The strategic development of foreign-owned subsidiaries and direct employment in host locations in the United Kingdom

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Abstract. The authors use international business strategy and regional development literature to inform a set of propositions about the links between direct employment by foreign-owned subsidiaries in the manufacturing sector and the development of embeddedness and autonomy in these subsidiaries. A large-scale survey of French, German, and US manufacturing subsidiaries in the United Kingdom is used to test the importance of embeddedness (host-country sourcing and use of networks) and autonomy (decisionmaking and operational autonomy) for the growth of employment by foreign-owned subsidiaries and the growth of skilled jobs in such subsidiaries. The results indicate that growth of embeddedness and autonomy factors are important, especially for the growth of skilled jobs, but those subsidiaries that have this attribute are a minority of foreign-owned subsidiaries. In the light of these results, the authors argue that policies need to be geared towards developing embeddedness and encouraging the growth of autonomy in subsidiaries that are likely to be regarded as central to the overall objectives of multinational corporations (MNCs). This requires policymakers to be aware of the internationalisation strategies used by MNCs, particularly in the light of the emergence of new, low-cost, countries which can easily provide high-quality but low-cost manufacturing operations. An important conclusion is that simple promotion of networking among firms and supporting agencies, and attempts to improve the local asset pool are unlikely to be effective in most cases.

Introduction
The literature on the development of embeddedness and autonomy by foreign-owned subsidiaries is located in two main research areas: regional development literature (Coe and Perry, 2004; Crone, 2002; Fuller and Phelps, 2004; Phelps, 1997; Potter et al. 2003; White, 2004), and the international business strategy literature (Andersson et al. 2002; Birkinshaw and Hood, 1998; Moore, 2001). The regional development literature is focused on the impact of developments in foreign-owned subsidiaries on host locations, whereas the international business literature is centred on the management of multinational corporations (MNCs). The international business strategy literature is normally based on conceptual frameworks derived from well-defined theoretical frameworks that are used to develop hypotheses which typically are tested with the aid of large-scale surveys. The regional development literature is often derived from an eclectic theoretical base, with empirical work that is normally based on case studies.

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and/or analysis of primary and secondary data on the association between key identified factors and regional development objectives. International business strategy approaches provide good indications of the importance of key generic factors that influence the development of foreign-owned subsidiaries, whereas regional development approaches provide rich data on the complexity underlying the relationships between phenomena observed in subsidiaries and regional development objectives.

There are many examples in the regional development literature in which international business strategy literature is used to inform research agendas (see, for example, Ivarsson, 2002; Phelps and Fuller, 2000; Poon and Thompson, 2003; White, 2004). However, these approaches do not normally seek to test hypotheses on the relationships between generic factors that influence behaviour of foreign-owned subsidiaries in relation to regional development objectives. In this paper we use resource-based theories of MNCs (Birkinshaw and Hood, 1998) to develop hypotheses on the association between embeddedness and autonomy factors and direct-employment effects in foreign-owned subsidiaries. The hypotheses are tested by use of a large-scale survey of foreign-owned subsidiaries in the United Kingdom.

There have been few large-scale plant-level studies that investigate the direct-employment effects connected to the strategic development of foreign-owned subsidiaries. Studies of German direct foreign investment (DFI) in the United Kingdom and Ireland found that German-owned subsidiaries tend to focus on sales and distribution in domestic markets, and that there was little evidence that large numbers of subsidiaries were evolving into more diversified operations embracing high-value-added operations in host countries (Hood and Taggart, 1997; McDonald et al, 2003; 2004; Taggart and Hood, 2000). These studies suggest that DFI inflows tend to lead to large numbers of subsidiaries which are lightly embedded into their host locations, and which possess few mandates associated with high levels of decisionmaking and operational autonomy. These studies imply that the direct-employment benefits associated with such investments are likely to be small.

In this paper we examine the importance of embeddedness and autonomy in foreign-owned subsidiaries for direct-employment effects in the manufacturing sector in the United Kingdom. The selection of the United Kingdom is appropriate because it is normally among the top five nations for DFI inflows, and it is the largest destination for extra-EU DFI inflows (Office for National Statistics, 2004). Furthermore, resource-based theories, which underpin this study, imply that the strategic development of foreign-owned subsidiaries is most likely to arise in large, developed, economies—such as the United Kingdom (Nohria and Ghoshal, 1997). The main objective in the paper is to discover whether embeddedness and autonomy factors are important for direct-employment effects in foreign-owned subsidiaries in large, developed, economies such as the United Kingdom. A secondary objective is to explore how an international business strategy approach can be used to help to formulate better DFI policies which can aid in the process of regional development.

We begin the paper with a review of the international business strategy literature on embeddedness and autonomy factors, which provides the basis for the development of hypotheses on links between these factors and direct-employment effects. The formulation of the hypotheses is also informed by the rich detail on issues such as domestic sourcing, and the use of networks, that is provided by the regional development literature. In the next section we outline the major characteristics of a large-scale survey of French, German, and US subsidiaries in the manufacturing sector in the United Kingdom which provided the data to test the hypotheses. This is followed by a section on the results, with discussion. In the final section we consider some of the policy implications of the results.
Embeddedness and strategic and operational autonomy
Research into the importance for host locations of the strategic development of foreign-owned subsidiaries has been focused on the concepts of embeddedness and autonomy. Embeddedness issues are normally associated with two main factors:
(1) the development of host-country sourcing based on enhancing the use of domestic supply chains;
(2) the use of local networks encompassing firms and supporting organisations that aid in gathering, processing, and dissemination of information and knowledge useful for achieving the strategic objectives of subsidiaries.

Domestic sourcing
The development of domestic supply chains by foreign-owned subsidiaries in order to improve performance has been extensively studied. Evidence has been found of the importance of the development of host-country sourcing for the performance of the subsidiaries, and for host-location benefits (Coe and Perry, 2004; Görg and Ruane, 2001; Papanastassiou and Pearce, 1997; Perez and Sanchez, 2002; Phelps, 1997). Increasing host-country sourcing is generally found to be beneficial for host locations. Some studies indicate that there are a number of problems associated with poor quality, reliability, and low skill levels in workforces which often hinder the growth of the use of local suppliers (Crone, 2002; Crone and Watts, 2002; Potter et al., 2003). In at least one study it has been found that beneficial direct-employment outcomes in host locations are associated with the increasing use of domestic sourcing (Williams, 2003). Most of the jobs connected to increases in local sourcing are likely to be in supplying firms, but purchasing firms (the focus of this study) may require more workers who can manage and operate a supply chain that is more independent from the parent company. Moreover, subsidiaries that have increasing levels of host-country sourcing are likely to outsource more mundane operations and therefore require a higher proportion of skilled labour as they concentrate on higher-value-added operations. This leads to the first hypothesis.

Hypothesis 1a. Growth of direct employment is positively related to increases in host-country sourcing.
Hypothesis 1b. Increases in the proportion of skilled jobs in subsidiaries are positively related to increases in host-country sourcing.

Local networks
Local business networks are the basis for the development of effective local supply chains and for efficient information-gathering and processing systems that enable MNCs to obtain and expand the desirable-assets base of their subsidiaries. The enhancement of competitiveness that follows from being embedded into such networks has been highlighted in research on the role of geographical factors in the internationalisation process (Dunning, 2000; Porter and Sölvell, 1998). This literature indicates that the use of local networks composed of other firms, R&D agencies such as universities and government research bodies, local authorities, chambers of commerce, and other organisations, can help subsidiaries to attain their objectives (Andersson and Forsgren, 2000; Andersson et al. 2002: Moore, 2001). These local networks increase the ability to benefit from collective learning and to realise innovation advantages based on enhanced potential to acquire benefits associated with linkages to valuable sources of information and knowledge in host locations (Davis and Meyer, 2004; Ivarsson, 2002; Schmid and Schurig, 2003). Networks that embrace governmental and nongovernmental agencies that provide supporting services and valuable information can also help to generate institutional systems that are useful for solving problems faced by
foreign-owned subsidiaries (Fuller and Phelps, 2004). These networks can help to reduce problems with the quality of labour (Huggins, 2001), and can help subsidiaries to convince parent companies to expand investment in their location (Phelps and Fuller, 2000). Networks that provide such benefits are at the core of industrial clusters, or industrial districts, which have been shown to deliver competitive advantages to foreign-owned subsidiaries which located in these geographical concentrations (Birkinshaw and Hood, 2000; De Propris et al. 2005; Driffield and Munday, 2000). Thus, subsidiaries which are strongly embedded in local networks are more likely than are lightly embedded subsidiaries to develop competitiveness and to engage in high valued-added operations. Therefore, as subsidiaries acquire valuable assets and knowledge by developing networks that expand opportunities to develop operations, this should boost direct employment—particularly of skilled labour. This leads to the second hypothesis.

**Hypothesis 2a.** Growth of direct employment is positively related to increases in the use of local networks.

**Hypothesis 2b.** Increases in the proportion of skilled jobs in subsidiaries are positively related to increases in the use of local networks.

The impact on direct employment in host locations of the development of strategic autonomy can be analysed in terms of two broad factors:

1. the development of subsidiaries by granting mandates that expand the decisionmaking autonomy of subsidiaries;

2. the increasing of operational autonomy by expanding the scope of operations of subsidiaries.

**Decisionmaking autonomy**

The development of decisionmaking autonomy and the performance of foreign-owned subsidiaries have been widely studied (Birkinshaw et al, 1998; Jarillo and Martinez, 1990; Paterson and Brock, 2002). The concept of procedural justice and subsidiary performance in the context of decisionmaking autonomy has also been investigated (Kim and Mauborgne, 1991; Taggart, 1996a; 1998a). In these studies it was found that good performance is related to granting subsidiaries mandates to make decisions that foster the development and specialisation of subsidiaries. Granting decisionmaking autonomy helps the subsidiary to build up unique and distinguishable knowledge positions by tapping into external networks in host locations which are not accessed by other entities in the MNC (Andersson et al, 2002; Holm et al, 2003). Moreover, granting mandates to make decisions in areas such as production methods, product development, marketing, and R&D can improve performance by improving the exploitation of locally available assets (Pearce, 1999) and engendering improved working relationships between headquarters and subsidiaries (Birkinshaw et al. 2005; Taggart, 1996a; Young and Tavares, 2004).

Some studies have found evidence of positive relationships between decisionmaking autonomy and knowledge creation (Taggart, 1997; 1998b). However, enhancing the autonomy of subsidiaries does not necessarily lead to benefits to the MNC because of rent-seeking behaviour by subsidiaries (Mudambi and Navarra, 2004) and failure to balance the management of the utilisation of knowledge and assets that can lead to the subsidiary using autonomy to develop in ways that harm the overall interests of the MNC (Almeida and Phene, 2004). Therefore, effective management by MNCs requires a balance between centralised and decentralised control strategies, and location where there are desirable assets that benefit the MNC as a whole (Birkinshaw et al, 2005; Ivarsson, 2002; Young and Tavares, 2004; 2005). Assuming that most MNCs have appropriate management systems for subsidiary development, enhancing
decisionmaking autonomy should lead to direct-employment benefits because of improved access to desirable assets, and to valuable knowledge that boosts the productivity of labour and develops the knowledge base of subsidiaries. This literature suggests that increasing decisionmaking autonomy should induce subsidiaries to employ more labour (especially skilled labour) in order to carry out more specialised and high-value-added operations. This leads to the third hypothesis:

**Hypothesis 3a. Growth of direct employment is positively related to increases in decision-making autonomy.**

**Hypothesis 3b. Increases in the proportion of skilled jobs in subsidiaries are positively related to increases in decisionmaking autonomy.**

**Operational autonomy**

Operational autonomy is linked to the ability to make tactical decisions by expanding the scope of operations in subsidiaries. Expanding operational autonomy should create opportunities to reap economies of scale and learning effects from expanding the scope of operations. Evidence of these effects has been found in a number of studies (Hood and Taggart, 1997; 1999; Pearce, 1999). Such developments are common in the area of product and production innovation, and R&D activities (Cantwell and Tammarino, 2001; Taggart, 1998b; Tavares and Pearce, 2001). Increasing operational autonomy in the main activities of subsidiaries follows from learning associated with the acquisition of new technology and know-how from other parts of the MNC and from harnessing locally available assets that enhance the potential to improve performance (Nohria and Ghoshal, 1997; Taggart and Hood, 2000). Such developments should lead to an increased need for labour—in particular skilled labour—if subsidiaries increase the type and intensity of their operations. Evidence that supports this view has been found in German subsidiaries in the United Kingdom (McDonald et al, 2004). Our final hypothesis is based on this postulated link:

**Hypothesis 4a. Growth of direct employment is positively related to increases in the scope of operations.**

**Hypothesis 4b. Increases in the proportion of skilled jobs in subsidiaries are positively related to increases in the scope of operations.**

**Traditional factors affecting subsidiary development**

Studies at plant level on the motivations for the strategic development of subsidiaries have provided evidence that the following factors have a significant influence: entry mode (greenfield, brownfield, or joint venture), region, main type of activity of subsidiary (manufacturing, services, sales and distribution, and R&D), industry, size and age of subsidiaries, use of expatriate managers, labour costs, and technology transfer from parent companies (Pearce and Papanastassiou, 1997; Scott-Green and Clegg, 1999; Tavares and Pearce, 2001; Young et al, 1994). Therefore, empirical investigation of the development of subsidiaries and employment effects at the plant level needs to control for these factors.

**The study**

In 2002, a survey was carried out to test the hypotheses and to investigate some of the key characteristics of French, German, and US subsidiaries in the manufacturing sector in the United Kingdom. These three countries accounted for about 60% of the book value of DFI stock in the United Kingdom for the period 1998-2002 (Office for National Statistics, 2004). Databases obtained from the German–British Chamber of Commerce, and the Anglo–Franco Chamber of Commerce and Industry provided detailed information on all known French-owned and German-owned subsidiaries in
the United Kingdom. Questionnaires were sent to all of these subsidiaries (593 French and 623 German). Comprehensive databases of this type were not available for US subsidiaries. There are about 10,000 US manufacturing subsidiaries in the United Kingdom. Therefore, a stratified sample (based on industry) of approximately 10% of the US database was used. The database was derived from a Dun and Bradstreet publication from which details of names, addresses, and industry of US-owned companies in the United Kingdom were obtained (Dun and Bradstreet, 2002). The Dun and Bradstreet list was less accurate than the databases from the German–British and Anglo–Franco Chambers of Commerce and Industry, and the quality of the database for the US subsidiaries may partly explain the lower response rate from US subsidiaries. Although German subsidiaries provided the largest numbers of returns, the representativeness of the returns (by industry) for all three countries is reasonably good (see table 1). Following Osterman (1994), possible nonresponse bias was checked by estimating a logistic model for each sample, with the probability of response being the dependent variable, and industry and region as the independent variables. The results confirmed that there were no significant differences between respondents and nonrespondents.

Table 1. Sample characteristics by industry.

| Industry                                      | Country of parent company | Germany | France | USA
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical and electrical engineering</td>
<td>% returns</td>
<td>50.8</td>
<td>28.0</td>
<td>27.6</td>
</tr>
<tr>
<td></td>
<td>% surveyed*</td>
<td>57.0</td>
<td>31.0</td>
<td>32.6</td>
</tr>
<tr>
<td>Vehicles</td>
<td>% returns</td>
<td>16.0</td>
<td>15.0</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td>% surveyed</td>
<td>12.6</td>
<td>12.0</td>
<td>7.4</td>
</tr>
<tr>
<td>Chemicals and pharmaceuticals</td>
<td>% returns</td>
<td>15.0</td>
<td>19.0</td>
<td>20.4</td>
</tr>
<tr>
<td></td>
<td>% surveyed</td>
<td>13.7</td>
<td>11.5</td>
<td>24.1</td>
</tr>
<tr>
<td>Information and technology and telecom. eq.</td>
<td>% returns</td>
<td>4.7</td>
<td>8.0</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>% surveyed</td>
<td>4.1</td>
<td>10.0</td>
<td>7.2</td>
</tr>
<tr>
<td>Other manufacturing</td>
<td>% returns</td>
<td>13.5</td>
<td>30.0</td>
<td>18.4</td>
</tr>
<tr>
<td></td>
<td>% surveyed</td>
<td>12.6</td>
<td>35.5</td>
<td>28.7</td>
</tr>
<tr>
<td>Total returns</td>
<td></td>
<td>193</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Total surveyed</td>
<td></td>
<td>623</td>
<td>593</td>
<td>1012</td>
</tr>
<tr>
<td>Response rate (%)</td>
<td></td>
<td>30.9</td>
<td>16.9</td>
<td>9.7</td>
</tr>
</tbody>
</table>

*Percentage of industry that was surveyed was determined by the share of the numbers of subsidiaries in each of these industries.

b Fifty questionnaires sent to US subsidiaries were returned as the companies were no longer US owned, or no longer existed (that is, 1062 – 50 = 1012).

To maximise the likelihood of a good response rate, the questionnaire was kept simple and short. The questionnaire did not ask respondents to rank the importance that they attached to embeddedness and autonomy factors subjectively. Rather, the questions sought to obtain factual information on the use of factors connected to embeddedness (host-country sourcing, and use of networks) and autonomy (decision-making autonomy, and operational autonomy). Data were also sought on the change in these factors in the period 1997 to 2001. The questions asked for factual information on growth of employment, and skill level of the workforce, as well as data on such matters as age, entry mode, and main type of activity (see table 2). This type of approach reduced the possibility of subsidiary managers expressing opinions influenced by their normative view of what they thought ought to be the level of embeddedness, decisionmaking, and operational autonomy, or that reflected either overoptimistic or
Table 2. Description of the variables and frequencies (shown in parentheses) for independent and control variables.

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>0—below average, 1—above average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment growth</td>
<td>0—not increased, 1—increased</td>
</tr>
<tr>
<td>Increase in skilled labour in workforce composition(^a)</td>
<td></td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
</tr>
<tr>
<td>Increase in host-country sourcing</td>
<td>0—not increased, 1—increased (22.8%)</td>
</tr>
<tr>
<td>Increase in use of networks</td>
<td>0—not increased, 1—increased (28.1%)</td>
</tr>
<tr>
<td>Increase in decisionmaking autonomy</td>
<td>0—not increased, 1—increased (30.4%)</td>
</tr>
<tr>
<td>Increase in scope of operations</td>
<td>0—not increased, 1—increased (46.3%)</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td>1—East region (21.2%),</td>
</tr>
<tr>
<td></td>
<td>2—North region (16.9%),</td>
</tr>
<tr>
<td></td>
<td>3—South region (33.0%),</td>
</tr>
<tr>
<td></td>
<td>4—West region (28.9%)</td>
</tr>
<tr>
<td>Entry model</td>
<td>0—brownfield/JV (57.5%), 1—greenfield (42.5%)</td>
</tr>
<tr>
<td>Presence of expatriate managers</td>
<td>0—expatriate manager not present (23.8%)</td>
</tr>
<tr>
<td></td>
<td>1—expatriate manager present (76.2%)</td>
</tr>
<tr>
<td>Technology transfer</td>
<td>0—no (51.2%), 1—yes (48.8%)</td>
</tr>
<tr>
<td>Age</td>
<td>1—≤ 4 years (15.1%),</td>
</tr>
<tr>
<td></td>
<td>2—5–10 years (21.7%),</td>
</tr>
<tr>
<td></td>
<td>3—11–20 years (30.2%)</td>
</tr>
<tr>
<td></td>
<td>4—&gt;20 years (33.0%)</td>
</tr>
<tr>
<td>Size</td>
<td>1—1–10 (19.1%), 2—11–50 (36.6%),</td>
</tr>
<tr>
<td></td>
<td>3—51–250 (28.6%), 4—&gt;250 (15.1%)</td>
</tr>
<tr>
<td>Industry</td>
<td>1—mechanical and electrical engineering (38.4%)</td>
</tr>
<tr>
<td></td>
<td>2—automotive (16.9%)</td>
</tr>
<tr>
<td></td>
<td>3—chemicals and chemical engineering (13.3%)</td>
</tr>
<tr>
<td></td>
<td>4—pharmaceuticals (4.3%)</td>
</tr>
<tr>
<td></td>
<td>5—information technology and telecommunication equipment (8.4%)</td>
</tr>
<tr>
<td></td>
<td>6—textiles (2.3%)</td>
</tr>
<tr>
<td></td>
<td>7—wood and construction (3.1%)</td>
</tr>
<tr>
<td></td>
<td>8—other manufacturing (13.0%)</td>
</tr>
<tr>
<td></td>
<td>9—other (0.3%)</td>
</tr>
<tr>
<td>Main activity</td>
<td>0—sales and distribution/others (61.4%)</td>
</tr>
<tr>
<td></td>
<td>1—manufacturing and R&amp;D (36.6%)</td>
</tr>
<tr>
<td>Change in labour compensation per employee in nine industries between 1996 and 2001(^b)</td>
<td>0—increased below average (13.3%)</td>
</tr>
<tr>
<td></td>
<td>1—increased above average (86.7%)</td>
</tr>
</tbody>
</table>

\(^a\) Classification based on UK government specification of professional, skilled, semiskilled, and unskilled occupations. Jobs specified by respondents in the classification ‘professional’ and ‘skilled jobs’ are defined as ‘skilled’.


over pessimistic views on the status of the subsidiaries. Although there are advantages in the use of subjective opinions in terms of the richness of data that can be collected (Easterby-Smith et al. 2002), the possibility that such data are not a reliable reflection of the position of the subsidiary led the researchers to avoid this approach. Most of the questions asked for information that required answers in the form of categorical data. The questionnaires were piloted in twenty companies (eight US, six German, and six French) and were amended in the light of the comments from respondents.
The databases identified the name of the managing director of the subsidiaries, and the questionnaires were sent to the named head of the subsidiary.

There is a great deal of debate in the literature about the correct type of statistical analysis to use for categorical data of the type available in this study. At least two possible approaches can be used: analysis of variance techniques, and probit/logit regression techniques (Agresti, 2001; Gujarati, 2005). The literature indicates that the most important factor in favour of probit/logit regression techniques, as opposed to analysis of variance techniques, is researchers wishing to use hypotheses that predict the sign and/or strength of the probability of the effect of the independent variables on the dependent variable (McFadden, 1984). As this research is based on hypotheses that do indeed predict the sign of the probability of the likely effect of independent variables on the dependent variable, and our purpose in this paper is not to investigate pairwise or higher order associations between the independent variables, probit/logit regression techniques are the most appropriate technique (Tansey et al, 1996). Logit/probit regression techniques are widely used to test hypotheses with categorical data of the kind used in this study (see, for example, Addison et al, 2001; Ivarsson, 2002). Probit regression techniques are more tractable in dealing with heteroscedasticity problems, which Greene (2003) and Yatchew and Griliches (1984) indicate can lead to inconsistent maximum likelihood estimators; therefore, probit regressions techniques were used. The estimation of heteroscedastic binary probit models was performed with the aid of the STATA 7.0 package; this package automatically excludes variables that lead to problems of multicollinearity (Long and Freese, 2003).

All independent variables and the skilled labour dependent variable are either 0 for not increased, or 1 for increased. The employment growth dependent variable is 0 for below-average and 1 for above-average employment growth. This measure is used to capture sizable employment growth. Sizable employment growth would be expected for ‘successful’ subsidiaries, because in the period covered by the survey there were no recessions in the UK economy. The possibility that this measure for employment growth could impose linearity because of subsidiaries that grew slowly and those that reduced employment is dealt with by the manner in which the binary probit model estimates the probability of the highest outcome (Long and Freese, 2003). The dependent, independent, and control variables used in the regressions are defined in table 2.

Results and discussion
The results were examined for key characteristics of the respondents, from the frequencies of the independent and control variables. As the respondents are representative (in terms of industry) of the known distribution of French, German, and US subsidiaries in the United Kingdom, and these countries account for about 60% of the stock of foreign-owned subsidiaries in the United Kingdom (Office for National Statistics, 2004), analysis of the key characteristics of the respondents provides insight into some of the major characteristics of foreign-owned subsidiaries in the manufacturing sector in the United Kingdom. The results from the probit regressions were used to test our hypotheses.

Key characteristics of foreign-owned subsidiaries
The frequencies for the independent and control variables (table 2) highlight fairly low levels of increases in embeddedness as measured by increased use of networks (28.1%) and host-country sourcing (22.8%). Increase of autonomy factors, as measured by decision-making autonomy, is also low—30.4%. However, nearly 50% of respondents have expanded operational autonomy as measured by the change in the scope of operations.
A large proportion of the subsidiaries had as their main activity sales and distribution and other manufacturing activities (61.4%); this suggests that the operations of many foreign-owned subsidiaries in the manufacturing sector are primarily concerned with supplying UK markets. Over 60% of the subsidiaries have been in foreign ownership for more than eleven years, and nearly 58% are either brownfield or joint ventures. This indicates that many subsidiaries have had a long period in which to develop host-location linkages; those who were brownfield or are joint ventures may therefore have possessed such linkages prior to foreign ownership. This may partly explain why there is low growth of decision-making autonomy, and low increases in the use of networks and host-country sourcing.

The relatively high proportion of subsidiaries in traditional industries such as mechanical/electrical engineering, automotive, chemicals and chemical products, textiles, and wood and construction products (74%) indicates that foreign-owned subsidiaries in the manufacturing sector are often involved in traditional manufacturing activities, some of which are declining. Only a small proportion of the subsidiaries were in high-tech sectors such as pharmaceuticals (4.3%) and information technology and telecommunications equipment (8.4%). Subsidiaries in traditional, especially static or declining, industries may lack a strong emphasis on developing embeddedness and strategic autonomy compared with high-tech industries. Most of the literature on embeddedness, decisionmaking, and operational autonomy tends to focus on high-tech and fast-growing industries (Andersson et al, 2002; Pearce, 1999).

The analysis of the characteristics of the respondents indicates that most of them have not embarked on substantial development of linkages within their host locations, and that most foreign-owned subsidiaries are primarily involved with sales and distribution activities connected with supplying the host-country market. The low incidence of strategic development of subsidiaries, and the large proportion of firms that are primarily engaged in sales and distribution, revealed in this survey reinforces what had been found in other surveys of foreign-owned subsidiaries (Hood and Taggart, 1997; 1999; McDonald et al, 2003; 2004; Pearce, 1999; Taggart, 1996b).

**Regression results**

Increased use of host-country sourcing is significant (but only at the 10% level) for increases in skilled jobs in subsidiaries, but is not significantly related to employment growth. Thus, there is no support for hypothesis 1a and only weak support for hypothesis 1b. The lack of significance of host-country sourcing for direct-employment growth may indicate that the major employment benefits from increasing domestic supplies accrue to suppliers rather than to buyers. In other words, increases in host-country sourcing contribute to indirect job creation in supplying firms—rather than to expansion of jobs in buying firms. The weak support for hypothesis 1b provides some evidence for the view that the main impact on buying firms is to increase the proportion of skilled jobs.

There is no support for hypothesis 2a, but there is a significant relationship (at the 1% level) between increased use of networks and increase in skilled jobs; therefore, hypothesis 2b is verified. Increases in decisionmaking autonomy are positively associated with employment growth (but only at the 10% level) and with increase in skilled jobs (at the 1% level). Therefore, there is weak support for hypothesis 3a and strong support for hypothesis 3b. However, less than a third of subsidiaries increased their use of networks and decisionmaking autonomy (table 3, see over). This suggests that the impact on direct employment of strategic developments in these areas is likely to be small. There is evidence in favour of hypothesis 4a, but not for hypothesis 4b. The significance of increase in scope of operations for direct-employment growth is not surprising because as subsidiaries expand the scope of their operations it is likely that there will be a requirement for increased direct employment.
### Table 3. Estimation results (with z-statistics shown in parentheses) of the heteroscedastic binary probit models.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Employment growth</th>
<th>Increase in skilled labour in workforce composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in host-country sourcing</td>
<td>−0.04 (−0.35)</td>
<td>0.43* (1.79)</td>
</tr>
<tr>
<td>Increase in use of networks</td>
<td>0.05 (0.47)</td>
<td>1.00*** (4.18)</td>
</tr>
<tr>
<td>Increase in decisionmaking autonomy</td>
<td>0.19* (1.81)</td>
<td>1.06*** (4.27)</td>
</tr>
<tr>
<td>Increase in scope of operations</td>
<td>0.56*** (2.96)</td>
<td>−0.68 (−1.13)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control variables</th>
<th>Employment growth</th>
<th>Increase in skilled labour in workforce composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region</td>
<td>0.05 (1.16)</td>
<td>−0.10 (−1.11)</td>
</tr>
<tr>
<td>Entry model</td>
<td>0.08 (0.77)</td>
<td>−0.08 (−0.37)</td>
</tr>
<tr>
<td>Presence of expatriate managers</td>
<td>0.19 (1.61)</td>
<td>−0.19 (−0.79)</td>
</tr>
<tr>
<td>Technology transfer</td>
<td>−0.17* (−1.79)</td>
<td>0.47** (2.24)</td>
</tr>
<tr>
<td>Age</td>
<td>−0.02 (−0.35)</td>
<td>0.04 (0.43)</td>
</tr>
<tr>
<td>Size</td>
<td>−0.10 (−1.66)</td>
<td>−0.23* (−1.79)</td>
</tr>
<tr>
<td>Industry</td>
<td>0.04* (1.78)</td>
<td>−0.01 (−0.23)</td>
</tr>
<tr>
<td>Main activity</td>
<td>0.01 (0.13)</td>
<td>0.57** (2.20)</td>
</tr>
<tr>
<td>Change in labour compensation</td>
<td>−0.64*** (−2.36)</td>
<td>−0.19 (−0.36)</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.08 (−2.73)</td>
<td>−0.56 (−0.68)</td>
</tr>
<tr>
<td>Prob &gt; χ²</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.12</td>
<td>0.17</td>
</tr>
</tbody>
</table>

*—significant at 10% level; **—significant at 5% level; ***—significant at 1% level.
Note: heteroscedastic binary probit model is fitted. Robust standard errors are used.

None of the embeddedness factors is significantly associated with employment growth, and, among the decisionmaking and operational autonomy factors, only increase in scope of operations is strongly linked to employment growth. Some literature suggests that traditional factors, such as size of the market, developing markets, tax/subsidy benefits, and labour-cost advantages are more important, at least in Europe, than are embeddedness and strategic factors as drivers of DFI (Mold, 2003; Phelps, 1997; Scott-Green and Clegg, 1999). Thus, despite significant advances in European integration programmes and public policies that have sought to enhance the importance of new locational factors (Phelps et al. 2003), traditional factors may still be the main drivers of the employment effects associated with DFI. The results also provide indirect support for the view that the main impact of DFI on employment growth is via spillover effects which create indirect employment in other firms. However, if strategic development of foreign-owned subsidiaries is the engine of these
spillover effects it is possible that these benefits are not extensive. This is what much of the literature suggests (see, for example, Driffield and Taylor, 2000).

Embeddedness factors are linked to increases in skilled jobs, with a weak link to increased host-country sourcing and a strong link to increased use of networks. In the case of decisionmaking and operational autonomy factors, there is a positive relationship between increases in decisionmaking autonomy and increase in proportion of skilled jobs—but there is no support for a link to increase in operational autonomy. These results indicate that the main direct-employment effects of increasing embeddedness, and decisionmaking autonomy, appear to be increases in the proportion of skilled jobs for the minority of subsidiaries which are developing host-country sourcing, use of networks, and decisionmaking autonomy. However, less than a third of foreign-owned subsidiaries are enhancing the use of networks, developing host-country sourcing, and increasing decisionmaking autonomy.

The results of this study indicate that there is a weak link between direct-employment growth and decisionmaking autonomy, and a weak link between host-country sourcing and increases in skilled jobs in subsidiaries. Strong links exist between operational autonomy and direct-employment growth, and between use of networks and decisionmaking autonomy and increased skilled jobs in subsidiaries.

Policy implications
Given the importance of embeddedness (use of networks, domestic sourcing) and decisionmaking autonomy for growth of skilled jobs in subsidiaries, and of decisionmaking and operational autonomy for employment growth, it would seem to be prudent to gear policies towards these factors. However, only a minority of foreign-owned subsidiaries appear to be increasing their embeddedness and decisionmaking autonomy. This is likely to be connected to the high number of subsidiaries that are brownfield or joint ventures, are in traditional and declining industries, and are primarily engaged in sales and distribution activities (see table 2). Host locations also often lack the necessary base of desirable assets and institutional frameworks to enable foreign-owned subsidiaries to engage in significant strategic developments (Fuller et al., 2003; Phelps et al., 2003; Potter et al., 2003).

Policies that attract foreign investors who are seeking to embed in host locations to acquire desirable assets and who grant high-level autonomy mandates to their subsidiaries are likely to provide significant direct-employment benefits in terms of increase in skilled jobs. Furthermore, policies that encourage subsidiaries which are already situated in host locations to increase their embeddedness and to deliver decisionmaking autonomy are also likely to lead to growth of skilled jobs in subsidiaries (Fuller and Phelps, 2004). However, these types of policies require a realistic appraisal of the potential to develop a desirable-asset base in host locations and a good understanding of the strategic objectives of investors that are interested in the assets that can be developed in host locations. The creation and development of institutional frameworks that are conducive to strategic development by foreign-owned subsidiaries are also required (Crone and Watts, 2002; Phelps et al., 2003; Potter et al., 2003). Such policies require policymakers to be aware of the strategic objectives of MNCs and to understand the complexities of the evolution of the internationalisation process in order to obtain insights into the type of locations that appeal to investors (Dunning, 2000; Porter and Sölvell, 1998). In particular, policies need to be informed by the need for subsidiaries to deliver outcomes that help to boost competitive advantage for the MNC as a whole (Young and Tavares, 2004). This requirement may lead to policy conflicts, as the overall competitiveness of the MNC may require downsizing of low-level operations (with the consequent loss of low-skilled jobs) and an increase in
high-level operations (leading to expansion of high-skilled jobs). Subsidiaries that are granted decisionmaking autonomy may well instigate these types of developments as they can face stiff competition from within the MNC that requires them to pursue radical developments to survive and prosper (Birkinshaw et al, 2005, Phelps and Fuller, 2000).

Host locations that currently lack desirable assets and effective institutional frameworks, due, for example, to an area with a heritage of traditional and declining industries, need to develop their asset pool and institutional frameworks to stimulate new developments among firms in the area (Sadler, 2003). In terms of foreign-owned subsidiaries, this can be done by policies that encourage the evolution of locally available assets that match the emerging needs of MNCs and that are either not available elsewhere, or are available at lower cost than in alternative locations. However, host locations that seek to develop desirable locally available assets and effective institutional frameworks that are cheaper than other possible locations risk becoming involved in harmful cost-reduction games with competitors in other potential locations. Dangers also exist of policymakers being drawn into "an increasingly murky firm – state nexus" (Phelps and Fuller, 2000, page 241) that leads to them becoming entangled in intra-MNC and inter-MNC manoeuvres to gain competitive advantage (Phelps, 2000; Young and Tavares, 2005).

The ideal policy objective is to develop a unique asset and institutional base that is attractive to MNCs. This requires the development of a desirable-asset and institutional base that cannot easily be replicated elsewhere or moved to other locations. Many host locations are probably unable to create and sustain such a base, and are therefore faced with the prospect of trying to attract foreign investments that are footloose and liable to relocation to host locations that provide cheaper labour and/or better tax and subsidy benefits.

The large numbers of manufacturing subsidiaries based in the United Kingdom (see table 2) that are primarily engaged in sales and distribution implies that the major motive for them being in the United Kingdom is to supply the domestic market. The movement to lower-labour-cost countries in the developing world of many aspects of assembly and basic manufacturing (Lim, 2001) is likely to mean that foreign-owned subsidiaries primarily involved in supplying the UK market will increasingly import goods from such countries and consequently their operations in the United Kingdom will become increasingly centred on high-level manufacturing: product development and R&D; and sales, distribution, and after-sales services. High-level operations of this type normally require access to locations with a good asset and institutional base that are unique—even if only in a limited range of the overall operations of the MNC. Subsidiaries involved with high-tech manufacturing and product-development operations, and with sophisticated sales, and after-sales services, tend to have high levels of decisionmaking and operational autonomy and are strongly embedded in their host locations (Pearce and Papanastassiou, 1997; Taggart, 1997). These types of subsidiaries are likely to generate increased direct employment of skilled labour, and policies should therefore be geared to encouraging development by these types of subsidiaries. However, this type of policy approach could encourage an even more rapid run-down of low-level operations in foreign-owned subsidiaries, with a consequent loss of lower skilled jobs.

Policies to attract new DFI and the strategic development of existing foreign-owned subsidiaries that are seeking to encourage significant direct-employment benefits, in particular the growth of skilled jobs, need to be attuned to the complex and changing developments in the internationalisation process, and to be based on a good understanding of the imperatives and strategic objectives of MNCs. Moreover, the creation and sustaining of a unique and desirable asset and institutional base is most likely to
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deliver significant direct-employment benefits. However, there are dangers of pursuing naïve policies based on the belief that encouraging networking and attempts to improve the local asset base will lead to the type of developments in foreign-owned subsidiaries that will increase the likelihood of achieving regional development objectives. In a world where MNCs are increasingly seeking to obtain maximum competitive advantages by developing their subsidiaries into a differentiated network, such naïve policies are unlikely to be effective. In these differentiated networks, some subsidiaries are central to certain aspects of the MNCs' overall performance and are therefore strongly rooted in their host locations. Other types of subsidiaries can be footloose and likely to move in response to lower labour costs and/or better tax/subsidy packages. The aim of policy in such a world is to attract and encourage the development of subsidiaries which are rooted into their host location because the local environment provides desirable assets and a good institutional base that the subsidiary management is able to weave effectively into the central operations of the MNC.

The results of this study suggest that such subsidiaries are a minority of the foreign-owned subsidiaries in the manufacturing sector of the United Kingdom. Therefore, policies that encourage the development of embeddedness and autonomy will only be 'successful' if they can attract, retain, and develop such subsidiaries. Regions that are unable to do this will find it increasingly difficult to attract and retain foreign-owned subsidiaries if their main advantage is low labour costs and flexible labour markets. Regions competing for foreign manufacturing subsidiaries on this basis are likely to face tough competition from emerging markets such as China and India.

Conclusions
The strategic development of subsidiaries and direct employment in host locations are associated mainly with increases in skilled jobs, but these benefits are only present in the minority of subsidiaries that undertake strategic developments based on increasing embeddedness and decisionmaking autonomy. Employment growth by foreign-owned subsidiaries is primarily connected to expansion of the scope of operational autonomy. Policies which encourage an increase in the numbers of subsidiaries that engage in strategic developments in host locations are therefore important if foreign investment is to provide significant direct-employment benefits. To construct and implement such policies effectively, a good understanding of the complexities of the internationalisation process and of the strategic objectives of MNCs is required in order to create and develop the type of asset base and institutional frameworks that make host locations attractive for the strategic development of subsidiaries.

Further research is required to increase our understanding of the links between the strategic development of subsidiaries and employment benefits. In particular, investigation of service-industry subsidiaries is required, as this type of investment is comprising a rising share of DFI inflows into developing countries. Examination of the importance of forward linkages from subsidiaries to their customers is also required, because most studies (including this one) are focused on backward linkages connected to sourcing. However, a substantial proportion of foreign-owned manufacturing subsidiaries are engaged primarily in serving the domestic market—hence investigation of forward linkages and employment effects would provide useful knowledge on the impact of strategic developments in this area. More detailed exploration of the impact of different types of network usage (including investigations of the cooperation-versus-competition emphasis in networks that include firms supplying the same or similar markets), and of the variety of decisionmaking and operational autonomy mandates that are granted would also help in the development of more effective policies. Comparisons across countries would also enable any country-specific patterns to be identified.
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