Key Drivers of Foreign Firms' Locational Choice: Knowledge Nodes, Cross-Cultural

Differences and Investment Motivation

(A Quantitative Case Study for New York City)

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Abstract: We identified the sectors of finance, services and retail/wholesale as key global "knowledge nodes" for New York City. We found that firms from culturally distance countries that pursued "asset augmenting" behaviors located closer to establish New York City knowledge nodes, than firms from culturally similar countries that pursued asset exploiting behaviors. The analysis of a micro-knowledge node, banking, revealed similar but more precise results.

Key Words: Locational Choice

Knowledge Node

Culture

The concept of industrial clustering is grounded in the study of economic geography Marshall (1916). In effect, positive knowledge externalities accrue to a region because no single firm can fully capture all the returns associated with its innovation process. The resulting knowledge spillovers attract new firms to the region and further perpetuate the knowledge accumulation/spillover process. The realization that intellectual capital and innovation are the main engine of wealth creation in today's economy, and the fact that globalization is widening the location options available to firms, has highlighted the need to simultaneously study geography of knowledge creation and the strategic location choices of firms (Dunning, 1999). Within the last decade, related concepts of industrial clustering, regional production systems, learning regions and global innovation centers have been vigorously explored from many academic disciplines: Industrial organization economists, (Porter, 1990; Enright, 1999); regional economists (Florida, 1998; Storper, 1995); city and regional planners (Saxenian; 1998; Markusen, 1994; Bagchi-Sen & Wheeler, 1989) and international business economists (Dunning, 1999; Audretsch, 1999). Depending on the discipline, the level of analysis has varied widely - across sectors, across countries, Porter, (1990), to a particular section in a particular city, Saxenian, (1998); however, the common threads observed in each were a spatial stickiness of economic activity and the increased importance of innovative capacity within a limited geographic confine. Because of conceptual difficulties and data constraints, the vast majority of this research has focused on specific manufacturing sectors (Schoenberger, 1994; Coughlin, 1992; Shaver, 1995); and high tech, research-intensive areas (Saxenian, 1994, 1998; Florida, 1995; Dunning & Narula, 1995). Only recently has regional cluster analysis been applied to explain knowledge intensive service sectors (Enright 1999; Moore & Birkinshaw 1998; Bagchi-

Sen & Sen, 1997, Nachum, 2000), the largest and fastest growing segment of developed countries' economies (Wymbs, 2000).

We want to extend these lines of research by performing a quantitative micro-regional analysis that focuses on how certain characteristics of foreign firms (investment motivation and culture) affect their attraction to certain knowledge nodes in a global city (New York). Existing literature does not refer to such potential variation but usually treats all foreign firms alike, which is, of course, a simplification of reality. The paper now discusses New York City knowledge nodes, followed by theory and hypotheses, methods, results and future research.

KNOWLEDGE NODES

First we justify the choice of a New York City as a reasonable level of analysis, then we broadly define the N.Y.C. knowledge nodes and finally we discuss the unit of analysis.

Level of Analysis

DelaMothe & Paquet (1994; 1996) observed that an economy is made more dynamic by information flows, knowledge, competence and capabilities, and small communities of practices and that the new relevant unit of analysis has to be the basis to understand innovation. It cannot be at the firm level because it is too idiosyncratic, nor can it be at the national level because it tends to mask more information than it reveals. Krugman (1991, 9. 57) observed that "States aren't really the right geographically units" because they also are at too high a level to capture innovative activity. Florida (1998) finds that regions are becoming the focal point of knowledge creation and learning in the new global, knowledge intensive, capitalism. Learning regions become the collectors and repositories of knowledge and ideas, and provide an underlying environment or infrastructure that facilitates the flow of knowledge ideas and learning. Similarly, Saxenian (1998) argues that it is the region and its relationships, rather than the firm, that defines opportunity for individual and collective advancement. Porter (1990) uses the more

geographically restrictive unit "clusters" to define innovative industry activities linked though vertical (buyer/seller) or horizontal (common customers, technology, channels) relationships. Audretsch, (1999) described an econometric model that supports a close relationship between the availability of knowledge resources in a city and its innovative performance. Jacobs (1969) found that cities themselves are a source of considerable innovation. With regard to specific competitive enhancing factors: Wolfe (2000) and Dunning (1994) found that a skilled labor pool is important and universities are a key contributor to knowledge node formation in service industries: Amin & Thrift (1993) highlighted the importance of related industries, e.g., securities and commodities, and common factors external to the firm but relevant to the industry, e.g., stock exchanges and MNE headquarters, as factors that add to the competitiveness of a node: Etzioni (1996) found that inter-firm knowledge sharing within a node is facilitated by common core values and objectives of a particular industry. Several studies cited the importance of relational variables that enhance the competitiveness of a node: Nohria & Garcia-Pont discussed strategic linkages, Chen & Chen (1998) referenced network linkages and Porter & Fuller (1994) indicated the importance of reputation.

N.Y.C. Knowledge Nodes

We define knowledge nodes, similar to Enright (1995) and Porter (1990), as localized centers of excellence where agglomeration economies and innovative capacity concentrates. Identifying these nodes for New York City was more anecdotal than scientific, but we believe the evidence presented below supports the above authors findings and thus provides a reasonable justification for their inclusion.

In 1998, New York City was the United States' single strongest magnet for foreign investment and is generally regarded as the most influential business location in the world (Directory, 1999). It has over 3.2 million skilled workers with twenty-five percent having at

least a four-year college degree. There are over 91 degree-credit institutions in NYC, over 360,000 students enrolled in N.Y.C. colleges and universities and over 22,000 masters and 1750 doctoral degrees granted each year (IDA, 1999). In 1996, the output per N.Y.C. worker was $101,534, almost seventy percent higher than the average United States output per worker of $63,902 (IDA, 1999).

In 1998, forty-six of the Fortune 500 companies located their headquarters in N.Y.C. (Fortune, 1998). (This is more than the combined total of the next three largest cities.) In service sectors, N.Y.C. dominance is even more evident.

"N.Y.C. is the undisputed global hub of the financial, new media, entertainment, services and fashion industries" (IDA, 1999, p12). The following examples support this bold assertion:

Financial. New York is the corporate headquarters for four of the ten largest U.S. insurance firms; four of the ten largest banks; nine of the ten largest United States securities firms and six of the world's top ten securities firms (Crains, 1998). In fact, the New York Stock Exchange accounted for 27.8 percent of the world's total in 1997.

Services. New York is the headquarters for three of the top five United States accounting firms; six of the nations' ten largest consulting firms; and the vast majority of the world's largest law firms (Crains, 1998). Also included as part of services is entertainment/communications/ media. New York is the home of all the major United States television networks – ABC, NBC, CBS, and FOX, as well as 20 cable television companies and five of the top six music companies; N.Y.C is the largest publishing center in the United States; its 2,601 new media companies (concentrated in lower Manhattan) have doubled employment to 55,000 people since 1995 and now account for almost half of the region's new media business of $5.7 billion.

Fashion industry. In 1997, this industry employed 225,000 people, accounted for $27 billion in annual revenues and helped to attract 23,000 wholesale buyers. New York is the home to more than 5,100 showrooms and 10,000 retail stores (IDA, 1999).

Specialty manufacturing. New York accounts for more than 27,000 people employed in the combined areas of fine and costume jewelry, the diamond trade and integrated manufacturing, and other segments of the jewelry industry.

Construction. New York possesses both world-class skilled construction engineering firms and almost 100,000 construction workers (IDA, 1999). Its firms have constructed three of the largest building in the world.

Transportation. New York City's transportation hub provides businesses with access to world markets and permits them to easily tap into world markets (Directory, 1999). New York City-area airports handled 2.8 million metric tons of cargo per year, more than any other airports in 1997. New York area ports handle 55 percent of the U.S. North Atlantic containerized cargo. Over 84 million passengers passed through New York City airports in 1997 and there are over 2,200 flights to 286 cities around the world every day.

In the late 1980s, Orr (1993) identified fdi as becoming an increasingly important source of economic activity in N.Y.C. By the late 1990s, N.Y.C. received about one quarter of all fdi flowing into retail trade in the United States, one third of the fdi in business services and 15 percent of foreign investment in finance, insurance and real estate (IDA, 1999). Clearly, N.Y.C. has global knowledge nodes in services, finance, and wholesale/retail and regional knowledge nodes in manufacturing, transportation and construction related activities.

Unit of Analysis

Building on Dunning & Morgan (1971), who studied the locational clustering of foreign firms in London and Vernon (1960), who studied economic activity in the New York-New

Jersey metropolitan area, we perform a more detailed analysis that studies the factors that influence individual firm's choices to locate around established knowledge centers in N.Y.C. The critical geographic inputs that drove the study were firm and knowledge node locations.

The physical locations of almost 2,000 foreign firms (the closest to the universe of foreign firms in N.Y.C. ever collected) were collected in 1998 by the Weissman Center for International Business at Baruch College, City University of New York (Directory, 1999). Interns working in the Weissman Center undertook fax inquiries and follow-up calls to verify all enterprises listed in their 1997-98 directory. Consultants and foreign government trade offices were then asked to review and amend not only their own entries, but also the entries for all companies from their country. Bi-national chambers were then requested to provide listings of their foreign-based members in N.Y.C. Finally, numerous web-sites, trade associations lists and even individual building directories were examined for firms that belonged in the directory. Despite these efforts the directory recognizes that there may be errors and omissions (Directory, 1999). As part of this effort, company sector information was also obtained. Unique latitude and longitude locations were then obtained for each foreign firm located in New York City by the use of the Street Map Software Program.

Overall New York City geographic centers for knowledge nodes were obtained through a modified Delphi Approach[1] (Goldfinger, 1993) using New York City industry experts: An editor from a major New York business magazine, a regional planner from a bi-state agency, a New York City economic consultant and industry experts. Each was asked to provide their estimate for the geographic center for the following major industry groups: Manufacturing; business

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[1] The Delphi Approach is an iterative estimation procedure where experts' opinions are shared and recalibrated. Each Delphi expert can update his/her estimate based on the group's estimate. Convergence is usually achieved after only a few iterations (Goldfinger, 1993).

services; finance, insurance and real estate, transportation and public utilities; construction; wholesale/retail; government. After the first round of estimates was provided, they were discussed and a consensus was obtained for each industry group. Industry experts were consulted to obtain micro-knowledge locations for the banking, securities and insurance sectors.

We then calculated the latitude and longitude coordinates for the location of each foreign firm in N.Y.C. and obtained estimates from city experts of specific N.Y.C. knowledge nodes. The geographic distance between the foreign firm's location and the center of the N.Y.C. knowledge node was then calculated.

THEORY AND HYPOTHESES

Moore & Birkinshaw (1998) found that service firms, unlike manufacturing ones, typically replicate the entire value chain in each country of operation, rather than centralizing certain parts in low cost countries. The centrifugal force of value chain replication will attract firms to knowledge centers, as opposed to the Shaver & Flyer (2000) finding that large manufacturing firms will locate away from knowledge centers to improve profits. We have previously demonstrated this effect when we described the creation of service-based knowledge-nodes for N.Y.C. We believe this paper raises two interesting hypotheses to explain the variation in attraction to knowledge nodes by foreign investors – the motivation for investment and the cultural distance between home and host countries. It is novel in that it uses geographic distance between knowledge nodes and firm sites as an operation for the dependent variable.

With regard to identifying culture as a factor that influences location choice, we first reviewed the analyses of (Contractor & Kundu, 1998; Erramilli & Roa, 1993; Kogut & Singh, 1988; Adler, 1997); however, they focused mostly on the entry mode decision rather than the firm's current position that depends on entry mode, growth and possible relocation. Because we were attempting to explain an outcome that occurred over time and wanted to avoid problems

associated with simultaneity estimation, we chose to use a time insensitive measure of culture identified by Hofstede (1980) and enhanced by Adler (1997). The four dimensions in Hofstede's (1980) seminal work were: Individualism/collectivism (do people define themselves as individuals or part of a group); Power distance (the extent to which less powerful members of a group accept an unequal distribution of power); Uncertainty avoidance (the extent to which people in a society feel threatened by ambiguity and avoid it); Career success/quality of life (the dominant value in career success is assertiveness and materialism and not emphasizing people concerns). These were used to create five relatively homogenous foreign country groups (described below) with approximately an equal number of firms in each.

We believe that the uncertainty avoidance dimension is the most critical one to foreign locational choice. Managers from high uncertainty avoidance countries feel threatened by ambiguity, fear making wrong decisions and are risk averse. The safe choice for these managers would be to have a foreign location close to an established knowledge node. Alternatively, we would expect managers from countries who value the quality of life dimension to be less influenced by business factors and to locate their businesses closer to airports to travel home more easily or closer to city's main center of social/cultural activities. With regard to the individualism/collectivism and power distance dimensions, they relate more to members' status in the group, not between the group and the home office. Therefore, they would have less direct effect on the foreign locational choice decision.

Though we could have used individual Hofstede measures for each country and each dimension, we believe that the use of Adler (1997) grouping of countries would provide us sufficient variation in the independent variable while minimizing the number of variables. An explanation of each grouping follows. Managers within the United Kingdom, Australia, New Zealand and Canada exhibited strong individualism, weak uncertainty avoidance and moderate

power distance tendencies and desire for career success. (These characteristics were very similar to those of United States managers who exhibited weak uncertainty avoidance, strong desire for success, strong individualistic tendencies and moderate power distance.) Managers from oriental cultures (China, Taiwan, Singapore, Korea, Hong Kong and Southeast Asia) seemed to show quite different tendencies, namely, they exhibited strong collectivistic behaviors, low power distance, weak uncertainty avoidance and limited desire for career success. Managers from the Large European countries of France, Germany and Italy exhibited strong uncertainty avoidance, individualism and desire for success and moderate power distance. Managers from the remaining European countries, labeled Small European, generally showed individualist tendencies and strong uncertainty avoidance, power distance, and a desire for quality of life. South American country managers exhibited collectivist tendencies, large power distance, strong uncertainty avoidance and strong career success. Asians from the subcontinent and African managers were the least homogenous group and the characteristics exhibited moderate collectivist tendencies, large power distance, strong uncertainty avoidance and moderate career success. Japanese managers showed strong uncertainty avoidance and desire for success and moderate power distance and marginal collectivistic tendencies. Table 1 summarizes these results.

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In general, we would expect firms from countries of different cultures than that of the United States to locate their firms near knowledge nodes in order to gain the maximum tacit knowledge transfer and compensate for cultural impediments associate with such transfers. The Japanese culture met these criteria and the Japanese business practices are viewed as different

than the U.S. ones. Therefore, the Japanese cultural attributes were used as the baseline for analysis. The other country cultural-distance measures were then compared with it.

> ***H1:*** ***Firms that are the most culturally distant from the United States (particularly with regard to the uncertainty avoidance dimension) will likely locate closer to knowledge nodes to gain maximum knowledge spillover.***

Dunning's (1977) and Hymer (1980) were the first to point out that firms use fdi to exploit firm's ownership specific assets in foreign countries. Wesson (1993) drew an interesting distinction between ownership advantages that are "asset exploiting" and those that are "asset augmenting." Ownership advantage which is asset exploiting involves firms extracting monopoly profits from foreign markets by using their exclusive or privileged access to specific intangible assets, e.g., technology, management skills, usually created in the home market. With asset augmenting ownership advantage, the foreign investment upgrades the asset base of both the recipient country and sending countries' firms. Similarly, Nohria & Garcia-Pont (1991) put forth strategic link theory and Johanson & Mattson (1987), network theory. Each asset augmenting theory looks to enhance, maintain or restore the firm's competitiveness in a global market rather than attempting to maximize its extraction of monopolistic rents.

A precise way of identifying asset exploiting or asset augmenting firm behaviors would be though a questionnaire. Also, a questionnaire would permit the collecting of interesting control variable such as size and age of investment. However, we believe classifying industries based on historical tendencies is a reasonable approximation to begin the analysis of motivation variables. We are aware that finer levels of disaggregation, i.e., below the industry-level, will likely provide more significant variables, but as a first cut we believe an industry-level analysis will produce interesting and meaningful results.

Asset exploiting service firms: They seek out markets for their activities because these firms have an ownership asset that uniquely differentiates their services, e.g., a world renowned bridge designer. Asset exploiting firms are not required to collocate near other similar firms. Asset exploiting sectors include firms in the following areas: wholesaling/retailing (firms selling uniquely designed fashion products); transportation (firms bringing cargo or people to the foreign market); construction (firms designing and or managing construction projects); and manufacturing (firms making unique products).

Asset augmenting service firms: They seek to learn from or network with other firms already present and dominant in the market. These firms depend on tacit knowledge transfer and the importance of geographical proximity in the learning regions (Storper, 1995). Asset augmenting sectors include firms in the following areas: business services that facilitate general business activities (law, accounting, consulting, advertising, media) and finance that includes the main business transactional areas of banking, insurance, investment banking, and securities.

H2: Foreign firms in N.Y.C. are more likely to locate closer to N.Y.C. knowledge nodes if they are pursuing "asset augmenting" behaviors because tacit knowledge is best transmitted through close personal contact.

METHODS

Measures

The data was obtained from the New York City Economic Development Agency (IDA, 1999), Crains' Market Facts publications (Crains, 1998), and Weissman Center's International Business Directory (WCIBD).

Dependent Variable

The construction of the dependent variable, the distance (measured in miles) between a foreign firm's location and the New York City's knowledge nodes required several steps. First,

the location of each firm from the WCIBD was converted into map coordinates. Next, the modified Delphi estimates of the New York City knowledge nodes were converted to map coordinates. Distance between each firm's location and the appropriate knowledge node was then calculated. The resulting distances are a continuous dependent variable.

Independent Variables

Country Culture. Country culture was a set of dummy variables. The most foreign culture to the U.S., Japan, was coded "0" for each of the culture variables. A separate dummy variable was created for English-based Countries, Large European Countries, Small European Countries, South American Countries, Southeast Asian Countries and Asian/African Countries. If Hypothesis 1 holds, we expect each dummy to be significant and positive because as the degree of foreignness declines, the need to locate near to the knowledge node to obtain tacit knowledge is reduced.

Asset Augmenting. The "asset augmenting" dummy variable was coded as a "1" if the firm was in an "asset augmenting" industry group and a "0" if it represented a firm in an "asset exploiting" group. If Hypothesis 2 holds, we would expect a negative sign for the "asset augmenting" variable because the requirement to share tacit knowledge would be greater than the requirement to locate close to markets that would be associated with "asset exploiting" behavior (Wesson, 1993; Nelson & Winters 1981). The previously presented background N.Y.C. data supports the designation of services and finance, insurance and real estate as "asset augmenting" groups. Foreign firms recognize U.S. firms located here as being in the forefront of knowledge creation and many of the U.S. firms are regarded as the best in the world. Foreign firm behaviors in the remaining industry groups, i.e., wholesale/retail trade, manufacturing, construction and transportation and public utilities, were classified as "asset

exploiting" because they are primarily seeking to exploit markets and earn a return on their home country's rare and unique assets (Barney, 1991).

Control Variable

A dummy variable was introduced for locations that were designated government. The majority of government office locations in New York City are associated with city government and are located downtown, while the majority of the foreign government locations are likely to located near the United Nations. Therefore, we used a dummy variable to isolate this effect and the intercept term represents non-government, Japanese, asset exploiting firms.

Estimation Method

A contingency table and chi square analysis were used to provide a better understanding of the raw data. A comparison of mean distances (measured in miles from the established knowledge nodes) was used to determine if there were significant differences between asset augmenting and asset exploiting investment behaviors for each culturally similar country grouping. Ordinary least squares (OLS) regression was used as an overall test of the hypotheses and was used to measure interaction effects between culture and investment motivations.

RESULTS & DISCUSSION

The results of the analysis are presented in Tables 2-5. In the first area, Descriptive Data, Table 2 reports the number of firms for each of seven culturally similar country groups and for each of the seven knowledge nodes for N.Y.C. It highlights areas where the actual number of firms was significantly greater or less than was statistically expected. In the second area, Investment Motivation, Table 3 compares for each country group the mean distance between the foreign firm locations and the established N.Y.C. knowledge node based on investment motivation, i.e., "asset exploiting" or "asset augmenting." In the third area, Cultural Country Effects, Table 4 presents statistics and correlations for each of the variables that are used in the

regression analysis. Table 5 presents these results. In the final area, a more micro-level of analysis was performed to determine if this supported previous findings or indicated that the previous models were misspecified.

Descriptive Data

The contingency analysis presented in Table 2 provides an indication of which categories are either under or over-represented. For the services node classified as asset augmenting, firms of the U.K., Canadian and Australian country group had a significantly greater number of firms (94) than would be expected from chance alone (66). This is due to close cultural ties and a similar common law structure as the U.S. that facilitates knowledge transfer in the following micro-service sectors of advertising, consulting, and law. For the retail/wholesale knowledge node that was classified as asset exploiting, the reverse was true. U.K. related countries had significantly fewer firms (42) than were expected (70), primarily because consumer products is a relatively weak domestic segment in these countries.

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For the finance node also classified as asset augmenting, Large European firms had significantly fewer banking firms (93) than were expected (131). Partially explaining this effect is that banks in Germany are relatively few and quite large and thus would limit their numbers in the U.S. On the other hand, this group had significantly more retail/wholesale firms (163) than were expected (104). The clothing/retail sectors, particularly in France and Italy, are regarded as world centers of excellence and thus, we expected these firms attempt to use asset exploiting behavior to extract monopolistic profits in one of the largest markets in the world, N.Y.C.

Firms from Southeast Asia were severely under-represented in services (26 observed vs. 56 expected) due to perceived differences between the Chinese and U.S. cultures and the desire to rely on U.S.-based firms that are regarded as the best in the world. However, this country group was over-represented in banking (60 observed vs. 75 expected) due to the desire of Southeast Asian banks to have operations near one of the main banking center in the world so that they could share knowledge quickly and coordinate operations with their home banking office. These opposing trends complicate the estimation of the asset augmenting effect for Southeast Asia.

South America and Asia both were over represented in the transportation category (19 vs. 7 and 18 vs. 6, respectively). This could be explained by the large number of small countries within each of the groups maintaining their own national airline. Preferred access to these countries home markets is the critical asset that they are exploiting.

Investment Motivation

In Table 3, we directly address the relationship between investment motivation and country culture. The asset augmenting and asset exploiting investment motivation distance measures (the distance measured in miles between foreign firm's locations and the established knowledge nodes) are generated and statistically compared for each of culture groupings. Six of the seven culturally similar country categories reported the mean distance between the foreign firm location and the knowledge node to less for asset augmenting firms than for asset augmenting firms. The one category, Southeast Asia, that did not support this finding was not significant, while four that did support it (Asia/Africa, Europe-Small, South America, Europe-Large) were significant at less than the .05 level. Also, the overall difference between the two tested motivations indicated significant differences at the .001 level. Clearly, *H2: Foreign firms in N.Y.C. are more likely to locate closer to N.Y.C. knowledge nodes if they are pursuing "asset*

augmenting" behaviors because tacit knowledge is best transmitted through close personal contact is supported by Tukey-Kramer HSD mean comparison test (SAS, 1995) presented in Table 3.

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This data also shows that Japanese firms on average are located closer to the knowledge centers than firms from any other countries. This partially confirms *H1: Firms that are the most culturally distant from the United States will likely locate closer to knowledge nodes to gain maximum knowledge spillover* and strongly suggests that Japan should be chosen as the base country for the subsequent OLS regression analysis because it will particularly highlight differences with other cultural country clusters.

Country Cultural Effects

Before we used OLS to estimate the country cultural effects, we removed the effect of the control variable, government. This was required because there is fundamental difference between foreign governments choosing to locate near the United Nations and local N.Y.C. government choosing to locate at the lower east side of Manhattan. In this same equation, we estimated the asset exploiting value to be 1.86 miles (vs. 1.85 miles in Table 3) and the asset augmenting effect to be -.31 miles (vs. -.34 miles in Table 3).

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We use the data summarized in Table 4 to first estimated the country cultural effect in isolation (labeled (CE) in Table 5); next we estimated it with the asset augmenting variable

(labeled (IM & CE) in Table 5) and finally we estimated the country cultural effects, asset augmenting variable with the interaction effects of country and asset augmentation (labeled (IM, CE & Cross Effects in Table 5). Note that coefficients in the equations translate directly into miles from the knowledge node and that Japanese asset exploiting behavior is used as the base and is reflected in the intercept term.

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For both the CE and IM & CE equations the UK, Southeast Asian and Small Europe country groups proved significant and positive. (The first two at the .001 level and the last at the .05 level.) According to Table 1, the UK and Southeast Asian cultural groups had low uncertainty avoidance, similar to the U.S but in stark contrast to Japan. Managers from particularly the UK and Southeast Asia can deal better with uncertain situations and are likely to be less uncomfortable with locating operations away from knowledge nodes. On average, UK asset exploiting firms located over three quarters of a mile farther away from knowledge nodes than Japanese firms, and Southeast Asia firms located almost two-thirds of a mile farther away. The reason for the positive significant difference between Small European firms and Japanese firms' distance from knowledge node measures is mainly attributed to manager's attitudes from Small European countries to allow quality of life dimensions to enter into their location choice process and not be solely driven by business success criteria. This would tend to increase the distance from knowledge nodes. As expected, the asset augmenting variable was significant a negative for the IM & CE equation.

In Table 3, there was considerable variation between country mean distances for both asset augmenting and asset exploiting investment behaviors. This indicates a possible interaction

effect between investment motive and country cultural effect. When the asset augmenting variable was crossed with the country cultural variables, the resulting equation R^2 displayed in Table 5 increased 50 percent to .048. All the previous significant country effects variables remained so and the South America variable also proved significant. The Asia and Large Europe variables were not significant, but had the correct positive sign.

With regard to the cross effects, the Asian/Asset augmenting variable proved significant and negative. The Small Europe/asset augmenting and South America/asset augmenting variables were also significant and negative. All the other cross-effect variables (except for Southeast Asia/asset augmenting which was not significant) had the expected negative signs.

Clearly the above results support *H1: Firms that are the most culturally distant from the United States (particularly with regard to the uncertainty avoidance dimension) will likely locate closer to knowledge nodes to gain maximum knowledge spillover.*

Micro-Level of Analysis: Banking

If the knowledge nodes were too aggregated or if there were multiple micro-knowledge nodes, then the distance between the foreign location and the knowledge could be dramatically over-estimated and could change the county cultural effects. To test this potential model misspecification, we obtained through the same Delphi Approach the micro-knowledge node for banking in N.Y.C. We then calculated the distance between all foreign banking locations and this new banking micro-knowledge node. The remaining foreign finance firms were measured against the previous finance knowledge node and the foreign services firms against the N.Y.C. service node. The banking micro-knowledge node was then used as the cross variable for all the country cultural variables.

Unlike in the (IM, CE & Cross Effects) equation in Table 5 where the asset augmenting variable for Japan was near zero and insignificant, the asset augmenting "banking" variable in

this equation was significant and negative. As expected, Japanese banks, on average, located .3 miles closer to their micro-knowledge node than Japanese asset exploiting firms. The significant and positive sign associated with the remaining asset augmenting variable that included services and insurance was surprising. One explanation is that Japanese service and insurance firms sought to locate near their dominant banking presence and their cultural hub dominated their knowledge hub. Primary research is required to better answer this question.

With regard to the country effects, all had the correct sign and all the ones that were significant in the previous equation were also significant here. As expected, the UK countries had the firms with the greatest distance from the knowledge centers. All of the banking/country culture cross effects were negative; however, two more were significant at the .05 level, i.e., Southeast Asia and the UK. Clearly, the banking micro-knowledge node analysis provides some usually insight and indicates that exploration in this area is useful. But equally important, it shows that the results of more macro-model are relatively stable and can be relied upon as providing reasonable estimates of the effect of investment motivation and country cultural effect on the distance foreign firms locate from N.Y.C. knowledge nodes

FUTURE RESEARCH

We believe that the micro-level analytical approach developed here that calculates geographic centers and variance for knowledge nodes is an exciting new way of analyzing foreign firm's locational choice decisions. Further sector disaggregation, e.g., the legal, accounting, media, consulting sectors within business services, fashion within retail/wholesale and insurance and securities within finance, combined with survey research will permit the study of factors affecting in-depth micro-knowledge node location choices by foreign firms. Also, comparisons of the results from New York City with other major cities will shed new light on how geography affects the creation of knowledge around the world. Even though our

New York City analysis showed an extreme concentration of service activity in Manhattan, a broader New York/New Jersey metropolitan analysis will likely reveal additional global knowledge nodes for pharmaceuticals and telecommunications in Northern New Jersey (Wymbs, 1998).

CONCLUSIONS

Our main objective was to answer the important business question: How does N.Y.C.'s knowledge nodes, culture and investment motivation affect foreign firms' locational choice decisions?

We first identified New York City knowledge nodes and then collected micro-level foreign firm locational data to test two hypotheses. We demonstrated that cultural aspects of a country, particularly the uncertainty avoidance characteristics, influenced where firms from foreign countries locate their operations relative to established knowledge centers. On average, the more culturally dissimilar countries are to the U.S., the more constrained they feel in locating closer to established N.Y.C. knowledge centers. We also have shown that firms pursuing asset augmenting behavior, due to tacit knowledge barriers, usually locate closer to knowledge nodes than those seeking asset exploiting behavior. In addition, we found that asset augmenting behavior was dependent on the country culture through the testing of interaction effects. Finally, we have shown that a more disaggregate micro-knowledge node analysis improves the precision of the results and is a worthwhile future endeavor, but does not change the key study findings.

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TABLE 1

Groups of Culturally Similar Countries Based on Hofstede' s Cultural Dimensions

	Uncertainty Avoidance[2]	Power Distance[3]	Success/ Quality of Life[4]	Individualism/ Collectivism[5]
United States	L	M	S	I
Japan	H	M	S	M
U.K., Canada & New Zealand	L	M	M	I
Southeast Asia & China	L	L	M	C
Small Europe	H	H	Q	I
Large Europe	H	M	S	I
South America	H	L	M	C
Asia/Africa	H	L	M	C

Source: Hostede, Geert, "Motivation, Leadership, and Organization: Do American Theories Apply Abroad?" Reprinted in Adler, N. 1997 International Dimensions of Organizational Behavior. South-Western College Publishing. Cincinnati, Ohio

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[2] Uncertainty Avoidance is measured as High (H), Low (L), Moderate (M).
[3] Power Distance is measured as High (H), Low (L), Moderate (M).
[4] Success/Quality of Life is measured as Success (S), Quality (Q) and Moderate (M)
[5] Individualism/Collectivism is measures as Individualism (I), Collectivism (C), Moderate (M).

TABLE 2

Contingency Table Comparing Investment Motivation and Culturally Similar Countries

Count **Expected** **Cell Chi*2**	Asia/ Africa	Large Europe	Small Europe	Japan	South America	Southeast Asia + China	U.K. + Canada+ Australia	**Total**
Finance	42	93	92	143	60	95	87	**612**
"Asset	31	131	109	138	75	75	89	
Augmenting"	3.5	*11.2	2.7	0.2	*9.2	5.3	0.0	
Construction	1	2	1	6	0	2	2	**14**
"Asset	0	3	2.5	3.1	1	2	2	
Exploiting"	0.1	0.3	0.9	2.5	0.7	0.0	0.0	
Government	3	1	5	1	0	0	2	**12**
"Asset	1	3	2	3	1	1	3	
Exploiting"	*9.1	1.0	3.8	1.1	0.7	1.5	0.0	
Manufacturing	9	47	33	67	9	22	45	**232**
"Asset	12	50	41	52	14	28	34	
Exploiting"	0.7	0.2	1.7	4.0	1.9	1.4	3.8	
Services	12	99	97	101	25	26	94	**454**
"Asset	23	87	81	102	28	56	66	
Augmenting"	5.6	0.0	3.1	0.0	0.3	*15.7	*11.9	
Transportation	18	7	27	17	19	16	7	**111**
Public Utilities	6	24	20	25.0	7	14	16	
"Asset	*26.3	*11.8	2.6	2.6	*21.7	0.4	5.2	
Exploiting"								
Wholesale &	14	163	88	99	5	74	42	**485**
Retail Trade	25	104	87	110	30	59	70	
"Asset	4.8	*33.3	0.0	1.0	*20.6	3.6	*11.5	
Exploiting"								
Total	**99**	**412**	**343**	**434**	**118**	**235**	**279**	**1920**

Standard errors in parentheses. N =1920

   † $p < .10$
   * $p < .05$
   ** $p < .01$
   *** $p < .001$

TABLE 3

Comparison of Asset Exploiting and Asset Augmenting Mean Values for Each Country Group

	Number	Mean (miles)	Std. Error	Significant Difference Tukey-Kramer HSD
Asia/Africa				***
Asset Augmenting	54	0.79	0.25	
Asset Exploiting	45	2.19	0.27	
Europe - Large				**
Asset Augmenting	192	1.28	0.13	
Asset Exploiting	220	1.62	0.12	
Europe - Small				***
Asset Augmenting	189	1.40	0.16	
Asset Exploiting	154	2.09	0.18	
South America				***
Asset Augmenting	85	1.10	0.26	
Asset Exploiting	33	2.81	0.42	
Southeast Asia & China				
Asset Augmenting	121	2.25	0.19	
Asset Exploiting	114	1.82	0.19	
U.K., Canada & Australia				†
Asset Augmenting	181	1.99	0.15	
Asset Exploiting	98	2.40	0.21	
Japan				
Asset Augmenting	244	1.38	0.10	
Asset Exploiting	190	1.40	0.12	
Overall				***
Asset Augmenting	1066	1.51	0.06	
Asset Exploiting	854	1.85	0.07	

† $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

TABLE 4

Statistics and Correlations

	X	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1.Asia	.05	.22												
2. Small Europe	.18	.38	-.10											
3. Large Europe	.22	.41	-.12	-.24										
4. Japan	.23	.42	-.13	-.25	-.28									
5. South America	.06	.24	-.06	-.12	-.13	-.14								
6. UK Canada Australia	.14	.35	-.10	-.02	-.22	-.22	-.11							
7. SE Asia & China	.12	.33	-.09	-.02	-.20	-.20	-.10	-.15						
8. Government	.01	.08	.07	.05	-.03	-.03	-.02	.00	-.03					
9. Augment-Banking	.16	.37	.11	-.03	-.08	-.05	.11	-.08	.13	-.04				
10.Augment-Non-Banking	.39	.49	-.09	.02	-.03	.05	.00	.14	-.13	-.06	-.35			
11. Asset Augmenting	.56	.50	-.00	-.00	-.09	.01	.09	.08	-.03	-.09	.40	.72		
12. Distance	-.03	.01	-.03	.01	-.05	-.08	-.01	.10	.07	.07	-.06	-.04	-.08	
13. Distance with Banking	-.03	.01	.03	.01	-.05	-.08	-.01	.10	.08	.07	-.04	-.05	-.08	.99

TABLE 5

Results of OLS Regression Analysis For Knowledge Node Distance

	Investment Motivation (IM)	Cultural Effect (CE)	IM & CE	IM, CE & Cross Effects	IM, CE, Cross Effects & Banking
Intercept	1.86*** (0.06)	1.38*** (0.01)	1.57*** (0.11)	1.39*** (0.14)	1.46*** (0.11)
Government	1.54*** (0.57)	1.74** (0.57)	1.54** (0.57)	1.35** (0.57)	1.48** (0.58)
Asset Augmenting (A)	-0.31*** (0.09)		-0.35*** (0.09)	-.01 (0.19)	
Asset Augmenting-Bank (AB)					-0.30** (0.10)
Asset Augmenting Non-Bank					0.61** (0.29)
Asia/Africa		-0.01 (0.22)	-0.01 (0.22)	0.71 (0.32)	0.23 (0.27)
Large Europe		0.07 (0.14)	0.04 (0.13)	0.23 (0.19)	0.13 (0.14)
Small Europe		0.30** (0.14)	0.30** (0.14)	0.66** (0.21)	0.51*** (.15)
South America		0.20 (0.20)	0.25 (0.20)	1.42*** (0.37)	0.63*** (0.24)
Southeast Asia + China		0.66*** (0.16)	0.64*** (0.16)	0.43† (0.24)	0.76*** (0.18)
UK+Canada+ Australia		0.74*** (0.15)	0.77*** (0.15)	0.99*** (0.24)	0.90*** (0.16)
Asia/Africa X (A)				-1.30** (0.43)	
Large Europe X (A)				-0.33 (0.26)	
Small Europe X (A)				-0.64** (0.28)	
South America X (A)				-1.69*** (0.44)	
Southeast Asia + China X (A)				0.45 (0.32)	
UK+Canada+ Australia X (A)				-0.38 (0.31)	
Asia/Africa X (AB)					-1.28 (0.51)
Large Europe X (AB)					-0.74 (0.42)
Small Europe X (AB)					-1.66*** (0.42)
South America X (AB)					-1.81*** (0.48)
Southeast Asia + China X (AB)					-0.85** (0.40
UK+Canada+ Australia X (AB)					-1.26** (0.50)
Adjusted R2	.011	.025	.032	.048	.043

Standard errors in parentheses. N =1920

    †   p < .10
    *   p < .05
    **   p < .01
    *** p <.001