Chapter eight

Rediscovering functions in the MNC: the role of expertise in firms' responses to shifting exchange rates

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Confronted by a turbulent global macroeconomy, intense global competition, and ever-changing product market conditions, multinational corporations (MNCs) are being forced to become more responsive, flexible and innovative. This often requires strategic and organizational redirection.

Strategically, it is important to understand the distinctive competitive implications of these complex environments. There are strategic considerations that arise from global competition in a turbulent macroeconomy that are very different from those in the context of domestic or multidomestic competition. Research that develops this view contends that the structure (technology, product mix, geographic location and value added) of the cost and revenue streams of an MNC relative to its global competition determines (1) the strength and sustainability of its competitive posture (e.g. global versus multidomestic) in international product markets; and (2) its vulnerability to fluctuations in the macroeconomy. For instance, if a firm's costs are primarily in dollars and its main competitors' primarily in yen, and both compete in similar international product markets, then the exchange rate regime between 1981 and mid-1985 (when the dollar was very strong) had very different competitive implications when contrasted with the exchange rate regime between 1985–1987 (when the dollar became much weaker).[1]

Organizationally, in keeping with Chandler's by now classic norms that structure must follow strategy, several researchers have focused on the complex differentiation and integration that MNCs must exhibit in such a global economy in order to be both responsive to the different product and geographic market contexts and still exploit the advantages of scope and scale afforded by the distributed resource and organizational capabilities of the MNC and its unique potential for global rationalization and integration. This dual focus on local responsiveness and global integration has led to the articulation of several idealized organizational structures for the MNC, such as the global matrix, the transnational corporation, the heterarchy, and the horizontal MNC.[2] A common theme in all these models is the emphasis placed on differentiated roles for the various sub-units of the MNC and on various mechanisms that lead to global co-ordination.

In this chapter we examine this general relationship between the strategic implications of turbulent global business environments and the organizational structure of MNCs in the specific context of how MNCs respond to volatile exchange rates. Shifts in exchange rates not only change the reference currency value of a firm's foreign currency denominated assets and liabilities (so-called transaction and translation exposures) and foreign profit streams, but also shift the relative prices of the firm's inputs and outputs and, in the case of global competitors with different cost structures, their competitive position (so-called operating exposure).[3]

For example, a US consumer goods manufacturer with a fully integrated subsidiary in France faced two potentially offsetting dollar profit effects when the franc fell to a low against the dollar in 1985 (or when it subsequently rose in 1986). On the one hand, its French franc profit stream translated or converted into fewer dollars. On the other hand, its costs fell relative to firms with a smaller proportion of their actual or potential production in France, allowing several possible sources of improvement in franc profits depending on the structure of global competition. If the firm faced other competitors in France or adjacent countries with a lower proportion of French costs, it had the option of using its lower costs to improve margins or gain share.[4] If it were concerned about its competition in the US, it also might have been able to use its low-cost French base to substitute for US production or to bring products into the US that it had hitherto not sold there.

As this example highlights, firms not only need to estimate and hedge their foreign exchange denominated exposures, but also to respond to shifts in exchange rates by adjusting operating parameters. Moreover, the nature of exchange rate determination makes accurate forecasting of such shifts extremely difficult and, perhaps, futile. Consequently, exchange rate fluctuations can have a dramatic impact on a multinational corporation's operations and finances.

This context, therefore, serves as an extremely useful lens through which one may examine the strategy-structure relationship in MNCs in the context of increasingly complex, turbulent, and volatile global business conditions. It also redresses the neglect of expert functions, such as finance, in existing discussions of the

organization of MNCs that for the most part have focused on geographic versus product or corporate versus subsidiary considerations.[5] Our focus on how MNCs respond to volatile exchange rates leads to two basic points of departure from the existing literature.

First, while we acknowledge that formal models provide valuable insights regarding the strategic implications of turbulent global environments and the appropriate response to complex problems such as volatile exchange rates, we contend that an unrealistic assumption made by these models is that the complete information and expertise relevant to the solution of the problem is available to a single rational agent acting in the best interests of the organization as a whole.[6] In reality this information and expertise is often distributed very widely among different agents and decision makers in an organization who may even have competing interests. For instance, in responding to the problems posed by exchange rate volatility, there are finance experts, marketing and pricing experts, production management experts, and international business experts, all of whom have only partial information and expertise necessary for the rational solution proposed by the formal models. Thus, the issue of managing expert tasks must increasingly be recognized as involving a broad set of expertise distributed throughout the corporation as opposed to being a narrow functional problem. This requires revisiting the role of functional experts in MNCs.

Our second point of departure from the existing literature is that this is not an organizational problem that can be solved by a priori design. As opposed to proposing a deliberate pattern of differentiation and integration specifying who should talk to whom, about what, when, and how, we attempt to locate organizational processes that facilitate the recognition, linkage, and diffusion of widely distributed expertise in a flexible way. It is difficult to solve the problem of responding to volatile exchange rates by a priori design because the firm must be responsive to specific changes (events) and the competitive interactions that flow from these events; all of which do not follow from any well-defined temporal pattern and hence cannot be incorporated into a routine or a finite set of contingency plans.

Drawing an analogy with the well-known fable of the five blind men and the elephant brings our points of departure into sharper focus. Our first point of departure follows from the moral of the fable that the five blind men, each analogous to a different organizational expert, are better off once they recognize that by sharing their individual and separate expertise they will arrive at a

better understanding of the animal they are trying to describe. Our second point of departure involves an extrapolation of the fable. If it were known with certainty that the only problem the five blind men were going to be required to solve was that of describing a specific animal such as the elephant, it would be possible for someone who knew the outlines of an elephant to specify a priori the ideal organizational structure (no doubt, some form of matrix) that must exist in order for the blind men to describe the elephant accurately. However, if the nature of the beast to be described is constantly changing – today an elephant and tomorrow a pig – as is inevitably the case in a turbulent and volatile global economy, the organizational problem is rendered far more complex. Clearly there is no deterministic organizational solution, so what is required is a more flexible context that permits the blind men, or analogously the different organizational experts, to recognize, share, and diffuse their differentiated expertise. Furthermore, the organization needs mechanisms that not only help link the expertise relevant to a particular situation, but preserve and further develop the differentiated knowledge and expertise that is required to address the different aspects of such complex problems.

This chapter is organized to expand on the above issues as follows. In Section I we briefly articulate the nature of the task of coping with volatile exchange rates in the context of global competition. This is done with a view to highlighting the highly distributed information and expertise that is required to address the problem. In Section II, based on field research in several organizations, we develop a descriptive model of the major factors that shape corporate responses to exchange rate volatility. In Section III, we conclude by describing the key elements of the 'emergent matrix' organization that we have observed and by offering a brief set of normative observations based on our identification of best practice among the firms we studied.

I. The expert task – coping with volatile exchange rates

Impact of volatile exchange rates under global competition

A major difference between multidomestic and global competition is the impact of exchange rates on the operations of a multinational firm. Under multidomestic competition, markets are national in scope and, typically, a substantial proportion of value added is local. Thus, exchange rate shifts do not significantly change the relative costs of firms operating in a particular market. As a result, firms' revenues and costs move together in response to shifts in

exchange rates, and profits from foreign operations, when converted into dollars,[7] move roughly proportionally with exchange rates.[8] Further, operating decisions regarding pricing and output, for example, should be unaffected by these changes.

In contrast, under global competition, there will be a tendency toward world prices and larger proportions of firms' value added are likely to be concentrated in particular countries. Thus, unless all firms have the same geographic patterns of value added, shifts in exchange rates will change their relative costs and profit margins. With the emergence of non-US global competitors, this is almost bound to be the case.[9] In this situation, the profits of foreign operations may respond either more or less than one-for-one with shifts in exchange rates and the profits of operations in the US may be affected as well. Further, operating decisions should be altered in response to such shifts. Even where prices remain localized through local regulation, product differentiation, or other factors that enable firms to maintain cross-border price-discrimination, the optimal competitive strategies of firms with different configurations are likely to shift.

The responsiveness of operating profits to shifts in exchange rates, then, is comprised of two effects: a conversion effect and a competitive effect. The conversion effect is the proportional adjustment of foreign currency operating profits into the reference currency (dollars for US-based firms). By definition, it applies only to foreign operations. The competitive effect, in contrast, is the response of local currency operating profits to exchange rate shifts resulting from the interaction of the various competitors' supply and price responses. It applies to both domestic and overseas activities. While the conversion effect may create headaches for treasurers and controllers, the competitive effect, since it requires adjustments in operating decisions, also affects and increases the complexity of the operating manager's job.

Potential firm responses to volatile exchange rates

Management of financial exposures (or of the conversion component of operating exposures) involves several stages very similar to those involved in portfolio management. These are (1) estimating positions or exposures, (2) simulating possible outcomes (including anticipated speculative returns, if any) and (3) taking appropriate offsetting positions, all of which take place in anticipation of exchange rate shifts. These are shown in the left-hand column of Figure 8.1. But coping with the competitive impacts of exchange rate volatility also includes an operational element, since the impact

of exchange rate movements on a firm depends in large part on its tactics subsequent to the shift; and the range of possible tactics in turn depends on the configuration of the firms' assets in anticipation of possible exchange rate shifts.

Thus, to the three steps noted above, three more must be added, as shown in the right-hand column of Figure 8.1: (1a) adjusting asset configuration and organization structure to enhance the range of possible responses (2a) altering operating tactics in anticipation of imminent exchange rate shifts and (3a) aligning operating tactics in response to exchange rate changes. These elements of coping with exchange rate exposures in the operating domain involve much greater interdependency across time frames than the simpler financial functions.

Each of these steps may involve elements in more than one activity domain, typically several. For purposes of simplicity in this discussion, the various domains of activity are defined at a highly aggregated level – marketing/pricing, production/sourcing, and finance/contracting. Further, these responses may be contained within a single organizational unit, e.g. corporate staff or a single country-centred subsidiary, or they may cut across two or more such units. Finally, the temporal dimension is divided into three stylized phases – strategic/anticipatory, tactical/anticipatory, and tactical/reactive. These are specified in Figure 8.2 and discussed at greater length below.

Strategic/anticipatory

At a strategic/anticipatory level, firms have both business and financial options for exploiting and protecting themselves from exchange rate fluctuations. For instance, with regard to the configuration of production and sourcing networks, firms face three generic strategies to cope with future exchange rate volatility. These are: (1) configure individual businesses to have the flexibility to increase production and sourcing in countries that become low cost due to swings in exchange rates; (2) configure individual businesses to reduce operating exposure by matching costs and revenues, and (3) select a portfolio of businesses with offsetting exposures.

The first option, that of configuring operations to increase flexibility, can actually increase a firm's expected operating profits as well as reduce its variability.[10] The other two can at best reduce variability with no reduction in expected operating profits and, often, will result in some reduction in expected operating profits. The reason for this in the case of configuring individual businesses to match the currency dimensions of revenues and costs, is that such matching typically will require some departures from the

Figure 8.1 Dimensions of response

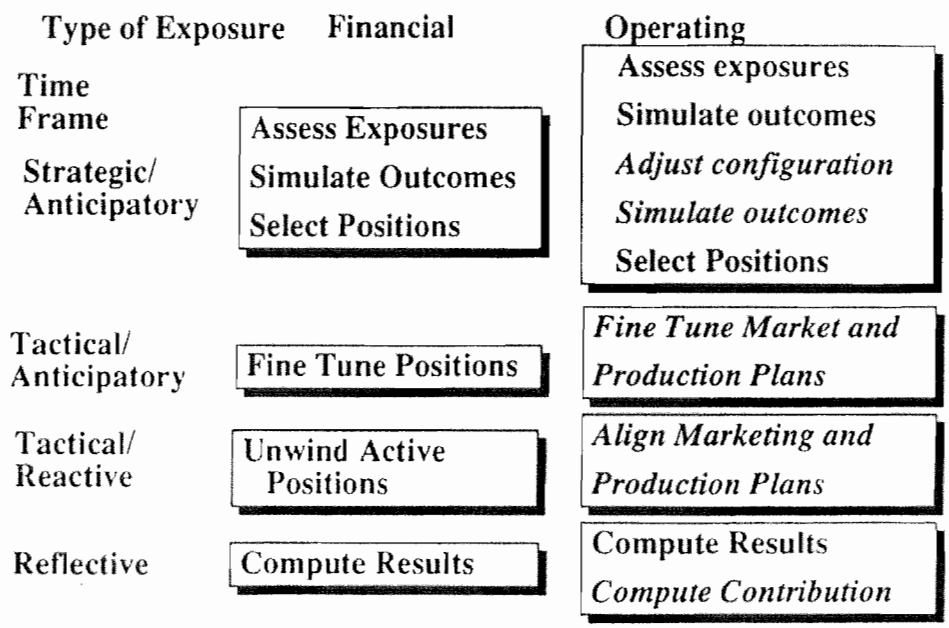

Figure 8.2 Corporate responses by function and timing

Function / Timing	Finance	Marketing	Production	Control
Strategic/ Anticipatory	Estimate (range of) future exchange rates Core liability strategy Hedging Strategy	Segmentation Product strategy Pricing Strategy	Plant location/ configuration Technology/ factor choices Sourcing Strategy	Determine locus of responsibility Measurement strategy
Tactical/ Anticipatory	Estimate Exposures Hedge positions	Set prices, mix Set terms	Production loading Sourcing	Set planning rate, budget expectations Assess possible outcomes
Tactical/ reactive	Unwind active positions	Adjust prices Adjust mix	Adjust loading Adjust sourcing	Adjust expectations
Reflective	Assess Performance	Assess response/ performance	Assess response/ performance	Assess/response performance

optimum configuration in terms of scale and location advantages. Similarly, selecting a portfolio of businesses with offsetting exposures is likely to lead to increased administrative costs and reduced efficiency associated with managing diverse businesses without other synergistic linkages. With all three strategies, firms must consider the expected level of real exchange rates over quite long periods. Such estimates typically are based on a presumed tendency of exchange rates to return toward purchasing power parity, although some firms implicitly or explicitly take current levels as the best long-run forecasts.

Firms face a similar set of choices in their marketing strategy – the degree of product differentiation, the extent to which segments are identified or reinforced within national boundaries, and so on – which affect both their exposures to exchange rate shifts and their ability to respond to such shifts.

The firm also has several financing/contracting options available to it. These include offsetting their operating exposures with financial exposures, such as those created by matching long-dated forwards (or, equivalently, foreign currency borrowing), swaps, or currency options. None of these is exact, since they are keyed to nominal rather than real exchange rates, but they have the advantage that when competitively priced they reduce the variability of operating profits with little or no reduction in the anticipated level of such profits.

Tactical/anticipatory

Given a particular competitive configuration and projection of exchange rates, firms must set prices and determine production loading and sourcing over the coming planning period. In the short run, these decisions typically will involve a balancing act between vaguely understood limits to sustainable price differentials across countries and the impact of local currency price shifts on demand and hence profits or, in the case of production, the trade-off between current cost differentials and the cost of switching locations. Further, given the emergence of global oligopolies in many industries, pricing decisions must reflect anticipations of competitor actions or reactions. Estimating these reactions is likely to be complicated by the fact that competitors differ significantly in the currency composition of their costs and, perhaps more importantly, in the currency eyeglasses they wear.

Tactical/reactive

The same set of issues arise in event rather than calendar time in response to an unanticipated shift in exchange rates. Volatile

industry. Sudden shifts in exchange rates require adjustments to prior decisions regarding pricing, output, and sourcing. These actions must be spontaneous, quick, and flexible in order to minimize losses or quickly capitalize on opportunities that may arise. They are further complicated by the fact that they no longer follow an orderly time frame and typically must be based on fragmentary, noisy information. Again, strategic interactions among various competitors are likely to be critical factors. These features preclude time-consuming, detailed analysis, yet also imply that intuitive responses are likely to be incorrect. This places a premium on a prior identification of appropriate contingent responses.

Based on the preceding discussion of the task of coping with volatile exchange rates in MNCs, it should be readily apparent that this activity involves information, expertise, and actions that span across multiple business domains and time frames. Therefore, conceptualizing the response of MNCs to this task as one that involves only the finance function is clearly inadequate. Instead, to further our understanding of this phenomenon we need to proceed by first understanding more carefully the various factors that influence corporate responses to this complex task. This descriptive understanding is a necessary precondition for managerially relevant prescriptions and is the task to which we turn in the next section.

II. A descriptive model of the factors influencing corporate response to volatile exchange rates

In order to understand corporate practice, and in particular to determine how firms have dealt with the information and organizational complexities of the exchange rate problem, we conducted in-depth interviews with managers in four firms and less intensive interviews with another six firms.[1] The firms interviewed included high-technology-based global manufacturers, global manufacturers with medium-level technologies and high recurring costs, and providers of financial services. Eight of these firms were from the US, two were Japanese. Whenever possible, we interviewed foreign exchange 'experts', usually members of the corporate staff, as well as their organizational 'clients', typically general managers of operating units. Our interviews in firms usually involved a half day, but they ranged from a two-hour discussion to more than fifteen individual interviews of more than four days in total. The interviews were open-ended, but our major lines of inquiry were guided by the existing literature on the management of similar complex problems and the literature on the management of the MNC discussed earlier in this paper.

Summary of the descriptive model

Our descriptive model of the factors that influence a firm's response to volatile exchange rates, which in turn affects corporate performance, is schematically represented in Figure 8.3. Three basic factors are at the core of this model: (1) The definition of the problem of coping with volatile exchange rates which is determined by the environmental context, the business strategy, the frames employed by individual managers, and the broad corporate frame; (2) The organizational context in terms of the formal structure of responsibility and authority and the co-ordination mechanisms that relate to the various components of the overall task; and (3) The information and control system which includes the control, performance appraisal and incentive system for both individual managers and corporate units.

In addition to these three general factors it is important to remember the important influence of the firm's administrative history, its corporate culture, and the particular vehicle it chooses to implement changes in the corporate response to volatile exchange rates. We will now elaborate on the theoretical and empirical rationale for the different aspects of this model.

Definition of the response

In principle, if one had complete information on all aspects of the relevant strategic environmental context and the firms' position in it, such as the structure of the cost and revenue streams relative to the competition, there exists for every firm, and possibly every business within a firm, a definition of the feasible set of responses to exchange rate that maximizes the (present) value of its cash flows. However, the near impossibility of accurately forecasting exchange rates and the complexities involved in specifying their impact and the appropriate organizational response makes the way an organization understands or 'frames' the task of coping with exchange rates an important determinant of the nature and quality of their response.[12]

There are various dimensions along which individuals, or the firm through an established routine, may characterize the exchange rate context and the appropriate responses to it. Three dimensions of this framing are of particular importance: (i) framing of the broad exchange rate environment, (ii) framing of the impact of exchange rate volatility, and (ii) framing of the appropriate actions firms must take to cope with volatile exchange rates.

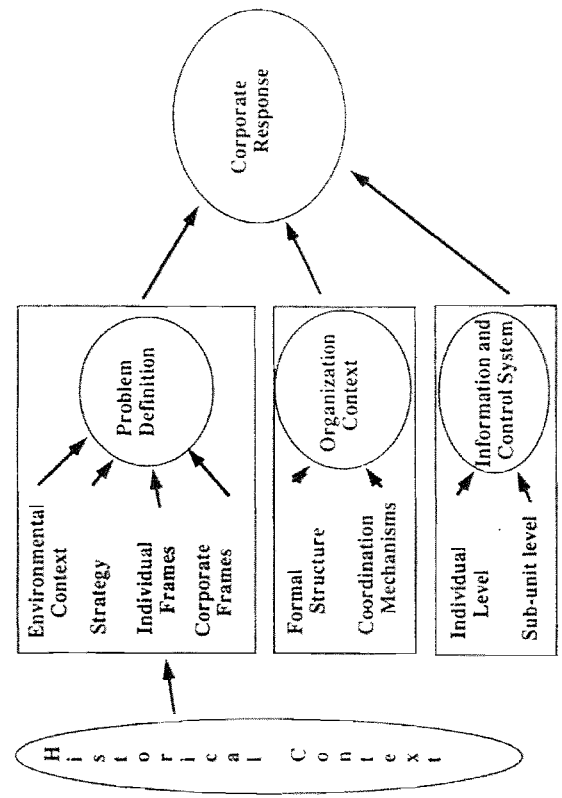

Figure 8.3 Determinants of firms' responses to volatile exchange rates: a descriptive model

Framing of the broad exchange rate environment

Theoretically, a key issue here is the extent to which the volatility of exchange rates is acknowledged or suppressed.[13] A closely related issue is whether the firm believes that it can 'beat the market', or that the market is 'efficient'[14] as reflected in views on the dynamics of exchange rates, such as purchasing power parity or momentum models.[15] In our empirical research, in almost every instance, managers felt that the volatility they had experienced in recent years in exchange rates was likely to remain an integral feature of the international business environment. While most had a general belief that exchange rates did tend in a secular sense towards purchasing power parity, they felt that short- and intermediate-run volatility was so great that the general trend was not very important in comparison.

In stark contrast to this generally shared view of the broad exchange rate environment at the individual level, firms we studied had very different routines that characterized their overall framing of the exchange rate environment. In several firms, for instance, no formal forecasts were made and, as a result, the implicit reference rates used were the current spot rates. In another firm, the forecast used as the reference point for defining corporate responses was a short-term single-point forecast, based on near term forward rates, which was updated every month. In a Japanese firm we studied, in contrast, the forecast that served as the reference point was the worst-case scenario over the product planning horizon. In yet another firm, the rate used for key decisions was a periodically updated 'long-term parity level' that often diverged substantially from current rates. One can readily imagine how these corporate differences in the framing of the exchange rate environment also influenced the definition of responses in these cases.

Framing of the impact of exchange rate volatility

Traditionally, the problem of coping with exchange rate changes has been viewed as minimizing exchange rate losses, and in some cases seeking to gain on the upside, typically focusing on financial assets and liabilities. As has been noted elsewhere (Lessard 1986), framing the problem as one of financial risk management is deficient in the context of global competition in two regards. First, it is concerned primarily with deciding whether to hedge or retain particular exposures arising from operations, rather than seeing to it that this exposure and its impact on expected operating profits have been factored into operating decisions. In fact, to the extent that it includes a speculative element by factoring possible gains

into the hedging decision, it differs little from staking the assistant treasurer with a sum of money to be used to speculate on stock options, pork bellies, or gold. Second, it tends to focus on exposures that lead to identifiable foreign exchange losses, neglecting the more critical, but harder to measure comparative effects. This further leads to responses being framed with less operational and strategic content than is desired under conditions of global competition.

Most managers we interviewed recognized the enormous competitive significance of volatile exchange rates and the operating and strategic implications in addition to the straightforward financial or contractual exposures. However, the degree of sophistication they showed in framing the operational and strategic impact varied. Some had only a vague, undifferentiated notion of these impacts, while others categorized various businesses in terms of the nature and degree of pricing responses and cost shifts. In some cases, the perception of a relatively undifferentiated operating exposure appeared to reflect a reality of largely local pricing which limited the exchange effect to the conversion of the local profit stream. However, in another firm there clearly were differences in the extent to which pricing of, say, service and products was determined by local versus global factors, yet no clear articulation of these differences was provided by either financial or operating managers. In yet another firm, some business unit managers had quite a clear sense of the nature and degree of operating exposure in their domain, yet even though these varied substantially across units, there was no evidence of a general corporate awareness of these differences.

The framing of exchange rate impacts was often narrowly focused on particular business activities or decisions where exchange rates had a critical impact rather than on the larger, less explicit exposures of the firm as a whole. As a result, firms with, say, Japanese yen cost exposures from the sourcing of a few components would emphasize these despite the fact that they faced Japanese competition virtually across the board in their product markets.

Framing of the appropriate actions

The greatest variation in framing among individual managers was in their definition of the appropriate organization actions that were needed to cope with volatile exchange rates. Several firms explicitly or implicitly assumed that the appropriate response was financial, and that 'good' treasury management would obviate the need for a broader operational response. In one such case, for instance, the

treasury foreign exchange management function was conceived as a profit centre that should profit from astute foreign exchange transactions, whether or not these transactions bore any relation to the overall exposure of the firm.[16] In another, the treasury sought to hedge the full exposure at all times, but most of the internal communication between finance and operations centred on reconciliation of differences between observed exchange rate impacts and hedging gains and losses. In yet other cases, including the two Japanese firms, operations managers viewed themselves as carrying the ball with little linkage to financial responses. In only a minority of firms could senior managers, finance managers, and operating managers articulate a view that included both sets of responses and appropriate co-ordination between them.[17]

Another distinctly different framing of the appropriate response was really an incremental shift in the traditional financial view. Recognizing that economic exposures were broader than financial exposures, the view here was that operating managers should be made aware of such economic exposures and be asked to report those exposures so that they could be adequately hedged with the increasingly sophisticated financial instruments available for these purposes. In this view what was required was awareness and control.

As opposed to these finance-oriented views, several firms had framed the problem in operational terms. The critical issue in most cases was not what should be done under particular circumstances, but to structure a process that would bring to bear the appropriate expertise on specific decisions regarding responses to shifting circumstances. In one case, a manager felt that the only way one could truly cope with exchange rates was by developing a rich cadre of 'international business' managers who could think through appropriate responses on the spot. In his view, operating in volatile global environments required a fundamentally different world view than operating in domestic environments. The solution, in his opinion was, therefore, not one of formulating strategy, because there was no clear calculus which one could employ that would be appropriate for each turn in the environment. Instead, the organizational solution lay in the development of managers who intimately understood the complex nature of the problems posed by volatile global environments and could, therefore, use this informed world view to address strategic issues as and when they arose. Therefore, the key organization mechanisms, in his view, were learning and education. In the same firm though, it was the view of another manager that the appropriate organizational response was to try and explicitly model the contingencies of

exchange rate volatility in the strategic planning process – both short and long term. In this sense, formal strategic analysis and contingency planning were the required organizational responses. Neither view was widely adopted by the firm.

In another set of firms, however, the appropriate organizational response was seen as requiring the creation of special purpose organizations – typically task forces with members drawn from the relevant functions and organizational units – to build expertise and relate it to the various responses. The view in these firms was that this problem, although complex, was amenable to structured analysis and that the key issue was creating a network to develop, link, and diffuse the expertise present in different parts of the organization.

In addition to the impact of differences in individual and corporate frames on the definition of the firm's responses to exchange rate, the strategy adopted by the firm or the business unit is also a major determinant of this definition. For instance, a strategy of aggressive growth by building market share is certain to result in a different definition of response than a strategy of making maximum profit without necessarily growing. In one of our companies, the fall of the dollar was on the one hand viewed as an opportunity to penetrate and build market share in critical markets such as France and Germany, and on the other hand a time for getting larger profits in less critical markets such as Singapore.

Organizational context

The preceding discussion of the definition of the exchange rate problem focused on the analytical and cognitive dimensions of the management of this complex activity. It described the factors that drive differences in the way firms define what should be done to manage in an environment of volatile exchange rates. The organizational context influences how firms respond to volatile exchange rates. Two aspects of the organizational context need to be discussed: (i) Formal structure of responsibility, and (ii) Co-ordination and linkage mechanisms.

Formal structure

The formal structure defines the locus of responsibility and authority for various aspects of how a firm responds to exchange rate volatility. It is likely to be closely related to the way the problem is framed. However, it is not easy to devise a formal structure to deal with volatile exchange rates. Dividing responsibility and authority among staff, geographic, and business

units can be a difficult balancing act. All three steps of financial foreign exchange risk management must lie within the traditional realm of corporate treasury. However, the responsibility for strategic and tactical operational aspects must lie with operating units and, possibly, corporate planning staff. Also the authority to carry out specific functions may be separated from the responsibility for those functions. Financing decisions, for example, may be a major determinant of a business unit's exposure, but the authority may reside with the corporate treasury. A mismatch is most likely where the overall problem is partially or improperly framed.

In our empirical research, there was a widely shared view that coping with volatile exchange rates required the utilization of several different knowledge bases and skills that resided in different parts of the corporation. Corporate staff and functional experts in the international treasury, control, and co-ordination units as well as operating managers were each considered to possess skills and information necessary but not sufficient for handling the expert task of coping with volatile exchange rates.

In one company that had recently moved from a functional to a product-based organization, a complex division of responsibility and authority had evolved to couple the operating knowledge base of the line operations with the functional skills that, due to the administrative heritage of the corporation, resided in the corporate staff. Formally, the division of responsibility was clear. The corporate treasury was responsible for the corporate-wide financial exposures and the line managers for operating exposures. Increasingly though, these clear lines of responsibility were getting blurred with the corporate treasury taking a more active role in working with line organizations to identify and manage operating exposures. The difference of authority is similarly being shared. Authority for operating decisions does not reside solely with the line managers but is shared by corporate staff responsible for such functions as the rationalization of production and transfer pricing. This division of responsibility and authority is not in the form of a formal matrix, but more in the form of a set of networked and interlinked actors that need to share expertise and negotiate differences and decision-making authority.[18] Interestingly, despite this understanding of the cross-functional nature of the problem, the predominant organizational response was to leave the co-ordination and most of the execution of exchange rate responses to the manager of foreign exchange in the treasury unit. This tended to limit the response to financial ones, and also to reinforce the information gathering and control aspects of the task over the

provision of assistance or guidance to operating units. This case clearly shows the enormous difficulties in creating an organizational structure that is responsive to the task of coping with volatile exchange rates.

The two firms that in our judgement were most successful, however, adopted more integrative patterns. One firm, which had determined that it had few valid operating responses, nevertheless incorporated exchange rate scenario analysis into its strategic planning, including the presentation on a quarterly basis to senior management of possible exchange rate impacts. Another, which faced large exposures and felt it could feasibly respond in finance, production, and marketing, instituted a task force that included members from finance, planning, pricing, production, and sourcing. This team obtained and maintained sponsorship at the top executive level and insinuated itself into ongoing strategic and operating decision-making wherever it determined that exchange rates were an important factor. Over time, though, some of its functions were spun off to operating units and, perhaps more importantly, members from various parts of the organization cycled in and out of the team, dispersing expertise and broadening the team's network.

Co-ordination and linkage mechanisms

As emphasized earlier, the task of responding to volatile exchange rates requires a highly complex set of interactions both across organization units/centres of expertise and over time. Centred around the recognition that coping with volatile exchange rates requires tapping multiple bases of expertise and competence that resides in different parts of the organization, we observed several different patterns of interaction and information flows. These may be organized and discussed under two basic types: (1) patterns associated with the discovery and dissemination of the relevant existing stocks of knowledge; and (2) patterns for the coupling of the relevant knowledge bases.

The discovery and dissemination of relevant knowledge

Several approaches were observed to accomplish this purpose. One involved the redefinition of a specialized knowledge base to highlight aspects that may be of relevance to other parts of the corporation. Thus, in one case, the manager in charge of the foreign treasury operations had redefined his knowledge base to include operational exposure management, such as the ability to bear the risks of all contractual exposures that were brought to his notice, to

advise operating managers on decisions such as cross-border inter-firm financial agreements. To facilitate the recognition of this expertise he was advertising this new capacity by circulating memos throughout the corporation and searching for a few visible cases to solve which would then serve to make his claims credible. Similar attempts were being made by other corporate functions such as finance and management information services.

Another approach to discovery and dissemination of expertise involved internal training and education programmes. For instance, one firm had started a regular international management education programme which was staffed by internal and external 'faculty'. In other cases, key individuals had taken a special initiative to educate others. For instance, the manager, described earlier, who felt that the corporate solution to cope with volatile exchange rates was to create the consummate international business manager had also taken it upon himself to go on-the-road, giving lectures on pricing strategies to various operating managers in subsidiaries of the company throughout the world.

A third approach was the expert consultant who 'called' on operating managers to offer expertise on this issue. All these approaches, though, were premised on the shared notion that successful response to exchange rate volatility required creating awareness of the problem and the location of the expertise in the corporation that might help solve various aspects of it.

The coupling of the relevant knowledge bases

Several organizational mechanisms were being set in place to facilitate the coupling of the dispersed knowledge bases. For instance, in one approach, as part of the regular planning process, teams which comprised line and corporate staff members were being asked to develop strategic plans together to promote the coupling of different information and analytical skills. The scope of the strategic plans was correspondingly enlarged and teams were required explicitly to consider exchange rate contingencies among several others.

A second approach designed to promote coupling of knowledge bases involved internal quasi-markets for specialized expertise. For example, finance specialists were placed as consultants within line operations who were billed for the specialists' services and shared in their evaluations. This was described as an attempt to develop information linkages between operations and corporate staff that facilitated the coupling and full utilization of the knowledge that resided in the corporation. Several innovative organizational solutions were attributed to this organizational linkage. For

example, one financial analyst, asked to update product profitability calculations, noted that the standard rules of thumb for allocating sales overheads bore no relation to the actual allocation of sales effort. The analyst then tracked actual sales efforts and recomputed the profit calculations with major differences. This procedure is now being replicated by financial analysts in other line organizations.

In yet another approach, a permanent foreign exchange task force was set up that included within its purview all international outsourcing decisions as well as major capital investments. This group first obtained a role in these operating decisions after a major sourcing decision resulted in significant currency-related losses, and gradually became institutionalized by the naming of one member from the procurement function.

Information and control systems

The final determinant of corporate responses to volatile exchange rates is the information and control system used to measure and reward individual and organizational unit performance. For instance, a critical issue faced by most firms is how to get finance 'experts' to contribute to operating decisions rather than restricting attention to their own limited domains. Here we saw various mechanisms at work, ranging from the 'matrixing' of finance staffers into operating organizations to explicit monetary performance targets tied to contributions to 'other peoples' ' areas of responsibility. In the majority of firms, finance staffers were formally assigned to operating groups, with the operating unit sharing in their evaluation. Further, in one of these firms senior corporate financial staffers' profit goals were tied to their contributions (savings or value-added) to operations as acknowledged by operating unit managers. Thus, they were operating as results-based consulting profit centres.

Another dimension of control is the way that exchange-rate related variances are computed and evaluated. The typical process with US firms, borne out in our interviews, is to plan at a projected exchange rate and then seek to link subsequent profit variations to changes in exchange rates. The Japanese firms in the sample used a radically different technique, planning operations at a pessimistic rate (180 when the yen was at 220, 140 when it was at 180, etc). Only one of the firms surveyed had explicit mechanisms for identifying before-the-fact specific responses to different contingencies and tracking, after the fact, the timeliness and accuracy of those responses.

Situational factors

In addition to these three basic determinants of a firm's response to volatile exchange rates, we observed several differences that could be attributed to situational factors which cannot be generalized but operate on a company-by-company basis. Perhaps the most important of these situational factors was the administrative history of the firm. For instance, one of the firms had only recently changed from a functional to a line-of-business structure. The background of the finance group which was one of the most powerful groups in the functional era is central to an understanding of the firm's response to volatile exchange rates. Another important situational factor was the vehicle or forum different firms had chosen to address this increasingly important problem. For instance, in one company there was a high-powered, multi-disciplinary task force that had been given charge to develop a company-wide practice and in another the process was being dominated by an individual with a background in international finance. The response of these two companies was influenced to a great degree by these choices.

In this section we developed a theoretically and empirically grounded descriptive model of the determinants of corporate responses to volatile exchange rates. Little attempt was made in this section to explicitly identify best practice along each of these dimensions. We do this briefly in our conclusions.

III. Conclusions

This research has focused on one activity (or related set of activities) within MNCs – coping with volatile exchange rates – in order to learn how these firms deal with the complexity presented not only by the contradictory needs of focusing both along product and geographic lines, but also developing expertise in particular domains whose application is diffused throughout the firm with varying degrees of intensity over time in response to environmental turbulence. We clearly have succeeded in establishing that the activity is a complex one, but we also believe that we have developed a more fine-grained view of complexity than that usually presented and have identified and described various cognitive and organizational factors that appear to influence the timeliness and quality of firms' responses to this complexity.

This chapter represents a step towards a fuller understanding of the importance of expertise and expert functions in coping with the complex problems thrown up by a turbulent global economy.

Furthermore, this rediscovery of expert functions broadens and extends the currently favoured structural conception of matrix organizations so that instead of emphasizing patterns of differentiation and integration based on a priori logic, more attention is accorded to emergent and less formal patterns of co-ordination and linkage. Indeed, the organizational form this view represents is sufficiently distinct from existing conceptions of matrix organizations that we label it the 'emergent matrix' to call attention to the fact that differentiated expertise represents a critical set of third dimensions in many organizations, but that these are largely self-designing and self-integrating.

While our observations are still incomplete, and thus we have not been able to link formally observed behaviours to various cognitive and organizational measures or factors, we believe that we have identified some of the key linkages and have begun to be able to spot 'best practice' in various aspects of the activity.

In particular, we find that the overall framing or 'vision' of the problem, coupled with an understanding of the constraints to various responses implicit in the firms' overall strategy, structure, and systems, is a critical factor in successful responses. We also find that an expert group explicitly charged with helping line managers cope with exchange rates is an important element in success. Finally, we find that the most successful firms create incentives for these experts to support line managers in their decisions, and not just to be successful transactional profit centres.

Framing

Three aspects of successful firms' framing stand out. The first is the recognition that coping with volatile exchange rates requires an options-like perspective, that it cannot be 'structured away' by any amount of a priori analysis or planning. The second is that 'finance cannot do it all', that regardless of the sophistication of the treasury function, it at best can reduce fluctuations in profits resulting from exchange rate swings. Treasury expertise cannot substitute for the business judgement required as circumstances change, nor can it be expected through astute trading to earn back losses incurred in operations. The third is that appropriate responses often involve the linking of normally differentiated functions and, hence, require 'going out of ordinary channels' with special structures and systems.

While a few experts in the firm may develop this understanding on their own or through consultants, external seminars, or discussions with peers in other firms, extending it to a large constituency

that foster the development and diffusion of relevant expertise and a set of incentive and control systems that support these tasks.

Notes

1 See, for instance, Hout, Porter, and Rudden (1980), Kogut (1985), Porter (1986), and Bartlett and Ghoshal (1987a,b) for general statements of the unique problems posed by global competition, and Lessard (1986) and Lessard and Lightstone (1986) for problems posed by macroeconomic volatility, such as exchange rate shifts in the context of global competition.

2 See Bartlett (1986) and Bartlett and Ghoshal (1986) for a discussion of the transnational; Hedlund (1986) for a discussion of the concept of organization as a heterarchy; Poynter and White (1989) for a discussion of the dual-focus firm.

3 For a discussion of the linkage between exchange rates and prices see Dornbusch (1987).

4 The issue of whether a firm should use its currency-derived cost advantage to gain margin or share depends on a number of factors, including the anticipated permanence of the exchange rate shift, the degree of customer loyalty, and the overall elasticity of demand for the good. For a discussion of these points see, for example, Krugman (1987).

5 Other expert functions include technological innovation, which has been addressed, among others, by Bartlett and Ghoshal (1989) in chapter 9 of this volume, competitor scanning (see e.g. Ghoshal and Westney (1988)), and marketing research.

6 This critique is similar to Bower's (1970) critique of the usefulness of formal models in financial theory for understanding the management of the resource allocation process in large, multi-unit, multi-product firms.

7 Since US firms represent our point of reference, our discussion is organized in 'dollar' terms. The basic arguments, of course, are fully general and can just as easily be translated into other reference currencies.

8 In more technical terms, given a change in the real exchange rate, the demand and supply curves facing the firm will remain unchanged in the local currency (adjusted for inflation). Hence the optimal output and local currency price will remain unchanged, as will local currency profit. From a dollar perspective, of course, both curves will shift by the same amount, and the dollar profit will change in proportion to the change in the exchange rate.

9 Under these circumstances, a change in the real exchange rate will result in a relative shift of demand and supply curves, regardless of the reference currency of the firm. This implies that the optimal price and volume will change as well.

10 Recent developments in financial economics have stressed that volatility is not simply a negative situation to be avoided or hedged, but that it may also create valuable options for active management response. In the case of operating exposure, for example, a firm with manufacturing flexibility could actually increase its average profits over time by switching production from one country to another in line with real exchange rate fluctuations.

11 The research project is still in progress. The final results will be based on interviews with 15 to 20 firms and a questionnaire survey of a larger number of firms. Some of the initial interviews were part of a masters' thesis research undertaken during the 1986–1987 and 1987–1988 academic years.

12 This importance of strategic issue diagnosis and the way the environment is framed by organizational members have been emphasized by Dutton and Jackson (1987).

13 One extreme can be caricatured as 'pseudocertainty', where firms forecast future exchange rates and act as if these forecasts will materialize. The other extreme believes that forecasting is difficult if not impossible and, as a consequence, considers a range of scenarios.

14 See Oxelheim and Wihlborg (1987) for a discussion of the relationship between beliefs regarding the efficiency of various markets and the relevant response set.

15 For an interesting discussion of alternative models of exchange rate behaviour which arise from alternative frames that might be employed by analysts, see Frankel and Froot (1987).

16 This firm has subsequently abandoned this 'transactions' model and has instituted a more passive hedging function, coupled with a much greater emphasis on operational responses.

17 One firm that framed the problem very well recognized that it had few degrees of operating freedom given the structure of its costs and markets and, hence, the appropriate responses were essentially financial. This insight, however, appeared to have important implications for general management perceptions of the health of the business, in contrast to firms that focused on the financial component because they had not fully articulated its linkages with operational responses.

18 Subsequently, this firm has begun to create task forces to tackle some of these issues.

19 The special drawing right of the IMF, a (roughly) trade-weighted basket of the five major currencies.

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