

**Subsidiaries in Motion:  
Assessing the impact of sunk vs. flexible assets**

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## **Abstract**

This paper addresses an unresolved theoretical issue in international business: the impact of existing, committed assets on parent and subsidiary decisions on future configurations of value-adding activities in host locations. We develop a measure of investment committedness, or the degree of flexibility versus specificity of existing assets in a location, to explore this issue. The measure assesses the extent to which assets, such as brands, human capital, process technologies and supplier relations, retain only scrap value outside their current application, or whether they can be re-deployed to alternative value-adding activities in the host location, or shifted offshore, either within the multinational enterprise (MNE) or to another user. The measure is a key step in developing a model of strategic choice for the future configuration of value-adding activities by MNEs in host locations. Drawing on firm-specific data from 237 MNE subsidiaries operating in Australia, we first present a traditional integration-responsiveness classification of subsidiary activities. This static snapshot of the subsidiaries' current profiles is then compared and contrasted with the measure's preliminary findings on the levels of investment committedness and strategic flexibility available to the sample MNEs and how this may shape strategic allocation decisions, including divestment and withdrawal.

## **Introduction**

The design and dominant logic of a multinational network (Prahalad and Doz, 1987) reflect market-by-market decisions about how to reallocate existing resources, and maximise innovation and competence development. Internationalisation models have long emphasised how firms increase their resource commitments to international markets (Stopford and Wells, 1972; Johanson and Vahlne, 1977), particularly focusing on optimal models of entry form and entry mode decisions (such as the choice between joint ventures and wholly owned affiliates). Somewhat neglected are the subsequent decisions about the role of particular subsidiaries within the multinational network. There is a nascent literature on MNE divestment and exit (Benito, 1997; Chang and Singh, 1999; Mata and Portugal, 2000), and also a literature on subsidiary survival (Shaver, Mitchell and Yeung, 1997; Zaheer and Mosakowski, 1997; Shaver, 1998). The prevailing taxonomies for examining subsidiary roles are either simplistic and static (the Integration-Responsiveness (IR) framework (Jarillo and Martinez, 1990; Taggart, 1997; Bartlett and Ghoshal, 1989), or overly focussed on the 'value enhancing' roles available for capture by subsidiaries (Cantwell and Mudambi, 2005; Enright, 2000; Birkinshaw and Hood, 1997). There is relatively little research on the retention of existing subsidiary operations, but with a decreased resource commitment. As such, it can be argued that the full strategic suite available to the parent is currently underdefined by international business (IB) scholars.

Investing in operations in a given location involves the transfer, development or acquisition of assets and resources. The subsequent impact of these investments is overlooked in much of the IB discussion of subsidiary evolution. In this paper, we develop a schema to populate the strategic options available to both parents and subsidiaries, based on pre-existing

investments in the host country. We adapt a strategic management framework proposed by Ghemawat and del Sol (1998) as a device for conceptualising the choices facing managers in light of their firm-specific resources and (sunk) commitments. We also draw on ideas proposed by Rugman and Verbeke (2001) with respect to non-location bound, firm-specific assets, and incorporate elements of industrial organisation (IO) models of exit barriers and asset flexibility, which underpin Ghemawat and del Sol's (1998) framework. This schema is complementary to existing models of subsidiary evolution and strategy, introducing an internal 'driver' that has thus far been overlooked: the impact of existing commitments on subsidiary paths of development, including the willingness of parents to abandon long-established investments.

The second half of the paper reports an exploratory empirical application of our schema. We develop measures of investment committedness, based on survey data on 237 foreign subsidiaries in Australia, to capture the degree of flexibility available to the MNE in reconfiguring or disposing of committed investments. Many of these subsidiaries were established as locally-focused facilities operating within highly protected and inefficient industries, in an economy exhibiting long-run characteristics of inhibiting local innovation (Hunter, 1962; Quiggin, 2002). We contrast our findings with a standard IR classification of these subsidiaries. This allows us to demonstrate the 'value-added' of our approach. We find that a quarter of the subsidiaries in our sample have made location-specific investments. These investments may limit their MNE parents' willingness to exit the market, and also may hamper their ability to adapt the subsidiary to alternative roles. Other MNEs in our survey do, however, have considerable scope to pursue more flexible growth

options within Australia and beyond. We highlight the interplay between use and firm specificity-flexibility. We conclude by suggesting directions for future research.

### **Literature Review: Subsidiaries, growth and decline**

The re-casting of the MNE network as a global knowledge repository has inspired research on how parents and subsidiaries can proactively pursue capability development and the assignment of product mandates or charters to enhance the subsidiary's position in the multinational network (e.g. Enright, 2000; Birkinshaw and Hood, 2001; Frost, 2001; Cantwell and Mudambi, 2005). Emphasis is particularly placed on the impact of the local environment, with numerous studies focusing on positive variables, such as the dynamism of the local environment, the extent of government support, richness of local research and technological infrastructure, related and supporting industries, and the intensity of competition (e.g. Foss and Pedersen, 2002; Almeida and Phene, 2004; Schmid and Schurig, 2003; Subramaniam and Hewett, 2004; Holm, Holmstrom and Sharma, 2005).

Despite the literature's shift to viewing subsidiary networks as active participants in knowledge generation and product development, the focus on value-enhancing roles for subsidiaries obscures alternative scenarios. Ignored are the instances where a subsidiary either exits the MNE system or slowly devolves into a 'black hole', serving little purpose other than to distribute products developed elsewhere. Processes of integration and consolidation of value-adding sites, which underpin the dominant integration-responsiveness framework (Prahalad and Doz, 1987; Bartlett and Ghoshal, 1987), necessarily entail that this is the 'fate' of some subsidiaries within the MNE network. Yet, there have been few attempts to theoretically model and test subsidiary evolution,

particularly with respect to clearly defining subsidiary starting points (initial conditions) and paths of transition.<sup>1</sup>

An exception is Birkinshaw and Hood's (1998) framework of subsidiary evolution. They defined evolution in terms of terms of charter development (establishment or loss of charters) and the accumulation or depletion of capabilities (but not necessarily, resources) over time. Evolution can be driven by head office assigning charters (based on the recognition of capability enhancement), subsidiary choice (reflecting subsidiary entrepreneurship and lobbying of head office for particular charters), and by local determinism (including the impact of clusters and host government support). Inter-subsidary competition for charters is also crucial, but can lead to sub-optimal decisions, with subsidiaries potentially engaging in empire building (Birkinshaw, 1998), rogue initiatives, and destructive intra-firm competition for mandates and centres of excellence.

Empirical studies of Birkinshaw and Hood's (1998) schema of generic subsidiary paths of have been limited (Birkinshaw, 2001). Moore (2001: 278) hypothesised that subsidiaries from most medium to small countries would end up as implementors of technologies developed elsewhere in the multinational network, with many devolving into a "considerably diminished role for the subsidiary, without international mandates...or Black Holes in Ghoshal and Bartlett's terms." If Moore is correct, an important empirical and theoretical question is how MNEs unwind and reconfigure foreign operations, as part of the re-alignment of affiliate networks.

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<sup>1</sup> There is a growing literature on MNE failure or exit in host countries. The major publications have tended to look at the role of prior experience, timing of entry, entry mode and location factors on the likelihood of survival (Shaver et.al., 1997; Zaheer and Mosakowski, 1997; Shaver, 1998). The process of divestment from the host countries has not typically been the focus, nor the impact of sunk investments.

### *'Unwinding' Foreign Commitments*

Divestment has received some coverage in the IB literature. Boddeyn (1983) argued that geographic and 'emotional' distance rendered foreign divestments easier propositions for senior managers, than closing domestic plants and facilities, and that such decisions are more easily 'sold' to local stakeholders, based on difficult to verify rationalisations, such as high perceived political risk, and remoteness of the 'victims'. Compared with purely domestic divestments, foreign exits are distinguished by lower barriers to exit due to the usual availability of alternative market servicing options (e.g. export, licensing) and to the smaller size of most FDIs, compared with the MNEs overall and home market operations (Boddeyn, 1979, 1983).

In a rare study of divestment decisions, Benito (1997) hypothesised that positive economic growth, political risk, cultural distance, shared equity (joint ventures), acquisitions, and international experience would affect the decision to divest foreign assets. Analysing Norwegian manufacturing FDIs between 1982 and 1992, his results found that while acquired operations were statistically more likely to be divested than Greenfield investments, and investments in growing economies and closely related operations were less likely to divested, joint venture status, international experience and cultural distance were not significant.

Looking at divestment (through sale) against closure exits by foreign firms in a host economy, Mata and Portugal (2000) analysed population data for Portugal over the period 1983 to 1989, finding that the decisions to shutdown versus divesting facilities were

affected by different factors. For example, Greenfield entry was found to increase the likelihood of closure and decrease that of divestiture, while limited liability status raised the probability of divestiture and lowered that of shutdown, compared with unlimited liability operations. Overall, the probability of closure declined with experience, while the likelihood of divestment was roughly constant over time. For both exit paths, the survival of foreign firms was highest in industries with higher rates of foreign ownership.

Diminishing a subsidiary's role means effectively 'walking away' from location-specific investments. These investments include supplier relationships and goodwill, and, with complete exit, tacit knowledge of local market demand, rivals, and investments in government and local firm relationships. A foreign operation's unwinding may occur through divestiture or through the reallocation of assets to other parts of the multinational network. Divestiture may represent a change in the intensity of the foreign market servicing mode with respect to both the form of investment and range of products sold, or it may entail complete withdrawal from a host country (Benito, 1997). This latter option may also be the end point of a staged exit, or creeping divestment of product lines and, ultimately, assets.

However, Chang and Singh (1999) found that within domestic multi-business firms the development of idiosyncratic, firm-specific assets, and the sharing of knowledge and resources between different business units, made the exit from lines of business more difficult and sales of assets to other firms less likely. They highlighted that "it may be difficult to segregate this already integrated business and repackage it for sale" (Chang and Singh, 1999: 1021).

Hence, Birkinshaw and Hood's (1998) proposal that parents present divestment decisions as *fait accompli* to subsidiary managers and host governments overly simplifies a complex decision. Atrophy may occur, but not through subsidiary neglect or explicit parent direction, as proposed by Birkinshaw and Hood (1998), but through (a) an inability of the affiliate to shake off the past; (b) the depletion of capabilities in the subsidiary not rendering existing resources value-less in their existing application; and/or (c) the switching costs of transferring resources to alternative locations or disestablishing investments exceeding the costs of leaving assets in place.

### ***The role of Sunk Costs***

Applying the concept of sunk costs to foreign investments introduces a moderating variable to any divestment/unwinding or reconfiguration decision. Sunk costs are defined as those costs that have been incurred and which cannot be recovered, and which will not vary with output or scale, unlike fixed costs that disappear with the cessation of production (Baumol and Willig, 1981). Industrial organisation models of barriers to exit have identified sunk costs as discouraging exit, even at lower than average returns (Caves and Porter, 1976; Siegfried and Evans, 1994). Sunk costs are typically associated with problems of inertia, as many sunk costs, whether arising from the costs of entry or set-up, accumulated through operation, or through exit, have limited salvage value (Clark and Wrigsley, 1995). For example, sunk costs have been associated with problems in innovation, as firms already committed to a particular technology or product have invested in resources and capabilities specific to that technology/product and which are likely to have a lower value when applied to an alternative (and typically newer) technology. Despite lower than average returns, sunk

costs can lock firms into particular paths of accumulation and contribute to a reluctance to exit a market, because of the uncertainty of costs of re-entry (Ghemawat, 1991; Clark and Wrigsley, 1995). Corporate bureaucracy can also become an accumulated sunk cost that disincentivises exit decisions (Clark and Wrigsley, 1995).

Phelps and Fuller (2000) argued that high levels of repeat investments in locations may arise from the negative effects of corporate inertia. Parents may decide to ‘stick’ with existing facilities and brands with known returns, rather than switch to strategic alternatives of servicing the location (including withdrawal). Divestment inertia may arise from uncertainty surrounding costs from the loss of goodwill, such as damage to a brand name following the withdrawal of local manufacturing (e.g. from adverse publicity, after-sale service concerns for consumers), and over the residual value of productive capacity, brands, and distribution infrastructure. Conversely, the phenomenon of offshoring indicates that many firms are seeking ways of managing sunk costs by decreasing their exposure to them through strategies with built-in flexibility and low levels of commitment. In the following section, we adapt Ghemawat and del Sol’s framework of strategic choice, based on resource specificity versus flexibility to construct measures of investment committedness that capture the degree of strategic flexibility available to the MNE in light of the committed assets of their subsidiary.

### **Conceptual framework: Specificity vs. Flexibility**

We aim to develop a schema that captures the strategic options facing an MNE with regard to its investments in subsidiary locations. If we view the MNE as an integrated system of strategically allocated assets, then we can see that the parent’s home operations and their

different subsidiaries are likely to offer varying rates of return and opportunities for firm-specific assets. *Ceteris paribus*, for any given set of subsidiary assets in a particular location, the MNE faces four generic options:

- (1) to re-deploy assets outside the country, either in-house or through sale;
- (2) to re-deploy the assets within the country, either in-house or through sale;
- (3) to write the assets off;
- (4) to use the assets as they are.

The fourth option may be selected for committed assets with acceptable rates of return and minimal on-going commitment (re-investment by the parent), or for assets that are creating new value-adding opportunities through competence creation, as well as exploitation. These four options pivot on estimating the costs of divesting assets against the costs of continued operation, irrespective of location. For each sub-set of costs, we are attempting to estimate the value of the assets in their next best alternative use (the size of the Ricardian rent on the assets), the costs of switching asset to their next best use, and their irrecoverable costs.

The traditional IB approach to such challenges is to populate each of the four options with a list of conditions, describing what may lead to one over the other. Alternatively, we propose a measure of *investment committedness*. This measure attempts to capture the extent of an asset's *flexibility* or *specificity*. An asset is flexible when it can be viably employed in an alternative fashion and a firm could thus reap reasonable returns from any such change. An asset is specific when it has little or no value when employed in an alternative fashion. *Investment committedness* of subsidiary assets can be measured along three axes that separately capture the flexibility-specificity of assets with respect to (1) the firm, (2) use, and (3) location.

### *Firm and Use committedness*

Ghemawat and del Sol (1998) identified two forms of committedness that impact upon the strategic options available to a firm. They defined a firm-specific resource as having “value to the firm [that] exceeds its value to any other firm” (p.28). These assets may utilise knowledge, or be tailored to be particular processes, unique to the firm. Firm-flexible assets could be readily sold to other firms who would extract considerable value from their use, as little to no modification of adaptation costs would be incurred in using them.

The authors also identify usage-specificity. An asset is use-specific if it cannot be readily adapted to another product market application. Examples of use-specificity might be a factory that can only produce bicycles, or a license to drill for oil in a particular location. If the firm sought to undertake a different activity these resources would have little to no value to them.<sup>2</sup>

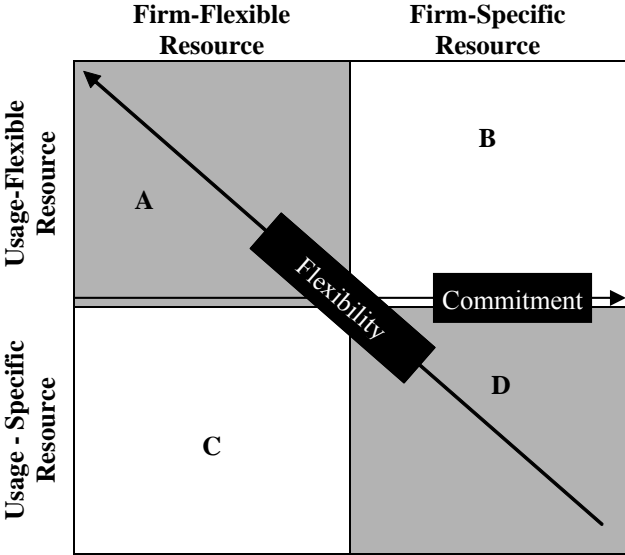
The resulting framework produces a 2x2 matrix of scenarios a firm might face (Figure 1). The framework highlights that firms may find that a given resource or asset is flexible both in its use and its user (quadrant A), or specific to the firm and to its current purpose (quadrant D). The asset may also have a flexible dimension and a specific dimension (quadrants B & C). The subsequent discussion highlights the interactions between firm- and use- committedness. Decisions about firm-specific assets are seen as highly *strategic* as the “commitments implicit in them underpin the possibility of sustainable superior

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<sup>2</sup> There may, of course, be a secondary market where the firm could sell these assets to other firms who may be interested in undertaking such production (i.e. of the assets are firm-flexible). The prices within that market may give some indication of any ‘discount’ incurred due to firm-specificity.

returns or irreversible losses” (Ghemawat and del Sol,1998: 41). Meanwhile, a usage-flexible resource’s adaptability provides the firm with greater scope to deal with uncertainty.

**Figure 1:** Ghemawat and del Sol’s Resource Specificity Matrix



Source: Ghemawat and del Sol,1998: 29

***Location committedness***

Classifying assets along flexibility-specificity dimensions is conceptually similar to Rugman and Verbeke’s (2001) location and non-location bound firm-specific advantages (FSAs). They argue that FSAs can be developed internally in three distinct geographic locations: the parent home country, a host country operation, or in the internal network spanning several countries (Rugman and Verbeke, 2001: 240):

“[l]ocation-bound FSAs can be defined as FSAs that benefit a company only in a particular location (or set of locations), and lead to benefits of national responsiveness. In the context of FDI, these location-bound FSAs cannot easily be transferred as an intermediate good and require significant adaptation in order to be used in other locations.”

Our proposed classification captures Rugman and Verbeke's distinction between location and non-location bound FSAs, but also extends the schema to all assets in the subsidiary. For example, an automotive manufacturer will hold significant capital assets in the form of buildings and production equipment that represent standard investments for all auto makers, which, *a priori* makes them fairly firm-flexible, but far less use-flexible, as they have been tailored to the production of automotives. However, while the buildings will be location-specific, individual pieces of equipment may be moved, expanding their use and firm flexibility. Finally, in a location where all automotive producers are already operating well below minimum efficient scale, or there is only one automotive manufacturer, the firm-flexibility of the assets disappears, given the minimal recoverable cost through sale.

Adding location (i.e. the IB dimension) generates a three-dimensional (2x2x2) variation on the Ghemawat and del Sol matrix. Each of the cells in this three-dimensional plot represents a different combination of the three measures of specificity. For example, marketing capabilities that are valuable in the local host environment, but are difficult to de-embed from the subsidiary's specific environment exhibit high degrees of firm and location-specificity. The on-going value of capabilities may be particularly determined by their use-flexibility, or the extent to which they can be applied to other products the firm may choose to launch in the location.

The investment committedness schema also parallels (in reverse) Rivoli and Salorio's (1996) arguments for delayed new investments, depending on the likelihood of full recovery for assets, delayability and reversibility, and shares common ground with aspects of real options theory, in which investments are characterized by sequential, irreversible

commitments under conditions of uncertainty (Dixit and Pindyck, 1994). Options are taken on strategic opportunities to enable time to resolve the level of uncertainty, with flexibility stemming from the possibility of abandoning proposed strategies (Adner and Levinthal, 2004).<sup>3</sup>

Applying the schema to the four strategic options for subsidiary investments outlined above, leads to the following classification of assets:

- (1) assets that can be redeployed offshore (i.e. are location-flexible) and
  - a. assets re-deployed offshore within the MNE (firm-specific)
  - b. assets sold offshore (firm-flexible)
- (2) assets that can only be re-deployed in Australia (location-specific)
  - a. within the firm (firm-specific, use-flexible)
  - b. sold (firm-flexible)
- (3) assets that should be written-off (location, use and firm-specific AND rent-stream below operating costs); or
- (4) assets that should be retained and used as is (firm and location-specific AND rent-stream above operating costs and above alternative use streams).

While use-specificity is the least influential in terms of determining the re-deployability of assets, it is crucial to the third and fourth options, since it renders all alternative uses as near zero.

Adjusting the focus of analysis to consider these assets as part of value-adding chains leads to a conclusion that production of intermediate products may be the most mobile and contestable of activities within MNEs, due to their low location- and, possibly, firm-

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<sup>3</sup> As we are principally concerned here with the reconfiguration of assets here, and given that our initial empirical context is firms that made their initial investments several decades ago, we have chosen to not explicitly engage with the real options literature.

specificity. The ability to de-couple intermediate production and support activities, such as business processes and customer service centres, from more location-bound activities renders these activities vulnerable to parent re-allocation, intra-corporate competition and outsourcing (Phelps and Fuller, 2000). In the following sections, we present a preliminary application of the measure to the assets and activities of foreign subsidiaries in Australia.

### **Data, Context and Research Design**

The study utilises a 2001 mail survey of managers of foreign firms operating in Australia. A list of foreign firms in Australia was constructed from *Who Owns Whom*, membership lists of bilateral business and trade associations and firms in the *Business Review Weekly's* 500 largest firms in Australia. The surveys were accompanied by a letter of endorsement from the Federal Minister for Industry, Science and Technology, and were followed by a selective re-mail and phone calls to firms. The initial and follow-up mailing yielded responses from 270 firms, with 237 yielding useable information.

As an economy with low numbers of indigenous MNEs (Maitland and Nicholas, 2002; Merrett, 2002), the attraction of foreign direct investment to Australia has been a crucial source of industrialisation, economic growth and technology transfer since European colonisation. Hunter (1962:2) famously described the “derivative industrial structure” as the outstanding feature of the Australian manufacturing sector. By the 1960s, foreign-dominated oligopolistic industries comprised three-quarters of the manufacturing sector, dominating the production of motor vehicles, pharmaceuticals, aluminium, non-ferrous metals, iron ore, soap, cigarettes, oil refining, and agricultural, telecommunications and electrical engineering equipment (Hunter, 1962:7. See also, Karmel and Brunt, 1962; Bell,

1970; Commonwealth Treasury, 1972; Withers, 1974; Carr, 1978). Between the 1960s and early 1980s, concentration ratios and the level of foreign value-adding in major industries continued to increase, frequently via foreign take-over of domestic firms (Caves, *et al*, 1987: 59).

The presence of large, foreign affiliates in import-substituting manufacture was associated not only with high rates of ownership concentration, but also over-capacity, economy-wide inflated cost structures, high rates of inefficiency and very low rates of innovation and research and development (R&D) (Carr, 1978; Hughes, 1977; Parry and Watson, 1978; Parry, 1980). By 2000, the picture of Australian manufacturing was remarkably similar. In the decade to 1998-1999, manufacturing grew by 10 percent; the rest of the economy grew by 45 percent. Spending on R&D was well below the OECD average, with little devoted to new product or technology development, nor to innovation in information and communications technologies (Dow, 2002: 62, 63; Quiggin, 2002). Foreign subsidiaries maintained their dominance of key sectors, including petrochemicals, chemicals and associate products, machinery and equipment, and wholesale trade (ABS, 2004). With lowering trade barriers, greater ease of transportation, and the development of larger, more dispersed international value chains within and across MNEs, the future of many long-lived Australian subsidiaries is under question. This is clearly an important issue for the Australian economy given the prevalence of such entities.

As shown in Table 1, our sample of subsidiaries reflects the spread of the population across the industrial landscape, with 57 percent active in manufacturing and 14.3 percent in wholesale trade. The parents' home countries were also roughly in line with population

statistics from the Australian Bureau of Statistics (ABS, 2004), with 46.8 percent from Europe, 34.5 percent from North America and 18.6 from Asia (or 21 different home countries in total). When asked about their financial performance in the previous year, 76.8 percent claimed to have been profitable.

**Table 1:** Characteristics of respondent firms

	1 <sup>st</sup> Quartile	Median	3 <sup>rd</sup> Quartile
Years since establishment	40	24.5	11
Number of operations worldwide	100	40.5	18
Number of operations in Australia	5	2	1
Number of employees in Australia	225	87.5	24.75
Annual sales/turnover (AUS\$m)	120	40	12
Manufacturing	57.0%		
Wholesale trade	14.3%		
Property and business services	9.3%		
Transport & storage	3.8%		
Parent – US	31.6%		
Parent – UK	15.4%		
Parent – Japan	13.9%		
Parent – Germany	11.0%		
Parent – Sweden	5.3%		

To provide a ‘snapshot’ of the subsidiaries’ roles at the time of survey, we development multiple measures of their integration-responsiveness, in line with previous studies (Jarillo & Martinez, 1990; Taggart 1997). Three integration variables were constructed, each expected to be positively related to the level of subsidiary-parent integration. A technology transfer (TECH) variable was constructed by averaging the importance (on a five-point Likert scale from 1 = low to 5=high) of transferred technology in ten areas.<sup>4</sup> The second variable, parent control (PCONTROL) measured the degree to which parents controlled or

<sup>4</sup> The ten areas were product/service quality; strategic management skills; HR expertise; advertising and marketing methods; brand name reputation; product technology; process technology; quality control; information technology platform; and environmental management. The Cronbach alpha across these items was 0.89.

expected subsidiaries to follow their lead in eight areas, based on a three-point scale (not at all, partly, totally).<sup>5</sup> Finally, a network (NETWORK) measure was generated that collected the highest importance response (five-point scale) for each firm across three items regarding involvement in a regional subsidiary network and/or global network and acting as a regional headquarters.

Three responsiveness variables were also developed, each expected to be positive indicators of the level of responsiveness to the Australian market. A change (CHANGE) measure was calculated.<sup>6</sup> A local input (INPUTOZ) measure was used that reported the percentage of inputs sourced domestically. Finally, a local supplier network (SUPNETOZ) measure was calculated averaging the responses to 20 items regarding frequency of interaction with suppliers on different tasks (4-point scale from 1=never to 4=usually).<sup>7</sup>

Using the standard principle component analysis for I-R studies (Harrigan, 1985; Robinson and Pearce, 1998; Jarillo and Martinez, 1990; Roth and Morrison, 1990; Taggart, 1997), we extracted summary integration and responsiveness factors<sup>8</sup>, with the resultant Bartlett scores subjected to hierarchical cluster analysis. This is the common approach taken in such studies (Harrigan, 1985; Robinson and Pearce, 1998; Jarillo and Martinez, 1990; Roth and

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<sup>5</sup> The eight areas were product/service range; product/service design; production technology; work organisation; marketing methods; HR policies and practices; subcontracting practices; and accounting systems. The Cronbach alpha across these items was 0.82. The firms were offered three-point scales (not at all, partly, totally) on both the “control” and “expected to follow” fronts. PCONTROL summed the number of “totally expected to follow”, “partly control” or “totally control” responses.

<sup>6</sup> CHANGE was calculated by the importance placed on production for the Australian market (a 5-point scale) the level of changes made to products for the local market (no changes =0; minor changes =1; major changes =2; minor and major changes to multiple products =3).

<sup>7</sup> The Cronbach alpha across these items was 0.91. As these six strategic variables had different scales each was z-standardised before further analysis was undertaken.

<sup>8</sup> TECH, PCONTROL, and NETWORK loaded most heavily on the *Integration* factor, and CHANGE, INPUTOZ, and SUPNETOZ loaded most heavily on *Responsiveness*. This analysis explained 51.3 percent of the variance, and Bartlett’s test of sphericity was significant at the 1 percent level.

Morrison, 1990; Taggart, 1997). As usual for cluster analysis, multiple solutions arose. Adopting a similar methodology to Liang and Nicholas (2004), the four cluster solution produced under Ward's method was accepted in light of its favourable consistency with other hierarchical and K-means non-hierarchical outcomes. The clusters were labelled along the standard four-strategy taxonomy of *active*, *receptive*, *autonomous* and *quiescent* subsidiaries. Table 2 reports the four subsidiary types' mean Bartlett scores for integration and responsiveness factors, along with the mean  $z$ -scores of the six variables used in the factor analysis and some indicative structural information (medians).<sup>9</sup>

**Table 2:** Comparison of variables by strategy type

<b>Mean scores</b>	<b>Active</b>	<b>Receptive</b>	<b>Autonomous</b>	<b>Quiescent</b>
Integration	1.17	0.64	-0.85	-0.42
Responsiveness	1.07	-0.21	0.65	-0.72
MNE technology transfer (TECH)	0.75	0.50	-0.69	-0.26
MNE parent control (PCONTROL)	0.96	0.34	-0.56	-0.11
MNE network involvement (NETWORK)	0.73	0.40	-0.44	-0.43
Local product modifications (CHANGE)	0.85	-0.45	0.45	-0.72
Local input usage (INPUTOZ)	0.20	-0.47	0.83	-0.98
Local supplier network (SUPNETOZ)	0.81	0.18	0.28	-1.11
<b>Median levels</b>				
Years since establishment	32	26	23	21
Operations worldwide	50	50	37	32
Operations in Australia	5	2	2	2
Employees in Australia	160	80.5	120	36.5
Annual sales/turnover (A\$m)	101.5	29.5	40	31.5
<b>n</b>	<b>29</b>	<b>87</b>	<b>77</b>	<b>40</b>

Only 12.4 percent of the sample fell into the *active subsidiary* cluster. This grouping had the highest median integration and responsiveness scores. These firms were active participants in their parents' MNE networks, contributing to and drawing upon the MNEs' knowledge and resources, while also adapting these advantages within the Australian

<sup>9</sup> Four firms had scores on one of the two factors that sat more than 1.5 times the inter-quartile range and were conservatively excluded as mild outliers.

context. This *active* group included the larger and more experienced of the firms in the sample.

The *receptive subsidiaries* were the largest group (37.3 percent of the sample). These firms, while participating in their parents' networks, felt little need to learn from or adapt to Australian conditions. While placing comparable import on utilising their parents' knowledge and technology to the *active* subsidiaries, the parents were less involved in subsidiary decision making, and the subsidiaries were less involved in the broader MNE network. These firms made little change to their products or services, and scored low on the domestic sourcing variable. The sourcing relationships they did develop were nurtured at a comparable level to the much more responsive *autonomous* group, indicating some desire to make the most of linkages once established. These *receptive subsidiaries* were considerably smaller than the *autonomous* and *active* clusters, although their parents were larger in terms of median number of worldwide operations. This group was also the second most experienced, in terms of years since establishment.

The *autonomous* group were the second biggest cluster (33 percent) and were focused on building location-specific advantages for Australia, scoring poorly on all three integration variables. They did modify and adapt products for Australian consumers at a comparable level to the *active* group, and had by far the highest use of Australian inputs. Despite this, they did not nurture their local supplier relationships to the extent of their *active* counterparts.

Finally, almost a fifth of the sample (17.1 percent), were *quiescent subsidiaries*. These firms had little involvement with their broader multinational network, made few modifications to products, sourced few inputs domestically and developed limited ties with local suppliers. These firms were typically new arrivals, with the lowest numbers of Australia-based employees.

Unlike Jarillo and Martinez (1990) and Taggart (1997), this study includes firms from across a variety of industries. We found that the clustering outcomes did differ significantly between industries.<sup>10</sup> As shown in Table 3, manufacturing was most representative of the overall sample. Wholesale trade, on the other hand, was much more likely to adopt a *quiescent* strategy than any other industry group and much less likely to be autonomous. Clearly, local responsiveness was not seen as a source of competitive advantage for these subsidiaries. This most likely reflects their involvement in sourcing and distributing intermediate products that require little modification. Property and business services were the most autonomous of the industry groups, consistent with the industry’s need for understanding of and responsiveness to the idiosyncrasies of the local environment. Similar tests on the incidence of strategies by parent’s triad membership – that is whether they were European, Asian or American – were not found to be significant.

**Table 3:** Comparison of strategy types by industry (percent)

<b>Industry</b>	<b>Active</b>	<b>Receptive</b>	<b>Autonomous</b>	<b>Quiescent</b>
Manufacturing	12.6	40.7	32.6	14.1
Wholesale trade	6.3	40.6	9.4	43.8
Property & business services	14.3	23.8	52.4	9.5
Other	15.6	31.1	42.2	11.1

<sup>10</sup> A chi-square test ( $\chi^2 = 23.76$ , 6 degrees of freedom) and Fisher’s exact test (21.59, 6 degrees of freedom) on the three industries (ANZSIC 1-digit level) with 10 or more firms – manufacturing, wholesale trade, and property and business services – were significant at the 1 percent level.

<b>Total</b>	<b>12.4</b>	<b>37.3</b>	<b>33.0</b>	<b>17.2</b>
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This classification of subsidiary types is a static view of sets of value-adding activities. *A priori*, the evolution of these subsidiaries would appear to be moving towards an unwinding of commitments. However, a straightforward classification does not tell us anything about the decision-matrix facing parent and subsidiary managers. In the following section, we present a preliminary attempt to develop an understanding of the scale of the legacy effects exerted by sunk commitments and the degree of flexibility the firms faced in re-aligning these assets with their wider corporate strategies. As discussed in the conceptual framework section, parents and subsidiaries face four generic strategic options, each shaped by the flexibility-specificity of committed assets along three dimensions – use, location and firm.

### **Measuring the Specificity-Flexibility of Committed Australian Assets**

#### ***Measuring Location Specificity***

The survey responses allowed us to construct an exploratory series of measures of the extent to which these MNEs may be encumbered with locally-specific assets. Such location specificity will impact on the likely value of the ‘next best use’ of these assets. Our assumption was that any productive resources tailored to the Australian environment would have substantially lower value to the firm if transferred offshore.

*Local Production* measures the extent to which the production capacity developed in Australia had been adapted to the idiosyncrasies of the Australian market. The variable multiplies the amount of product modification for the local market (3 point scale) and the

importance of that market (5 point scale). A score of 8 or more is denoted as location specific.<sup>11</sup> Almost half of the sample (46.3 percent) falls into this category.

Firms may also make relationship specific investments that are location-bound. Attempting to transfer the productive capacity to an offshore location may render such investments worthless. We calculated two *Local Supplier* measures. The first multiplies the percentage of inputs provided by long-term local suppliers (the raw number was divided by 50) and the frequency of the sample firm investing in equipment specific to these long term suppliers (4 point scale). The second measure considers human capital investment specific to the suppliers. We deemed a score of 3 or more indicative of location specificity.<sup>12</sup> Between 12 and 15 percent of the firms reached this threshold.

Our fourth measure of location specific investments looks at the managerial assets held by the subsidiary, which the sunk costs literature identifies as representing potentially significant sunk costs and sources of corporate inertia. We asked the respondents to indicate whether their overall management practice within the subsidiary would best be described as “Mainly Australian” (1), “Mixed Australian-foreign parent”(0.5), or “Mainly foreign parent” (0). We multiplied this by the percentage of Australian senior managers in the subsidiary. Any firm scoring over 50 percent was determined to possess considerable localised managerial assets that may not transfer well to alternative environments.

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<sup>11</sup> This threshold ensures only the following instances are classified as location-specific:

- (a) firms making minor modifications (2 on the 3 point scale) and reporting importance scores of 4 or 5 for production for the local market; and
- (b) firms making major modifications (3) and reporting importance scores of 3 to 5 for production for the local market.

Similar logic is adopted for all subsequent scale-based multiplicative measures.

<sup>12</sup> Dividing the input percentages by 50 produced a number between 0 and 2. Firms eventually scoring 3 or more on *Local Supplier* thus had to have at least 50 percent of their inputs sourced locally and made supplier-specific investments at least ‘sometimes’ (3), or alternatively have at least 66.6 percent of their inputs sourced locally and ‘usually’ made supplier-specific investments (4).

Table 4 reports the spread of location specificity across the various measures. We used a simple binary estimation of specificity versus flexibility on each measure, allowing us to generate a count measure of specificity. On this measure, 35.6 percent of the firms were unfettered by location specific investments; that is they had a count of zero, and were thus flexible. A further 38.9 percent of the firms experienced specificity along only one dimension, with most (25.2 percent) reporting local production or managerial specificity (11.1 percent). We deemed firms with 2 or more dimensions of specificity on the count variable to have substantial exit cost concerns. This captured 25.5 percent of the firms.<sup>13</sup> There were no significant differences in the incidence of location specificity between the early and later arriving firms.

**Table 4:** Incidence of Location Specificity (percent)

	<b>Total</b>
Local production specificity	46.3
Local supplier-equipment specificity	15.6
Local supplier-human capital specificity	12.2
Local managerial specificity	27.0
Location Specificity count =0	35.6
Location Specificity count =1	38.9
Location Specificity count =2	15.9
Location Specificity count =3	8.1
Location Specificity count =4	1.5
Average Location Specificity count	1.01

### ***Measuring Firm Specificity***

For the second axis, we identified five different measures of firm specificity. Subsidiaries engaging in production may be highly reliant on technology from the parent and, if this

<sup>13</sup> Only 5 firms (1.9 percent) with a count of 2 reported the local supplier-equipment and human capital specificity combination. As such, we are confident that there is little risk of ‘double-counting’.

production is then exported through the MNE's subsidiary network, buyers of the subsidiary's production facilities may discount the value of the assets, as ongoing technology transfers are unlikely and exporting relationships more hands-off. Our *Export Technology* measure multiplies the importance of production for export markets by the higher of the importance scores reported for transfers of process *or* product technology competencies from the parent (all 5 point scales). A score of 15 or more was deemed to be firm specific. Just less than a third of the sample (30.4 percent) fall into this category.

Subsidiaries may also be highly reliant on the cachet of their parent's brand name. If the subsidiary is heavily committed to export activity that uses the brand, then again Australian production facilities may be of lesser value to any buyer unable to offer the branded products to overseas buyers. Our *Export Branding* variable multiplies the importance of production for export markets by the importance of transfers of brand name reputation competencies from the parent. The threshold score for firm specificity (15) was reached by 28.9 percent of sample.

Similarly a subsidiary may be focused on distributing imports within Australia. If the competencies involved in advertising and marketing these imports are principally derived from the parent relationship, then severing such a tie would render these assets less valuable. As such, we calculated an *Import Marketing* variable, which multiplies the importance of distribution for import markets by the importance of transfers of advertising and marketing competencies from the parent (all 5 point scales). Again a score of 15 or more was the firm specific benchmark, and 27 percent of the sample firms fell into this category.

An alternative role for a subsidiary is as a regional headquarters. *A priori* we might deem such a role to be somewhat firm specific. The general managerial capacity of the subsidiary might be quite transferable across firms however. As such, we identified transfers of managerial competencies from the parent as amplifying the firm specificity. Our *Regional Headquarter* measure multiplies the importance of the subsidiary's regional headquarter role by the higher of the importance scores reported for transfers of strategic management skills *or* HR expertise from the parent (all 5 point scales). The threshold score for firm specificity (15) was reached by 25.2 percent of sample.

Subsidiaries may also be active participants in their parent's broader regional or global subsidiary network. Developing and leveraging such network ties may be firm specific dimensions from which any acquiring firm would reap considerably lower benefits. Lacking a direct measure of competency transfer measures on this front, we employ the stated importance of network integration. The measure *Subsidiary Network* takes the higher of the responses to the importance of being integrated into the regional *or* global subsidiary network (5 point scale). A firm specific score of 4 or more was reported by 35.2 percent of the firms.

Table 5 reports the spread of firm specificity across the various measures. On the count measure, 30.4 percent of the firms were unencumbered by firm specific investments. A further 27.0 percent of the firms experienced specificity along only one dimension, most typically regional headquarter specificity (9.6 percent) and import marketing specificity

(8.5 percent). We deemed firms with 2 or more dimensions of specificity on the count variable to have substantial exit cost concerns. This captured 42.6 percent of the firms.

**Table 5:** Incidence of Firm Specificity

	%
Export technology specificity	30.4
Export branding specificity	28.9
Import marketing specificity	27.0
Regional headquarter specificity	25.2
Subsidiary network specificity	35.2
Firm Specificity count =0	30.4
Firm Specificity count =1	27.0
Firm Specificity count =2	20.0
Firm Specificity count =3	13.0
Firm Specificity count =4	7.4
Firm Specificity count =5	2.2
Average Firm Specificity count	1.47

### ***Measuring Use Specificity***

A further consideration for subsidiaries when assessing the ease or cost of exit is the extent to which their assets would be suitable for alternative uses. An aspect of this may be the appealing of these assets to other firms. Our *Potential Buyers* binary variable was triggered for any firm reporting moderately high to high levels of competition from Australian-owned competitors, from subsidiaries of either the parent's competitors or other overseas companies. This was 87.8 percent of the sample, leaving only 12.2 percent of sample with this proxy of use-specificity concerns.<sup>14</sup>

<sup>14</sup> We acknowledge that this is a rather clumsy and inexact proxy for use-specificity/flexibility. The existence of competitors might just as easily indicate a market for firm-flexible assets. A better measure would be a direct item on the *adaptability* of assets. We are constrained considerably by the items in the 2001 survey. We hope to develop more appropriate and fine-grained items and measures in subsequent surveys.

### *Aggregating the Specificity-Flexibility measure*

This produces three dimensions along which we can assess the firms' levels of specificity-flexibility – location, firm and use. As noted above, we have used relatively crude cut-offs beyond which a firm may be considered to be in possession of specific assets. Assuming all non-specific assets are flexible, we can categorize each firm along the three dimensions. This results in a 2x2x2 matrix, ill-suited to presentation in table form. Table 6 reports the overall findings as simply as possible, and shows more than a third of the sample (38.1 percent) could be described as completely flexible, while only two firms (0.7 percent) were constrained along all three dimensions. Almost a fifth (17.1 percent) of the firms had specific assets along two dimensions, while the largest proportion (44.2 percent) had specific assets along one dimension. Table 7 shows the various combinations of specificity and flexibility measures.

**Table 6:** Overall Specificity-Flexibility measure (2x2x2)

	%	%
Complete Flexibility		38.1
One specificity dimension - Firm	26.7	
- Location	11.9	
- Use	5.6	44.2
Two specificity dimensions - Firm, Location	11.1	
- Firm, Use	4.1	
- Location, Use	1.9	17.1
Complete specificity		0.7
<b>Total</b>		<b>100</b>

**Table 7:** Combinations of Specificity-Flexibility measures

	%
Location flexible & Firm specific & Use flexible	26.7
Location flexible & Firm specific & Use specific	4.1
Location flexible & Firm flexible & Use flexible	38.1
Location flexible & Firm flexible & Use specific	5.6
Location specific & Firm specific & Use flexible	11.1
Location specific & Firm flexible & Use flexible	11.9
Location specific & Firm flexible & Use specific	1.9
Location specific & Firm specific & Use specific	0.7
<b>Total</b>	<b>100</b>

Returning to our earlier classification of assets, we were now able to provide some insight into the scope for the MNEs to reconfigure their Australian subsidiaries' operations. Utilising the data from Table 7, we categorised the sample firms as predominantly possessing:

- (1) assets that can be redeployed offshore (i.e. are location-flexible) and
  - a. assets re-deployed offshore within the MNE (firm-specific)
  - b. assets sold offshore (firm-flexible)
- (2) assets that can only be re-deployed in Australia (location-specific)
  - a. within the firm (firm-specific, use-flexible)
  - b. sold (firm-flexible)
- (3) assets that should be written-off (location, use and firm-specific AND rent-stream below operating costs); or
- (4) assets that should be retained and used as is (firm and location-specific AND rent-stream above operating costs and above alternative use streams).

A large majority of the firms (74.5 percent) were found to be in situation 1, in that they had considerable scope to re-deploy or sell assets offshore (see Table 8). A further 24.9 percent were in category 2, with scope to redeploy or sell within Australia. A paltry 0.7 percent were constrained to retaining assets in house and in Australia. As we did not have any

indication of the operating costs of the firms/assets, we could not distinguish between categories 3 and 4.

**Table 8:** Asset redeployment classification

<b>Redeployment Options</b>		<b>%</b>	<b>%</b>
1	Assets that can be redeployed offshore (LF)		74.5
	a. within the MNE (LF;FS;UF or US)	30.8	
	b. sold (LF;FF;UF or US)	43.7	
2	Assets that can only be re-deployed in Australia (LS)		24.9
	a. within the MNE (LS;FS;UF)	11.1	
	b. sold (LS;FF;UF or US)	13.8	
3/4	Assets that should be written off or retained in current use (LS; FS; US)		0.7
<b>Total</b>		<b>100</b>	<b>100</b>

**Note:** LF = Location flexible; LS = Location specific; FF = Firm flexible; FS = Firm specific; UF = Use Flexible; US = Use specific

Breaking the sample up by industry revealed considerable differences in the redeployment opportunities. Subsidiaries engaged in wholesale trade were much more likely to have locational flexibility, with almost all (94.4 percent) deemed to have assets that could be redeployed offshore. These assets of these subsidiaries were not overly firm specific either, with 58.3 percent able to be sold to other firms globally. The property and business firms in our sample were also relatively footloose and similarly unconstrained by firm-specificity. These findings would appear consistent with the use of standard physical assets in these domains, and highlight the apparent mobility of human resource and knowledge-based assets. It is a little surprising that so many of the firms appear to view such resources as non-firm specific. Manufacturing firms were less mobile, as more firms (30.9 percent) had assets tying them to Australia. The manufacturers were quite evenly split with regards to their scope to sell assets in the market.

**Table 9:** Asset redeployment classification by industry

Redeployment Options		Manufac- turing %	Wholesale trade %	Property & Business %	Other %
1	Assets that can be redeployed offshore	68.4	94.4	79.6	64.4
	a. within the MNE	31.6	36.1	25.9	30.7
	b. sold	36.8	58.3	53.7	43.7
2	Assets that can only be re-deployed in Australia	30.9	5.6	18.6	24.8
	a. within the MNE	14.5	5.6	9.3	11.1
	b. sold	16.4	0.0	9.3	13.7
3/4	Assets that should be written off or retained in current use	0.7	0.0	1.9	0.7
<b>Total</b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

We also returned to our earlier IR classifications to explore the differences in redeployment opportunities. Consistent with the theory, those subsidiaries that were more engaged with the Australian business environment (i.e. the *Active* and *Autonomous* firms) were also those facing asset mobility constraints (see Table 10). Over half (51.7 percent) of the *Active* firms could only redeploy assets within Australia, and 39 percent of the *Autonomous* firms were similarly locked in. The *Active* firms were also more likely to have developed firm-specific assets (mobile or otherwise). This would reflect their high levels of integration with the MNE parent and broader MNE networks. In contrast, few (12.6 percent) of the *Receptive*, and none of the *Quiescent*, firms had assets tying them to Australia. The big distinction between these two strategic types was that the *Receptive* firms were much more likely to have firm-specific assets.<sup>15</sup>

<sup>15</sup> There are some crossovers in the variables and items used to create the IR strategy classifications, and the Specificity-Flexibility measures, so we do advise some caution in interpreting these results.

**Table 10:** Asset redeployment classification by I-R Category

<b>Redeployment Options</b>		<b>Active %</b>	<b>Autonomous %</b>	<b>Receptive %</b>	<b>Quiescent %</b>
1	Assets that can be redeployed offshore	48.3	59.8	86.2	100
	a. within the MNE	34.5	14.3	50.6	22.5
	b. sold	13.8	45.5	35.6	77.5
2	Assets that can only be re-deployed in Australia	51.7	39.0	12.6	0.0
	a. within the MNE	31.0	14.3	8.0	0.0
	b. sold	20.7	24.7	4.6	0.0
3/4	Assets that should be written off or retained in current use	0.0	1.3	1.1	0.0
<b>Total</b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

An attempt was made to calculate more gradated measures along two of the dimensions – location and firm. These results are presented and discussed in the Appendix. The overall findings with this 3x3x2 matrix model were very similar to those presented above.

### **Assessing Transformation Intentions**

One of the key rationales for examining the specificity-flexibility aspects of the sample firms was to assess the capacity of the parent to alter the subsidiary’s role. Our survey asked the subsidiaries how important they perceived the various activities mentioned in Table 4 would be in five years time. Comparing their responses to their ‘now’ answers allows us to gauge the amount of organisational transformation they foresaw. We focussed on two areas where the direction of the transformation appeared unequivocally positive or negative: Production for Export and acting as a Regional Headquarters.<sup>16</sup> We would hope that firms have a clear idea about the likelihood of a shift in the importance of these activities in the coming five years. Also, we would expect there to be some relationship

<sup>16</sup> The other areas were more difficult to interpret: Distribution of Imports, Production for Australian market and Integration into the regional/global subsidiary network.

between the nature of the firms' assets – that is their transformability – and their expectations. Table 11 shows that the relationship was not strong, however. In terms of the percentage of firms predicting a lesser role in export production, which would presumably involve the redeployment of assets, having assets that were mobile (redeployment category 1) made no real difference to the firm's view on such action being likely. If the assets were location-specific, however, then firms showed an appreciation for the impact of firm-specificity. Only 13.8 percent of firms with location specific, firm specific, use flexible assets (category 2a) saw a reduced export production role on the horizon. In comparison, 51.5 percent of firms with location specific, firm flexible assets (category 2b) foresaw a reduced export production responsibility. The findings with respect to regional HQ were less distinctive.

**Table 11:** Transformation expectations by asset redeployment classification

Redeployment Options		Export Production Transformation			Regional HQ transformation		
		Less %	Same %	More %	Less %	Same %	More %
1	Assets that can be redeployed offshore	27.2	67.3	5.6	29.6	64.8	5.6
	a. within the MNE	23.0	70.3	6.8	22.9	71.4	5.7
	b. sold	30.7	64.8	4.5	27.6	69.0	3.4
2	Assets that can only be re-deployed in Australia	32.8	59.3	4.7	25.5	70.0	4.5
	a. within the MNE	13.8	75.9	10.3	22.2	70.4	7.4
	b. sold	51.5	48.5	0.0	37.0	59.3	3.7
3/4	Assets that should be written off or retained in current use	0.0	100.0	0.0	0.0	100.0	0.0
<b>All firms</b>		<b>28.8</b>	<b>65.9</b>	<b>5.3</b>	<b>26.4</b>	<b>68.9</b>	<b>4.7</b>

### Discussion and Directions for Future Research

For the sample firms, the investment committedness measures reveal very high rates of flexibility in the assets committed to Australia in 2001. From Table 10, nearly 22 percent of the sample comprised assets that exhibited flexibility along all three dimensions. A further

22.6 percent of assets could be sold offshore or domestically and 17 percent were firm-specific but flexible with respect to location and use (or at least neutral on one or more of these dimensions). Only 20 percent exhibited location-specificity, but of this total, only 5.6 percent were specific to the firm, entailing that they were either maintained in-house or written-off.

Given these fairly high rates of flexibility, particularly with respect to location, relatively few subsidiaries expected to be engaged in different types of value-adding activities or roles five years on from the date of survey (i.e. in 2006). In response to direct questions on whether they were part of integrated subsidiary networks, most of the sample firms indicated that they were. Yet, the structure of their activities at the date of survey and five years out revealed that most were not participating in the form of producing products for distribution through the subsidiary network. Comparing this with their responses on levels of subsidiary R&D, on which just under two-thirds of the firms provided data, over a fifth of the firms employed no R&D staff and exactly half employed fewer than 10 R&D personnel, with later entry firms exhibiting a greater tendency to having no R&D commitments.

Despite low subsidiary and host economy rates of innovation and preliminary estimates of significant flexibility in the re-deployability of committed assets both within the host location and off-shore, subsidiary managers expected few changes to their value-adding profiles and contribution to the parent networks. Given most subsidiaries indicated sound financial performance, one possible conclusion is that parent MNEs were content to leave

assets in Australia, maintaining a fairly isolated focus on serving the domestic market, but without clear mandates to produce for the broader MNE network.

Alternatively, Australian subsidiary managers may have been ignorant of parent plans for the assets, and/or parent managers may not have recognized the degree of flexibility embedded in their Australian operations. Assets may well be flexible, but the MNE must also possess the dynamic capabilities to recognize new opportunities and applications for its assets. The tasks underpinning these dynamic capabilities include knowledge management routines that create strong parent knowledge of subsidiary assets and/or subsidiary-level knowledge of the profile of the wider MNE network. This knowledge encompasses product portfolios (underlying technologies, product lines, brands, market positioning), value-adding activities undertaken at different locations, competitors, and institutional differences and distances between the subsidiary location and alternative sites for exploitation.

For example, to assess the next best alternative uses for subsidiary-located brands and marketing capabilities associated with them, decision-makers need to be able determine the willingness of local competitors and/or new entrants to buy or license the assets, the adaptability of the brands to different product and geographic markets, and the re-deployability of the marketing team to new products or locations. Each of these variables requires managers scan, collect, and evaluate noisy and ambiguous information flows. The collection and analysis of information introduces managerial cognitive processes as an additional mediating factor in the determination of resource commitments to new and existing operations.

Empirical studies and simulation modelling of managerial cognition have consistently shown that managers' mental models directly affect their processes of environmental scanning, and their identification and diagnoses of strategic issues and options (Porac and Thomas, 2002; Gavetti, 2005; Hodgkinson and Johnson, 1994; Adner and Helfat, 2003; Miller, Burke and Glick, 1998; Thomas, Clark and Gioia, 1993). Decisions by top executives and board directors are typically made under conditions of great uncertainty, where the "decision makers personal frame of reference, not the objective characteristics of the situation, becomes the basis for action" (Finkelstein and Hambrick, 1996: 20). Drawing on expert information processing theory, various studies have highlighted that while 'expert schemas enable managers to identify relevant sets of information and relations for a particular situation, they can also entrench tunnel vision, simplistic reasoning by analogy, and myopia, including focusing on the short over the long-term, and near events to those at a distance (Weick, 1979; Levinthal and March, 1993; Smith and Tushman, 2005).

Hypotheses on the impact of mental models and behavioural characteristics on decisions to reconfigure a firm's strategic positioning have been advanced by a number of specialised literatures. Escalation of commitment studies, supported by experimental evidence from laboratory studies, argue that decision-makers can become 'stuck' in losing courses of action, as a desire not to waste already sunk costs leads to increasing expenditure of resources over time (Staw and Hoang, 1995; Staw, 1976; Tegar, 1980, Brockner and Rubin, 1985). Personal responsibility for a particular investment and high levels of personal investments in firm-specific human capital create incentives to engage in escalation of commitment to failing strategies (Zardkoohi, 2004). Conversely, work on strategy abandonment has identified the sense-making activities of managers as crucial to whether

organisational decision-making is characterised by rigidity or change (Greve, 1995: 445)). Given uncertainty, managers may be influenced by a number of sources, including reference groups, such as contacts outside the organisation, consultants (as a source of industry news and rumours), and the press and media. Contagion, as a form of inter-organisational learning, may result in firms mimicking each other's decisions, such that a strategy is re-evaluated as other organisations abandon existing activities, potentially leading to a contagion of abandonment. Conversely, over-confidence (Camerer and Lovo, 1999) and internal political pressures not to reveal failure (McGrath, 1999; Sitkin, 1992) act as pressures to deter strategic re-directions.

Decisions to alter the firm's international value-adding activities confront managers with noisy and ambiguous information flows, and high levels of uncertainty. The impact of managers' mental models on internationalization decisions is far from clear. Standard IB models have largely ignored the role of managerial cognitive processes in the determination of resource commitments to new and existing operations, despite assuming constraints on individual cognition (bounded rationality) and strong information asymmetries in foreign locations. The empirical literature on internationalisation has persistently studied *revealed* choice (Devinney, Midgley and Venaik, 2000), rather than how managers scan, evaluate, discard, and embrace different strategic options of entry, expansion, resource reassignment and exit that create multinational networks. In developing richer measures of the three flexibility-specificity dimensions, future studies of subsidiary evolution also need to consider the cognitive and behavioural characteristics of parent and subsidiary decision-makers.

## **Conclusion**

Entry form and mode decisions have formed the backbone of IB research since its inception. The flipside of these decisions – to decrease the intensity of a firm’s commitment to a particular foreign market – has been the subject of just a handful of theoretical and empirical studies. We know little about how, or even if, the nature of existing commitments affects parents’ determination of future roles and forms of engagement. A subsidiary’s administrative heritage and committed assets may create sufficiently large legacy effects to swamp any attempts to bid for new mandates, or for the parent to simply ‘walk away’ from sunk investments. While the literature on subsidiary roles and network configurations present largely stylised types (e.g. Bartlett and Ghoshal, 1989; Jarillo and Martinez, 1990; Taggart, 1997), the experiences and processes of adaptation for individual subsidiaries are clearly different within and across MNEs. The investment committedness measure is one step towards understanding reallocation and divestment decisions within MNEs.

The literature is also notably silent on what happens to subsidiaries that have evolved in a local environment that has not been conducive to local innovation, but has produced an acceptable rate of return. While much of the subsidiary development literature has focused on developed, peripheral economies, such as Spain, Scotland and Canada, most of these countries form part of wider regional trade and investment blocs (particularly NAFTA and the European Union). By contrast, Australia represents a slightly different case that may come to epitomise a more typical development path for subsidiaries. In particular, the experiences of Australian subsidiaries may be mimicked in countries rapidly losing comparative advantages as low cost production environments, such as the original Asian ‘Tigers’ (Hong Kong, Taiwan, South Korea and Singapore), the second tier Asian

economies (e.g. Malaysia and Thailand), and other early industrialising, but lagging, economies, such as Argentina and Brazil. For subsidiaries (and domestic firms) in such economies, the possible stasis of the world economy in a balkanised set of regional groupings, rather than globalisation, represents particular challenges.

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## Appendix

An attempt was made to calculate more gradated measures along two of the dimensions – location and firm. For the *Location Specificity Count* reported in Table 4, firms with a count of 2 or above had *Location specific* assets; firms with a count of 1 were *Location neutral* (rather than *flexible* as in the earlier measure); while firms with a count of 0 were *Location flexible*. For the *Firm Specificity Count* reported in Table 5, firms with a count of above 2 had *Firm specific* assets; firms with a count of 1 or 2 were *Firm neutral*; while firms with a count of 0 were *Firm flexible*.<sup>17</sup> As Table A-1 shows, there were a considerable number of firms that exhibited neutrality.

<b>Table A-1: Overall Specificity-Flexibility measure (3x3x2)</b>	
	%
Location flexible & Firm flexible & Use flexible	8.1
Location flexible & Firm flexible & Use specific	3.3
Location flexible & Firm neutral & Use flexible	18.9
Location flexible & Firm neutral & Use specific	0.4
Location flexible & Firm specific & Use flexible	4.1
Location flexible & Firm specific & Use specific	0.7
Location neutral & Firm flexible & Use flexible	10.0
Location neutral & Firm flexible & Use specific	1.5
Location neutral & Firm neutral & Use flexible	13.7
Location neutral & Firm neutral & Use specific	1.5
Location neutral & Firm specific & Use flexible	10.0
Location neutral & Firm specific & Use specific	2.2
Location specific & Firm flexible & Use flexible	6.3
Location specific & Firm flexible & Use specific	1.1
Location specific & Firm neutral & Use flexible	11.5
Location specific & Firm neutral & Use specific	1.1
Location specific & Firm specific & Use flexible	5.2
Location specific & Firm specific & Use specific	0.4
<b>Total</b>	<b>100.0</b>

Our view is that such neutrality reflects quite low levels of asset stickiness and has an impact more akin to flexibility than specificity. As reported in Table A-2, classifying using these 3x3x2 measures only altered the spread of firms in a minor fashion. As we were, in

<sup>17</sup> In the 2x2x2 version, firms with a Firm Specificity count of 2 (out of 5 items) were deemed *Firm specific*. Under the 3x3x2 approach, a count of 2 falls in the *neutral* category. This reflects the broader nature of the Firm Specificity count when compared to Location specificity (which only has four items).

effect, narrowing the definition of firm specificity, we found firms to have greater scope to offload assets to other firms. This impacted on the distribution of firms within categories 1 and 2, and shifted 1 firm (0.3 percent of the sample) into category 2 from 3.

**Table A-2:** Asset redeployment classification (using 3x3x2 measures)

<b>Redeployment Options</b>		<b>%</b>	<b>%</b>
1	Assets that can be redeployed offshore (LF)		74.4
	a. within the MNE (LF or LN;FS;UF or US)	17.0	
	b. sold (LF or LN;FF or FN;UF or US)	57.4	
2	Assets that can only be re-deployed in Australia (LS)		25.2
	a. within the MNE (LS;FS;UF)	5.2	
	b. sold (LS;FF or FN;UF or US)	20.0	
3/4	Assets that should be written off or retained in current use (LS; FS; US)		0.4
<b>Total</b>		<b>100</b>	<b>100</b>

**Note:** LF = Location flexible; LN = Location Neutral; LS = Location specific; FF = Firm flexible; FN = Firm Neutral; FS = Firm specific; UF = Use Flexible; US = Use specific

**Table A-3:** Asset redeployment classification (using 3x3x2 measures) by industry

<b>Redeployment Options</b>		<b>Manufactu ring %</b>	<b>Wholesale trade %</b>	<b>Property &amp; Business %</b>	<b>Other %</b>
1	Assets that can be redeployed offshore	68.4	94.4	71.4	74.4
	a. within the MNE	19.7	8.3	21.4	17.0
	b. sold	48.7	86.1	50.0	57.4
2	Assets that can only be re-deployed in Australia	31.6	5.6	28.6	25.2
	a. within the MNE	6.6	2.8	3.6	5.2
	b. sold	25.0	2.8	25.0	20.0
3/4	Assets that should be written off or retained in current use	0.0	0.0	1.9	0.4
<b>Total</b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table A-4:** Asset redeployment classification (using 3x3x2 measures) by I-R Category

<b>Redeployment Options</b>		<b>Active %</b>	<b>Autonomous %</b>	<b>Receptive %</b>	<b>Quiescent %</b>
1	Assets that can be redeployed offshore	48.3	59.7	86.2	100
	a. within the MNE	27.6	5.2	32.2	5.0
	b. sold	20.7	54.5	54.0	95.0
2	Assets that can only be re-deployed in Australia				0.0
	a. within the MNE	27.6	3.9	3.4	0.0
	b. sold	24.1	36.4	9.2	0.0
3/4	Assets that should be written off or retained in current use	0.0	0.0	1.1	0.0
<b>Total</b>		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**Table 11:** Transformation expectations by asset redeployment classification

<b>Redeployment Options</b>		<b>Export Production Transformation</b>			<b>Regional HQ transformation</b>		
		<b>Less %</b>	<b>Same %</b>	<b>More %</b>	<b>Less %</b>	<b>Same %</b>	<b>More %</b>
1	Assets that can be redeployed offshore	26.5	65.6	7.8	25.5	70.1	4.5
	a. within the MNE	21.7	71.7	6.5	23.8	69.0	7.1
	b. sold	29.3	65.5	5.2	26.1	70.4	3.5
2	Assets that can only be re-deployed in Australia	33.3	61.9	4.8	29.6	64.8	5.6
	a. within the MNE	14.3	71.4	14.3	21.4	64.3	14.3
	b. sold	38.8	59.2	2.0	32.5	65.0	2.5
3/4	Assets that should be written off or retained in current use	0.0	100.0	0.0	0.0	100.0	0.0
<b>All firms</b>		<b>28.8</b>	<b>65.9</b>	<b>5.3</b>	<b>26.4</b>	<b>68.9</b>	<b>4.7</b>