which monitoring becomes more difficult.

Influences on the use of monitoring

According to agency theory, monitoring is more difficult as the agency relationship is increasingly characterized by information asymmetry between the principal and agent and as the agent is delegated increased decision-making discretion (Fama and Jensen, 1983; Rajagopalan and Finkelstein, 1992; Tosi and Gomez-Mejia, 1989). Thus, factors that result in increased information asymmetry between the MNC headquarters and the foreign subsidiary and increased discretion on the part of subsidiary managers should diminish the effectiveness of monitoring. Two such factors are 1) subsidiary strategic role, and 2) subsidiary autonomy.

As international management researchers have noted, foreign subsidiaries of MNCs can be assigned different strategic roles in the implementation of the firm's overall international strategy (Ghoshal and Nohria, 1989; Gupta and Govindarajan, 1991). From an agency theory perspective, a foreign subsidiary strategic role that presents difficulties for monitoring subsidiary management behavior is one in which the subsidiary has a high level of specialized information that headquarters does not have. Within a global firm, a foreign subsidiary that presents particularly challenging monitoring difficulties is one with a strategic role of *lateral centralization*.

A foreign subsidiary with a strategic role of lateral centralization has worldwide responsibility for a complete set of value activities associated with a particular product or product line (Crookell, 1990; Roth and Morrison, 1992; Roth and O'Donnell, 1996; Rugman and Bennett, 1982). Specialized knowledge about the product or product line resides in the subsidiary, with the subsidiary managing the research and development, production and marketing activities on a global basis. Strategic and operational activities are centralized and coordinated worldwide, but the bulk of decision-making information is held at the subsidiary level, not at headquarters. The foreign subsidiary often develops a high level of specialized knowledge regarding the product or product line for which it has worldwide responsibility. Thus, information asymmetry between headquarters and the subsidiary can be expected to be relatively high, making it more difficult and costly for headquarters to monitor subsidiary management behavior and decisions through the use of monitoring mechanisms.

Hypothesis 1a: As lateral centralization increases, headquarters use of supervision will decrease.

Hypothesis 1b: As lateral centralization increases, headquarters use of bureaucratic monitoring mechanisms will decrease.

Another characteristic of foreign subsidiaries that presents monitoring difficulties is subsidiary autonomy. Autonomy 'is related to the division

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of the decision-making authority between a local unit and an outside organization that controls it' (Garnier, 1982: 893–894). Thus, *subsidiary autonomy* is defined as the degree to which the foreign subsidiary of the MNC has strategic and operational decision-making authority. Ghoshal and colleagues (Ghoshal, Korine and Szulanski, 1994) noted that subsidiary autonomy is a key structural attribute of MNCs, and allows the subsidiary manager to exercise greater discretion in dealing with the demands of the local market and task environment. A foreign subsidiary may be given more autonomy because it is in a better position than headquarters to evaluate the needs and demands of the particular market that it serves. Additionally, the use of subsidiary resources, including physical, technological, knowledge, financial and human resources, often is better determined by subsidiary management, as they are more able to identify the particular resources that are needed and to evaluate their ability to deploy them appropriately.

With greater subsidiary autonomy, the foreign subsidiary manager has greater managerial discretion, which, as previously discussed, makes direct monitoring of agent behavior more difficult and a less effective means of control. Thus, the following relationships are hypothesized:

> *Hypothesis 2a: As subsidiary autonomy increases, headquarters use of supervision will decrease.*

> *Hypothesis 2b: As subsidiary autonomy increases, headquarters use of bureaucratic monitoring mechanisms will decrease.*

In summary, as the managerial discretion and information asymmetry associated with lateral centralization and subsidiary autonomy increase, it becomes more difficult to address the agency problem at the foreign subsidiary through the use of monitoring. From an agency theory perspective, the alternative to monitoring is the use of incentives to reduce goal incongruence between headquarters and the foreign subsidiary.

The use of incentives to manage foreign subsidiaries

One way in which MNC headquarters and subsidiary management goals can be aligned is through the use of financial incentives, in which a portion of subsidiary management's compensation is outcome-based. Several authors have suggested the use of compensation design as method of control in the MNC (Doz and Prahalad, 1981; Gupta and Govindarajan, 1986, 1991; Hedlund, 1986; Hedlund and Rolander, 1990). However, there are costs and difficulties associated with the use of incentives that may make them less effective for addressing the agency problem. In the context of the MNC, two such factors are outcome measurability and outcome uncertainty.

Influences on the use of incentives

To align the goals of headquarters and subsidiary managers through the use of incentives, the outcome toward which headquarters wishes subsidiary managers to work must be tied closely to the receipt of the incentive. The more difficult it is to measure the outcome, the more difficult it is to determine when that outcome has been achieved and when (and to whom) to give the reward (Eisenhardt, 1989). *Outcome measurability* is the degree to which the foreign subsidiary manager's outcomes are specifiable and quantifiable. The nature of a manager's job as well as the competitive environment can make it difficult to specify in advance the precise outcomes that are desired (Mintzberg, 1973; Walsh and Seward, 1990). While all businesses operate in an environment that is uncertain to some degree, operating in a different country than headquarters increases the difficulty of specifying in advance the outcomes that the subsidiary manager should achieve, for headquarters may not have the relevant knowledge or expertise to determine the appropriate outcomes. Additionally, it may be difficult to quantify the desired outcomes for foreign subsidiary managers. For example, the desired outcome might be to increase customer perception of product quality in a particular market or to improve relationships with the government of the host country. From the agency theory perspective, incentives are more effective and, hence, will be used to a greater degree when outcomes are more measurable. Thus,

> *Hypothesis 3: As outcome measurability increases, headquarters use of monetary incen-*

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tive compensation for foreign subsidiary management will increase.

Outcome uncertainty reflects the probability that the actions or decisions of the agent, in this case the foreign subsidiary manager, will result in the intended outcomes. Given the agency theory assumption of risk aversion, incentive rewards will be more desirable when outcomes are more certain. With increased outcome uncertainty, the subsidiary manager has less influence or control over the subsidiary outcomes that are used to determine his or her incentive rewards. In exchange for the increased risk that the subsidiary manager bears with incentive rewards under increased outcome uncertainty, he or she will demand a larger incentive, thus increasing the firm's cost of using incentive rewards (Balkin and Gomez-Mejia, 1987; Beatty and Zajac, 1994; Zajac and Westphal, 1994).

In the foreign subsidiary context, two important components of outcome uncertainty are industry volatility and host country volatility. *Industry volatility* refers to the degree to which conditions fluctuate within the foreign subsidiary's industry. Industry volatility has been shown to be an important determinant of strategic decisions (Miller and Friesen, 1983) and firm performance (Fredrickson and Iaquinto, 1989). In addition to facing uncertain industry conditions, a foreign subsidiary also must contend with *host country volatility*, which refers to the stability of conditions in the host country in which the foreign subsidiary operates. Host country conditions, particularly the stability of economic and political conditions, have been argued to influence foreign subsidiary operations and outcomes (Boddewyn and Brewer, 1994). Because foreign subsidiary outcome uncertainty is determined by industry and host country volatility, the following hypotheses are put forth.

Hypothesis 4a: As industry volatility increases, headquarters use of monetary incentive compensation for foreign subsidiary management will decrease.

Hypothesis 4b: As host country volatility increases, headquarters use of monetary incentive compensation for foreign subsidiary management will decrease.

The relationship between monitoring and incentives

Monitoring and incentives are viewed as substitutive mechanisms for controlling the agency problem, with the balance between them being determined by a trade-off in their respective costs or difficulties (Eisenhardt, 1989). Thus, theoretically, there should be a negative relationship between the use of monitoring and the use of incentives as control mechanisms in an agency relationship.

However, previous research suggests that the use of incentive compensation may not continue to increase linearly as monitoring difficulties increase. Zajac and Westphal (1994) argue that the use of incentive compensation follows a logarithmic pattern with decreasing returns, because the salience of incentive compensation and the associated changes in the cognitive attention and motivation of employees may be greater for changes in incentive compensation from initially low incentive levels than from initially high incentive levels.[1] These arguments lead to a modification of the negative linear relationship between monitoring and incentive alignment that is suggested by agency theory, such that as monitoring increases, the use of incentives will increase at a diminishing rate.

Hypothesis 5a: As headquarters use of bureaucratic monitoring mechanisms decreases, the use of monetary incentive compensation will increase, but at a diminishing rate.

Hypothesis 5b: As the use of headquarters supervision decreases, the use of monetary incentive compensation will increase, but at a diminishing rate.

The model of foreign subsidiary management presented thus far has been developed using the logic of agency theory, which assumes a hierarchical relationship between headquarters and the

[1] Additionally, Zajac and Westphal (1994, 1995; Westphal and Zajac, 1994) use institutional theory to suggest that performance-based incentives have become 'institutionalized' and, therefore, are used in token amounts for the purpose of making the organization appear as though it is conforming to societal norms. From this perspective, the external salience of the use of incentive compensation can be achieved at low levels of incentives, again implying diminishing behavioral returns with increased incentive use (Zajac and Westphal, 1994: 123–124).

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subsidiary, with this dyadic relationship between principal and agent being the focus of the theory. However, much of the MNC management research over the past decade has viewed the foreign subsidiary as being a member of a set of interdependent organizational subunits, as opposed to merely acting as an agent of corporate headquarters. In the next section, an alternative model of foreign subsidiary management is presented, a model that uses an interdependence, or intraorganizational network perspective to predict the use of different types of management mechanisms.

INTERDEPENDENCE MODEL OF FOREIGN SUBSIDIARY MANAGEMENT

In the international management literature, a global firm has been conceptualized as one in which competitive actions in one country location affect those taken in another location (Porter, 1980; 1986). Thus, the global organization links its competitive position across its various country locations. Sources of competitive advantage for the multinational can include international scale and scope economies (Kogut, 1985) as well as advantages that result from operating in a specific country location (Porter, 1990). Realizing firm-level competitive advantage from these sources requires an efficient flow of resources between organizational units. These necessary resource flows are an important element in the integration necessary to develop and sustain international competitive advantage (Kobrin, 1991; Prahalad and Doz, 1987).

Studies suggest that foreign subsidiaries are critical to the international competitiveness of the MNC as an important source of strategic resources (Birkinshaw, 1996; Gupta and Govindarajan, 1991; Hedlund, 1986; Roth and Morrison, 1992). Within global industries, firms often encounter multipoint competition where they face the same global competitors in multiple international markets. Competitive tools in the form of resources or knowledge developed at the subsidiary level in order to compete effectively against a competitor in one country market also may be used effectively against the same competitor in a different country or market (Kogut and Zander, 1992, 1993). Research has demonstrated that the subsidiaries of a multinational organization develop unique, differentiated sets of competencies and capabilities due to the different international environments in which they operate (e.g., Birkinshaw, Hood and Jonsson, 1998; Ghoshal and Nohria, 1989). Subsidiaries are exposed to different cultural, political, technological, societal and legal environments, in which they encounter different markets, competitors and management practices. Individuals with specific knowledge and expertise vital to global competitiveness are often located, not at headquarters, but within operational groups at international locations where this specialized knowledge was first developed in response to local market and resource conditions (Bartlett and Ghoshal, 1989, 1993; Hedlund, 1986; Kogut and Zander, 1992). For example, a foreign subsidiary in a key international market may be faced with a set of competitive conditions that results in its development of a unique stock of knowledge regarding the industry, product technology, competitors and customers that would be valuable in other locations or divisions of the firm. The ability to tap into these valuable subsidiary resources and transfer them across the firm is critical to sustaining the international competitiveness of the MNC.

International interdependence refers to the condition in which one subsidiary or subunit of the MNC relies on another subunit's activities or inputs in order to perform its role effectively. As noted above, important resources and knowledge upon which the firm's competitive advantage hinges exist at the subsidiary level. The effective transfer of these resources to other international locations requires a network of intra-firm linkages, which can result in a high degree of interdependence among the firm's subunits. Interdependence has been defined as the state in which the activities and outcomes of one actor are influenced by the actions of another actor (Saavedra, Earley and Van Dyne, 1993). Extending this conceptualization to the multinational organization, *international interdependence* can be defined as the state in which the outcomes of a foreign subsidiary of a MNC influence or are influenced by the actions of another unit within the firm operating in a different country. International interdependence has become an increasingly important tool with which MNCs can exploit their multinationality to achieve and maintain a competitive advantage in

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the global marketplace. Thus, it is important to know how to best manage subsidiaries within a highly interdependent network.

Managing international interdependence

As foreign subsidiaries become more interdependent, they increasingly rely on other subunits as providers and users of their resources. Research has demonstrated that a sub-unit's power within an organization is greater when the sub-unit is highly interdependent with other subunits (Astley and Zajac, 1990). With increased international interdependence, the actions and decisions taken at a particular foreign subsidiary have a greater impact on activities throughout the organization. Because subsidiary-level decisions have greater ramifications for the firm as a whole when international interdependence is high, it is even more important to ensure that such decisions are appropriate for the MNC as a whole. However, in foreign subsidiaries characterized by high levels of international interdependence, different types of decisions are required on the part of subsidiary managers. Monitoring and incentive compensation, the control mechanisms prescribed by agency theory, may not be the most effective mechanisms for eliciting the appropriate decisions when international interdependence is high.

The effective functioning of a system of highly interdependent international subsidiaries requires a great deal of coordination. Situations characterized by high levels of interdependence necessitate facilitative effort (Nilakant and Rao, 1994), or cooperative behavior between actors, which requires high levels of information sharing and flexibility. At high levels of international interdependence, excessive monitoring may actually become counterproductive by restricting the information and resource exchanges that are necessary for organizational effectiveness in a highly interdependent system of international subunits. Additionally, it has been suggested that hierarchical governance mechanisms such as monitoring have a dual effect on opportunistic behavior. On one hand, they increase the cost of opportunistic behavior, thus reducing the actor's propensity to engage in it. Yet, hierarchical control mechanisms also create negative feelings toward the organization, which may increase the occurrence of opportunistic behavior (Ghoshal and Moran, 1996). Given the need for cooperative behavior and information exchange, monitoring is not likely to be particularly effective in eliciting the types of decisions required in an interdependent organizational system.

Similarly, the use of incentive compensation presents difficulties in situations of high international interdependence. Wageman (1995) suggests that incentives are less effective when they are based on outcomes that result from interdependently performed tasks because it is more difficult to link the incentive to the outcomes achieved by a specific individual. In the MNC, with greater international interdependence the outcomes of one subsidiary become more dependent on the outcomes of other units of the MNC. Therefore, at increased levels of international interdependence, the effectiveness of incentive compensation diminishes. If, as suggested here, neither monitoring nor incentive compensation is effective for managing foreign subsidiaries in a highly interdependent network, MNC managers must turn to a different set of mechanisms in such situations.

The cooperative behaviors needed in conditions of high international interdependence are best facilitated through social control methods, or what Ouchi (1979) referred to as clan control. The aim of social control is for individuals to identify with the MNC organization and for this organizational identification to be converted over time into internalization of the values and goals of the organization as a whole (Ouchi, 1979: 842). Ashforth and Mael (1989) argued that identification leads to internalization of and adherence to organizational values and, hence, to cooperative behavior. The desired result of social control in the MNC is a set of shared values and beliefs among the managers of different foreign subsidiaries with respect to the interests of the overall organization (Nohria and Ghoshal, 1994).

Research has demonstrated that identification and internalization are related to prosocial behaviors that promote the welfare of the organization rather than the individual (Becker, 1992; O'Reilly and Chatman, 1986). Through increased identification with the MNC and internalization of the goals and values of the corporation, subsidiary managers will be more likely to engage in prosocial behaviors, which in this context are the cooperative behaviors necessary for an interdependent organizational network to function effectively. Therefore, social control mechanisms that are

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likely to elicit organizational identification and the internalization of corporate values and norms become more important at higher levels of international interdependence, when cooperation is most needed. In the MNC context, social control consists of management mechanisms that are likely to induce in subsidiary managers the MNC identification and shared corporate values that lead to such cooperative behaviors. As will be discussed below, three important ways that headquarters can engender organizational identification and shared values at the subsidiary level are through the use of vertical integrating mechanisms, lateral integrating mechanisms, and nonmonetary incentives.

Vertical and lateral integration as social control

Earlier, from the agency theory perspective, the presence of headquarters personnel at the foreign subsidiary was viewed as a form of monitoring, with headquarters executives being at the subsidiary to obtain information about subsidiary-level activities and prevent opportunistic behavior. However, when viewed from a social control perspective, headquarters executives at the foreign subsidiary can serve an entirely different purpose altogether. Through visits by executives from the home office, managers at the foreign subsidiary have more contact with, and get to know personally, some of the decision-makers from corporate headquarters.

Research in organizational socialization has shown that employees' identification with their organization becomes greater as they interact with other members and experience increased contact with the organization (Feldman, 1976; Van Maanen and Schein, 1979). Here, interaction can be conceptualized as personal interaction between headquarters executives and subsidiary managers or between managers of different foreign subsidiaries. Through interaction with corporate executives and other subsidiary managers, managers of foreign subsidiaries are exposed to issues and symbols that remind them of their affiliation with the MNC as a whole. The personal interaction that occurs in assignments, training or visits can increase foreign subsidiary managers' identification with the global organization and their internalization of corporate goals and values. Through increased interaction, subsidiary managers better understand the role that they and their subsidiary play in meeting those goals and they are more likely to engage in cooperative behavior with other units of the same organization.

Personal interaction on the part of foreign subsidiary managers can be facilitated through integrating mechanisms. In the context of the MNC, such integrating mechanisms can be grouped into two categories, vertical and lateral integrating mechanisms. *Vertical integrating mechanisms* consist of various types of contact and communication between the managers of foreign subsidiaries and headquarters managers, with the goal of creating a shared understanding between subsidiary and headquarters management regarding the interests of the overall corporation and the role of the subsidiary. Such mechanisms can include assignments at corporate headquarters, headquarters-based training programs, executive development programs that include participants from headquarters, and headquarters mentors for managers of foreign subsidiaries (Bartlett and Ghoshal, 1989; Doz and Prahalad, 1981).

As noted earlier, as the subsidiary is more interdependent with other units of the MNC in terms of resource exchanges, there is a greater need for management mechanisms that elicit cooperative behaviors. As the headquarters-subsidiary relationship, in particular, becomes more interdependent, it becomes more important for subsidiary managers to understand and identify with the headquarters perspective. Thus, the following hypothesis is forwarded:

Hypothesis 6: As headquarters-subsidiary interdependence increases, the use of vertical integrating mechanisms will increase.

While vertical integrating mechanisms focus on the relationship between headquarters and subsidiary managers, *lateral integrating mechanisms* refer to activities that facilitate contact among managers of different foreign subsidiaries. The purpose of lateral integrating mechanisms is to develop in subsidiary managers an understanding of the role of their particular subsidiary and, more important, the role of other subsidiaries, in meeting overall corporate goals. Galbraith (1973) discussed the importance of lateral processes and argued that, although they often are initiated informally, they can be designed into the formal

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organization. Lateral integrating social control mechanisms include activities such as joint decision-making using inter-unit committees, temporary task forces or permanent teams set up to coordinate and facilitate international collaboration between subsidiaries, inter-subsidiary liaison personnel and meetings and training programs that involve participants from multiple international locations. These lateral integrating mechanisms result in increased contact among managers from different foreign locations within the firm, which leads to a system of lateral interpersonal networking (Bartlett and Ghoshal, 1993; Ghoshal *et al*., 1994). Through the sharing of information, the goals of various sub-units of the MNC and how they contribute to overall corporate goals can be better understood by managers throughout the organization.

When international interdependence among different foreign subsidiaries is high, it is important for subsidiary managers to have a good understanding of these inter-subsidiary interdependencies. In such situations a shared understanding of the company and its goals and the roles that different subsidiaries play in meeting those goals can be developed through lateral integrating mechanisms.

Hypothesis 7: As inter-subsidiary interdependence increases, the use of lateral integrating mechanisms will increase.

Furthermore, it is expected that headquarters-subsidiary international interdependence will not be related to the use of lateral integrating mechanisms, nor will inter-subsidiary interdependence be related to vertical integrating mechanisms.[2]

Incentives as social control

From an agency theory perspective, incentives are used to guard against opportunistic behavior. However, from an interdependence perspective, incentives can be viewed as a means of social control. Reward systems can be designed such that they facilitate or even encourage the internalization of MNC goals by managers of foreign subsidiaries. Social identity theory suggests that organizational identification evokes individual behaviors that benefit the whole organization (Ashforth and Mael, 1989; Dutton, Dukerich and Harquail, 1994; Mael and Ashforth, 1995) and that organizational identity prompts increased cooperation with other organizational members because of a heightened sense of in-group (Dutton *et al*., 1994). An interdependent MNC network requires cooperative decisions on the part of foreign subsidiaries. Thus, rewards that enhance subsidiary managers' sense of belonging to the larger, corporate system should facilitate the cooperation needed with greater interdependence.

When viewed from the perspective of social control, incentives other than financial compensation should be considered. A previous study found that, although managers at foreign subsidiaries receive incentive compensation, monetary incentives are used only to a small degree at the foreign subsidiary (Roth and O'Donnell, 1996). One area for further research that this finding suggests is the use of *non-monetary incentives* as a mechanism for managing foreign subsidiaries.

Non-monetary incentives can be classified into two types, those related to the manager's career within the organization and those having to do with the foreign subsidiary. With regard to career incentives, there is evidence that expatriate assignments are becoming increasingly important in a manager's career development within many MNCs. These assignments provide managers with a more complete understanding and awareness of the firm's worldwide goals and activities as well as a greater appreciation for the firm's cultural diversity (Bartlett and Ghoshal, 1989). Other career related non-financial incentives can include the manager's choice of his or her next assignment or location, the receipt of a more prestigious headquarters-based assignment, the opportunity to serve on a particular committee or board, selection as a high-potential executive or the opportunity to participate in executive-level training programs.

Another type of non-financial incentive used at the foreign subsidiary level is that in which the subsidiary manager receives additional resources from the MNC with which to better manage his or her subsidiary. Successful performance by subsidiary management can be rewarded by additional non-financial corporate resources being

[2] Although such relationships (or lack thereof) are expected, they are not stated as formal hypotheses, nor tested, as it is inappropriate to test the null hypothesis. Rather, it is expected that no relationship will exist between these variables.

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allocated to that particular subsidiary. In addition to channeling financial resources to the subsidiary, headquarters can reward managers with such things as additional managerial capabilities in the form of highly skilled and experienced human resources from throughout the corporation or the transfer of technology or know-how that was developed in other parts of the organization. Non-financial resources such as these that come from other locations of the multinational organization underscore the important role headquarters and other subunits can play in helping the foreign subsidiary meet its goals and objectives. Thus, they are likely to increase the subsidiary manager's sense of belonging to a larger, corporate system.

Both of these types of non-financial incentives emphasize the importance of the subsidiary manager's role within the corporate network. Rewarding performance with corporate career enhancements or resources developed within other units of the corporation underscores the fundamental idea that activities occurring at the foreign subsidiary can impact other parts of the organization in important ways and that subsidiary managers are an important part of the MNC and its global activities. It is expected that as a foreign subsidiary is more interdependent with the MNC network, the use of non-monetary career-related and subsidiary-related rewards will be used to a greater extent as a means of social control.

Hypothesis 8a: As headquarters-subsidiary international interdependence increases, the use of non-monetary career-related rewards will increase.

Hypothesis 8b: As inter-subsidiary international interdependence increases, the use of non-monetary career-related rewards will increase.

Hypothesis 8c: As headquarters-subsidiary international interdependence increases, the use of non-monetary subsidiary-related rewards will increase.

Hypothesis 8d: As inter-subsidiary international interdependence increases, the use of non-monetary subsidiary-related rewards will increase.

METHOD

Sampling and data collection procedure

This study addresses the mechanisms MNC headquarters uses to manage foreign subsidiaries. Thus, the key informant was a headquarters-based executive responsible for operations of one or more foreign subsidiaries. To ensure that the key informant focused on a specific subsidiary, the sampling procedure involved the identification of both the respondent and a foreign subsidiary. The sample consisted of the foreign subsidiaries of U.S. firms in thirteen industries, all of which had been identified as global industries in previous studies (Kobrin, 1991; Roth and Morrison, 1990, 1992). To preserve the independence of observations and to prevent any large company or set of companies from biasing the results, a maximum of two foreign subsidiaries from the same parent company were included in the study. These steps resulted in the identification of 255 headquarters–foreign subsidiary pairs.

For each pair, a mail questionnaire was sent to the headquarters-based executive to whom the subsidiary top manager reported or who was responsible for the subsidiary's activities. Following Dillman (1978), follow-up questionnaires were sent to non-respondents after two weeks and again after six weeks. The initial and follow-up mailings yielded eighty-nine responses from the primary respondent for a response rate of thirty-two percent. Questionnaires also were sent to an additional headquarters executive and the foreign subsidiary top manager. Multiple responses were received from twenty headquarters–foreign subsidiary pairs. These responses were used to validate the responses of the key informant on the constructs measured using primary data. The overall level of interrater agreement was assessed by calculating a Pearson product moment correlation across all questionnaire items for each pair of respondents (Jones *et al*., 1983). The mean correlation across all pairs of respondents was 0.79 ($p < 0.001$).

Nonresponse bias was evaluated in two ways. The first procedure draws on the work of Armstrong and Overton (1977), who argued that the profile of late respondents is similar to that of non-respondents. The responses from the first mailing were compared with the responses from the third mailing by testing for mean differences on all of the variables included in the hypotheses.

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Given that the means of the two sets of respondents were not significantly different on any of the variables, the analysis suggested that nonrespondents did not differ from respondents. Second, where available, demographic information was collected on the key informants targeted in this study (Dun and Bradstreet, 1997; *Who's Who in Finance and Industry*, 1996–1997). Respondents did not differ significantly from nonrespondents in terms of age or tenure with their current company. Secondary information concerning the parent company and the foreign subsidiary also was collected for a randomly selected subset of respondents and nonrespondents. The two groups did not differ significantly in terms of annual sales of the parent corporation or subsidiary annual sales or parent or subsidiary size, as measured by number of employees.

Measures

The Appendix summarizes the multi-item measures used in this study. *Lateral centralization* was measured with a seven-item index based on previous research (Roth and Morrison, 1992; Roth and O'Donnell, 1996). The coefficient alpha for the scale was 0.87, which compares favorably to the reliability levels of this measure reported in previous studies. Headquarters–subsidiary pairs from which multiple responses were received were used to assess the validity of the lateral centralization measure. The correlation between the response of the key informant and that of the secondary respondent was 0.80 ($p < 0.001$).

Subsidiary autonomy was defined as the extent to which the foreign subsidiary has operational and strategic decision-making authority across its entire product line. The response scale was based on studies by Ghoshal and colleagues (Ghoshal *et al*., 1994; Ghoshal and Nohria, 1989) and the list of decision items was drawn from Egelhoff (1988) and the Aston studies (Inkson, Pugh and Hickson, 1970; Pugh *et al*., 1968). The coefficient alpha for this measure was 0.90, indicating a high level of reliability. The subsidiary autonomy score of the key respondent and the secondary respondent were correlated at 0.52 ($p < 0.05$).

Outcome measurability was defined as the degree to which the desired subsidiary outcomes are specifiable and quantifiable. The five-item scale used to assess outcome measurability exhibited acceptable internal consistency (α = 0.85) and the responses of the primary headquarters respondent were correlated significantly with those of the secondary respondent (r = 0.67, $p < 0.05$).

The two components of *outcome uncertainty*, industry volatility and host country volatility, both were measured using secondary data sources. Following Buchko (1994) and Wholey and Brittain (1989), *industry volatility* was assessed as the variance in worldwide industry production over the past ten years for the primary industry of the subsidiary as determined by the four-digit SIC code for the subsidiary. Worldwide industry production figures were collected from the *Industrial Commodity Statistics Yearbook* (1996), which details country-based and worldwide yearly production figures broken down by international standard industrial classification codes (ISIC).[3]

The other component of outcome uncertainty concerns the economic and political stability of the country in which the foreign subsidiary operates. *Host country volatility* was measured by *Euromoney's* 1996 Country Risk Ratings (*Euromoney*, 1996). The *Euromoney* country risk assessment uses nine categories that fall into three broad groups: analytical indicators, credit indicators, and market indicators, and calculates a weighted score for each country. The scores are on a scale from 0 through 100 with higher scores indicating less country risk. In this study they were reverse scored so that higher scores would indicate greater country risk.

Monitoring was conceptualized in two ways, as headquarters supervision of foreign subsidiary managers and as bureaucratic monitoring mechanisms at the foreign subsidiary. To assess *headquarters supervision*, respondents were asked to indicate 1) the number of managers comprising the subsidiary top management team and 2) the number of these managers who are from corporate headquarters. The headquarters supervision meas-

[3] For most of the industries represented by the responding firms, the U.S. four-digit SIC code closely paralleled the international classification system. However, in some cases it was necessary to combine two or three ISIC groups in order to make the two classification systems equivalent. For example, in the U.S. SIC code list there is one entry for 'tires and inner tubes' (SIC 3011), whereas in the ISIC code list there are five categories of tires and inner tubes. In such cases, the worldwide production figures for all of the subclassifications were combined into one aggregate figure that best matched the U.S. classification.

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ure is the percentage of the subsidiary top management team that is from corporate headquarters.

The operationalization of *bureaucratic monitoring mechanisms* was based on several previous studies, including Galbraith (1973), Ghoshal and Nohria (1989), Roth, Schweiger and Morrison (1991) and Roth and Nigh (1992). The seven-item scale had a coefficient alpha of 0.68. A high level of interrater agreement was found for this scale, as the responses of the secondary respondents exactly matched those of the key informant in 48.7% of the cases, and in 79.6% of the cases the two responses were within one point of each other on the six-point scale. The number of exact matches was significantly greater than that which would have occurred by chance ($\chi^2 = 78.76$, $p < 0.001$).

The measure used to assess *monetary incentive compensation* was based on Balkin and Gomez-Mejia (1987) and Galbraith and Merrill (1991). Respondents were asked to indicate the percentage of subsidiary senior management compensation paid through each of the following: 1) fixed salary, 2) incentives based on short-term performance, and 3) incentives based on long-term performance, with the total of the three components equaling one hundred percent. The sum of the percentages allocated to items two and three was used as the measure of monetary incentives. A significant correlation between the responses of the key informant and those of the secondary respondent supported the validity of this measure ($r = 0.47$, $p < 0.05$).

International interdependence was conceptualized as the degree to which activities and outcomes at the foreign subsidiary affect or are affected by activities of other units within the MNC. Because headquarters-subsidiary and subsidiary-subsidiary interdependencies were hypothesized to have different effects, they were measured separately using measures based on Astley and Zajac (1990). Each scale exhibited an acceptable coefficient alpha (HQ-subsidiary interdependence: $\alpha = 0.63$; inter-subsidiary interdependence: $\alpha = 0.88$). To examine validity, the scales were correlated with a separate multi-item measure of international interdependence that was based on Porter's (1985) discussion of sub-unit linkages (correlation with HQ-subsidiary interdependence measure: $r = 0.49$, $p < 0.001$; inter-subsidiary: $r = 0.66$, $p < 0.001$).

Vertical integrating mechanisms were measured with four objective items relating to personal interaction between headquarters and subsidiary managers that were averaged to form an index ($\alpha = 0.53$). The nine-item scale used to measure *lateral integrating mechanisms* was based on Gupta and Govindarajan (1993) and Roth *et al.* (1991). The coefficient alpha for this measure was 0.91 and the correlation between the responses of the primary and secondary respondents was 0.75 ($p < 0.05$).

Development of the non-monetary incentives measures followed a procedure based on that suggested by Churchill (1979). After specifying the domain of the construct by conducting a search of the relevant literature, a series of personal and telephone interviews was conducted with international compensation and/or human resources managers from different multinational

Table 1. Item factor loadings for non-monetary incentives measure

Item	Factor 1 Career Related	Factor 2 Subsidiary Related	Factor 3 Choice
Advancement within corporation	**0.82**	0.01	0.20
Increased corporate visibility	**0.84**	0.23	0.01
Identification as 'high potential' employee	**0.83**	0.16	0.01
Management development programs	**0.74**	0.22	0.01
Increased international experience	**0.66**	0.14	0.30
Managerial experience in important market	**0.62**	0.01	0.19
Corporate resources devoted to subsidiary	0.13	**0.80**	0.20
More authority to subsidiary management	0.22	**0.85**	0.00
More important strategic role to subsidiary	0.15	**0.83**	0.01
Choice of next assignment	0.16	0.00	**0.83**
Choice of next location	0.16	0.24	**0.77**

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corporations. The information collected through the early interviews confirmed the domain of the construct and generated a number of survey items which captured the domain. Subsequent interviews were used to confirm and edit the items. The result of these steps was a thirteen-item scale to assess non-monetary incentives. Factor analysis of these thirteen items using varimax rotation resulted in a three factor solution. Table 1 shows the results of a second factor analysis performed after dropping two items that loaded on multiple factors. Non-monetary incentives was conceptualized as a two dimensional construct: career related rewards and subsidiary related rewards. The first two factors correspond to these dimensions. The first factor consists of six items related to the subsidiary manager's career path. An index was created from these items and was labeled non-monetary *career related rewards* ($\alpha = 0.87$). The three items that loaded on the second factor were combined in an index for a measure of non-monetary *subsidiary-related rewards* ($\alpha = 0.81$). The measures were then validated by correlating the responses of the key informant with those of the secondary respondent (career related rewards: $r = 0.57$, $p < 0.01$; subsidiary related rewards: $r = 0.47$, $p < 0.05$).

Firm size (Beatty and Zajac, 1994; Hill and Phan, 1991; Westphal and Zajac, 1994) and subsidiary profitability (Roth and O'Donnell, 1996) have been argued and shown to be related to incentive use and the use of bureaucratic control. Thus, control variables for parent size and subsidiary profitability were included in the hypothesis tests, with parent size being measured as the natural log of the annual sales of the parent corporation and subsidiary profitability being measured by a self-reported measure of subsidiary ROI performance.

Analysis

All hypotheses except 5a and 5b were tested using multiple regression. Hypotheses 5a and 5b posit curvilinear relationships between monitoring and incentive compensation. Conceptually, the relationship between monitoring and incentives is not a causal one in which one control mechanism is a dependent variable caused by the other. As argued in this study, the use of each mechanism is determined by other independent variables, and the relationship between monitoring and incentives is substitutive. Thus, this set of hypotheses was tested with correlation analysis rather than regression. A negative quadratic relationship will result in the negative and diminishing relationship posited in Hypotheses 5a and 5b. Thus, these relationships were tested by correlating the quadratic transformation of the monitoring variable with the incentive variable. A negative and significant correlation between the two variables would indicate support for the curvilinear relationship as hypothesized.

RESULTS

Summary statistics and correlation coefficients for all of the variables are presented in Table 2.

Results of agency theory hypothesis tests

Table 3 presents the results of the regression equations used to test Hypotheses 1a through 2b. As indicated in Model 1 of Table 3, Hypothesis 1a was not supported, for lateral centralization was not significantly related to the use of headquarters supervision. However, the data support Hypothesis 2a, as subsidiary autonomy was found to be negatively and significantly related to the use of headquarters supervision. Similarly, as indicated in Model 4 of Table 3, Hypothesis 1b was not supported, as lateral centralization was not significantly related to the use of bureaucratic monitoring mechanisms. The results of Model 4 indicate support for Hypothesis 2b, as the coefficient for subsidiary autonomy was significant and in the posited direction.

It should be noted from Table 2 that the two independent variables, lateral centralization and subsidiary autonomy, are significantly correlated. Thus, it was necessary to examine whether this collinearity had an effect on the model parameter estimations. The two models were respecified, alternately dropping out the two correlated variables, to check the sensitivity of the parameter estimates to the model specification. As the results of Models 2 and 3 indicate, the coefficient for the significant predictor, subsidiary autonomy, remains stable across the models in which headquarters supervision is the dependent variable. A similar result is found in Models 5 and 6, in which bureaucratic monitoring is the dependent variable. This suggests that the correlation

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Table 2. Summary statistics and correlations

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Lateral Centralization	2.49	1.09													
2. Subsidiary Autonomy	2.74	0.55	0.47***												
3. Outcome Measurability	6.10	0.82	0.18	0.01											
4. Industry Volatility	6.26	7.21	–0.30**	0.03	–0.27*										
5. Host Country Volatility	12.56	15.28	0.29**	0.26*	0.09	–0.29*									
6. Bureaucratic Monitoring	2.03	0.53	–0.08	–0.35**	0.01	–0.01	0.21†								
7. Headquarters Supervision	8.79	14.94	–0.06	–0.25*	0.10	–0.12	–0.13	0.09							
8. Monetary Incentives	20.25	14.00	0.13	0.15	0.37**	0.05	–0.09	–0.29*	0.01						
9. HQ-Sub Int'l Interdependence	3.13	0.80	–0.07	–0.37**	0.13	–0.13	0.09	0.31**	0.35**	0.03					
10. Inter-Sub Int'l Interdependence	2.29	0.95	0.04	–0.14	–0.07	–0.33**	–0.22*	0.13	0.24*	0.01	0.41***				
11. Vertical Integrating Mechanisms	6.76	4.53	–0.02	–0.33**	0.16	–0.12	0.16	0.09	0.03	–0.14	0.34**	0.17			
12. Lateral Integrating Mechanisms	2.97	0.94	0.12	0.01	0.19†	–0.25*	–0.09	0.04	0.24*	0.36**	0.35**	0.68***	0.26*		
13. Career Incentives	3.07	0.95	–0.08	–0.14	0.23*	–0.12	0.09	–0.13	0.29**	0.30**	0.39***	0.37**	0.05	0.49***	
14. Subsidiary Incentives	2.48	0.94	–0.03	–0.23*	–0.05	–0.05	0.09	0.01	0.07	–0.12	0.30**	0.02	0.11	0.04	0.36**

† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

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Table 3. Influences on headquarters use of monitoring[a]

Independent Variables	Headquarters Supervision Model 1	Model 2	Model 3	Bureaucratic Monitoring Mechanisms Model 4	Model 5	Model 6
Lateral Centralization	0.31	–1.47		0.05	0.04	
	(1.73)	(1.54)		(0.06)	(0.06)	
Subsidiary Autonomy	–7.30*		–7.01**	–0.36**		–0.31**
	(3.36)		(2.93)	(0.18)		(0.38)
Parent Sales	1.28†	1.02	1.26†	–0.06*	–0.08*	–0.07*
	(1.45)	(0.88)	(0.87)	(0.03)	(0.03)	(0.03)
Subsidiary Profitability	3.69*	4.12**	3.75**	–0.04	–0.02	–0.03
	(1.59)	(1.59)	(1.54)	(0.05)	(0.06)	(0.05)
R^2	0.17	0.12	0.17	0.19	0.08	0.18
Adjusted R^2	0.13	0.08	0.17	0.15	0.05	0.15
F	3.62**	3.17*	4.88*	4.18**	2.21†	5.32**

[a] Unstandardized regression coefficients are shown; standard errors are in parentheses.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

Table 4. Influences on headquarters use of incentives[a]

Independent variables	Monetary incentives
Outcome measurability	5.00*
	(2.56)
Industry volatility	0.32
	(0.35)
Host country volatility	0.06
	(0.12)
Parent sales	2.64**
	(0.97)
Subsidiary profitability	1.60
	(1.60)
R^2	0.24
Adjusted R^2	0.17
F	3.49**

[a] Unstandardized regression coefficients are shown; standard errors are in parentheses.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

between these two independent variables did not lead to imprecise parameter estimates. Additional collinearity diagnostics suggested by Belsley, Kuh and Welsch (1980) were performed. The tolerance values and variance inflation factors for the parameter estimates as well as the condition number of the scaled variable matrix all implied that

Table 5. Relationship between monitoring and incentives[a]

	Monetary incentives
Bureaucratic monitoring mechanisms (quadratic)	–0.28*
Headquarters supervision (quadratic)	–0.04

[a] Entry indicates the Pearson correlation coefficient between the two control mechanisms.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$

the presence of collinearity did not degrade the parameter estimates.

Table 4 presents the results of the regression equation used to test Hypotheses 3, 4a and 4b. The data support Hypothesis 3, as the coefficient for outcome measurability is positive and significant. However, neither industry volatility nor host country volatility was significantly related to the use of monetary incentives. Thus, Hypotheses 4a and 4b were not supported.

The correlations used to test Hypotheses 5a and 5b are presented in Table 5. The significant negative correlation between the square of

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bureaucratic monitoring mechanisms and monetary incentives supports Hypothesis 5a. However, Hypothesis 5b was not supported.

Results of interdependence hypothesis tests

The results of the tests of the interdependence hypotheses (H6–H8d) are shown in Table 6. As indicated in Model 1, HQ-subsidiary international interdependence is a significant predictor of the use of vertical integrating mechanisms, which supports Hypothesis 6. Additionally, the relationship between inter-subsidiary interdependence and vertical integrating mechanisms was not significant. Hypothesis 7 also was supported, as the coefficient for inter-subsidiary interdependence in Model 2 is positive and significant, whereas the coefficient for HQ-subsidiary interdependence is not significant. As indicated in the results of Model 3, the use of career-related incentives is significantly predicted by both HQ-subsidiary interdependence and inter-subsidiary interdependence. Thus, Hypotheses 8a and b are supported. Finally, Model 4 shows the results of the tests of Hypothesis 8c and d. The data support Hypotheses 8c, the positive relationship between HQ-subsidiary interdependence and the use of subsidiary-related rewards, but they do not support Hypothesis 8d, the relationship between inter-subsidiary interdependence and subsidiary-related rewards.

DISCUSSION

The purposes of this study were twofold. One goal was to increase our understanding of the types of mechanisms headquarters uses to manage its foreign subsidiaries and the factors that influence the use of these mechanisms. The other aim was to use the results to evaluate the relative applicability of two different theoretical perspectives with respect to the management of foreign subsidiaries of MNCs.

The agency theory model

Certain elements of the agency theory model were supported by the data in this study. In particular, the data indicate that both types of monitoring examined here, headquarters supervision and bureaucratic monitoring, are influenced by the level of decision-making autonomy exhibited by the subsidiary (H2a and H2b). Specifically, as the managerial discretion associated with subsidiary autonomy increases, headquarters uses less monitoring, presumably because of the costs and difficulties associated with monitoring in situ-

Table 6. Effects of international interdependence[a]

Independent Variables	Model 1 Vertical Integrating Mechanisms	Model 2 Lateral Integrating Mechanisms	Model 3 Career Rewards	Model 4 Subsidiary Rewards
HQ-Subsidiary International Interdependence	1.60*	0.02	0.28*	0.48**
	(0.71)	(0.05)	(0.13)	(0.15)
Inter-Subsidiary International Interdependence	0.31	0.64***	0.23*	–0.14
	(0.60)	(0.09)	(0.11)	(0.13)
Parent Sales	–0.11	0.09*	0.19***	–0.04
	(0.27)	(0.04)	(0.05)	(0.06)
Subsidiary Profitability	0.56	0.19*	0.09	–0.17
	(0.50)	(0.07)	(0.09)	(0.10)
R^2	0.13	0.54	0.36	0.15
Adjusted R^2	0.08	0.51	0.32	0.10
F	2.58*	20.94***	10.01***	2.90*

[a] Unstandardized regression coefficients are shown; standard errors are in parentheses.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$
*** $p < 0.001$

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ations involving high levels of managerial discretion. With respect to the use of incentives, the only hypothesis that was even moderately supported was the posited relationship between outcome measurability and the use of monetary incentives. Outcome measurability appears to make the link between the achievement of the outcome and the receipt of the incentive reward more direct. The present study indicates that financial incentives are, indeed, being used to compensate managers of foreign subsidiaries, but the explanation for the use of such incentives seems to require a theoretical perspective other than that of agency theory.

Although some of the relationships suggested by agency theory were supported by the data in this study, overall, the results of the agency theory model were not particularly strong. One possible explanation for the weak findings is that some of the agency theory arguments may have limited explanatory power in the headquarters–foreign subsidiary context in which they were applied in this study. For example, agency theory arguments predicted that a subsidiary strategy of lateral centralization would negatively influence headquarters use of monitoring. However, lateral centralization had no impact on the use of either headquarters supervision or bureaucratic monitoring. Although lateral centralization poses monitoring difficulties due to information asymmetry, apparently it does not result in decreased use of monitoring. A subsidiary with such a role can have a strong impact on the worldwide performance of the organization with respect to its mandated product line because of its responsibility for decisions concerning the set of value activities of that particular product line on a worldwide basis. The potential effects of undesired subsidiary management actions may offset or even outweigh the costs and difficulties associated with monitoring a subsidiary characterized by lateral centralization. It also could be argued that, with greater lateral centralization, headquarters might actually increase monitoring activities in order to tap into the subsidiary's store of specialized knowledge.

Previous conceptual and empirical research has demonstrated that agency theory is a useful perspective by which to view the MNC headquarters–subsidiary relationship (Doz and Prahalad, 1991; Nohria and Ghoshal, 1994; Roth and O'Donnell, 1996). However, the results of this study support Doz and Prahalad's assertion that 'agency theory provides but a departure point for the study of (MNC) management issues' (1991: 149). They argue that the simplicity of the dichotomous choice between monitoring and incentives posited by agency theory prevents it from addressing more complex combinations of control types. This view is supported by the results of a study by Tosi and colleagues in which they found that monitoring and incentives have different effects and, thus, should be used in combination rather than simply as substitutes for one another (Tosi, Katz and Gomez-Mejia, 1997).

Other organizational research has indicated that the design of organizational control systems is more involved than the choice between monitoring and incentives suggested by agency theory. The dichotomy between monitoring and incentives that stems from their treatment as substitute control mechanisms in agency theory may be too simplistic to accurately model the design of organizational control in multinational corporations. For example, if one considers the case of a subsidiary that is highly autonomous, the agency theory model presented here would suggest low levels of monitoring. However, if that same subsidiary also exhibited low outcome measurability, the model would predict low use of incentives, as well. Agency theory, which addresses only these two control mechanisms, provides little guidance as to how to manage a subsidiary with such a combination of characteristics, which is not an unlikely situation to encounter.[4] Another theoretical perspective is needed to suggest alternative mechanisms to fill this gap.

Additionally, the agency theory perspective assumes a simple, dyadic, hierarchical relationship between headquarters and the foreign subsidiary (Doz and Prahalad, 1991). Such a hierarchical relationship often is not the case, as was evident in the discussion of subsidiary strategic roles. In the case of a subsidiary with a global mandate, responsibilities and authority for the mandated product line are centralized at the subsidiary level, making the headquarters–subsidiary relationship something other than hierarchical. Headquarters should be encouraging such subsidi-

[4] This limitation of the agency theory model was pointed out by an anonymous reviewer.

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aries to be innovative and entrepreneurial in order to capture the full benefits of their unique knowledge and competencies. However, agency theory also assumes opportunism on the part of the agent, so how does headquarters encourage entrepreneurial subsidiary manager behavior while simultaneously expecting and guarding against opportunistic behavior? As pointed out by Ghoshal and Moran, 'opportunism is difficult to distinguish ex ante from entrepreneurship and leadership' (1996: 38). A further violation of the agency theory assumption of hierarchy is the well accepted idea that subsidiary managers have a web of relationships with different managers, both at headquarters and at other foreign subsidiaries. Such situations are difficult to characterize as principal-agent relationships, for there will be many different principals, and perhaps multiple agents, depending on which relationship is being considered.[5]

In summary, a number of conceptual difficulties are encountered when agency theory is used to model the management of foreign subsidiaries. Many of these problems are related to the assumptions on which agency theory is grounded. Thus, it is not surprising that several of the hypotheses based on agency theory were not supported by the data collected in this study. However, much more support was found for the hypotheses based on a view of the MNC as an interdependent network of subunits.

The interdependence perspective

It was argued here that interdependence among different international subunits of the MNC is important for building and maintaining the firm's international competitiveness. However, it was also argued that the control mechanisms suggested by agency theory do not facilitate the types of cooperative behaviors necessary on the part of managers of foreign subsidiaries within an interdependent organizational network. Thus, the concept of social control was introduced as an alternative mechanism for managing foreign subsidiaries in the presence of high levels of international interdependence. Social control mechanisms examined in this study included vertical and lateral integrating mechanisms, as well as career- and subsidiary-related non-monetary incentives. The results suggest that international interdependence has a significant influence on the use of each of these types of social control.

The two measures of international interdependence used in this study differentiate between headquarters-subsidiary interdependence and inter-subsidiary interdependence. This distinction appears to be justified, as the results indicate different relationships between these two types of interdependence and the different social control mechanisms examined here. When the subsidiary is highly interdependent with headquarters, vertical integrating mechanisms are used to a greater extent. The shared understanding and corporate identification that result from vertical integrating mechanisms likely facilitate the types of cooperative decisions and behaviors that are needed on the part of subsidiary management. It is also interesting to note that lateral integrating mechanisms are not used to a greater extent when the headquarters–subsidiary relationship is highly interdependent. Similarly, lateral integrating mechanisms are used more in response to inter-subsidiary interdependence, but not when headquarters-subsidiary interdependence is high. One probable explanation for these findings is that social control methods are costly to implement and, thus, should be used to a great extent only when they are most needed. Thus, vertical integrating mechanisms are used primarily to manage 'vertical' interdependence, while lateral integrating mechanisms are used to manage 'lateral' interdependence.

With respect to the use of non-monetary incentives as social control mechanisms, career-related rewards and subsidiary-related rewards seem to be used somewhat differently. The use of career-related rewards was significantly related to both types of international interdependence. Together, headquarters-subsidiary interdependence and inter-subsidiary interdependence accounted for fifteen percent of the variance in the use of career-related rewards ($\Delta R^2 = 0.15$), with each type of interdependence explaining an equal amount of variance. However, in the case of subsidiary-related rewards, headquarters-subsidiary interdependence explained thirteen percent of the variance in their use ($\Delta R^2 = 0.13$), while inter-subsidiary interdependence did not account for any additional variance. It is likely that career-related rewards, as measured in this

[5] I am grateful to an anonymous reviewer for the ideas in this paragraph.

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study, enhance a subsidiary manager's identification with the other various international subunits of the MNC to a greater extent than do subsidiary-related rewards. Essentially, the use of such career-related rewards identifies the subsidiary manager as being one of a pool of talented, experienced international managers that may include personnel from many different locations within the firm. Being selected or identified as a member of such an elite group from across the MNC is quite likely to engender the type of group identification that Ouchi (1979) describes as clan identification. Thus, career-related rewards can be useful for eliciting a subsidiary manager's identification not only with headquarters, but also with a group made up of managers from other subsidiaries. Hence, they would be useful for managing both headquarter-subsidiary and inter-subsidiary interdependencies. On the other hand, subsidiary-related rewards serve to connect the manager with headquarters, but not with mangers of other foreign subsidiaries. Perhaps this is because, despite the fact that such resources may have been developed at other foreign subsidiaries, the reward is allocated by headquarters, which, in turn, impacts the subsidiary manager's identification with headquarters, but not with other subsidiaries. Thus, these rewards would be most useful for managing headquarters-subsidiary interdependence.

Here, international interdependence was conceptualized as the condition in which the activities and outcomes of a foreign subsidiary influence or are influenced by actions that occur at other subunits within the MNC. The results of the tests of the interdependence hypotheses in this study indicate strong support for the international interdependence perspective. However, there are many different types of resources that can form the basis for interdependence, including human resources, financial resources, and intangible, knowledge-based resources, in addition to flows of products and components. This study did not examine the implications of these different types of resource interdependencies with respect to the management of foreign subsidiaries. Given the important role international interdependence can play in developing and maintaining global competitiveness, it is critical to ensure that it is managed effectively. Future studies should incorporate some of these different types of interdependencies and examine the different mechanisms that are needed to manage them. Theory on intrafirm knowledge transfer may be a particularly useful perspective to use in studying international interdependence within the MNC. As theories of the learning organization emphasize, there can be multiple centers of knowledge or 'brains' within a company, which develop their own knowledge-based competencies (Hedlund, 1993, 1994). International knowledge transfer must occur in order to take advantage of opportunities for leveraging such competencies across multiple units of the MNC.

Conclusions

The results reported here show that both agency theory and the interdependent network perspective have predictive value for studying the management of foreign subsidiaries, with intrafirm international interdependence and social control mechanisms being particularly critical factors to consider. From the results of this study, it appears as though the change in perspective that has occurred in international management research over the past decade is warranted. In particular, the hierarchical headquarters–subsidiary relationship that was the focus of international strategy research for a long period of time may no longer be the most important relationship to examine. This study empirically demonstrates what more recent conceptual and case-based international management research has argued, that intra-firm, inter-unit relationships play just as important a role as headquarters control in implementing strategies in a global organization (e.g., Bartlett and Ghoshal, 1989).

However, the results found here also indicate that the headquarters–subsidiary relationship still plays an important role and should not be ignored. For example, headquarters–subsidiary international interdependence was significantly related to vertical integrating mechanisms and both types of non-monetary rewards. Together, the results of the agency theory model and the interdependence perspective suggest that the headquarters—subsidiary relationship has become characterized less by hierarchy and control by fiat, and more by mutual interdependence and learning. Thus, it is important to consider multiple intrafirm relationships when examining organization design issues in complex multinational organizations that compete on a global basis.

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APPENDIX

Summary of Measures

Subsidiary Strategy: Indicate the extent to which each of the following statements describes the responsibilities of the subsidiary concerning any one of its dominant product lines: (1 = to a very little extent and 5 = to a very great extent)

1) the subsidiary is primarily an implementor of headquarters developed strategy (reverse scored)
2) the subsidiary has worldwide responsibility for production activities
3) the subsidiary has a high level of specialized information that headquarters does not have regarding a product or product line
4) the subsidiary is a central point within the corporation for decisions concerning a product or product line
5) the subsidiary has worldwide responsibility for marketing activities
6) the subsidiary controls product research and development activities
7) international market development costs are incurred by the subsidiary

Subsidiary Autonomy: For the overall business activities of the subsidiary, indicate the extent of headquarters and/or subsidiary influence on the following decisions: (1 = headquarters almost always decides, 4 = subsidiary almost always decides)

1) Borrowing short term from local bankers
2) Changing to a new manufacturing process
3) Changes in subsidiary organization structure
4) Hiring subsidiary top managers
5) Changes in subsidiary compensation policies
6) Creating a new department at the subsidiary
7) Training methods used
8) Entering new foreign markets
9) Establishing quarterly production schedules and plans
10) Quality control decisions
11) The decision to significantly increase inventories
12) Promotion of subsidiary top managers
13) Creating a new job at the subsidiary
14) Changes in product price
15) Changes in product design
16) Introduction of new products

Outcome Measurability: To what extent does each of the following statements describe the subsidiary? (1 = to a very little extent, 5 = to a very great extent)
1) The objectives of this subsidiary are clearly stated
2) There are specific performance objectives for this subsidiary
3) Performance targets are set for this subsidiary
4) The outcomes toward which this subsidiary works are specified precisely
5) This subsidiary's important objectives are stated numerically

Bureaucratic Monitoring Mechanisms: How frequently is information in each of the following subsidiary areas reviewed by headquarters? (1 = daily, 2 = weekly, 3 = monthly, 4 = quarterly, 5 = annually, and 9 = never. The responses were recoded such that a higher score would indicate a greater level of monitoring.)

1) operating expenditures
2) sales figures
3) quality control assessments
4) budgeting process
5) resource allocation
6) capital equipment purchases
7) strategic business plans

International Interdependence: Indicate the extent to which each of the following statements describes the subsidiary: (1 = to a very little extent, 5 = to a very great extent)
1) the activities of this subsidiary influence the outcomes of headquarters (*other foreign subsidiaries*)
2) headquarters *(other foreign subsidiaries)* depends on this subsidiary to effectively perform its tasks in order to continue performing its own tasks effectively
3) work in this subsidiary is connected to the work of headquarters *(other foreign subsidiaries)*
4) this subsidiary depends on the effective functioning of headquarters *(other foreign subsidiaries)* to keep performing its own tasks effectively
5) the activities of headquarters *(other foreign subsidiaries)* influence the outcomes of this subsidiary

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Vertical Integrating Mechanisms:
1) How many days per year do subsidiary top managers participate in executive development programs involving participants from headquarters?
2) How many days per year do subsidiary top managers spend at corporate headquarters?
3) How long a period of formal training do subsidiary top managers spend at corporate headquarters (in days)?
4) How many days per year do headquarters-based managers spend at the subsidiary for the purpose of integrating subsidiary top management into the organization?

Lateral Integrating Mechanisms: To what extent does each of the following occur in the subsidiary: (1 = very rarely, 5 = very frequently)
1) informal personal contact between managers from different international locations
2) inter-unit committees that are set up to allow managers from different international locations to engage in joint decision-making
3) temporary task forces set up to facilitate international collaboration on a specific project
4) liaison personnel whose specific job is to coordinate the efforts of international functional areas
5) permanent teams to coordinate decisions and actions with other subsidiaries
6) informal communication between managers from different international locations
7) scheduled meetings of managers from different international locations
8) the seeking of advice from managers of different international locations
9) the transfer of top managers to different international locations for the purpose of building a shared corporate philosophy

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