
CENTRE FOR **I**NTERNATIONAL **B**USINESS **S**TUDIES

**Locational strategies of the world's largest
transnationals.
An empirical analysis of the network of affiliates in
1997¹**

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Abstract

This paper considers the location strategies of companies and analyses the profile of the world largest 664 transnationals, in terms of the locational structure of their foreign affiliates. The full list of companies as well as several empirical tables on them is given in the Appendix. Following a discussion on the theoretical underpinnings of locational strategies, three basic indices are developed (a) an Internationalisation index which assesses the foreign projection of the company by the percentage of affiliates located abroad in relation to the total number of company's affiliates (b) a Network Spread index which assesses the extent to which companies spread their activities in various countries of the world; (c) a Herfindahl index which assesses the concentration of affiliates in the various foreign countries in which the companies operate. When possible and suitable, the empirical results on these indices are compared to relevant data on the macro-economy. The locational profile is analysed for the year 1997 and in relation to: the size of the firms, the country of origin of the transnationals and the industries in which the companies operate. On the whole the study shows low tendency towards agglomeration.

JEL: F21-F23

Key Words: Transnational companies; foreign direct investment; indices of internationalisation; location of production strategies.

Preface

This paper was written some 10 years ago just after 2000, the empirical research having been done in the two preceding years. It was never published in its entirety, though selected results were included in Antonioni and Ietto-Gillies (1998) and in Ietto-Gillies (2002: ch. 4). I am doing so now, partly because I have received some requests for the full paper and empirics. Putting it into the public domain may give a chance to replicate results or to test the conclusions several years later. To this effect, the Appendix presents the full list of companies used in the study as well as several empirical tables derived from data on them.

The version made public now contains small amendments including a couple of updated references. The comments in the paper must be read as written in 2000 not in 2010. This is particularly relevant whenever the comment refers to a period of time. Expressions like 'recent' or last 'few years' refer to the period prior to 2000.

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1. Introduction

The decades since the mid-1970s have seen acceleration in the internationalisation process in all its manifestations from trade to foreign direct investment (FDI) to cross-border acquisitions (UNCTAD, DTCI 1996 and 1997) and strategic partnerships (Hagedoorn, 1996) to the globalisation of financial markets.

The role of information and communication technologies in making this possible and indeed in driving the process has been emphasised (Dicken, 1998 and 2007, Freeman, 1992). Direct production abroad by transnational companies (TNCs) has been widely researched. There is now a large body of literature trying to explain why companies invest abroad and what patterns they are likely to follow (Hymer, 1960, Vernon 1966, Aliber, 1970 and 1993, Buckley and Casson 1976, Dunning 1977 and 1980, Knickerbocker, 1973². More recent explanations have been developed within the theoretical framework of the "New trade and location theories" (Markusen, 1995; Krugman, 1985; Helpman, 1984 and 1985, Helpman and Krugman, 1985). The TNC-enlarged new trade theories emphasise the dichotomy agglomeration *versus* spread in the location of industrial activities.

The possible tensions between globalisation and regional integration are also attracting attention (Thomsen and Woolcock, 1993; Oman, 1996; Hirst and Thompson, 1996; Kozul-Wright and Rowthorn, 1998 and Chesnais, Ietto-Gillies and Simonetti, 2000; Ietto-Gillies, 2011).

The TNCs' strategies of location of production and the resultant pattern of economic activity at the international, macro level present many facets. Particularly relevant are the following. First, there is a dichotomy between production at home and abroad. This is linked to the strategy of entry mode via exports or via direct production. Second, within the general strategy of direct foreign production there may be different specific strategies in relation to the locational spread in many countries or concentration in a few. At the extreme

² For reviews of various theories cf. Ietto-Gillies (2005), Cantwell (1991, 2nd ed 2000). A useful review of theoretical and empirical issues on the determinants of FDI is also in UNCTAD (1998).

side of the spectrum, all production could be concentrated in the home country (as in the case of uninational companies). It could be concentrated in two or three foreign countries or spread among most nation-states of the world.

Third, in each foreign country, TNCs can operate with different degrees of intensity. They may spread all their activities or affiliates equally in foreign countries or they may concentrate them. Different degrees of concentration in foreign countries could be an indication of various elements. The fact that some foreign countries are more relevant than others in the companies' internationalisation strategies or it may also indicate that organisational strategies are specific to host countries. Fourth, the companies' strategies relate also to decisions on internalisation and direct production *versus* different levels of externalisation via for example sub-contracting or full arm's length involvement with other firms operating downstream or upstream. These organisational issues may affect, to various degrees, all the previous three sets of strategies.

The dichotomy home *versus* foreign direct production has been explored in most works on the determinants of foreign direct investment referred to above. The new trade and location theories predict agglomeration due to economies of scale whether of the internal, Chamberlinian type or of the external Marshallian type (Krugman, 1985 and 1998). They would therefore appear to favour a pattern of concentration of production in the home country and sourcing of foreign markets via exports. Nonetheless, within this approach a pattern of foreign direct production emerges as a result of specific assumptions related to joint inputs as well as barriers to trade or different factor endowment (Markusen, 1995 and Helpman, 1985)³.

All these various theories suggest that under specific conditions, companies will produce directly in foreign countries and indeed all the available evidence shows that this is increasingly the case.

Are there reasons to believe that companies will not only produce abroad, but that they might follow a locational diversification strategy which involves the spread of their activities into many foreign countries rather than a few? There are two aspects of locational diversification. The first one relates to location into different nation-states, and the number of such states in which companies want to operate in. The second one relates to the intensity of operation in the various foreign countries.

Let us begin by considering the locational strategies in different nation-states. Different nation-states are characterised by different regulatory regimes (Ietto-Gillies, 2005). The regulatory regimes refer to all sets of regulations and norms related to: (a) labour and social security; (b) taxation; (c) currency; and (d) the environment. Within each nation-state the same – or more uniform – set of regulatory regimes apply. Do companies benefit from operating across different regulatory regimes over and above any advantages of operating in different geographical locations and thus over and above any advantages deriving from the efficient use of resources in each location?

There may indeed be extra benefits from operating across different regulatory regimes. These benefits can derive from three sources: (1) ability to manipulate transfer prices and thus take advantages of different tax, currency and environmental regimes; (2)

³ An analysis of the TNC-enlarged new trade and location theories and of some of their limitations is in Ietto-Gillies (2000).

ability to spread risks linked to the political situation in different countries; and (3) ability to take advantage of different labour regimes, i. e. of the fact that labour can organise itself more easily within each nation-state than across any of them.

A strategy of wide locational network of production diminishes the risks of production disruptions through industrial action. Moreover, and most important, it also fragments the labour force employed by the same company as labour organisation is, on the whole, more difficult across different countries. Such a strategy may, therefore, diminish the bargaining power of labour compared to a situation in which all or most of the company's production is located within one or few countries (Cowling and Sugden, 1987; Sugden 1991; Ietto-Gillie 2005: ch. 15). A wide network spread of direct activities may also give credibility to any threat of relocation of production. It can also be used when bargaining with governments for special incentives designed to attract inward investment.

Any strengthening of the company's bargaining power towards labour and/or governments is likely to have also positive effects on its power towards rivals. However, there are also costs associated with a strategy of locational spread in terms of possible missed economies of scale as well as higher managerial and organisational costs (Hymer, 1960 published 1976).

What about the third issue? What motivations lie behind the company's decision to operate with different or equal intensity in each host country? Here the issue is complicated by the fact that the intensity of operation can be assessed in various ways. In particular via values/quantums of activities –such as value of assets, value of investment, or sales, or output, or employment- or via the presence of affiliates. Owing to data constraints –as discussed later- the indices used are based on the number of affiliates in each foreign country. Thus the above question must be phrased in terms of the company's motivation in spreading or concentrating its affiliates in host countries. What prompts a company to locate only a few or many affiliates in each foreign country in which it establishes operations? Are there strategies of locational diversification within each nation-state and thus within the operation of each regulatory regime? The answer is not an easy one. If the location of relatively few affiliates is a sign of low level of activity, then a different concentration of activity in foreign countries indicates different degrees of relevance of the host countries and also different degrees and depths of internationalisation. It can also be a sign of relevance of agglomeration due to internal economies. If much agglomeration is found at industry level, the outcome may be the result of external and/or internal economies of scale. Different numbers and spread of affiliates in host countries can also be a sign of wider organisational strategies. There may be many reasons for this. Some may derive from the history of the company: for example how were the affiliates established? Via acquisitions or through organic growth or through joint ventures with local firms? Some reasons may be linked to the product diversification strategies of the company. Some to the size of the host country and its institutional framework and constraints such as requirements on entry via joint ventures with local companies. Some may be industry-specific and they may, for example, be related to the need to have affiliates near consumers or sources of raw material. There is also likely to be a relationship with the overall company's strategy of internalisation or externalisation of its downstream or upstream activities.

This paper is concerned with the empirical assessment of the three location

strategies here highlighted by using three specific indices. This is an attempt to assess the end result of the various strategies. The possible processes and causes leading to the results will be taken into consideration in interpreting the results. The indices are applied to the world largest 664 TNCs and the results analysed by size of the company, country of origin and industry.

The paper proceeds as follows. Section two and three describe the methodology and the data used respectively. Sections four, five and six analyse the results by size of the company, country of origin and industry respectively. Section seven summarises and concludes.

2. Methodology. The indices

There have been several attempts at assessing the degree of internationalisation of companies or countries. There are relevant conceptual issues behind the various types of indices and they have implications for the analysis of results and for policy development (Ietto-Gillies 2009). Most of the indicators developed in the literature measure internationalisation in terms of the share of activity(ies) abroad as a percentage of total activity(ies). They are therefore connected with the first type of strategy and thus with the dichotomy home *versus* foreign production. Sometimes a single dimension of activities is used (Dunning and Pearce, 1985; Rugman and Oh, 2011); sometimes several dimensions and thus variables are combined together (Sullivan, 1994, UNCTAD, 1995).

The second strategic element in the location of activities relates to the spread of foreign activities into many countries. There have been very few empirical studies of the pattern of the locational spread of the activities of TNCs. The Commission of the European Communities, 1976 gives some details for the spread of affiliates for all the OECD countries. Vernon (1979) analyses the network spread pattern of subsidiaries of the largest US and European TNCs using data from the Harvard Multinational Project. Ietto-Gillies (1996) analyses the trend in the network spread of affiliates of the largest UK TNCs in manufacturing and mining. Ietto-Gillies (1998) introduces an indicator of network spread based on the number of foreign countries in which the company operates. Estimates of this indicator was published in UNCTAD (1998) and following ones.

The third strategic element relates to the concentration/spread of affiliates by foreign countries. A Herfindahl index will be used to assess this element. Before introducing the three indices, which will be used in our applied work, we should give a word of caution on the data used; though the details of such data will be given in the next section. Ideally, the first and third indices should have been calculated on the basis of values of activity (ies) in the home country as well as in each host country. Such an approach would give us full details of the strategic pattern of location.

Unfortunately we do not have information on relevant variables expressing value/ quantum of activities abroad and at home for all the companies in the sample. In particular the data expressing details of values of operations in foreign countries is too scanty and available for too limited a period or number of companies, activities or host country to arrive at meaningful conclusions on the pattern of locational behaviour. However information is available on the number of company's affiliates in each country; and we

have therefore used data on the number of affiliates rather than on the value of their investment, sales, or profits or employment. However, an affiliate can be a business unit with a considerable amount of investment and activity within it or it can be a very small affair; it can be used for production or simply as a sales point. This means that the results of our indices must be interpreted appropriately and with caution.

The first index is designed to assess the foreign projection of the company and is constructed as the percentage of affiliates abroad in relation to the total number of affiliates (domestic and foreign).

$$I_i = FA/TA \quad \text{where } I_i = \text{Internationalisation index}$$

FA = Foreign Affiliates and
TA = Total affiliates

This index assesses the propensity of the company to operate away from the home country. For any random affiliate of a company, the index assesses the probability that it is located abroad.

As already mentioned there have been several attempts at measuring the degree of direct foreign projection by companies (Dunning and Pearce, 1985, Sullivan, 1994 and most notably UNCTAD, 1995) using an approach similar to the one of the Internationalisation index above. These studies use variables related to some aspect or other of the level of activity such as sales, assets, profits or employment.

The emphasis of these indices - including the Internationalisation index developed here - is on the dichotomy of location home *versus* foreign countries. Thus internationalisation is identified as the degree of “foreignness” of the direct activities, independently of the number of foreign countries in which the activities of the TNC take place.

The second index we use, the Network Spread index (NS_i) is designed to take account of whether the company operates abroad in few or many countries and thus to assess the spread of activities among the various countries of the world. The index is developed in Ietto-Gillies (1998)⁴ and is arrived at as follows. Let:

n = the number of foreign countries in which the TNC has affiliates

n^* = the number of foreign countries in which, potentially, the company could have located affiliates

Theoretically, n^* could include all the countries of the world; in practice we have taken it to be the number of countries, world-wide, which have been in receipt of foreign direct investment. This is, in fact, taken as a willingness on the part of the home country to accept inward FDI and therefore as a real possibility for the companies to invest there.

We have, therefore, taken n^* to be the number of countries in which there is inward stock of FDI minus one, in order to exclude the home country of the TNC. From the data in UNCTAD, DTCI (1997, Annex, table B.3) we have calculated n^* to be 178. The actual

⁴ A brief discussion of the framework for the Network Spread index is also in UNCTAD (1998: Box II.2, 43-44).

value of n^* is not very relevant because the analysis which we shall be making is based on comparison of the index within countries or industries and the actual scale of the index is not significant. We shall also give the value of 'n' that is the actual number of foreign countries in which the companies have affiliates.

The Network Spread index is therefore constructed as: $NS_i = n/n^* = n/178$. Like the Internationalisation index it is expressed in percentage terms. It measures the percentage of foreign countries in which the TNC has affiliates in relation to the total number of foreign countries in which, potentially; it could have located affiliates. Given any randomly selected country - from those that are in receipt of world FDI - the index assesses the probability that the TNC under consideration may have located activities in it. The Network Spread index focus on the spread of activities into many foreign countries and not on the "foreignness" only, as in the Internationalisation index.

The Network Spread index focuses on the number of foreign countries in which TNCs operate without taking account of the number of affiliates located in each of them. Will all the foreign countries have equal weight in the company's strategy? Is there a tendency to agglomeration in a few host countries? Will the same organisational structure be followed in all the host countries? The third index is designed to begin to tackle some of these issues by taking account of the number of affiliates and their distribution among the foreign countries. The Herfindahl index of concentration is calculated as⁵:

$$H_i = \frac{\sum_k (X_{ik})^2}{(X_i)^2}$$

Where X_i = company i 's total number of foreign affiliates

And X_{ik} = Company i's affiliates in foreign country k.

H_i has a range of values between zero (when all the affiliates are equidistributed between the host foreign countries) and one (when there is maximum concentration and all foreign affiliates are in one single foreign location)⁶.

3. The data

Two data sets were used for this analysis: (a) the list of the world's 1000 largest companies by market capitalisation published in Business Week (BW), July 1997; and (b) the information on the affiliates network by country, from Dun and Bradstreet *Who owns Whom*, 1997. The BW list also provides information on the home country of the company

⁵ Davies and Lyon (1996:chs. 7 and 11) develop a Multinationality index as 1-Herfindahl index and use it to assess the spread of activities of large companies in the EU. They therefore combine our NS_i and H_i together. We prefer to keep them separately to stress the relevance of having a presence in one or many foreign countries (via NS_i). We are essentially trying to consider and assess separately the second and third type of strategies.

⁶ If a company operates in all the 178 countries, which are potential host countries considered in the construction of our NS_i , the value of H_i is 0.0056, thus very close to zero.

and the industry classification within which it operates. We proceeded in the following way.

The companies on the BW list were checked against Dun and Bradstreet's database, and a profile of the affiliates obtained. The profile provided a list of the affiliates split into four categories: dormant companies, which were discarded from the analysis, trade partners, associates and subsidiaries. The sum of the associates, trade partners⁷ and subsidiaries formed the total number of affiliates for each parent company on the Business Week list. An Excel macro was then used to sort the affiliates by country of location. The following pieces of information were retained for the analysis: the total number of affiliates by host country. The information was used to produce the three indices discussed in section two.

Some arbitrary decisions had to be made in cases where the Dun and Bradstreet database was not clear about the location of affiliates. This was most notably the case where affiliates were located in some part of former Yugoslavia or former Czechoslovakia. Difficulties in assigning legal location meant that some affiliates had to be discarded from the analysis in cases where Dun and Bradstreet did not assign the affiliate to a given country. A second issue was the use of "haven" countries by companies. In producing a figure for the network spread of companies, we attempted to match the location of affiliates with the countries receiving inward investment according to UNCTAD, *World Investment Report*. As a result we discarded some affiliates whose locations were not on the UNCTAD list. Examples of these locations were Micronesia and La Reunion. All the issues discussed in this paragraph are very minor in relation to the number of companies and or affiliates involved.

Two problems were encountered in producing our results. The first is the fact that there is not full consistency between the Business Week sample and the Dun and Bradstreet one. There were two principal reasons for this. The first reason is that whilst the Dun and Bradstreet survey contains a large list of parent companies, the Business Week report does not discriminate between parent companies and subsidiaries. As a result some companies in the Business Week survey either did not appear in the database or duplicated the profile of the parent companies. In these cases the company was discarded from the final sample. The second reason is due to combination of the following: not all the companies in the BW 1000 are listed in Dun and Bradstreet and the Dun and Bradstreet sample appear to be biased in its orientation towards holding data on British companies. The final outcome may be an overrepresentation of the UK sample of companies, though a very slight one. In fact, our final sample of 664 companies allocates 13.3 per cent of these to the UK and 39 per cent to the USA. Thus our sample's representation by countries is very similar to the original BW 1000.

The second problem was due to our focus on *transnational* companies. The Business Week survey makes no attempt to distinguish between transnational (TNCs) and uninational companies (UNCs). As a result, several companies, which are very large but operate directly only in the home country - mostly in the energy and utilities industries but with some examples in other industries - were discarded from the survey. The final sample

⁷ The number of trade partners is very small.

extracted consisted of 664⁸, of which 28 have affiliates in one foreign country only. The TNCs originate from 20 countries; five of them have ‘homes’ in two different countries. They are: Shell, Reed and Unilever with headquarters in the Netherlands and the UK, ABB (Switzerland and Sweden) and RTZ/CRA (UK and Australia).

As already mentioned, in all three indices the activities are measured in terms of number of affiliates rather than in terms of values and “quantum” of those activities. This raises the question of whether one is in danger of commenting on indices that are very remote from the values and quantum of TNCs’ activities? In order to attempt to test whether this is the case, I compare our Ii - based on number of affiliates - with a set of indices which are constructed along the same conceptual framework, the degree of “foreign” direct projection of the company, but use value/quantum data. This set of indices is taken from UNCTAD (1998) and relates to percentage of foreign assets, foreign sales and foreign employment in the total of those elements for the company. We have also considered the composite index developed by UNCTAD as a mean of the above three indices. The values of these four indices are available for 86 of the 100 companies listed in UNCTAD (1998): these are the only companies for which we have the necessary data to carry on the following exercise. Even for these companies the value data are available only for the overall foreign operations rather but not broken down for each host country. Therefore no comparison could be carried out in relation to Hi. In order to attempt a comparison between value/quantum data index and our Ii based on number of affiliates, we have calculated rank correlation coefficient between our Ii and these four indices which are built from values/quantum. The results show the following coefficients: 0.51, 0.57, 0.60 and 0.58 respectively for the above four elements. This means, that, on the whole, the index based on number of affiliates may be reasonably consistent with value/quantum indices.

4. Location of affiliates and size of the company

The transnational companies we are dealing with are the largest worldwide. Their market capitalisation ranges from \$3.5bn to \$198 bn. Table 1 gives details by size bands. It shows that almost 43 percent of companies are on the 10+bn dollars range in terms of size (col. 2 and Chart 1). The percentage in each size-band increases with the decrease in the size of the average company by market capitalisation (chart one).

As expected, the largest companies are the ones with the biggest average number of affiliates abroad (col. 4, Table 1). Moreover, the largest companies have affiliates in the largest number of foreign countries (col. 5, and chart 2). All three indices display a monotonic pattern in relation to the size of the TNCs: Ii and NSi decrease and Hi increases (columns 6, 7, 8 in Table 1 and Charts 3, 4, 5).

At the very top there is a total of 33 companies (five percent of the total sample) with an average market capital of over 50bn dollars. They have, on average, almost 297 affiliates compared to an average of 159.4 for the whole sample. The same 33 companies operate, on average, in almost 42 countries and have a Network Spread index of almost 23

⁸ Although all 664 companies in the sample are drawn from the Business Week survey of the top 1000 companies, they are not necessarily the largest 664 companies in the survey, for the reasons given above. The list of 664 companies is not reported here for reasons of space; it is available on a PDF file.

percent compared to 12.5 percent for the whole sample. They also have an average Internationalisation index of 65.4 percent compared to an average of almost 53 percent for the whole sample. Their average Hi is very low at 8%, which indicates a pattern of location of affiliates very near equidistribution.

Does size matter in the number and distribution of foreign affiliates? *A priori* we would expect the very large companies to be operating abroad to a higher degree than the average company. This is, indeed, corroborated by the empirical results. The TNCs in the sample have a total of 58626 foreign affiliates which means, on average, 88.3 foreign affiliates each. The corresponding figure for the total world TNCs is 8.37⁹. Therefore, as regards foreign affiliates, the companies in our sample are of a totally different order of magnitude compared to the average world TNC.

It should also be noted that, historically, the average size of the TNCs world-wide may be declining, in relative terms, as an increasing number of smaller companies branch out their production into foreign countries. There are many factors pushing in this direction. The lower relative costs and better technologies of transportation and communications are a major factor. Moreover, countries with a long tradition of foreign direct investment have developed institutional structures - such as governmental and non-governmental agencies, educational environment and cultural elements - that help to further international production by the smaller as well as the very large companies. It is as if the activities of the very large companies generate some spillover effects on to the smaller ones. The overall business culture has become more and more one of branching out into foreign countries.

Does large size lead to internationalisation or are multinational activities helping companies to grow and achieve large size? Which way does the causal relationship work? These questions cannot be answered within the scope of this study. *A priori*, the causal link could go either way. Size and economies of scale and scope can give ownership advantages, which are useful when competing with rivals for foreign markets and foreign locations of production. On the other hand - and particularly for companies which are already large - the international operations may give scope for further growth once the opportunities at home are exhausted.

Within each band we could not find a very clear pattern. As mentioned in section one, the location strategies cannot be assessed independently of other company's strategies. Once a very high level of affiliates spread by foreign country is reached, it may be that companies resort to other strategies such as product diversification or strategic partnering. This means that, once a presence in a country is established, further involvement in it does not necessarily require the setting up of more affiliates, it can be developed via additional investment in the existing affiliates, or via inter-firm relationships including sub-contracting and strategic alliances with other firms.

Nonetheless the results for our Hi are, in general, quite low with an average of 12 percent. This means that the companies not only operate in considerable number of host countries (on average over 23 countries) but that they are also involved in each host country to a considerable degree, reaching an almost equidistribution of their network of affiliates. If the number of affiliates in each country could be taken as a proxy for the level of activity in that country, than we could say that we are not far from an equidistribution pattern of

⁹ Calculations for this last ratio are based on the data in UNCTAD, DTIC (1998, table I.2: 3-4).

activities in host countries. The larger the companies, the lower the H_i and therefore the nearer the locational pattern is to equidistribution. However, as already mentioned it may be far fetched to take the number of affiliates as proxy for the level/values of activities. The jump from the one to the other is indeed more legitimate within each company, when we have some uniformity of product(s) and/or organisational strategies across the company as a whole. When we aggregate company data – whether by size or industry or other – the degree of uniformity diminishes and thus the average value of H_i is likely to be the results of a variety of elements and strategies. Moreover, even within each company there is scope for divergence. In fact, each company may follow strategies that are specific to host countries and related to their economic, social, political frameworks including constraints set by the host countries' governments (for example on entry mode via joint ventures).

We can conclude with the following. The very large companies have an average number of affiliates abroad well above the total number of world TNCs. Within our sample, it appears that the largest companies have a higher propensity to operate away from the home country; they also have a higher propensity to spread their wings wide in foreign countries and to operate very nearly an equi-distribution pattern of affiliates in foreign countries.

5. Locational profile by country of origin of the companies

The largest world TNCs in the sample originate from twenty countries and they represent 1.1 per cent of the total world TNCs. Some 13.1 percent of the total number of foreign affiliates in the world is attributable to these 664 TNCs.¹⁰ Within the twenty countries the distribution is uneven. Table 2 shows that thirty nine percent of these companies originate in the USA. The next country with a high share is Japan with 18.4 percent, followed by the UK with 13.3 per cent. These three countries together are home to over 70 percent of the world largest 664 companies. Well below these countries come Germany and France with 5.7 and 4.4 respectively.

Column four in Table 2 gives the distribution of outward stock of FDI for the twenty countries in the sample. This allows us to analyse the extent to which there is consistency between the percent of the largest TNCs located in the country (col. 3) and the percentage of its total outward stock of investment. Indeed, the pattern in column four is very similar to the one in column three though a few countries have a higher percentage of outward FDI stock than might have been warranted by their share of the largest TNCs: namely the Netherlands, Switzerland, Hong Kong and Italy.

It is interesting to compare the results for the largest companies with those for the total world TNCs and of total FDI stock. Column five in Table 2 gives the percentage shares of total world TNCs for which the 20 listed countries are responsible. All together the countries which are home to the largest 664 TNCs account for 94.2 per cent of the total outward FDI stock and for 76.0 per cent of the total world TNCs.

Table 3 gives similar distribution for manufacturing/mining and services separately

¹⁰ Calculated as a ratio of the total foreign affiliates of the TNCs in our sample (58626 in our table 4) divided by the number of foreign affiliates of the total world TNCs. UNCTAD (1998, table I.2: 3-4) gives the total world TNCs as 53607 and the total world foreign affiliates as 448917.

for the years 1985 and 1985-87 respectively. It shows that the US, Japan and the UK are still the three countries at the top of the league in the share of large TNCs that originate from them. Moreover, the breakdown between companies operating within the two main sectors of the economy shows similar ownership pattern by country of origin (table 3).

The data in column five of Table 2 give the percentage of world TNCs that originate from the 20 listed countries. The distribution is quite different from the one related to the top 664 TNCs (col. 3) and from the one of the stock of FDI (col.4). Germany exhibits the highest share of TNCs with 15.3 percent (column five), followed by Switzerland (9.1 percent), Japan, (8.6 percent), Sweden, (8.4 percent) and US (6.8 percent).

The discrepancies in distribution between columns 3, 4 and 5 in Table 2 may partly be specific to size and partly to the home country. On the first reason, we note that Germany's highest percentage of world TNCs combined with a relatively low percentage of the largest TNCs means that its high share of outward FDI stock (9.2 percent in col. 4) is attributable to many companies that are not so large. As regards the second reason, it could be that companies from different countries follow different market entry strategies.

At the other end of the spectrum, the UK's outward FDI stock (11.7 per cent of world total) appears to be originating mainly with very large companies. There is, in fact, a considerable discrepancy in the UK rankings on the largest 664 (col. 3) and on all the TNCs (col. 5), in the opposite direction to the one seen for Germany. It could also be that smaller German companies have been involved in direct market-entry strategies to a larger extent than companies of similar size originating in the UK.

The host countries of the affiliates of our 664 companies tend to be predominantly drawn from among the developed ones, as is indeed the case with the location of world outward FDI. The only exceptions to this pattern are Hong Kong and Singapore (table four) the developing countries appears to be a very relevant area for the location of affiliates for companies from these two countries. This can be explained partly by their level of development and partly by their strategic position in the region of which they are part.

For the sample as a whole, the 664 TNCs have located 44.3 per cent of their affiliates at home, 38.9 percent in developed countries and 16.8 percent in the developing countries. In our sample, the share of foreign affiliates located in developed countries, as percent of total affiliates, is 70. This contrasts with a 22 per cent share for all the foreign affiliates of the world TNCs. The discrepancy is likely to be due to two elements: (a) the smaller TNCs world wide are more likely to have most of their affiliates at home and they are, in general, less internationalised than the very large ones; (b) a larger proportion of smaller TNCs are likely to originate from developing countries and to locate their foreign activities in other developing countries.

The regional breakdown in the shares of foreign affiliates (table 4) is more consistent with the regional breakdown in the stock of inward and outward FDI which shows, for the developed countries, percentages of 68 and 90 for inward and outward respectively¹¹.

Columns six and seven in Table 2 give the values for the Internationalisation and Network Spread indices. Most European countries as well as the US and Australia show a

¹¹ The data on world foreign affiliates and stock of inward and outward FDI are taken from UNCTAD (1998: table I.2, pp. 3-4, table B3, pp. 373-377 and table B4, pp. 379-384 respectively).

double-digit index of Network Spread (NSi). The following factors seem relevant in the country specificity of the results for the indices. (1) The size of the home country; a large home country gives more scope to the company for growth at home. Thus - *ceteris paribus* - we might expect a lower degree of internationalisation and spread for companies originating from large countries compared with those from smaller ones. However, a large home base may also give the company specific ownership advantages, which can be used to expand abroad. (2) The country's history of foreign direct investment; a long history of FDI increases the probability of wider spread because the companies and the home country will have more opportunities for links in other countries. Moreover, the home country is more likely to have developed an infrastructure and business culture congenial to operating in foreign countries. *Ceteris paribus*, the marginal cost of operating in an additional country may decline with the longer history of foreign involvement and with the higher number of country in which the company already has operations. (3) Some countries may be chosen as home country by companies for convenience reasons linked to financial and regulatory regimes.

Switzerland, with the second highest spread of activities (NSi equal to 22.4 per cent) and a very high percentage of foreign to total affiliates (the highest in the sample at 79.3 percent) may fall into the last category. There is also likely to be a size effect as the country's economy is too small to provide scope for market growth at home.

The US is the largest economy in the sample. Though, as already noted, it is home to the largest number of the companies in our sample (259), its indices of Network Spread and Internationalisation are slightly below the average (at 11.8 and 50.7 per cent respectively). The large size of the country provides scope for domestic growth of the companies and this explains why the very large companies located in the US appear to be less spread than one might expect.

The UK results are particularly interesting. The UK is a relatively small economy with a very long history of international production and with the added advantage of colonial links from the past as well as experience of operating in foreign countries.¹² This helps to explain the large share of TNCs from the sample which are located in the UK. It also explains the very high value for the Network Spread index (17.0 percent). The affiliates have a spread index among the host countries with about average value. In similar position may be the Netherlands, Sweden and Belgium: all three countries show high to average values for the indices though a much lower share of number of sample companies (2.0, 2.9 and 0.9 percent respectively) than the UK.

Japan with the second highest share of sample companies (18.4 percent), has a relatively low Network Spread index though a higher than average Internationalisation index. This indicates the effect of a large economy, combined with TNCs' strategies of targeted locational concentration (by nation-states) of their direct foreign activities. Moreover, the relatively recent involvement in foreign operations - compared to other countries in our list - does not give Japan the "historical connection" advantage in the locational spread.

¹² Hannah (1996) singles out the unusual results for the index of multinationality calculated by UNCTAD, 1995 for Britain. He ascribes them to Britain's history though more in terms of the effects of commercial links than in terms of colonial past.

Transnational companies from most of the twenty countries have more than 50 percent of their affiliates abroad. The exceptions are: Hong Kong, Spain, Italy and New Zealand: all with low share of participation in the sample of companies (Table 2 col. 6). As regard the last three countries, the relatively recent involvement in outward FDI, makes the home country particularly relevant. In the case of Hong Kong, one has to look for explanations, in its strategic position with regard to the rest of China and South East Asia.

Listed in col. 8 of Table 2 are values for Hi. The spread of values by home country is very low: only two countries, New Zealand and Ireland, have values above 25 per cent and they are both very small countries. Are there reasons to believe that the spread of affiliates by host countries could be specific to the country of origin of the TNC? On the whole, I do not see many *a priori* reasons for home country specificity. As already mentioned we are more likely to expect specificity in relation to the product(s), or the company's organisational strategies, or the industry or the host country. Nonetheless, it could be that companies from different home countries have different organisational cultures, which they then implement when operating in foreign as well their home country. They may also be some country-specificity in relation to product(s) and industries. But the links would be indirect and thus, on the whole, it is not surprising to see no specific home country pattern in the results for Hi.

6. Locational profile by industries

The majority of the largest 664 TNCs operate within manufacturing and mining (407 or 61 percent) with 257 (39 percent) in services (Table 5). The average company size within the two sub-samples is the same at 15.8bn dollars. However, services companies have, on the whole, a lower foreign projection and a lower propensity for spreading affiliates in many countries. The average value for the Internationalisation index is 43.9 percent for services and 58.4 for manufacturing and mining. For the Network Spread index we have: 9.6 and 14.3 percent in services and manufacturing/mining respectively and the Hi is 10.0 and 16.0 per cent respectively. Thus services appear to be less internationalised and their foreign affiliates more geographically concentrated (by nation-states) compared to manufacturing.

The results at such aggregate level must be looked at with caution. There is a fundamental problem in the sectoral breakdown, which has to do with issues of recording. In the last analysis this is a company-based study and the companies are classified according to their main activities. However, many companies, particularly large ones, which started as manufacturing have been diversifying, to a smaller or larger extent, into services. As they are still recorded under manufacturing, this leads to an under-recording of services activities in all their manifestations. Moreover, the services industries are the ones where fast changes are occurring partly due to the new technologies. However, as our data refer to one year only, it is impossible to detect dynamic changes.

The sample companies pertain to 38 two-digit industries, which we have aggregated into 20 groups of industries. The grouping has been done with attention to the type of activities and to the values of the two main indices (Ii and NSi). The results are in Table 6 where the industries are ranked by average size of the companies (col. 3) and the grouping is indicated in the notes.

The ranking of the Ii and NSi by industry appears to be very similar. The industries that have a high percentage of affiliates abroad as well as a high spread of the network of affiliates in foreign countries are: automobiles, electrical, electronics and data processing, consumer products, household durables/appliances, chemicals and wholesale/ international trade. For these industries proximity to the market is likely to be very relevant and this feature may explain the high levels of internationalisation expressed by both indices.

The industries with low - or relatively low - values for both indices, and therefore the industries for which the home country is still the main - or a very substantial - location are the following: telecommunications, aerospace and military, real estate, merchandising, utilities/transportation and tourism. We should, however, note that in some cases this may be an indication of genuinely high production facilities at home, which act as spearhead for the foreign ones (utilities, telecommunications, real estate). In other industries the activities abroad are important or crucial but the industry operates through other foreign channels and modes than the establishment of direct affiliates. This may be the case of the tourism and merchandising industries, which are also the industries with the highest Hi.

A high Internationalisation index combined with a low or relatively low Network Spread index shows that the activities of the industries are based abroad to a large extent, though they are concentrated in few - or relatively few - foreign countries. This is the case of business and public services, mining and forestry and housing and construction materials.

The concentration index shows very low dispersion around the mean. The following industries have below average Hi values: Chemicals, Consumer products, Automobiles, Electrical, Electronic and data Processing, Capital Equipment, Energy Sources, Wholesale/International trade, Mining and Forestry, telecommunications and Aerospace/Military. Thus low concentration appears in industries where the proximity to the consumer is relevant as in Consumer products, Automobiles and Electronic, Electrical and data Processing and Telecommunications. The highest values for Hi (and therefore the highest concentration of affiliates by host country) are in Merchandising (28.3 per cent) and Leisure and tourism (24.6 per cent). Different entry modes for these industries would explain the higher values for Hi.

As already mentioned, the history of the company and its entry mode into the host country is likely to play a role in such distribution. Can we draw any conclusions regarding agglomeration tendencies? On the whole it would appear that the companies studied have a low agglomeration pattern either at home or in their host countries. The low concentration values and high foreign projection could be the result of various elements such as low or relatively low internal economies of scale, low external economies at the industry level. The low agglomeration pattern found here is in accordance with similar results reported in other studies using different datasets and techniques. For example Krugman (1998: 15) states that "... in general, the tendency towards agglomeration is stronger in the models than it seems to be in the real economy". Nonetheless, account should be taken of the size factor. The companies in this study are all very large. This means that economies of scale – internal or external - may still be possible even if production is spread. One might find some industry specificity for the indices – and a clear agglomeration pattern - in studies involving a sample containing both large and small TNCs. For example Braunerhjelm and

Ekhoh (1998).

Table 7 gives the distribution of TNCs by industries and countries of origin, where the countries are listed according to their share of the sample TNCs (as in Table 2). As expected, the countries which are home to the largest number of companies have TNCs covering most industries (US, Japan and UK in particular). Some industries are in the portfolio of many countries. The following industries appear in at least half the listed countries: telecommunications, energy sources, consumer products, multi-industry group, utilities/ transportation, financial services and mining and forestry. These industries appear to be more widely spread among the 20 listed countries. There may be various reasons for this pattern, including the relevance of the home base for that specific industry.

7. Summary and conclusions

The paper starts with a discussion of reasons behind different location strategies. The main body of the paper is devoted to analysing the profile of the world largest 664 TNCs in terms of the locational structure of their affiliates. Three indices are developed to analyse the companies' locational profile. (1) The Internationalisation index which assesses the degree of foreign projection of the company's direct activities and is constructed as the percentage of affiliates which are located in foreign countries in relation to the total number of affiliates. (2) The Network Spread index which assesses the extent to which the company's affiliates are located in many countries of the world. (3) The third index assesses the degree to which the number of affiliates are concentrated (or, on the contrary, equidistributed) in the various nation-states. The research analyses the locational profile in relation to the size of the company; the country of origin of the TNC and the industry to which the company belongs.

As regards locational structure and size the following conclusions can be elicited. The companies in our sample have, on average, 88.3 foreign affiliates, ten times as large as the average for all the world-wide TNCs, big and small (8.37). We must, however, remember that even the smaller companies in the sample are pretty large, as the smallest company has a market value of \$3.5 bn. These conclusions are in accordance with expectations. Within the sample the largest companies exhibit a higher propensity to operate abroad and in a larger number of foreign countries. Their affiliates tend to be fairly equally distributed around the host countries.

The largest TNCs originate from 20 countries, which altogether are responsible for 76.0 percent of the total world TNCs, and for 94.2 percent of the world stock of outward FDI. The distribution of the sample TNCs by country of origin is similar to the distribution of the stock of outward FDI for the country as a whole. There are, however, some discrepancies with the distribution of total world TNCs; this may be due to the effect of the very large number - probably increasing - of smaller TNCs operating world-wide. There may also be the effect of possible different strategies for entry modes for companies originating from different countries.

The results corroborate the *a priori* hypothesis that the locational profile of the companies in terms of the country of origin is affected by the following elements: the size of the country; the history of FDI in the country with related links with other countries and,

in a minority of cases, the fact that the choice of home country may be linked to issues of regulatory regimes.

The locational profile of the companies according to the industries in which they operate shows the following pattern. In our sample more companies were listed within manufacturing and mining than within services (61 and 39 percent respectively). The two sectors have different results in relation to the three indices presented in this paper. Compared to manufacturing, the services sector shows lower values for both the Network Spread and Internationalisation indices. It also shows less equal distribution of affiliates by host country.

We have also aggregated the results in 20 industries and they show that the industries with high Network and Internationalisation indices are automobiles, electrics, electronics and data processing, household durables/appliances, chemicals and wholesale/international trade. In the following industries both indices appear rather low, denoting the relevance of the home country as a base for the companies' activities: telecommunications, aerospace and military, real estate, merchandising, utilities/ transportation and tourism.

On the whole the spread of activities in different countries appear to be size and industry specific. The specificity with respect to the country of origin is linked to wider elements such as the size of the home country and the history of foreign direct involvement of the country' TNCs. This means that the size of the company, its growth and its international strategies are likely to be affected by the size of the country of origin and the opportunity it offers at home and as platform for foreign activities. Moreover, the spatial diversification must be seen in the context of wider diversification strategies, which affect spatial location, but also the mode of market entry as well as product diversification.

This study cannot discriminate between different entry modes in the location of affiliates, therefore we do not know whether and to what extent the entry mode via greenfield leads to different locational spread compared to entry via mergers and acquisitions¹³.

The distributional pattern of affiliates in foreign countries leads to a low H_i (12 per cent) which denotes low concentration by host country. The low level of H_i is specific to the size of the companies and, in fact, the larger the company, the nearer the pattern is to equidistribution. On the whole industries in which proximity to the consumer is important, appear to have low degree of concentration such as consumer products). At the other end, the highest degree of concentration is shown by industries in which alternative entry modes are likely to be in operation.

The overall results from the three indices lend weight to the hypothesis of low or relatively low agglomeration tendencies. It is not possible to distinguish whether this is due to low internal or external economies. In fact it could even be compatible with economies of scale because the companies studied are very large and therefore could spread their activities and yet they operate near optimum size.

There are strategic and policy implications from the overall results presented in the previous sections. At the company's level a high degree of Network Spread may be a sign

¹³ There is evidence of considerable differences in cross border mergers and acquisitions activity by country of origin of direct investment as well as by industry UNCTAD (1997) and Chesnais, Ietto-Gillies and Simonetti, (2000: ch. 3).

of high ownership advantages. It may also denote a strategy of locational diversification, which should be looked at in the context of other diversification strategies and constraints (such as product diversification). Moreover, it may also have implication for costs and efficiency issues as a wide geographical spread may lead to higher managerial costs and organisational diseconomies. Such implications may also derive from the different degree of concentration of affiliates, which may be linked to the companies' organisational strategies.

The strategies ought to be looked at in relation to the impact on various players in the economic system: rivals, labour, governments and consumers. A strategy of high locational diversification may give the company advantages towards some or all of these other players. In particular it may give advantages towards labour as it fragments the total labour force employed by the company and thus lowers its ability to organise. These strategic motivations in the location of activities by large TNCs help to explain a lower level of agglomeration than expected in theories and models based on efficiency criteria as in the New Trade Theories.

At the macro level, a high level of internationalisation - whether measured by foreign projection or by spread of activities or by both - may be an indication of low or declining locational advantages of the home country, particularly if associated with low levels of inward FDI. It may also have implications for the level and structure of the home country's trade, given the high level of involvement in trade by TNCs in general.

As regards implications for policies, a high foreign projection combined with a high network spread may put constraints on industrial policies by governments in the home countries. Moreover, a high network spread might point to a high degree of "footlooseness" on the part of the companies. Here the industry specificity of the results on the Network Spread may be of some relevance in developing realistic industrial strategies.

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Chart 1: World's largest 664 TNCs: Distribution of companies by size band by market capitalisation in \$bn.

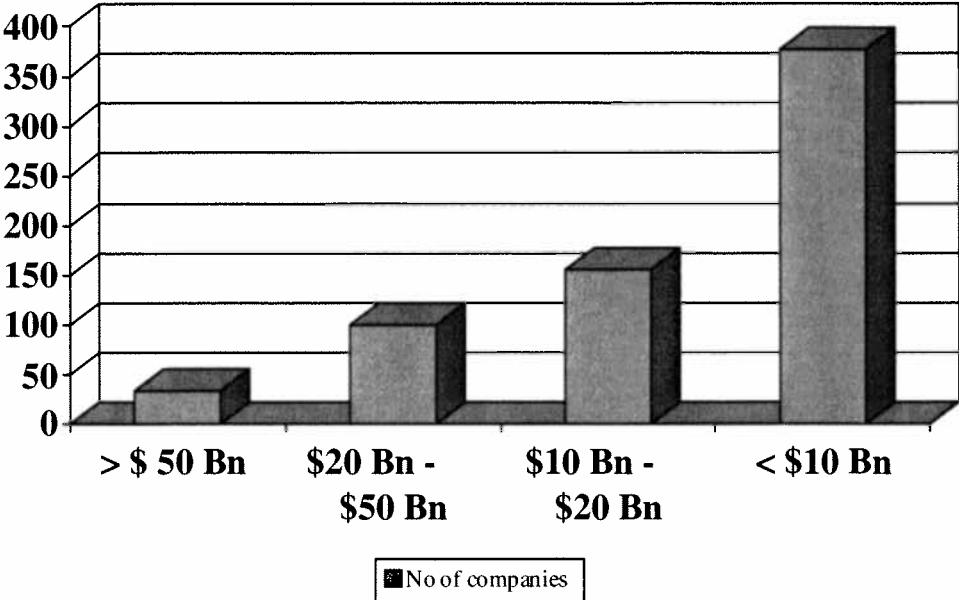


Chart 2: World's largest 664 TNCs: Average number of total affiliates by size band of company's market capitalisation in \$bn. Averages.

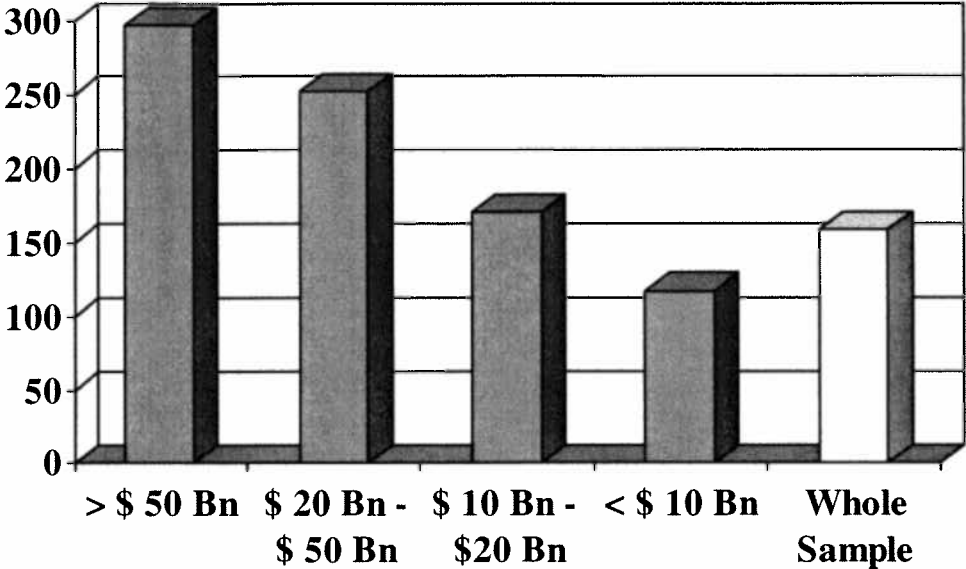


Chart 3: World's largest 664 TNCs: Average number of foreign affiliates by size band of company's market capitalisation in \$bn. Averages.

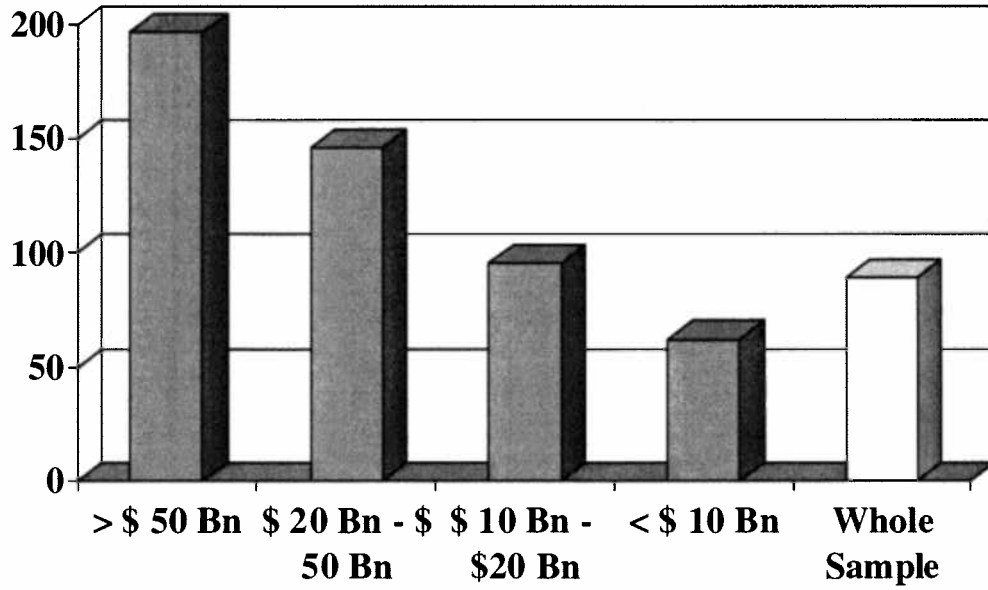


Chart 4: World's largest 664 TNCs: Internationalisation index (Ii) by size band of companies by average market capitalisation. \$bn. Averages.

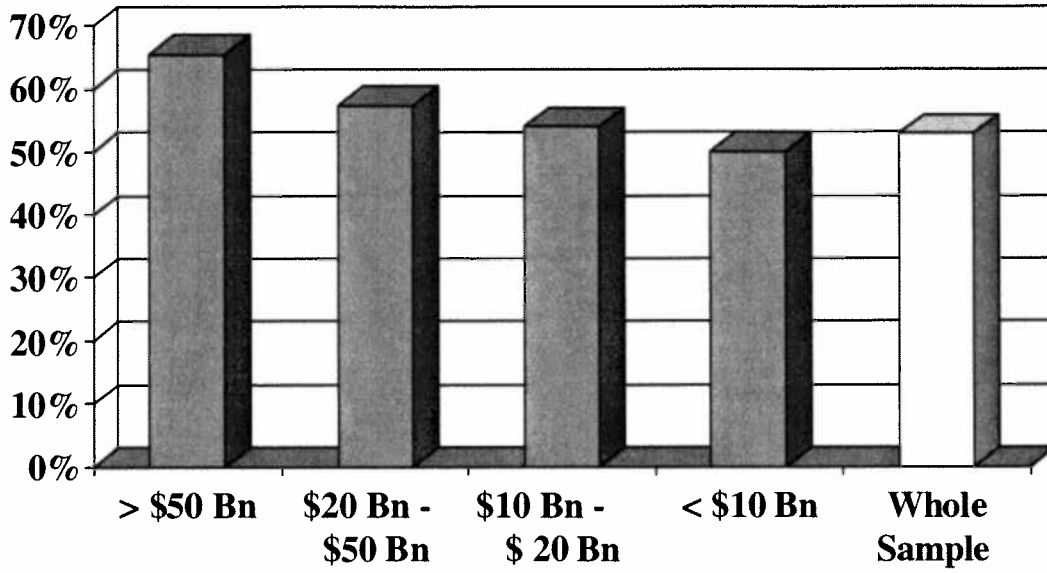


Chart 5: World's largest 664 TNCs: Network spread index (NSi) by size band of companies by average market capitalisation. \$bn. Averages.

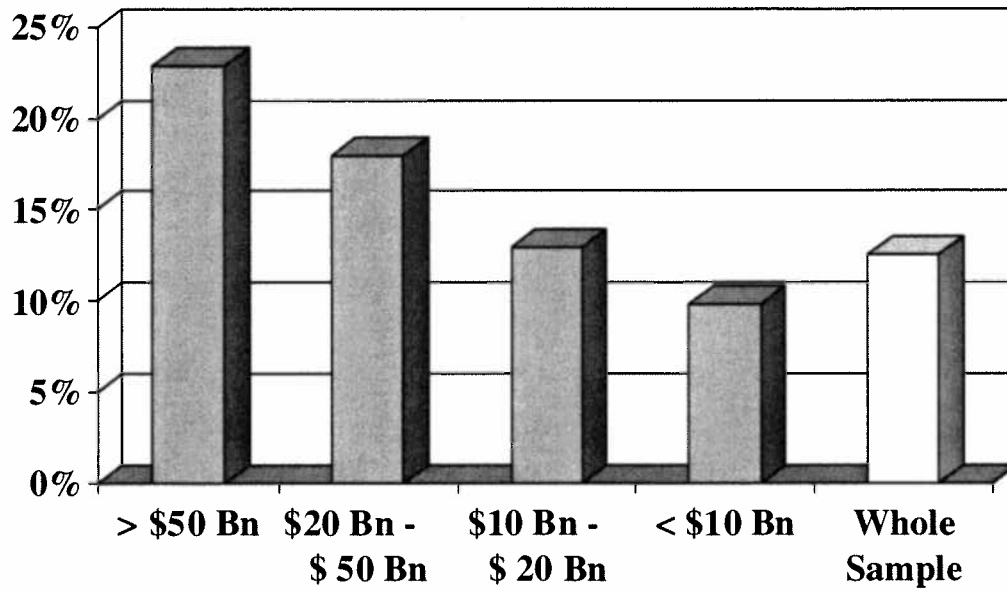


Table 1: World largest 664 TNCs 1997: Breakdown by band size. Various indicators.

Band (1)	No. Companies (2)	% (3)	Mean No. of affiliates (4)	Mean No. of foreign affiliates (5)	Mean No. of foreign countries (6)	Mean Ii (7)	Mean NSi (8)	Mean Hi* (9)
> \$ 50 Bn	33	5.0%	296.8	196.4	41.8	65.4%	22.9%	8.0%
\$20 Bn - \$ 50 Bn	99	14.9%	252.4	146.2	33.0	57.4%	18.0%	10.0%
\$10 Bn- \$20 Bn	155	23.3%	170.6	95.4	24.1	53.9%	13.0%	12.0%
< \$ 10 Bn	377	56.8%	118.4	62.1	18.7	50.0%	9.9%	14.0%
Whole Sample Mean	664	100%	105851 159.4	59141 88.8	23.2	52.8%	12.5%	12.0%

Source: Business Week, 7th July 1997. Dun and Bradstreet, Who Owns Whom CD ROM, 1997.

* Weighted mean

Table 2: World's largest 664 TNCs by country of origin. Various indicators.

Country of origin (1)	Number of Companies * (2)	Percentage of sample (3)	Percentage of World FDI Stock (outward)** (4)	Percentage of World TNCs *** (5)	Internationalisation Index (mean) Ii (6)	Rank	Network spread (mean) NSi (7)	Rank	Concentration Index (mean) Hi+ (8)	Rank
United States	259	39.0	25.6%	6.8%	50.7%	14	11.8%	11	11.0	12
Japan	122	18.4	8.0%	8.6%	57.2%	7	8.6%	14	16.0	6
United Kingdom	88	13.3	11.7%	2.1%	51.5%	12	17.0%	6	12.0	10
Germany	38	5.7	9.2%	15.3%	54.3%	8	18.5%	4	9.0	15
France	29	4.4	6.4%	4.2%	53.3%	11	18.8%	3	9.0	15
Canada	22	3.3	3.9%	3.4%	63.3%	4	8.7%	13	20.0	5
Sweden	19	2.9	2.1%	8.4%	51.3%	13	13.7%	8	8.0	18
Australia	13	2.0	1.5%	1.0%	53.7%	9	11.4%	12	21.0	4
Netherlands	13	2.0	6.0%	3.3%	61.6%	5	23.6%	1	10.0	14
Switzerland	12	1.8	4.4%	9.1%	79.3%	1	22.4%	2	11.0	12
Hong Kong	10	1.5	3.9%	1.0%	27.1%	19	5.1%	19	22.0	3
Spain	9	1.4	1.4%	1.7%	22.3%	20	7.3%	16	9.0	15
Denmark	7	1.1	0.7%	1.6%	60.6%	6	8.5%	15	15.0	7
Italy	7	1.1	3.5%	2.0%	43.1%	17	13.6%	9	7.0	19
Belgium	6	0.9	2.7%	2.2%	66.1%	3	12.6%	10	12.0	10
Singapore	6	0.9	1.2%	..	49.9%	15	7.0%	17	15.0	7
Ireland	3	0.5	0.2%	0.1%	53.6%	10	5.4%	18	26.0	2
Finland	2	0.3	0.6%	2.4%	73.9%	2	17.4%	5	7.0	19
New Zealand	2	0.3	0.2%	0.5%	33.3%	18	3.4%	20	33.0	1
Norway	2	0.3	0.9%	1.8%	49.1%	16	14.3%	7	14.0	9
Total	669	100	94.2%	76.0%						
Mean figures	33.45				52.8%		12.5%			

* Companies having headquarters in more than one country are counted as nationals of both countries. These companies include: ABB (Switzerland/Sweden); RTZ/CRA (UK/Australia) and Shell, Reed and Unilever (all UK/Netherlands). This accounts for a total of 669 instead of 664

** Source: UNCTAD/DTCI (1998), Annex table B4, pages 379-384.

*** Source: UNCTAD/DTCI (1998), table I.2, page 3-4. The data for Denmark is taken from UNCTAD/DTCI (1997:6) because the data given in UNCTAD/DTCI (1998) includes both Danish and foreign parent corporations based in Denmark. The world total has been adjusted accordingly.
+ Weighted average.

Table 3: World's largest TNCs in manufacturing and services. Percentages of sample by country of origin 1980s.

Country	Mining and Manufacturing* %	Services** %
USA	46	45.5
Japan	16	20.0
UK	10	9.9
W. Germany	6	5.2
France	4	6.0
Netherlands	1	2.7
Switzerland	2	2.5
Italy	1	1.1
Others	14	7.1
Total	100	100
No of companies in sample	600	365

Source: UNCTC (1988) Transnational Corporations in World Development, Trends and Prospects

* Data refers to 1985

** Data refers to 1985-87

Table 4: World's largest 664 TNCs by country of origin. Breakdown of affiliates location by home country and host region. 1997.

Country of Origin	Affiliates in home country		Host developed countries		Host developing and CEE countries		Total affiliates		Total affiliates in host countries	
	No	%	No of countries operated in	Affiliates	No	%	No	%	No	%
United States	15034	47.8%	11.4	10525	33.5%	10.7	5866	18.7%	31425	100.0%
Japan	3859	38.9%	8.4	3966	40.0%	8.0	2098	21.1%	9923	100.0%
United Kingdom	9830	41.3%	14.8	10249	43.1%	15.3	3699	15.6%	23778	100.0%
Germany	5135	46.1%	16.9	4449	39.9%	16.4	1559	14.0%	11143	100.0%
France	4072	49.5%	16.6	3064	37.2%	17.7	1095	13.3%	8231	100.0%
Canada	623	35.1%	8.8	793	44.7%	7.5	358	20.2%	1774	100.0%
Sweden	1178	43.9%	25.4	1178	43.9%	9.2	330	12.3%	2686	100.0%
Australia	1186	39.7%	9.1	1298	43.5%	11.9	503	16.8%	2987	100.0%
Netherlands	1626	43.6%	15.0	1597	42.8%	15.8	506	13.6%	3729	100.0%
Switzerland	306	12.1%	18.1	1549	61.3%	23.6	670	26.5%	2525	100.0%
Hong Kong	1035	69.5%	3.2	96	6.4%	6.9	358	24.0%	1489	100.0%
Spain	902	77.4%	8.2	150	12.9%	5.8	113	9.7%	1165	100.0%
Denmark	161	36.1%	11.0	216	48.4%	5.1	69	15.5%	446	100.0%
Italy	719	50.5%	13.1	492	34.5%	12.3	214	15.0%	1425	100.0%
Belgium	291	27.7%	13.7	632	60.1%	9.8	128	12.2%	1051	100.0%
Singapore	171	29.3%	4.5	174	29.8%	8.8	238	40.8%	583	100.0%
Ireland	156	32.6%	8.7	315	65.9%	2.0	7	1.5%	478	100.0%
Finland	114	29.9%	19.0	228	59.8%	12.0	39	10.2%	381	100.0%
New Zealand	64	51.6%	4.0	42	33.9%	3.0	18	14.5%	124	100.0%
Norway	248	48.8%	16.0	235	46.3%	10.5	25	4.9%	508	100.0%
All TNCs and countries	46710	44.1%		41248	39.0%		17893	16.9%	105851	

Note : The allocation between developed and developing countries follows the UNCTAD, WIR.

Table 5: World's largest 664 TNCs, 1997. Number, size and indices by sector. Averages.

Sector	Companies		Average Size (\$ Bn)	Mean Internationalisation Index Ii	Mean Network Spread Index NSi	Mean Concentration Index Hi
	No	%				
Manufacturing & Mining	407	61%	15.8	58.4%	14.3%	10.0%
Services	257	39%	15.8	43.9%	9.6%	16.0%

Table 6: World's largest 664 TNCs: Number, size and indices by industry, 1997. Averages.

(1) Industry *	(2) No of Companies		(3) Average Size (\$ Bn)	(4) Mean Network Spread NSi	(5) Mean Index of Internationalisation Ii	(6) Concentration Index Hi	(7) Network Spread Rank	(8) Index of Internationalisation Rank	(9) Concentration Index Rank
	No	%							
1 Telecommunications	21	3.2%	33.3	7.9%	29.7%	11.1%	17	18	12
2 Automobiles	15	2.3%	25.9	16.1%	55.9%	7.2%	5	7	18
3 Energy Sources	33	5.0%	22.3	14.6%	42.3%	9.4%	7	13	15
4 Multi Industry	26	3.9%	20.3	15.7%	55.1%	13.2%	6	9	10
5 Electrical, electronics and data processing	60	9.0%	17.7	14.1%	71.5%	8.5%	8	1	17
6 Consumer Products	93	14.0%	22.8	17.8%	66.9%	7.2%	3	3	18
8 Financial Services	126	19.0%	15.9	10.3%	48.3%	14.6%	13	12	8
7 Business and Public Services	30	4.5%	15.2	11.0%	55.2%	19.4%	11	8	5
9 Aerospace/ Military	9	1.4%	13.8	9.9%	31.4%	11.5%	14	17	11
10 Household durables	10	1.5%	13.7	16.3%	68.4%	17.5%	4	2	6
11 Real Estate	10	1.5%	13.6	4.4%	27.8%	23.4%	19	20	4
12 Leisure and Tourism	12	1.8%	13.3	8.7%	35.9%	24.6%	16	15	2
13 Chemicals	30	4.5%	11.7	19.9%	65.0%	6.1%	1	4	20
14 Merchandising	22	3.3%	10.9	4.4%	28.7%	28.3%	20	19	1
15 Wholesale/International Trade	6	0.9%	10.2	18.7%	59.0%	9.8%	2	6	14
16 Broadcasting and Publishing	15	2.3%	9.7	10.6%	39.8%	16.3%	12	14	7
17 Utilities and Transportation	42	6.3%	10.0	7.1%	33.1%	14.4%	18	16	9
18 Capital Equipment	44	6.6%	7.4	12.6%	61.8%	9.0%	9	5	16
19 Mining and forestry	41	6.2%	6.6	11.4%	53.0%	10.9%	10	11	13
20 Housing and Construction Materials	19	2.9%	5.4	8.9%	53.6%	23.8%	15	10	3
Total	664	100.0%							
Whole Sample Means			15.0	12.0%	49.1%	14.3%			

+ = Weighted mean

* The list of industries used here are derived by aggregation from the 38 categories as from Business Week. The aggregated categories are:

Electrical, electronics and data processing	(Data processing & reproduction, electrical & electronics, electronic components)
Consumer Products	(Beverages and tobacco, food & household products, health & personal care, recreation & other goods, textiles & appare)
Financial Services	(Banking, financial services and insurance)
Utilities and Transportation	(Utilities, airlines, road & rail, shipping)
Capital Equipment	(Energy equipment, industrial components, machinery & engineering)
Mining and forestry	(Gold mines, forest products & paper, nonferrous metals, steel, misc. materials)
Housing and Construction Materials	(Building materials and components, construction and housing)

Table 7: World's largest 664 TNCs by industry and home country, 1997.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	Telecommunications	Automobiles	Energy Sources	Multi Industry	Electrical, electronics, and data processing	Consumer Products	Business and Public Services	Financial Services	Aerospace / Military	Household durables	Real Estate	Leisure and Tourism	Chemicals	Merchandising	Wholesale & International Trade	Broadcasting and Publishing	Utilities and Transportation	Capital Equipment	Mining and forestry	Housing and Construction Materials	TOTAL
United States	8	4	16	9	33	47	14	34	7	3		6	14	8	1	6	17	18	13	1	259
Japan	1	5	2		16	13	3	23		5	2		6	1	5	1	6	15	9	9	122
United Kingdom	4		5	5	2	11	7	17	2		2	6	2	8		3	6	3	2	3	88
Germany	1	3		1	1	6	2	8					4				5	3	3	1	38
France		1	2		3	4	3	5					2	3		1		2	1	2	29
Canada	1		2	1	2	1		5								1	2	1	6		22
Sweden		1			1	2		5	1					1			2	2	3	1	19
Australia			2			1		5								1			3	1	13
Netherlands	1		1		1	2		3		1			1	1		2					13
Switzerland				2		4	1	4									1				12
Hong Kong	1			3							5						1				10
Spain	1		1					5									2				9
Denmark	1			1		3		1									1				7
Italy		1	1	1				4													7
Belgium			1	1				3					1								6
Singapore	1			1				2			1					1					6
Ireland								2												1	3
Finland					1														1		2
New Zealand	1																		1		2
Norway			1	1																	2
Total	21	15	34	26	60	94	30	126	9	10	10	12	30	22	6	16	43	44	42	19	669

The world's largest 664 TNC's taken from the Business Week, July 1997.

1 General Electric	United States	57 Minnesota Mining And Manufact	United States
2 Coca Cola	United States	58 Dai-Ichi Kangyo Bank	Japan
3 Nippon Telegraph & Telephone	Japan	59 Boeing	United States
4 Microsoft	United States	60 Fuji Bank	Japan
5 Exxon	United States	61 Sanwa Bank	Japan
6 Intel	United States	62 Ameritech	United States
7 Toyota Motor	Japan	63 Hitachi Ltd	Japan
8 Merck	United States	64 ING Groep	The Netherlands
9 Philip Morris	United States	65 McDonald's	United States
10 Novartis	Switzerland	66 L.M. Ericsson	Sweden
11 Procter And Gamble	United States	67 Schering Plough	United States
12 International Business Machines	United States	68 American Express	United States
13 Roche Holdings	Switzerland	69 Sony	Japan
14 Bank Of Tokyo Mitsubishi	Japan	70 Hutchinson Whampoa	Hong Kong
15 HSBC Holdings	United Kingdom	71 Siemens	Germany
16 Johnson And Johnson	United States	72 Bell Atlantic	United States
17 Bristol Myers Squibb	United States	73 Industrial Bank Of Japan	Japan
18 Glaxo Wellcome	United Kingdom	74 Oracle	United States
19 British Petroleum	United Kingdom	75 Barclays Bank	United Kingdom
20 Shell Transport And Trading	United Kingdom	76 Compaq Computer	United States
21 Pfizer	United States	77 Schlumberger	United States
22 American International Group	United States	78 Sun Hung Kai Properties	Hong Kong
23 Dupont	United States	79 Texaco	United States
24 Deutsche Telecom	Germany	80 Zeneca Group	United Kingdom
25 AT&T	United States	81 Honda Motor	Japan
26 PepsiCo	United States	82 Broken Hill Property	Australia
27 Walt Disney	United States	83 Bayer	Germany
28 Mobil	United States	84 UBS	Switzerland
29 Lloyds TSB	United Kingdom	85 Kimberley Clark	United States
30 Berkshire Hathaway	United States	86 Veba	Germany
31 Citicorp	United States	87 Deutsche Bank	Germany
32 Hewlett Packard	United States	88 B.A.T. Industries	United Kingdom
33 Eli Lilly	United States	89 Singapore Telecommunications	Singapore
34 Gillette	United States	90 Warner Lambert	United States
35 Nestle	Switzerland	91 Elf Acquitaine	France
36 American Home Products	United States	92 Eastman Kodak	United States
37 Abbott Laboratories	United States	93 Telefonica Nacional De Espana	Spain
38 Allianz	Germany	94 Astra	Sweden
39 Smithkline Beecham	United Kingdom	95 Monsanto	United States
40 Chevron	United States	96 Time Warner	United States
41 British Telecommunications	United Kingdom	97 Hong Kong Telecommunications	Hong Kong
42 Bellsouth	United States	98 ABN Amro Holdings	The Netherlands
43 Cisco Systems	United States	99 Carrefour	France
44 Ford Motor	United States	100 ABB Asea Brown Boveri	Sweden/Switzerland
45 Amoco	United States	101 L'oreal	France
46 Sumitomo Bank	Japan	102 Credit Suisse Group	Switzerland
47 Nationsbank	United States	103 Emerson Electric	United States
48 GTE	United States	104 Nynex	United States
49 General Motors	United States	105 Wells Fargo	United States
50 BankAmerica	United States	106 Cheung Kong Holdings	Hong Kong
51 Chase Manhattan	United States	107 Marks & Spencer's	United Kingdom
52 Lucent Technologies	United States	108 Atlantic Richfield	United States
53 ENI	Italy	109 Nomura Securities	Japan
54 Daimler Benz	Germany	110 Basf	Germany
55 Matsushita Electric Industrial	Japan	111 Hoechst	Germany
56 Motorola	United States	112 Fujitsu	Japan

113 Total	France	169 Texas Instruments	United States
114 Volkswagen	Germany	170 Henderson Land Development	Hong Kong
115 Denso	Japan	171 BCE (Bell Canada Enterprises)	Canada
116 RWE	Germany	172 Zurich Insurance Group	Switzerland
117 Chrysler	United States	173 Union Pacific	United States
118 Xerox	United States	174 Tokai Bank	Japan
119 Unilever Plc	United Kingdom	175 Nissan Motor	Japan
120 Canon	Japan	176 Nike	United States
121 NEC	Japan	177 Bank Of New York	United States
122 Allied Signal	United States	178 Dresdner Bank	Germany
123 Campbell Soup	United States	179 Koninklijke Pitt Nederland	The Netherlands
124 National Australia Bank	Australia	180 BMW	Germany
125 LVMH Moet Hennessy Louis Vuitton	France	181 Compagnie Generale Des Eaux	France
126 Sprint	United States	182 Banco Bilbao Vizcaya	Spain
127 Muenchener Rueck	Germany	183 H.J. Heinz	United States
128 National Westminster	United Kingdom	184 General Electric Co	United Kingdom
129 Sakura Bank	Japan	185 Fortis	The Netherlands
130 Abbey National	United Kingdom	186 Standard Chartered	United Kingdom
131 Nippon Steel	Japan	187 Kellogg	United States
132 Norwest	United States	188 Asahi Bank	Japan
133 Fuji Photo Film	Japan	189 Aetna	United States
134 Endesa	Spain	190 Dai Nippon Printing	Japan
135 Computer Associates International	United States	191 Assicurazioni Generali	Italy
136 Toshiba	Japan	192 Mannesmann	Germany
137 Sara Lee	United States	193 Seagram	Canada
138 Nokia	Finland	194 BG	United Kingdom
139 Grand Metropolitan	United Kingdom	195 Baxter International	United States
140 Dow Chemical	United States	196 News Corp	Australia
141 Aegon	The Netherlands	197 Waste Management	United States
142 JP Morgan	United States	198 Sharp	Japan
143 Phillips Electronics	The Netherlands	199 International Paper	United States
144 AXA UAP	France	200 Southern	United States
145 Prudential	United Kingdom	201 Automatic Data Processing	United States
146 Sears Roebuck	United States	202 General Re	United States
147 United Technologies	United States	203 Rockwell International	United States
148 Reuters Holdings	United Kingdom	204 Mitsui And Co	Japan
149 Dell Computer	United States	205 Fiat Group	Italy
150 Mitsubishi Trust And Banking	Japan	206 Banco De Santander	Spain
151 Swiss Bank Corp	Switzerland	207 Conagra	United States
152 Sap	Germany	208 Vodafone	United Kingdom
153 Caterpillar	United States	209 McDonnell Douglas	United States
154 Mitsubishi Corp	Japan	210 Kyocera	Japan
155 Kansai Electric Power	Japan	211 Thomson	Canada
156 Electronic Data Systems	United States	212 Tesco	United Kingdom
157 Colgate Palmolive	United States	213 Royal Bank Of Canada	Canada
158 First Chicago NBD	United States	214 Swire Pacific	Hong Kong
159 Tokio Marine And Fire	Japan	215 BTR	United Kingdom
160 Bridgestone	Japan	216 PNC Bank	United States
161 Cable And Wireless	United Kingdom	217 Gannett	United States
162 Lockheed Martin	United States	218 Deere	United States
163 Guinness	United Kingdom	219 J.C. Penney	United States
164 Mitsubishi Estate	Japan	220 Volvo	Sweden
165 Meditronic	United States	221 Cigna	United States
166 Us West Communications Group	United States	222 Koninklijke Ahold	The Netherlands
167 Alcatel Asthom	France	223 Burlington Northern Santa Fe	United States
168 Merrill Lynch	United States	224 Aluminium Co Of America	United States

225 RePSol	Spain	281 National Power	United Kingdom
226 China Light And Power	Hong Kong	282 Mitsui Fudosan	Japan
227 Illinois Tool Works	United States	283 Pitney Bowes	United States
228 Westinghouse Electric	United States	284 Australia And New Zealand Banking	Australia
229 CPC International	United States	285 TDK	Japan
230 Citric Pacific	Hong Kong	286 Societe Generale	France
231 Norfolk Southern	United States	287 General Mills	United States
232 Mitsubishi Electric	Japan	288 Commonwealth Bank Of Australia	Australia
233 Via	Germany	289 Seagate Technology	United States
234 Granada Group	United Kingdom	290 Canadian Imperial Bank Of Commer	Canada
235 New World Development	Hong Kong	291 Bank Of Montreal	Canada
236 Rohm	Japan	292 Weyerhaeuser	United States
237 Compering De Saint-Gobain	France	293 Daiwa Securities	Japan
238 Sun Microsystems	United States	294 Bank Of Nova Scotia	Canada
239 Applied Materials	United States	295 United Overseas Bank	Singapore
240 Commerzbank	Germany	296 EMC	United States
241 British Airways	United Kingdom	297 Halliburton	United States
242 Royal & Sun Alliance	United Kingdom	298 Textron	United States
243 Marsh & McLennan	United States	299 Westpac Banking	Australia
244 Corning	United States	300 Imperial Chemical Industries	United Kingdom
245 Walgreen	United States	301 Toppan Painting	Japan
246 Bass	United Kingdom	302 Household International	United States
247 Norsk Hydro	Norway	303 Conrail	United States
248 Asahi Glass	Japan	304 Kawasaki Steel	Japan
249 Sumitomo Electric Industries	Japan	305 Toray Industries	Japan
250 Corestates Financial	United States	306 Akzo Nobel	The Netherlands
251 SGS Thomson Microelectronics	France	307 Investor	Sweden
252 Raytheon	United States	308 All Nippon Airways	Japan
253 Reed International	United Kingdom	309 Murata Mfg	Japan
254 Mellon Bank	United States	310 PG & E	United States
255 L'air Liquide	France	311 Barrick Gold	Canada
256 Phillips Petroleum	United States	312 Pinault-Printemps-Redoute	France
257 Loews	United States	313 Sumitomo Corp	Japan
258 Nintendo	Japan	314 Gap	United States
259 Sumitomo Trust And Banking	Japan	315 Honeywell	United States
260 Rentokil Initial	United Kingdom	316 Canadian Pacific	Canada
261 Groupe Danone	France	317 Goodyear Tire And Rubber	United States
262 Bayerische Vereinsbank	Germany	318 Tellabs	United States
263 Archer Daniels Midland	United States	319 Ralston Purina Group	United States
264 Jusco	Japan	320 AMR	United States
265 Morgan Stanley Group	United States	321 BAA	United Kingdom
266 Bankboston	United States	322 Toronto Dominion Bank	Canada
267 Rhone-Poulenc Rorer	United States	323 American General	United States
268 Tyco International	United States	324 Amp	United States
269 Rhone-Poulenc	France	325 Mitsui Trust And Banking	Japan
270 Great Universal Stores	United Kingdom	326 Legal & General Group	United Kingdom
271 Unocal	United States	327 Cadbury Schweppes	United Kingdom
272 Chubb	United States	328 Micron Technologies	United States
273 J Sainsbury	United Kingdom	329 Telecom Corp Of New Zealand	New Zealand
274 Nabisco Holdings	United States	330 RJR Nabisco Holdings	United States
275 PPG Industries	United States	331 Shin Etsu Chemical	Japan
276 Boots	United Kingdom	332 British Aerospace	United Kingdom
277 Safeway	United States	333 Nikko Securities	Japan
278 Enron	United States	334 Development Bank Of Singapore	Singapore
279 Kirin Brewery	Japan	335 Ricoh	Japan
280 Wharf (Holdings)	Hong Kong	336 3com	United States

337 Mattel	United States	393 State Street	United States
338 USX Marathon Group	United States	394 Charles Schwab	United States
339 Hershey Foods	United States	395 General Accident	United Kingdom
340 Air Products And Chemicals	United States	396 Gas Natural SDG	Spain
341 Banque Nationale De Paris	France	397 Thyssen	Germany
342 Fanuc	Japan	398 Bombardier	Canada
343 Matsushita Electrical Works	Japan	399 Panenergy	United States
344 HFS	United States	400 Hilton Hotels	United States
345 Heineken	The Netherlands	401 Scottish And Newcastle Breweries	United Kingdom
346 American Brands	United States	402 Williams	United States
347 Avon Products	United States	403 Sekisui House	Japan
348 Compagnie De Suez	France	404 AFLAC	United States
349 Secom	Japan	405 ITT	United States
350 Nippon Express	Japan	406 Michelin	France
351 Service Corp International	United States	407 NKK	Japan
352 Praxair	United States	408 Foereningssparbanken	Sweden
353 Tokyo Electron	Japan	409 Schering	Germany
354 Tenet Healthcare	United States	410 Wm. Wrigley Jr	United States
355 Emi Group	United Kingdom	411 Delta Air Lines	United States
356 Sanyo Electric	Japan	412 Mitsubishi Motors	Japan
357 Petrofina	Belgium	413 Newbridge Networks	Canada
358 Bayerische Hypotheken- Und Wechs	Germany	414 Kmart	United States
359 Wolters Kluwer	The Netherlands	415 Hennes And Mauritz	Sweden
360 Novo Nordisk	Denmark	416 Singapore Press Holdings	Singapore
361 Kao	Japan	417 Pearson	United Kingdom
362 Alcan Aluminium	Canada	418 Sumitomo Chemical	Japan
363 BOC Group	United Kingdom	419 Browning Ferris Industries	United States
364 Aon	United States	420 TRW	United States
365 Georgia Pacific	United States	421 Great Western Financial	United States
366 Asahi Chemical Industry	Japan	422 Mitsubishi Chemical	Japan
367 Sumitomo Metal Industries	Japan	423 Osaka Gas	Japan
368 Paribas	France	424 Bankers Trust New York	United States
369 Royal Bank Of Scotland Group	United Kingdom	425 Generale De Banque	Belgium
370 Yamanouchi Pharmaceutical	Japan	426 Clorox	United States
371 Henkel	Germany	427 Ajinomoto	Japan
372 Kingfisher	United Kingdom	428 Promodes Group	France
373 Compagnie Financiere Richemont	Switzerland	429 Fresenius Medical Care	Germany
374 Long Term Credit Bank Of Japan	Japan	430 Dover	United States
375 Shizuoka Bank	Japan	431 Kubota	Japan
376 Tenneco	United States	432 Tele Danmark	Denmark
377 Commercial Union Assurance	United Kingdom	433 Svenska Handelsbanken	Sweden
378 Occidental Petroleum	United States	434 Coca Cola Amatil	Australia
379 Tonen	Japan	435 Peninsular And Oriental Steam Navig	United Kingdom
380 Komatsu	Japan	436 Dominion Resources	United States
381 Allied Domecq	United Kingdom	437 Marubeni	Japan
382 Powergen	United Kingdom	438 Whitbread	United Kingdom
383 Dampskibsselskabet Af 1912	Denmark	439 National Grid Group	United Kingdom
384 Japan Airlines	Japan	440 Cognizant	United States
385 Bank Of Scotland	United Kingdom	441 Tokyu Corp	Japan
386 Crown Cork And Seal	United States	442 Lincoln National	United States
387 City Developments	Singapore	443 Entergy	United States
388 Siebe	United Kingdom	444 Masco	United States
389 Itochu	Japan	445 Nikon	Japan
390 Marriott International	United States	446 Nippon Oil	Japan
391 Sandvik	Sweden	447 Daiwa Bank	Japan
392 WMC	Australia	448 United News And Media	United Kingdom

449 Adecco	Switzerland	505 Schroders	United Kingdom
450 Eaton	United States	506 Digital Equipment	United States
451 Estee Lauder	United States	507 Yasuda Fire And Marine	Japan
452 UPM-Kymmene	Finland	508 McGraw Hill	United States
453 Advantest	Japan	509 Skandinaviska Enskilda Banken	Sweden
454 Tractebel	Belgium	510 BMC Software	United States
455 GKN	United Kingdom	511 Limited	United States
456 Newmont Mining	United States	512 Republic New York	United States
457 Argentaria Corp Bancaria De Espana	Spain	513 Enterprise Oil	United Kingdom
458 Toyoda Automatic Loom Works	Japan	514 Baker Hughes	United States
459 Incentive	Sweden	515 Kobe Steel	Japan
460 Kredietbank	Belgium	516 Havas	France
461 Deutsche Lufthansa	Germany	517 Hachijuni Bank	Japan
462 Newell	United States	518 Banque Bruxelles Lambert	Belgium
463 Becton, Dickinson	United States	519 Rio Tinto Zinc / CRA	Australia
464 Lafarge	France	520 Kajima	Japan
465 Cooper Industries	United States	521 Rohm And Haas	United States
466 Dresser Industries	United States	522 Northern Trust	United States
467 Genuine Parts	United States	523 Vendome Luxury Group	United Kingdom
468 United Utilities	United Kingdom	524 Coastal	United States
469 Asahi Breweries	Japan	525 Banco Central	Spain
470 Shiseido	Japan	526 Noranda	Canada
471 Banco Popular Espanol	Spain	527 Hoya	Japan
472 Rolls Royce	United Kingdom	528 Omron	Japan
473 Kawasaki Heavy Industries	Japan	529 Istituto Mobiliare Italiano	Italy
474 VEW	Germany	530 UST	United States
475 Federal Express	United States	531 Canal Plus	France
476 St Paul	United States	532 Bank Of Ireland	Republic of Ireland
477 Oji Paper	Japan	533 Allied Irish Banks	Republic of Ireland
478 Ingersoll Rand	United States	534 Tomkins	United Kingdom
479 Computer Sciences	United States	535 Phelps Dodge	United States
480 Cox Communications	United States	536 Thermo Electron	United States
481 Pacificorp	United States	537 Gehe	Germany
482 Rank Group	United Kingdom	538 Smc	Japan
483 Union Carbide	United States	539 Sherwin Williams	United States
484 Lyonnaise Des Eaux Dumez	France	540 Renault	France
485 Salomon	United States	541 Istituto Bancario San Paolo Di Torino	Italy
486 Linde	Germany	542 Sumitomo Marine And Fire	Japan
487 Pioneer Hi Bred International	United States	543 Blue Circle Industries	United Kingdom
488 Asda Group	United Kingdom	544 Skanska	Sweden
489 Aluisse Lonza Holding	Switzerland	545 British Steel	United Kingdom
490 Sekisui Chemical	Japan	546 Solvay	Belgium
491 Freeport McMoran Copper And Gol	United States	547 Ishikawajima-Harima Heavy Industries	Japan
492 Winn-Dixie Stores	United States	548 Coles Myer	Australia
493 Reckitt & Coleman	United Kingdom	549 Nippon Television Network	Japan
494 Nordbanken	Sweden	550 Den Danske Bank	Denmark
495 Bank Of Yokohama	Japan	551 Jardine Matheson Holdings	Singapore
496 Quaker Oats	United States	552 Bankgesellschaft Berlin	Germany
497 Suzuki Motor	Japan	553 Vf	United States
498 Advanced Micro Devices	United States	554 Carlton Communications	United Kingdom
499 Eisai	Japan	555 Amerada Hess	United States
500 Times Mirror	United States	556 Reynolds Metals	United States
501 Scania	Sweden	557 Unicom	United States
502 Istituto Nazionale Delle Assicurazioni	Italy	558 Northrop Grumman	United States
503 Cinergy	United States	559 Atlas Copco	Sweden
504 Inco	Canada	560 Molex	United States

561 International Flavors And Fragrances	United States	617 Orange	United Kingdom
562 3i Group	United Kingdom	618 National Semiconductor	United States
563 Bay Networks	United States	619 Preussag	Germany
564 Stora Kopparbergs Bergslags	Sweden	620 Brambles	Australia
565 Adidas	Germany	621 Sophus Berendsen	Denmark
566 Daiichi Pharmaceutical	Japan	622 Sumitomo Metal Mining	Japan
567 Tosco	United States	623 Isuzu Motors	Japan
568 Champion International	United States	624 Parker Hannifin	United States
569 Sydkraft	Sweden	625 Yamaha	Japan
570 Hercules	United States	626 Furukawa Electric	Japan
571 Petrocanada	Canada	627 Falconbridge	Canada
572 Shimizu	Japan	628 Fried. Krupp AG Hoesch-Krupp	Germany
573 General Dynamics	United States	629 Lasmo	United Kingdom
574 British Land	United Kingdom	630 RMC Group	United Kingdom
575 Obayashi	Japan	631 Smiths Industries	United Kingdom
576 Next	United Kingdom	632 Global Marine	United States
577 Placer Dome	Canada	633 Nova Corp	Canada
578 Morton International	United States	634 Minebea	Japan
579 Central And South West	United States	635 Magna International	Canada
580 Legrand	France	636 W.R. Grace	United States
581 Lucasvarity	United Kingdom	637 Carlsberg	Denmark
582 Beiersdorf	Germany	638 Anadarko Petroleum	United States
583 Degussa	Germany	639 Dana	United States
584 TI Group	United Kingdom	640 CRH	Republic of Ireland
585 Fluor	United States	641 Yamazaki Baking	Japan
586 Pioneer Electronic	Japan	642 Hasbro	United States
587 Severn Trent	United Kingdom	643 Whirlpool	United States
588 Tyson Foods	United States	644 CSR	Australia
589 Fresenius	Germany	645 IMC Global	United States
590 Ladbroke Group	United Kingdom	646 NSK	Japan
591 Mitsubishi Materials	Japan	647 Burmah Castrol	United Kingdom
592 Electrolux	Sweden	648 Usinor Sacilor	France
593 Taisei	Japan	649 Stanley Works	United States
594 Case	United States	650 Union Camp	United States
595 Wolseley	United Kingdom	651 Western Atlas	United States
596 Aisin Seiki	Japan	652 Boral	Australia
597 Mercury Asset Management	United Kingdom	653 Altana Industrie-Aktien und Anlagen	Germany
598 SMH	Switzerland	654 Talisman Energy	Canada
599 Owens Illinois	United States	655 Danisco	Denmark
600 Analog Devices	United States	656 Compass Group	United Kingdom
601 General Public Utilities	United States	657 Ashland	United States
602 Transcanada Pipelines	Canada	658 Johnson Controls	United States
603 Rubbermaid	United States	659 Kinden	Japan
604 Toto	Japan	660 MEPC	United Kingdom
605 Man	Germany	661 Brown Forman	United States
606 Thames Water	United Kingdom	662 Harris	United States
607 Orkla	Norway	663 Paccar	United States
608 Ebara	Japan	664 Montedison	Italy
609 Valeo	France		
610 Carter Holt Harvey	New Zealand		
611 Svenska Cellulosa Aktiebolaget	Sweden		
612 Guardian Royal Exchange	United Kingdom		
613 Heidelberger Zement	Germany		
614 Teijin	Japan		
615 Adaptec	United States		
616 Bic	France		