

CITIES AND GLOBALIZATION: AN INTERNATIONAL CITIES PERSPECTIVE¹

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Abstract: This paper adopts an international cities perspective for the study of major cities in the world, using data on 100 service firms in 314 cities provided by the Globalization and World Cities Study Group and Network (GaWC). Firms and cities have different degrees of internationalization, with many firms, for example, having only a regional focus with modest global coverage. Many international cities, in turn, also show only partial evidence of internationalization; only a few qualify as truly “world cities” that function as dominant command centers of the world economy. There is a good correspondence between regional firms and regional clusters of cities (e.g., Asia-oriented firms and Asian open cities). [Key words: international cities, world cities, globalization, advanced service firms, urban system.]

INTRODUCTION

In the age of globalization, cities have become an increasingly important arena of competition and strategic promotion. Along with the spatial dispersion of economic activities, there is a trend toward territorial centralization of controlling functions in major cities in the world such as New York, London, and Tokyo (Short and Kim, 1998; Sassen, 2001b). Thus many urban studies have focused on so-called world cities.

Following up on the notion that advanced producer services are a distinctive feature of contemporary world city formation (Sassen, 2001a, 2001b), the Globalization and World Cities Research Group and Network (GaWC; Beaverstock et al., 1999, 2000; Taylor et al., 2000, 2002b; Taylor, Walker, and Beaverstock, 2002; Taylor, 2001) has made a renewed attempt to identify world cities. They consider the presence of key advanced producer service firms as representing the global capacities of cities, interpreted as concentrations of expertise and knowledge.

GaWC has produced two data sets on advanced producer service firms in various cities in the world. The first data set includes 69 firms across 264 cities for 1997/1998. GaWC's most influential studies have been based on this data set (Beaverstock et al., 1999; Taylor and Walker, 2001). Some 10 Alpha world cities, 10 Beta world cities, and 35 Gamma

¹The data were produced by P.J. Taylor and G. Catalano and constitute Data Set 11 of the GaWC Study Group and Network (<http://www.lboro.ac.uk/gawc/>) publication of inter-city data. We are grateful to Professor P.J. Taylor for providing the data to us.

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world cities were identified. A multivariate analysis also was conducted to identify the order of geographical complexity (cross-city profiles of firms and corporate service mixes) of the process of world city formation using a subset of top 46 firms in 55 cities (Taylor and Walker, 2001). However, this data set is not perfect, including (for example) many law firms but no management consultancy firms.

The second data set is much better, including 100 firms in six sectors across 314 cities for 2000 (Taylor et al., 2002a, 2002b).³ Only limited analyses of this second data set have been undertaken. It was used, for example, to identify global connectivity in world city network (Taylor et al., 2002b), and its top 123 cities were selected for 13 exploratory analyses to reveal primary and secondary structures of the world city network (Taylor et al., 2002a). However, no study has been conducted to update the seminal analyses of GaWC based on the first data set.

As pointed out by Beaverstock et al. (1999, p. 451), “we have defined general principles of classification but the specific methods used in each sector are inevitably subjective; the data could be ordered in other ways.” Only a few cities can be qualified as truly “world cities” or “global cities” that serve as commanding centers of the world economy. Concentrating on only a few of such “world cities” would provide a lopsided view of the dynamics of cities in the age of globalization. The key argument of this paper, therefore, is that it is more appropriate to use “international cities,” as defined in the following section, to rank and analyze cities across the world having different degrees of internationalization.

More specifically, this paper uses the second data set on advanced service firms provided by GaWC (Taylor et al., 2002a) to perform a systematic study of international cities. We define an index of internationalization that is used to classify the cities into different classes, and then conduct multivariate analyses to examine the spatial structure of advanced service firms and firm mix of the top 60 international cities following Taylor and Walker (2001). This analysis of the second data set affords a good opportunity to examine how improvement in the data may alter the results of analysis (e.g., the ranking of world cities and their spatial configurations). Nonetheless, the results reported here, based on a different ranking approach, are not completely comparable to earlier GaWC studies employing the first data set (Beaverstock et al., 1999; Taylor and Walker, 2001).⁴

INTERNATIONAL CITIES IN THE AGE OF GLOBALIZATION

Globalization has profoundly transformed production, consumption, and many other aspects of society. In the age of globalization, it is now popular to assume that the role of nation state is declining while that of cities is increasing (Swyngedouw, 1997; Macleod and Goodwin, 1999). Many urban studies have focused on the study of the major cities of the world, variously identified as world cities, global cities, and mega-cities. The study of mega-cities follows a demographic tradition with such cities being defined by their population size—over 8 million according to the United Nations Population Division (2004).

³This data set was made available to the authors by GaWC.

⁴Because of problems of comparability and the limitations of the first data set, we do not use the new ranking approach developed here to report results based on the first data set.

However, mega-cities with large populations do not necessarily possess global command functions. Using a functional approach, scholars have begun to identify major cities according to their disproportionate geo-economic power in the world system (Hall, 1966; Reed, 1981).

Friedmann and his associates (Friedmann and Wolff, 1982; Friedmann, 1986) proposed the hypotheses of world city formation in their influential work. Emphasizing the hub and controlling functions of world cities in global capitalism since the 1970s, a set of world cities and their hierarchical network were sketched.

Sassen (2001a, 2001b) considered global cities as sites for the production of producer and financial services. According to Sassen, the rapid growth, specialization, and agglomeration of producer firms, as well as the financial industry are responsible for the formation of global cities.

Recently, scholars in GaWC have argued that the branches of advanced service firms in various cities represent the global capacities of cities and also indicate inter-city relations, given the control and information connections existing among branches of the same firm (Beaverstock et al., 1999; Taylor et al., 2002b; Taylor, Walker, and Beaverstock, 2002). This is a significant advancement over previous studies using international airline data to measure inter-city interactions (Rimmer, 1998).

Based on commonly accepted notions, only a few cities can be qualified as truly "world cities" or "global cities"; such cities should possess command functions and dominating power in the world economy. On the other hand, many cities may only exhibit partial evidence of internationalization or integration into the world urban system. Based on the Federal Express data, Michelson and Wheeler (1994) found only modest information flows between foreign countries and subordinate cities in the United States. Communication between many U.S. cities and the world at large takes place mainly through New York and the four regional information capitals (i.e., Atlanta, Chicago, Dallas, and Los Angeles).

Thus under a world cities or global cities perspective, emphasis inevitably is placed on a few top cities in the world, while the majority of other cities are ignored. A more inclusive, encompassing perspective considers all cities in an international setting, in which world cities or global cities are locations having a special status and role. We therefore propose to adopt the perspective of "international cities." International cities may be defined as those cities that have many transnational links in terms of investment, trade, business, services, information, migration, and culture. In other words, they are defined according to their connections with other cities with an indication of the extent to which they dominate or are dominated by other cities. A world city must have dense international links and is, no doubt, an international city. Indeed, Nijman (1996, p. 7) has previously argued for a distinction between world city and *Weltstadt*: "many cities in the world have a striking international or cosmopolitan flavor, but are not known to be notable command centers." He illustrated this point using the case of Miami, Florida.

Specifically, there are three main reasons to adopt an international cities perspective rather than one focusing on world cities. First, world cities are a small subset of international cities with a commanding position. Calculating the degree of "world city-ness" for a city that is not of world city status would prove confusing. Indeed, it is more appropriate to measure the degree of "international city-ness" and then to identify a small group of the top cities as world cities.

Although there was an important shift “from an international to a global economy” (Amin and Thrift, 1992), only a fraction of cities can be identified as world cities. According to a review of 16 studies on world cities by Beaverstock et al. (1999), 79 cities were mentioned as world cities, but only London, New York, Paris, and Tokyo received unanimous endorsement; 62 cities were identified as world cities by less than eight studies and roughly 25 were by only one source. Considering the fact that a majority of the world’s population is excluded from the capitalist “space of accumulation” and consequently from world city analysis, Friedmann (1995, p. 21) argued that “our understanding of the urban dynamic remains incomplete unless we consider both the internal and external proletariats of world cities.” Godfrey and Zhou (1999) argued that the world city literature tends to marginalize important nodes of globalization in developing regions. Thus, the study of international cities provides a more inclusive framework within which a subset of world cities can also be identified.

Second, the presence of advanced service firms indicates the degree of internationalization of a city’s service sector within the world economy. As internationalization or globalization also involves international trade, tourism, educational, cultural, media and religious interactions, the data on advanced service firms are an approximate measure of a city’s internationalization status. Thus, the perspective of international cities justifies the use of data on advanced service firms in the study of cities in the globalizing world.

Third, a city that is integrated into the world system can appear as a commanding node dominating other cities, a passive node being controlled by other commanding world cities, or an intermediate node transmitting orders from high-order centers to peripheral cities (Nijman, 1996, p. 16). Thus there are dominating, intermediate, and dominated cities that can contain a number of advanced service firms. Measuring the number or size of such service firms can thus reveal the degree of internationalization. Only cities hosting headquarters or regional headquarters of service firms with a controlling function over the urban network can be considered as possible candidates for world city status (Hall, 1966; Friedmann, 1986, 1995; Godfrey and Zhou, 1999).

MEASURING INTERNATIONALIZATION AND WORLD CITY-NESS BASED ON INFORMATION ON ADVANCED SERVICE FIRMS

Conceptually, a city’s degree of internationalization differs from an index of world city-ness. As mentioned before, only a city with high degree of internationalization and possessing commanding functions may qualify as a world city. However, measures of world city-ness are often applied to world cities and ordinary cities for the purpose of identifying world cities. In this sense, there are similarities in measuring the degree of internationalization and world city-ness.

Reed (1981) was the first to identify international financial centers based on a multivariate analysis of 76 cities in 1900–1980. Five levels of financial centers were identified: supranational, supranational first-order, supranational second-order, international, and host international.

Thirty world cities were identified and divided into four categories by Friedmann (1995): global financial articulations, multinational articulations, important national articulations, and subnational/regional articulations. Several key criteria that were

considered included major financial center, global and regional headquarters of TNCs, international institutions, and rapid growth of high-level business services.

Godfrey and Zhou (1999) argued that relying solely on the location of headquarters to identify the global urban hierarchy is problematic, as it overestimates the importance of cities in core developed countries dominated by large corporations. For example, the dominance of large centralized corporations in Japan made Tokyo the top city in the world, with 92 headquarters of Fortune Global 500 firms in 1996, much greater than the 38 in New York. The position of Singapore and Hong Kong was marginalized due to the lack of TNC headquarters. Godfrey and Zhou argued that first-level TNC subsidiaries also should be considered in order to identify global and regional centers. New York, Tokyo, London, Hong Kong, and Singapore were identified as the top five world cities in their study.

As mentioned before, the most recent advancement is to use information on advanced service firms to measure world city-ness by GaWC (Beaverstock et al., 1999; Taylor et al., 2002b; Taylor, Walker, and Beaverstock, 2002). GaWC has made a significant contribution to the study of world cities by collecting systematic data on advanced service firms in various cities in the world. This paper will make use of GaWC's second data set, unlike most previous studies that have relied on the first data set. It is useful to consider differences in the two GaWC data sets in terms of their utility in identifying world city-ness, as it explains our rationale for selection of the second data set. We then propose an alternative approach for calculation of the degree of internationalization for various cities.

First, GaWC's first data set on 69 firms across 264 cities for 1997/1998 has some important limitations. It is dominated by law firms, meaning that results are affected by a quite unbalanced sectoral mix of firms. For example, two law firm-based major principal components account for 32% of the total variance in a previous multivariate analysis (Taylor and Walker, 2001).

Second, and more importantly, the first data set is based on inconsistent information that varies among firms, ranging from number of employees to fax numbers in a city. Some 34 firms were only recorded by their presence or absence. It is difficult and problematic to define world city-ness using such a diverse array of data types. According to Beaverstock et al. (1999), only firms with a significant presence in a city were identified, and sectors in which only one firm had a significant presence in a city were ignored. Subsequent ranking and multivariate analysis would be affected by such inconsistencies (Taylor and Walker, 2001).

Third, although a similar method was used to collect information for the second data set for the year 2000, the second set recorded a better mix of firms. And although again the type and amount of information varied dramatically across firms, the sample size ($n = 100$) was larger, and a value from 0 to 5 was assigned to indicate the importance of each firm within its city (see Appendix A for a listing of the 100 firms). Considering the subjective nature in which scores were derived for the various cities, we developed an alternative approach for use of the data set.

First, in place of selective use of the data, we utilized the information contained in the data set to the maximum extent possible. We regarded the presence of any major firm in a city as evidence of internationalization, and because the degree of internationalization

theoretically can be measured for any city, all 100 firms and 314 cities covered in the second data set were taken into account.

Second, only data on the presence and absence of a firm were used to calculate the degree of internationalization to avoid any potential problem in conversion of information (at varying levels of detail) to data (Taylor et al., 2002b). Unlike previous GaWC studies, the presence of any major international firm in a city is indicative of its integration into the world economy; no firms are ignored.

Third, the degree of internationalization using the presence and absence data is affected by the number of firms covered in each sector. To overcome this problem, the number of firms present in one sector of a city is standardized—in other words, divided by the maximum number of firms present in a city in the same sector. All data are then multiplied by two so that the total degree of internationalization is 12, the same maximum score used in the GaWC study (Beaverstock et al., 1999).

Finally, the presence of a firm's headquarters in a city did not elicit special treatment in our study. It was expected that a major global service center hosting a firm's headquarters would be complemented by the presence of additional service firms. Therefore the total number of service firms present in a city should reflect in part the likelihood of its hosting firms' headquarters facilities. The degree of internationalization will not be underestimated significantly.

UNEVEN GLOBALIZATION: GLOBAL DISTRIBUTION OF MAJOR SERVICE FIRMS AMONG CITIES

Globalization is an uneven process among different economic sectors and over space. It is illuminating to examine briefly the global distribution of the 100 advanced service firms over 314 cities in our study. Table 1 presents the average percentage of cities where a particular service firm is present. The top two and bottom two firms (with the highest and lowest percentages of presence in the world) in each sector are presented, as well as the average for the entire sample of 100 firms. For the 100 firms as a whole, they are present in 75 out of 314 cities on average (23.90%). A city that hosts offices of all 100 service firms would be considered a truly global city. However, only some major cities are highly internationalized.

Geographically, the degree of internationalization is different among different regions. In Oceania's cities, about 28% have a chance to receive one office of each service firm. In Western European, Eastern European, North American, South American and Asian cities, the percentage is over 23%. The African cities have the lowest chance, only 12.84%. Thus, no region currently has a degree of internationalization exceeding 30%.

There are remarkable differences in the spatial coverage of major services in different service sectors indicating different degrees of internationalization. Accountancy firms are present in 43% of world cities on average and their global office network is relatively complete. Coverage in African cities again is relatively low, however, at 27.78%. The top two firms, KPMG and PricewaterhouseCoopers, cover over 84% of international cities in the world. The top 11 accountancy firms have penetrated most cities, with a coverage rate of over 40%. The bottom two firms, Macintyre Strater International (MSI) and Summit International + Baker Tilly, cover only 18.47% and 10.19% of the world's international cities, respectively. Clearly, the spatial reach of even accountancy firms ranges from

TABLE 1. DISTRIBUTION OF ADVANCED SERVICE FIRMS AMONG 314 CITIES IN THE WORLD BY SECTOR AND REGION (%)

| Sector/firm | No. of cities | World | Africa | Asia | Eastern Europe | North America | Oceania | South America | Western Europe |
|---------------------------------------|---------------|-------|--------|-------|----------------|---------------|---------|---------------|----------------|
| No. of cities | 314 | 314 | 37 | 78 | 19 | 69 | 11 | 22 | 78 |
| KPMG | 268 | 85.35 | 56.76 | 75.64 | 84.21 | 98.55 | 100.00 | 86.36 | 94.87 |
| PricewaterhouseCoopers | 265 | 84.39 | 78.38 | 69.23 | 73.68 | 94.20 | 90.91 | 90.91 | 93.59 |
| Macintyre Strater International (MSI) | 58 | 18.47 | 2.70 | 11.54 | 5.26 | 34.78 | 45.45 | 18.18 | 17.95 |
| Summit International + Baker Tilly | 32 | 10.19 | 2.70 | 2.56 | 5.26 | 21.74 | 27.27 | 9.09 | 10.26 |
| Accountancy firms (18) | 135 | 42.89 | 27.78 | 36.61 | 39.47 | 47.99 | 64.65 | 51.26 | 47.22 |
| McCann-Erickson | 154 | 49.04 | 43.24 | 53.85 | 84.21 | 37.68 | 36.36 | 68.18 | 44.87 |
| J Walter Thompson | 125 | 39.81 | 32.43 | 39.74 | 68.42 | 50.72 | 27.27 | 50.00 | 25.64 |
| Hakuhodo | 27 | 8.60 | 0.00 | 20.51 | 0.00 | 2.90 | 9.09 | 4.55 | 8.97 |
| Asatsu DK | 21 | 6.69 | 0.00 | 17.95 | 0.00 | 2.90 | 0.00 | 0.00 | 6.41 |
| Advertising firms (15) | 77 | 24.54 | 17.12 | 26.41 | 34.39 | 22.51 | 29.70 | 28.79 | 23.68 |
| Citibank | 168 | 53.50 | 37.84 | 52.56 | 42.11 | 69.57 | 54.55 | 77.27 | 43.59 |
| HSBC | 145 | 46.18 | 32.43 | 62.82 | 15.79 | 40.58 | 63.64 | 50.00 | 44.87 |
| UBS | 37 | 11.78 | 5.41 | 7.69 | 0.00 | 17.39 | 18.18 | 4.55 | 17.95 |
| Sakura Bank | 32 | 10.19 | 0.00 | 25.64 | 0.00 | 8.70 | 0.00 | 4.55 | 6.41 |
| Banking/Finance firms (23) | 78 | 24.84 | 11.05 | 31.33 | 22.43 | 23.44 | 23.72 | 24.70 | 26.92 |
| Winterthur | 209 | 66.56 | 86.49 | 52.56 | 63.16 | 57.97 | 72.73 | 77.27 | 75.64 |
| CGNU | 109 | 34.71 | 10.81 | 29.49 | 10.53 | 39.13 | 72.73 | 22.73 | 51.28 |
| Liberty Mutual | 23 | 7.32 | 0.00 | 3.85 | 0.00 | 20.29 | 0.00 | 18.18 | 2.56 |
| Prudential | 22 | 7.01 | 0.00 | 15.38 | 0.00 | 8.70 | 0.00 | 0.00 | 5.13 |
| Insurance firms (11) | 72 | 22.79 | 11.79 | 17.60 | 11.96 | 31.75 | 27.27 | 22.73 | 27.27 |
| Baker and McKenzie | 58 | 18.47 | 2.70 | 19.23 | 26.32 | 21.74 | 18.18 | 27.27 | 17.95 |
| White and Case | 38 | 12.10 | 2.70 | 19.23 | 26.32 | 8.70 | 0.00 | 4.55 | 12.82 |
| Sidley and Austin | 11 | 3.50 | 0.00 | 5.13 | 0.00 | 8.70 | 0.00 | 0.00 | 1.28 |
| Morgan Lewis | 10 | 3.18 | 0.00 | 1.28 | 0.00 | 8.70 | 0.00 | 0.00 | 3.85 |
| Law firms (16) | 25 | 7.84 | 0.84 | 7.61 | 14.47 | 9.24 | 2.84 | 2.84 | 10.66 |
| Deloitte Touche Tohmatsu | 107 | 34.08 | 45.95 | 37.18 | 78.95 | 21.74 | 27.27 | 40.91 | 24.36 |
| Andersen Consulting | 104 | 33.12 | 10.81 | 26.92 | 26.32 | 52.17 | 45.45 | 27.27 | 34.62 |
| Mercer Man Con | 22 | 7.01 | 0.00 | 3.85 | 0.00 | 14.49 | 0.00 | 4.55 | 10.26 |
| Compass | 19 | 6.05 | 2.70 | 0.00 | 0.00 | 13.04 | 9.09 | 0.00 | 10.26 |
| Management consultancy (17) | 56 | 17.82 | 7.63 | 13.57 | 16.41 | 22.93 | 16.58 | 16.58 | 22.85 |
| Average of all firms (100) | 75 | 23.90 | 12.84 | 23.22 | 25.17 | 26.28 | 28.27 | 25.00 | 26.83 |

“global” (covering most cities) to “international” (covering cities in a few countries in a region).

The global coverage of service firms in the other five sectors is much less than that of the accountancy sector. On average, an advertising, banking/finance, or insurance firm covers 23–25% of the 314 cities, compared with 17.82% for a management consultancy firm. The global coverage of law firms is the lowest, as the practice of law is heavily regulated by nation states.

The top advertising firm, McCann-Erickson, has penetrated many cities, with an average coverage of 49.04%. Firms with low global coverage tend to serve particular regions, indicating regionalization instead of globalization. The bottom five advertising firms, with global coverage of less than 12%, have a specific regional focus. For example, CMG (Carlson Marketing Group) mainly serves Oceania and North American cities while Hakuhodo and Asatsu DK mainly serve Asian cities. It is noticeable that the degree of internationalization in this sector in North America is not particularly high, with an average coverage 22.51%, possibly due to the existence of strong local firms in the United States. For example, European advertising firms have chosen not to compete in the domestic market of the United States (Taylor and Walker, 2001, p. 33).

In the banking/finance sector, three top firms have penetrated many cities, with an average coverage of over 38%. For remaining 20 firms, most have a clear regional focus in one or two regions. For example, Sakura Bank serves over 75.65% of the cities in Asia, while Chase serves 65.22% cities in North America.

Only the top insurance firm, Winterthur, has penetrated most of the 314 cities, with an average coverage of 66.56%. Most remaining firms have high coverage in North America and/or Western Europe in addition to one or two other regions. For example, Allianz serves over 36% of Eastern and Western European cities, whereas Prudential has relatively high coverage in Asia.

The top two management consultancy firms have a global coverage of 33–34%, with a significant presence in most regions. Except for IBM Worldwide and McKinsey, the remaining 13 firms have high coverage in North America and/or Western Europe in addition to one or two other regions.

As pointed out by Beaverstock et al. (1999, p. 453), law is very territorial in its practice, principles, and organization. A law firm covers only about 7.84% of cities on average, with Baker and McKenzie, the top law firm, having branches in 18.47% of the cities in our study. Other law firms focus on one or two regions (e.g., White and Case covers over 19% of the cities in Asia and Eastern Europe).

FOUR CLASSES OF INTERNATIONAL CITIES

The global reach of advanced service firms affects the degree of internationalization of cities in various regions. The degree of internationalization is calculated for each city according to the procedure outlined previously. The top 97 cities are identified as having a minimum degree of internationalization of 3.19. Each of these cities hosts at least 26 service firms.

The 97 cities are divided into four classes of international cities: A (6 cities), B (10), C (44), and D (37). The cutoff points for different classes were selected according to natural

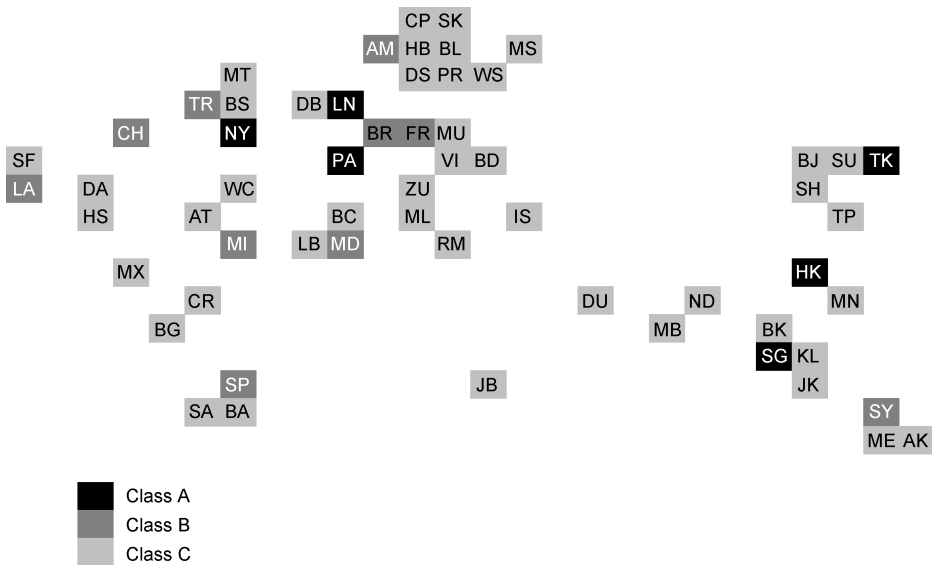


Fig. 1. Top 60 International cities of class A, B, and C. *Abbreviations:* AK: Auckland; AM: Amsterdam; AT: Atlanta; BA: Buenos Aires; BC: Barcelona; BD: Budapest; BG: Bogoto; BJ: Beijing; BK: Bangkok; BL: Berlin; BR: Brussels; BS: Boston; CH: Chicago; CP: Copenhagen; CR: Caracas; DA: Dallas; DB: Dublin; DS: Dusseldorf; DU: Dubai; FR: Frankfurt; HB: Hamburg; HK: Hong Kong; HS: Houston; IS: Istanbul; JB: Johannesburg; JK: Jakarta; KL: Kuala Lumpur; LA: Los Angeles; LB: Lisbon; LN: London; MB: Mumbai; MD: Madrid; ME: Melbourne; MI: Miami; ML: Milan; MN: Manila; MS: Moscow; MT: Montreal; MU: Munich; MX: Mexico City; ND: New Delhi; NY: New York; PA: Paris; PR: Prague; RM: Rome; SA: Santiago; SF: San Francisco; SG: Singapore; SH: Shanghai; SK: Stockholm; SP: Sao Paulo; SU: Seoul; SY: Sydney; TK: Tokyo; TP: Taipei; TR: Toronto; VI: Vienna; WC: Washington; WS: Warsaw; ZU: Zurich.

breaks in the degree of internationalization. Table 2 also indicates the percentage of the 100 firms that are present in class A and B cities, as well as their classification and world city-ness scores in the previous GaWC study. The location of class A, B, and C cities is shown in Figure 1.

As different methods and data sets are used, there are some differences in city ranks between GaWC studies and this study. The top 97 cities do not include all 55 world cities identified in previous GaWC studies (Beaverstock et al., 1999; Taylor and Walker, 2001). Osaka was identified as a Gamma city by GaWC, but is not among the top 97 cities in this study as only a few international firms are present. Two Gamma cities are not among the top 60 cities in class A, B, and C.

Each class A city hosts over 88% of the total number of service firms in the study. All class A cities are Alpha world cities in GaWC study (Beaverstock et al., 1999). The top four cities are London, New York, Hong Kong, and Tokyo, with the former two cities' leading positions already well recognized (Beaverstock et al., 1999; Sassen, 2001b). On the other hand, there is little consensus on Hong Kong's position.

TABLE 2. CLASS A AND B INTERNATIONAL CITIES AND THEIR DEGREES OF INTERNATIONALIZATION^a

| City | Degree of internationalization | | Accountancy firms | Advertising firms | Banking/finance firms | Insurance firms | Law firms | Management consultancy | All firms | GaWC class | GaWC world city-ness |
|-------------------|--------------------------------|------|-------------------|-------------------|-----------------------|-----------------|-----------|------------------------|-----------|------------|----------------------|
| | Value | Rank | | | | | | | | | |
| Class A cities/6 | | | | | | | | | | | |
| London | 11.88 | 1 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 94.12 | 99.00 | Alpha | 12 |
| New York | 11.58 | 2 | 100.00 | 100.00 | 100.00 | 90.91 | 93.75 | 94.12 | 97.00 | Alpha | 12 |
| Hong Kong | 11.06 | 3 | 83.33 | 93.33 | 100.00 | 100.00 | 93.75 | 82.35 | 92.00 | Alpha | 10 |
| Tokyo | 10.96 | 4 | 94.44 | 86.67 | 100.00 | 90.91 | 93.75 | 82.35 | 92.00 | Alpha | 12 |
| Singapore | 10.55 | 5 | 88.89 | 93.33 | 100.00 | 81.82 | 81.25 | 82.35 | 89.00 | Alpha | 10 |
| Paris | 10.47 | 6 | 94.44 | 93.33 | 91.30 | 81.82 | 62.50 | 100.00 | 88.00 | Alpha | 12 |
| Class B cities/10 | | | | | | | | | | | |
| Milan | 9.10 | 7 | 88.89 | 73.33 | 82.61 | 72.73 | 37.50 | 100.00 | 77.00 | Alpha | 10 |
| Brussels | 8.99 | 8 | 72.22 | 80.00 | 69.57 | 63.64 | 87.50 | 76.47 | 75.00 | Beta | 8 |
| Chicago | 8.86 | 9 | 94.44 | 73.33 | 91.30 | 81.82 | 37.50 | 64.71 | 75.00 | Alpha | 10 |
| Los Angeles | 8.79 | 10 | 88.89 | 66.67 | 86.96 | 81.82 | 56.25 | 58.82 | 74.00 | Alpha | 10 |
| Madrid | 8.63 | 11 | 83.33 | 86.67 | 78.26 | 63.64 | 31.25 | 88.24 | 73.00 | Beta | 8 |
| Sydney | 8.47 | 12 | 94.44 | 80.00 | 78.26 | 63.64 | 25.00 | 82.35 | 72.00 | Beta | 9 |
| Sao Paulo | 8.47 | 13 | 88.89 | 73.33 | 86.96 | 72.73 | 25.00 | 76.47 | 72.00 | Beta | 8 |
| Toronto | 8.44 | 14 | 94.44 | 86.67 | 82.61 | 63.64 | 12.50 | 82.35 | 72.00 | Beta | 9 |
| Frankfurt | 8.24 | 15 | 61.11 | 80.00 | 82.61 | 54.55 | 75.00 | 58.82 | 70.00 | Alpha | 10 |
| Amsterdam | 8.22 | 16 | 83.33 | 100.00 | 73.91 | 45.45 | 37.50 | 70.59 | 70.00 | Gamma | 6 |

^aIn GaWC study, 55 cities are divided into three classes, 10 alpha cities, 10 beta cities, and 35 gamma cities (Beaverstock et al., 1999).

**TABLE 3. CLASS C AND D INTERNATIONAL CITIES
AND THEIR DEGREES OF INTERNATIONALIZATION**

| City | Value | City | Value | City | Value | City | Value |
|------------------|-------|--------------|-------|-------------|-------|------------|-------|
| Class C cities | | | | | | | |
| San Francisco | 7.91 | Jakarta | 6.87 | Manila | 6.24 | Istanbul | 5.49 |
| Zurich | 7.89 | Prague | 6.71 | Barcelona | 6.14 | Dusseldorf | 5.41 |
| Beijing | 7.73 | Melbourne | 6.65 | Lisbon | 6.10 | Dallas | 5.32 |
| Mexico City | 7.71 | Dublin | 6.58 | Budapest | 6.09 | Hamburg | 5.31 |
| Bangkok | 7.39 | Mumbai | 6.56 | Copenhagen | 5.99 | Bogoto | 5.30 |
| Buenos Aires | 7.30 | Vienna | 6.53 | Montreal | 5.95 | Dubai | 5.28 |
| Taipei | 7.27 | Kuala Lumpur | 6.51 | Caracas | 5.77 | New Delhi | 5.23 |
| Stockholm | 7.17 | Washington | 6.48 | Miami | 5.70 | Santiago | 5.17 |
| Shanghai | 7.15 | Johannesburg | 6.45 | Boston | 5.66 | Rome | 5.17 |
| Moscow | 6.98 | Warsaw | 6.35 | Auckland | 5.64 | Berlin | 5.16 |
| Seoul | 6.91 | Atlanta | 6.29 | Munich | 5.55 | Houston | 5.14 |
| Class D cities | | | | | | | |
| Cairo | 4.70 | Rotterdam | 4.05 | San Diego | 3.48 | St. Louis | 3.30 |
| Oslo | 4.70 | Geneva | 3.94 | Jeddah | 3.45 | Perth | 3.30 |
| Helsinki | 4.67 | Seattle | 3.86 | Panama City | 3.44 | Bratislava | 3.29 |
| Vancouver | 4.63 | Philadelphia | 3.85 | Calgary | 3.42 | Hamilton | 3.25 |
| Luxembourg | 4.44 | Minneapolis | 3.77 | Detroit | 3.42 | Antwerp | 3.25 |
| Ho Chi Minh City | 4.35 | Wellington | 3.62 | Brisbane | 3.39 | Stuttgart | 3.22 |
| Beirut | 4.33 | Bucharest | 3.59 | Guangzhou | 3.39 | Riyadh | 3.19 |
| Athens | 4.25 | Montevideo | 3.59 | Lima | 3.35 | Bangalore | 3.19 |
| Rio De Janeiro | 4.21 | Cologne | 3.50 | Karachi | 3.32 | Cleveland | 3.19 |
| Denver | 4.12 | | | | | | |

Hong Kong hosts many transnational service firms—92% of those in this study. It is a well-known international city playing the role of an entrepot (Enright et al., 1997; Sung, 2002; Shen, 2003). In an earlier GaWC study (Beaverstock et al., 1999), it was ranked behind Tokyo because of the absence of headquarters of major TNCs. When first-level subsidiaries (such as regional headquarters) of the world's 100 largest corporations listed in the Fortune Global 500 (1996) were considered, Hong Kong ranked fourth according to Godfrey and Zhou (1999). A recent GaWC study also ranked Hong Kong third in terms of service value and global connectivity (Taylor et al., 2002b). Thus Hong Kong is a highly internationalized city with eminent regional command functions, as opposed to London and New York with eminent global command functions. Hong Kong ranks higher than Tokyo in terms of the degree of internationalization, whereas Tokyo ranks higher according to world city-ness.

Each class B city hosts over 70% of the total number of firms on average. Among the service sector firms, law firms in particular are not as highly represented as in Group A cities. Within this group, Milan, Chicago, Los Angeles, and Frankfurt are Alpha cities in the GaWC study, but fall to the ranks of class B cities in no small part due to a lower number of management consultancy firms. On the other hand, one Gamma city identified by the GaWC study, Amsterdam, is a class B city due to its many banks, accountancy, advertising, and management consultancy firms.

Over 44% of the 100 firms are present in each of the class C cities, which are moderately internationalized. Some 31 class C cities were Gamma world cities in the GaWC study, and 5 were categorized previously as Beta world cities.⁵ A further 8 cities were not Gamma world cities in the GaWC study, but have risen to class C status in this study due to the presence of many firms from various sectors other than law firms (e.g., over 86.96% banks are present in Mumbai).

Among class D cities, Geneva and Minneapolis are Gamma world cities in the GaWC study. They are categorized here as class D cities because of the dearth of advertising firms in both cities and insurance firms in Geneva. Over 38% of the study's accountancy firms are present in all class D cities except Guangzhou. Overall, class D cities have a low degree of internationalization, with only 25–42% of all service firms being present in a class D city.

MULTIVARIATE STRUCTURAL ANALYSIS OF SERVICE FIRMS AND INTERNATIONAL CITIES

To acquire better understanding of the spatial structure of advanced service firms and firm mix of international cities, this section examines whether particular groups of firms have specific locational choices and whether particular clusters of cities are served by certain kinds of advanced service firms. The analyses will focus on the top 60 international cities in classes A, B, and C as the data matrix becomes sparser when more cities are included. One management consultancy firm, McKinsey, is also excluded from the analysis, as it is present in all 60 cities (there is no need to analyze its locational strategy).

Given the 99×60 data matrix of 99 firms in 60 cities, with each cell representing the absence (0) or presence (1) of a particular firm, principal component analysis was used for city-based and firm-based analyses. Significant principal components (PC) were extracted. For interpretation of significant relationships, only loadings over 0.4 are listed.⁶ A principal component draws on its meaning from those firms or cities whose loadings on that component are high. Except for the use of absence/presence data according to the perspective of international cities, the above analytical strategy follows an early GaWC study (Taylor and Walker, 2001) rather than a more complicated analysis based on 100 forms for 123 cities (Taylor et al., 2002a).

⁵Moscow and Seoul are class C cities, for example, because they have fewer insurance firms than class B cities.

⁶Statistically, this means that the correlation coefficient of each principal component with the original variables (i.e., firm or city variable) is over 0.4.

Firm-Based Analysis

Table 4 depicts the loadings of six main principal components from the firm-based analysis, accounting for 43.42% of the total variance. They are grouped by regions and/or sectors indicating their peculiar historical origins and location strategies.

Principal component one (9.56% of the total variance) is named “North America– and Oceania-oriented firms” and consists of a mixture of 20 firms from various sectors, especially insurance and management consultancy. Their average coverage rate among the 314 cities is not high, ranging from 4.46% to 34.71%, but their common character is relatively higher coverage in North American and Oceania (mostly 20–30% of cities).

Principal component two (8.46% of the total variance), “Europe-oriented firms led by law firms,” consists of seven law firms and eight other firms that focus on Western and Eastern European cities. The average coverage rate of these firms is not high among the 314 cities, but most of these firms have relatively high coverage (20–30%) in Western and Eastern European cities.

Principal component three (8.22% of the total variance), “global-oriented firms led by advertising firms,” consists of 8 advertising and 10 other firms. Most firms have a wide global reach (25–40% of all cities).

Principal component four (7.50% of total variance), “Asia-oriented firms,” consists of seven banks and five other firms, with average coverage ranging from 15.38% to 47.44% in Asian cities. Most of these firms, such as Dai-Ichi Kangyo (BC) and Fuji Bank (AU), are based in Asia.

Principal component five (5.52% of the total variance), “North American law firms,” consists of six law firms and one insurance firm.⁷ Most of these law firms have their highest coverage in North America cities and only low coverage overall in the world (3–9% of the 314 cities).

Principal component six (4.16% of the total variance), “global firms,” involves four firms from three sectors that have high coverage (over 46% of the 314 cities).⁸ AGN Network (F), HSBC (BD), and Royal and SunAlliance (BO) are based in London, while KPMG (J) is a Swiss cooperative.

Some 23 firms do not have a loading exceeding 0.4 on the six principal components described above. These are likely firms whose expansion is shaped by their own origin, particular regional environment, and development history. Their existence attests to the persistence of diversity in the world, even during the age of globalization.

The above analysis also reveals that only two principal components can be said to represent “global firms,” whereas the other four describe regional firms based in one or two regions. Regional instead of global operation is still the norm for most TNCs, which are unevenly distributed in the world urban network.

⁷Winterthur Group, a leading Swiss insurance company, has a negative loading of –0.630 due to its relatively low coverage in North American cities, in contrast to the American law firms.

⁸The exception is Royal and SunAlliance (BO), which has an average world coverage of 23.57%.

TABLE 4. STRUCTURE OF SERVICE FIRMS (INCLUDING ALL LOADINGS ABOVE 0.4)

| Principal component: | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------------|--|--|--|---------------------|-------------------------|--------------|
| Name: ^a | North America and Oceania oriented firms | Europe oriented firms led by law firms | Global oriented firms led by advertising firms | Asia oriented firms | North America law firms | Global firms |
| CG | 0.781 | | | | | |
| BP | 0.709 | | | | | |
| CT | 0.684 | | | | | |
| CK | 0.662 | | | | | |
| AG | 0.628 | | | | | |
| BJ | 0.615 | | | | | |
| AR | 0.586 | | | | | |
| CU | 0.576 | | | | | |
| CD | 0.569 | | | | 0.458 | |
| U | 0.550 | | | | | |
| K | 0.544 | | | | | |
| CN | 0.538 | | | | | |
| D | 0.537 | | | | | |
| BQ | 0.507 | | | | 0.490 | |
| BN | 0.479 | | | | | |
| BH | 0.459 | | | | | |
| CQ | 0.453 | | | | | |
| E | 0.428 | | | | | |
| BM | 0.425 | | | | | |
| CL | 0.411 | | | | | |
| AV | | 0.776 | | | | |
| AW | | 0.767 | | | | |
| BV | | 0.742 | | | | |
| CC | | 0.722 | | | 0.449 | |
| CA | | 0.683 | | | | |
| BT | | 0.655 | | | | |
| AK | | 0.635 | | | | |
| BY | | 0.558 | | | | |
| BW | | 0.542 | 0.410 | | | |
| CW | | 0.516 | | | | |
| AI | | 0.513 | | | | |
| R | | 0.504 | | | | |
| CR | | 0.486 | | | | |
| BZ | | 0.473 | | | 0.466 | |
| CO | | 0.432 | | | | |
| CM | | | 0.688 | | | |
| G | | | 0.687 | | | |
| Y | | | 0.658 | | | |
| X | | | 0.647 | | | |
| Z | | | 0.630 | | | |
| CP | | | 0.618 | | | |
| AD | | | 0.563 | | | |

(table continues)

TABLE 4. (*Continued*)

| Principal component: | 1 | 2 | 3 | 4 | 5 | 6 |
|----------------------|--|--|--|---------------------|-------------------------|--------------|
| Name: ^a | North America and Oceania oriented firms | Europe oriented firms led by law firms | Global oriented firms led by advertising firms | Asia oriented firms | North America law firms | Global firms |
| AA | | | 0.558 | | | |
| BF | | | 0.521 | | | |
| H | | | 0.513 | | | |
| AN | | | 0.513 | | | |
| P | | | 0.505 | | | |
| AB | | | 0.499 | | | |
| AC | | | 0.485 | | -0.461 | |
| T | | | 0.473 | | | |
| B | | | 0.453 | | | |
| AY | | | 0.440 | | | |
| I | | | 0.422 | | | |
| BC | | | | 0.783 | | |
| AZ | | | | 0.780 | | |
| AU | | | | 0.772 | | |
| AX | | | | 0.726 | | |
| V | | | | 0.636 | | |
| AH | | | | 0.607 | | |
| BB | | | | 0.589 | | |
| CI | 0.479 | | | 0.509 | | |
| AM | | | | 0.473 | | |
| AS | | | | 0.457 | | |
| BI | | | | 0.444 | | |
| M | | | | 0.411 | | |
| BK | | | | | -0.630 | |
| BR | | | | | 0.629 | |
| BX | | | | | 0.628 | |
| CE | | | | | 0.563 | |
| CB | | | | | 0.511 | |
| BU | 0.408 | | | | 0.478 | |
| CF | | 0.412 | | | 0.424 | |
| F | | | | | | 0.616 |
| J | | | | | | 0.563 |
| BD | | | | 0.440 | | 0.448 |
| BO | | | | | | 0.404 |

^aSee Appendix for full names of firms.

The above results differ from the early GaWC study (Taylor and Walker, 2001), in which six of eight firm-based principal components are sector based. In this study, among the six firm-based principal components, four are regionally based and two are globally oriented. Thus the second data set, used in this study, shows a stronger spatial pattern of firms than the first data set used in the GaWC study.

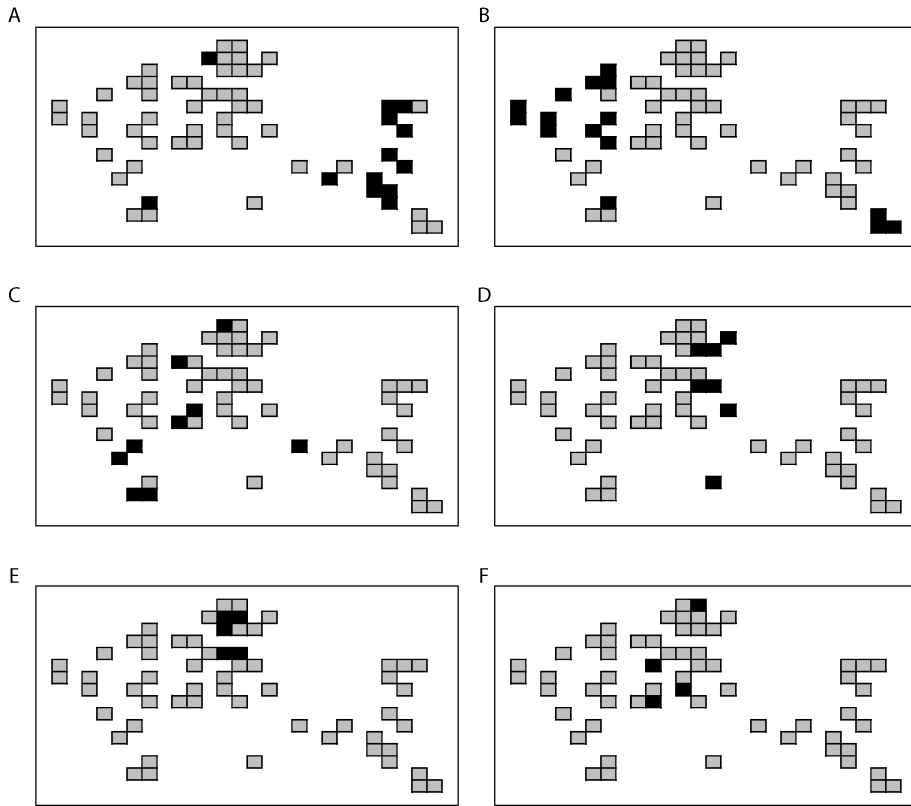


Fig. 2. Cities with similar firm mix based on principal components analysis (cities with loadings of over 0.4 on top six principal components). (A) Principal component 1: Asian open cities. (B) Principal component 2: North American and Oceania cities. (C) Principal component 3: class C Western European and South American cities. (D) Principal component 4: class C Eastern European cities. (E) Principal component 5: German cities. (F) Principal component 6: Western European open cities.

City-Based Analysis

A city-based analysis reveals the firm mixes of the various cities. Table 5 presents the loadings of eight principal components from the analysis. The ninth principal component has a significant loading in only one city, Brussels, indicating its special mix of firms.⁹ This single city-based principal component will not be further analyzed here. The nine principal components account for 62.08% of the total variance. The eight main principal components can be grouped by city status and region, with different firm mixes. All cities with loadings of over 0.4 for the top six principal components are shown in Figure 2.

Principal component one (12.47% of the total variance), “Asian open cities,” consists of 11 Asian cities and 2 other cities. One major feature of this cluster is the high coverage

⁹Brussels has high coverage of firms from all sectors, although firm coverage is still lower than that of London, New York, and Tokyo, differentiating it from these top global cities.

(over 66%) by accountancy firms, advertising firms, and banks. Insurance and management consultancy firms are also well represented in most cities. That is why they are identified as “open” cities. These cities have high scores of over 0.68 with the principal component “Asia-oriented firms,” indicating good correspondence between regional firms and regional cities. Hong Kong and Singapore are exceptions, with high scores in most firm-based principal components as two of the most globalized cities in Asia.

Principal component two (11.11% of the total variance), “North American and Oceanian cities,” consists of all 11 North American cities and three Oceanian cities in this analysis. One major feature of this cluster is that various sectors, especially management consultancy firms, are well represented. There is also a relatively strong presence of law firms. Most cities in this cluster also have high scores on the principal component “North America- and Oceania-oriented firms.” Three cities—Dallas, Los Angeles, and Washington—have very high scores of over 0.86 on the principal component “North American law firms.”

Two principal components are related to class B and C cities. Principal component three (9.63% of the total variance), “Class C Western European and South American cities,” is a cluster of class C cities located mainly in South America and Western Europe. These cities generally exhibit a strong presence of accountancy, advertising, and insurance firms, but only a limited presence of law firms. One Asian city, Dubai, is also included because of its similarity in firm mix with other cities in the cluster. Most cities in this cluster have high scores in the principal components of “global firms” and “global-oriented firms led by advertising firms.” Clearly, firms in this cluster are globally oriented.

Principal component four (8.10% of the total variance), “Class C Eastern European cities,” has relatively high presence of firms from various sectors except insurance and law firms. These cities generally have high scores in the principal components “Europe-oriented firms led by law firms” and “Global-oriented firms led by advertising firms.” Although most cities in the cluster are in Eastern Europe, three other cities from Western Europe, Africa and Asia (Vienna, Johannesburg, and Istanbul, respectively) are included as they share the aforementioned features.¹⁰

Principal component five (6.17% of the total variance), “German cities,” involves all five German cities in this study, mostly class C cities. It accounts for. These cities generally only have high presence of accountancy firms and banks. They have high scores over 0.92 in the principal component of “Europe-oriented firms led by law firms.”

Principal component six (4.95% of the total variance), coined “Western European open cities,” is an international cluster of cities in Western Europe. The cities in this cluster have high scores in the principal components of “global firms” and “North America- and Oceania-oriented firms.” Hence, they are “open” cities, although they are different from the German cities of principal component five that are dominated by “Europe-oriented firms.” This cluster of cities is highly internationalized, featuring the strong presence of firms from various sectors except law.

¹⁰Istanbul also has significant loadings (over 0.4) in principal component one (Asian open cities) and three (Class C Western European and South American cities), reflecting its intermediate position between Asia and Europe.

TABLE 5. CLUSTER OF INTERNATIONAL CITIES (INCLUDING ALL LOADINGS ABOVE 0.4)

| Principal component: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------|-------------------|-----------------------------------|--|---------------------------------|---------------|------------------------------|---------------|-----------------|
| Name: | Asian open cities | North American and Oceania cities | Class C Western European and South American cities | Class C Eastern European cities | German cities | Western European open cities | Global cities | Peculiar cities |
| Taipei | 0.712 | | | | | | | |
| Seoul | 0.705 | | | | | | | |
| Bangkok | 0.693 | | | | | | | |
| Kuala Lumpur | 0.682 | | | | | | | |
| Jakarta | 0.677 | | | | | | | |
| Beijing | 0.671 | | | | | | | |
| Manila | 0.665 | | | | | | | |
| Shanghai | 0.562 | | | | | | | |
| Sao Paulo | 0.548 | 0.422 | | | | | | |
| Amsterdam | 0.539 | | | | | | | |
| Mumbai | 0.533 | | | | | | | |
| Hong Kong | 0.503 | | | | | | | |
| Singapore | 0.473 | | | | | | | |
| Boston | | 0.736 | | | | | | |
| San Francisco | | 0.729 | | | | | | |
| Dallas | | 0.669 | | | | | | |
| Atlanta | | 0.663 | | | | | | |
| Houston | | 0.657 | | | | | | |
| Chicago | | 0.627 | | | | | | |
| Melbourne | | 0.620 | | | | | | |
| Los Angeles | | 0.585 | | | | | | |
| Montreal | | 0.577 | | | | | | |
| Washington | | 0.526 | | | | | | |
| Miami | | 0.488 | 0.470 | | | | | |
| Toronto | | 0.487 | | | | | | |
| Sydney | | 0.484 | | | | | | |
| Auckland | | 0.455 | | | | | | 0.426 |
| Caracas | | | 0.691 | | | | | |
| Bogoto | | | 0.658 | | | | | |
| Santiago | | | 0.657 | | | | | |
| Copenhagen | | | 0.657 | | | | | |
| Dublin | | | 0.649 | | | | | |
| Dubai | | | 0.574 | | | | | |
| Buenos Aires | | | 0.564 | | | | | |
| Lisbon | | | 0.511 | | | | | |
| Barcelona | | | 0.452 | | | | | |
| Budapest | | | | 0.775 | | | | |
| Prague | | | | 0.709 | | | | |
| Moscow | | | | 0.693 | | | | |
| Warsaw | | | | 0.686 | | | | |

(table continues)

TABLE 5. (*Continued*)

| Principal component: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------------------|-------------------|-----------------------------------|--|---------------------------------|---------------|------------------------------|---------------|-----------------|
| Name: | Asian open cities | North American and Oceania cities | Class C Western European and South American cities | Class C Eastern European cities | German cities | Western European open cities | Global cities | Peculiar cities |
| Johannesburg | | | | 0.609 | | | | |
| Vienna | | | | 0.594 | | | | |
| Istanbul | 0.466 | | 0.426 | 0.551 | | | | |
| Munich | | | | | 0.810 | | | |
| Berlin | | | | | 0.718 | | | |
| Hamburg | | | | | 0.615 | | | |
| Dusseldorf | | | | | 0.612 | | | |
| Frankfurt | | | | | 0.513 | | | |
| Milan | | | | | | 0.700 | | |
| Paris | | | | | | 0.686 | | |
| Stockholm | | | | | | 0.524 | | |
| Madrid | | | | | | 0.494 | | |
| Tokyo | | | | | | | 0.748 | |
| New York | | | | | | | 0.692 | |
| New Delhi | 0.497 | | | | | | | 0.584 |

Principal component seven (3.65% of the total variance), “global cities,” consists of the two class A cities, Tokyo and New York, with the richest mix of advanced service firms. Over 82% of firms in all sectors are present. London, with the richest mix of individual firms (99 out of the total 100) should also be considered a global city, but does not appear in principal component seven due to its top position well above Tokyo and New York. These three cities have high scores, over 0.5, in all six principal components of the firm-based analysis.

As is apparent, global cities are by far not the most inclusive category among the international cities, the “global cities” principal component ranking only seventh among the nine principal components. Many cities even in core developed countries may not qualify as global cities (Nijman, 1996).

Principal component eight, “peculiar cities,” has significant loadings on two cities, New Delhi and Auckland. Auckland is considered to fall within the “North American and Oceanian cities” cluster, with a higher loading on that principal component, but shares with New Delhi the special attribute of not hosting any law firms despite the modest presence of all other sectors. As an Asian city, New Delhi also has a high loading on the principal component “Asian open cities” and a high score on the principal component “Asia-oriented firms.” Location still matters.

Similar to an earlier GaWC study (Taylor and Walker, 2001), city-based principal components are mainly regionally based. However, the spatial configuration revealed by

this study is not the same as that of Taylor and Walker (2001). The city clusters are much clearer with minimal overlapping (Table 5); a unique group of "German cities" is identified; and only Tokyo and New York are categorized as "global cities." In GaWC study, Los Angeles and Boston are also identified as "global cities," while Tokyo is identified as one of the "major transnational and Latin American world cities." On the other hand, the "Asian open cities" identified in this study closely resemble the "Pacific Asian world cities" of the GaWC study; similarly the "Eastern European cities" cluster identified here closely approaches the "first Eastern European world cities" in Taylor and Walker (2001).

CONCLUSION

This paper argues that only a few cities can be qualified as truly "world cities" or "global cities," as the command centers of the world economy (Friedmann, 1986, 1995). Many cities will show only some manifestations of internationalization. Furthermore, service firms essentially are agents of TNCs, rather than exercising a command function in world cities. The presence of advanced service firms indicates the degree of internationalization, but does not necessarily convey the status of world city (Beaverstock et al., 1999). A city that is integrated into the world city system rather can function as a commanding node, a passive node, or an intermediate node (Nijman, 1996, p. 16). Thus this paper adopts a perspective of international cities for the study of major cities using a more recent data set on 100 service firms in 314 cities provided by GaWC. The key findings are as follows.

First, despite the accelerated pace of globalization since the 1970s, globalization is an uneven spatial-temporal process. Some cities, economic sectors, and firms are more internationalized than others. Accountancy firms are present in 135 cities on average and their global office network is the widest, whereas the coverage of law firms is the lowest. Clearly, only a few top TNCs have a truly global reach.

Second, the different ranking approach and different data used in this paper produce a different ranking of world and international cities (Beaverstock et al., 1999). All class A cities identified by this study were categorized as Alpha world cities in GaWC study. However, Hong Kong ranked below Tokyo in the early GaWC study (Beaverstock et al., 1999). Furthermore, considerable differences exist when comparing this study's class B and C cities with GaWC's beta and gamma cities.

Third, multivariate analyses of 60 international cities reveal the spatial structure of advanced service firms and the firm mix of international cities. The results differ from Taylor and Walker's (2001) early GaWC study. In the latter, six of eight firm-based principal components are sector based, whereas we identified four of the six firm-based principal components of this study to be regionally based.

Also similar to Taylor and Walker (2001), our city-based principal components are mainly regionally based. However, this study identified a unique group of "German cities" and conferred the status of "global city" only upon Tokyo and New York. More importantly, city-based and firm-based multivariate analyses revealed a good correspondence between regional firms and regional clusters of cities, such as "Asian open cities"/"Asia oriented firms." A previous GaWC study did not show such correspondence (Taylor and Walker, 2001).

The above results show that utilization of presence and absence data on advanced service firms can shed light on the process of globalization and the nature of international cities. Firms and cities have different degrees of internationalization. Globalization is a partial process and many firms have only a regional focus with modest global coverage. Similarly, most cities can only be considered international cities rather than "world cities." As noted previously, the "global cities" principal component accounted for only 3.65% of the total variance, ranking seventh among eight principal components. Thus our findings echo previous determinations that much global interaction is concentrated in a few top cities (Michelson and Wheeler, 1994) and that cities in developing countries tend to be marginalized or excluded from world city analysis (Friedmann, 1995; Godfrey and Zhou, 1999). Thus the study of cities in the process of globalization should focus on international cities in addition to a few top world cities.

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APPENDIX. LIST OF FIRMS AND THEIR CODES

| Firm code | Full name | Sector | Firm code | Full name | Sector |
|-----------|---------------------------------------|--------|-----------|--|--------|
| B | Ernst & Young | ACC | AZ | Sanwa | BANK |
| C | Arthur Andersen | ACC | BA | J P Morgan | BANK |
| D | Macintyre Strater International (MSI) | ACC | BB | BTM (Tokyo-Mitsubishi) | BANK |
| E | IGAF | ACC | BC | DKB (Dai-Ichi Kangyo) | BANK |
| F | AGN Network | ACC | BD | HSBC | BANK |
| G | BDO | ACC | BE | Citibank | BANK |
| H | Grant Thornton International | ACC | BF | Allianz | INSU |
| I | Horwath International | ACC | BG | Skandia | INSU |
| J | KPMG | ACC | BH | Chubb | INSU |
| K | Summit International | ACC | BI | Prudential | INSU |
| L | RSMi | ACC | BJ | Reliance | INSU |
| M | Moores Rowland International | ACC | BK | Winterthur | INSU |
| N | HBL Int | ACC | BL | Fortis | INSU |
| O | Moore Stephens | ACC | BM | CGNU | INSU |
| P | Nexia | ACC | BN | Liberty Mutual | INSU |
| Q | PKF | ACC | BO | Royal and SunAlliance | INSU |
| R | Fudicial | ACC | BP | Lloyd's | INSU |
| S | PricewaterhouseCoopers | ACC | BQ | Latham and Watkins | Law |
| T | Impiric | ADV | BR | Morgan Lewis | Law |
| U | TMP | ADV | BS | Baker and McKenzie | Law |
| V | Hakuhodo | ADV | BT | Clifford Chance | Law |
| W | Draft Worldwide | ADV | BU | Jones Day | Law |
| X | Densu Young and Rubicon | ADV | BV | Freshfields BD | Law |
| Y | D'Arcy | ADV | BW | Allen and Overy | Law |
| Z | FCB | ADV | BX | Dorsey and Whitney | Law |
| AA | Satchi and Satchi | ADV | BY | Linklaters | Law |
| AB | Ogilvy | ADV | BZ | White and Case | Law |
| AC | BBDO | ADV | CA | Cameron McKenna | Law |
| AD | McCann-Erickson | ADV | CB | Morrison and Foerster | Law |
| AE | J Walter Thompson | ADV | CC | Lovells | Law |
| AF | Euro RSC6 | ADV | CD | Skadden, Arps, SLM | Law |
| AG | CMG | ADV | CE | Sidley and Austin | Law |
| AH | Asatsu DK | ADV | CF | Coudert Brothers | Law |
| AI | WestLB | BANK | CG | Towers Perrin | MANA |
| AJ | Dresdner Bank | BANK | CH | Logica Con. | MANA |
| AK | Commerzbank | BANK | CI | Watson Wyatt | MANA |
| AL | Deutsche Bank | BANK | CJ | Sema Group | MANA |
| AM | Chase | BANK | CK | CSC | MANA |
| AN | BNP Paribas | BANK | CL | Hewitt Associates | MANA |
| AO | ABN-AMRO | BANK | CM | IBM Worldwide | MANA |
| AP | Credit Suisse/First Boston | BANK | CN | Mercer Man Con | MANA |
| AQ | Rabobank Int | BANK | CO | Boston Con | MANA |
| AR | UBS | BANK | CP | Deloitte Touche Tohmatsu | MANA |
| AS | ING | BANK | CQ | Booze.Allen & Hamilton | MANA |
| AT | Barclays | BANK | CR | A T Kearney | MANA |
| AU | Fuji Bank | BANK | CS | McKinsey | MANA |
| AV | Bayerische HV | BANK | CT | Bain & Co | MANA |
| AW | Bayerische LG | BANK | CU | Compass | MANA |
| AX | Sakura Bank | BANK | CV | Andersen Consulting | MANA |
| AY | Sumitomo Bank | BANK | CW | Gemini Consulting/Cap Gemini (Ernst & Young) | MANA |