World City Network Integration in the Eurasian Realm

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World City Network-integration in the Eurasian realm, 2000-2008: a comparison of the trajectories of cities in China, the former Soviet Union, the former Eastern Bloc, and India.

Abstract: This paper sketches some of the main empirical features of the global economic integration of Eurasia through an analysis of the (shifting) position of the region's key cities as gateways for the channelling of transnational flows of capital, goods, knowledge and people cities in 2000-2008. We thereby focus on and discuss some of the main differences between key cities in China, the former Eastern Bloc (FEB), the former Soviet Union (FSU), and India.

Keywords: advanced producer services, world city network, former Soviet Union, former Eastern Bloc, China, India, cities, economic integration, GaWC

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Introduction

Although (post)socialist Eurasia still bares the footprints of international political isolation and market protectionism, it is now well established that the region has 'opened up' and is experiencing rapid processes of global economic integration in terms of investments, trade, and globalized production and servicing alike. While the transition of individual countries and regions within the Eurasian realm is obviously marked by idiosyncrasies related to the rationale, actors, timing, and pace of these processes, key regions such as China (Yulong and Hamnett, 2002), the former Soviet Union (FSU) (Kolossov et al., 2002), the former Eastern Block (FEB[1]) (Karreman, 2009), and also to a certain extent India (Grant and Nijman, 2002) have been experiencing a common shift from closed state-centred economies towards globalized liberalized economies. China was the first to open up its economy for foreign ownership and investments, albeit scarcely through a few selected sites (free export zones) and cities along its coast mainly from 1978 onward (Song and Timberlake, 1996). In the FSU and FEB, markets were closed off for global capital until the fall of the Iron Curtain in 1991, after which some states experienced increased political and economic integration with Western Europe through two waves of accession to the European Union in 2004 and 2007 respectively. Although not (post)socialist in the sense of the other regions discussed here, India went through a similar transition in that it gradually gave up its protectionist positions and opted for market-led restructuring of its economy from 1991 onward (Bhalla, 1998).

In a world economy that appears to be shifting to 'the East', these 'emerging markets' have thus become both a destination and, more recently, also a source of global capital. On the one hand, the vastness of their domestic markets is attracting capital, through foreign direct investments of transnational corporations or through investment in domestic stock markets. On the other hand, floating on current account surpluses, private and sovereign investments are increasingly finding their way into Northern American and European economies. As an indication that 'capital is flowing uphill', Chinese, Indian and Russian investors are acquiring stakes in 'Western' companies (e.g. core-industries such as the automotive and steel production) and, perhaps more importantly, China in particular has become one of the main financiers of the US trade deficit via US treasury bills and private and corporate debt.

This expansion and integration of Eurasian economies in the global economy is no doubt also influencing the way in which Eurasian *cities* are embedded in global urban networks (Song and Timberlake, 1996; Shin and Timberlake, 2000): as territorial states in the region go through a transition from closed state-centred economies to open market-based capitalist economies, key cities within their territories are becoming gateways for the channeling of transnational flows of capital, goods, knowledge and people. As a consequence, metropolitan areas in the Eurasian realm have increasingly linked up with global

[1] The former Eastern Bloc comprises the former Communist states of Eastern and Central Europe (i.e. Poland, Hungary, Bulgaria, Romania, and former Czechoslovakia). Yugoslavia and Albania, which were no longer aligned with the Soviet Union after 1948 and 1960 respectively, are not considered in this analysis.

urban networks, thus becoming key basing points in overall processes of global economic integration (see, for instance, Brunn, 2003; Derudder et al., 2007; Lintz et al., 2007; Shin and Timberlake, 2000). The aim of this article is to sketch some of the main empirical features of this economic integration through cities. We thereby focus on and discuss some of the main differences between key cities in China, the FEB, the FSU, and India. This comparison is relevant because, as we will seen although this general 'opening up' is unambiguously identifiable through a deeper integration of cities in transnational networks, the actual process is taking place gradually and selectively as sub-regional and national tendencies have kept their importance.

Contemporary globalization has obviously many dimensions, but in this paper our particular focus will be on the globalization of firms in the financial and business service sectors. In their striving to provide a 'seamless service' for clients with worldwide interests, many of these service firms have developed global networks of offices in cities across the world. It is the work carried out in these offices – often located in the archetypal metropolitan tower blocks – that integrates key cities in a network of global service centers also known as the 'world city network' (Taylor, 2004). This focus on cities' positions in the globalized geography of service provision is of course highly specific, but it is our contention that it does provide us with good overall indicators of how and to what degree cities have become connected in myriad transnational flows. To empirically analyse the integration of cities in office networks of globalized financial and business service firms, we draw on data gathered in the context of the Globalization and World Cities (GaWC, http://www.lboro.ac.uk/gawc) research network. In this article, we use these data to provide a detailed overview of the (geography of the) transnational connectivity of Eurasian cities in 2008, thereby also paying attention to some of the major changes that have been taken place in the period 2000-2008. The next section provides an overview of the GaWC methodology and ensuing data gathering, after which we present a general overview of some of the major connectivity patterns (and changes therein) of leading cities in the Eurasian realm. The paper is concluded with an overview of our main findings and some of their broader implications.

Empirical framework

- Empirical research on world city network-formation

Partly because the 'world' or 'global' cities concepts cannot be unambiguously defined (compare, for instance, Friedmann, 1986; Sassen, 2001), empirical research on world city network (WCN)-formation has been diverse in terms of data sources. In general, however, the different approaches have largely been premised upon two foundations, which can respectively be labelled the 'corporate organisation' and the 'infrastructure' approach (Derudder, 2006).

Research carried out in the infrastructure approach focuses on a series of enabling infrastructures that underpin border-crossing urban networks. The gist of this approach lays in the observation that world cities are key nodes for advanced telecommunication (e.g. Devriendt et al., 2008) and transportation networks (e.g. Smith and Timberlake, 2002) connecting the global economy: the most important cities also harbour the most important airports, while extensive fibre backbone networks that support the Internet have equally been deployed within and between major cities, thus creating a vast planetary infrastructure network on which the global economy has come to depend almost as much as physical transport networks. The intermeshing of the above-mentioned infrastructures with other networks such as tourism and business travel (Faulconbridge et al., 2009), international migration (Benton-Short et al., 2005), cultural and ethnicity networks (McEwan et al., 2005), global media (Krätke, 2003), etc. simultaneously mould the outcome of globalization processes through cities, and empirical WCN researches in this approach use this observation to map transnational urban networks through such infrastructures.

The corporate organisation approach, in turn, starts from the observation that relations between key cities are primarily created by firms pursuing transnational location strategies. Key examples of this corporate organization approach for studying WCN-formation include analyses that take transnational networks of multinational corporations – as epitomized by headquarter-subsidiary relations – as a starting point for their analysis (e.g. Alderson and Beckfield, 2004; Wall and van der Knaap, 2010). Another major example of this approach is the research focusing on the urban office networks of so-called 'advanced producer services' (APS) firms, a research tradition that has chiefly been pursued at GaWC (e.g. Taylor et al., 2009b; Bassens et al., 2010). It is this approach that we further develop and employ in the remainder of this paper.

- Rationale

The GaWC empirical framework draws on Saskia Sassen's (1995, 2001) observation that some metropolitan centers have secured a particular component in their economic base that gives them a specific role in the current phase of the world economy. That is, these cities have become prime centers for the production and consumption of business services in the organization of global capital. Business service firms active in finance, management consultancy, law, accountancy, etc. sell customized knowledge, expertise and skills, and an increasing number of firms in these sectors have 'gone global' to service existing clients and find new ones (see Harrington and Daniels, 2006). These firms have thereby benefited immensely from the technological advances in computing and communications as this has

allowed them to broaden the geographical distribution of their service provision: such firms have always clustered in cities to provide services to their clients, but under conditions of contemporary globalization, multiple offices are required in major cities around the world to provide a seamless service, thereby protecting global brand integrity by keeping all work in-house. Each firm has its own locational strategy – which cities to have offices in, what size and functions those offices will be, and how the offices will be organized. It is the work done in these offices that 'interlock' various cities in projects that require multiple office inputs. Thus the intercity relations in these servicing practices are numerous electronic communications (information, instruction, advice, planning, interpretation, strategy, knowledge, etc.), some teleconferencing as required, and probably travel for face-to-face meetings at a minimum for the beginning and end of a given project. These are the variegated flows that combined across numerous projects in many firms constitute the WCN as specified in the GaWC model (Taylor, 2004).

- Specification

This GaWC specification of the WCN can be formally represented by a matrix V_{ij} defined by n cities x m firms, where v_{ij} is the 'service value' of city i to firm j. This service value is a standardized measure of the importance of a city to a firm's office network, which depends upon the size and functions of an office or offices in a city. Assuming there is no actual information on inter-office flows for firms across cities, the basic relation $r_{ab,j}$ between each pair of cities a and b for firm j is derived from matrix V_{ij} as:

$$r_{ab,j} = v_{aj}.v_{bj} \qquad (1)$$

The conjecture behind conceiving the product of service values as a surrogate for actual flows of inter-firm information and knowledge between cities is that the more important the office, the more connections there will be with other offices in a firm's network. This approach is reasonable when the following assumptions are made. First, offices generate more flows within a firm's network than to other firms in their sector. This is inherently plausible in a context where protecting global brand image through providing seamless service is the norm. Second, the more important the office, the more flows are generated and these have a multiplicative effect on inter-city relations. The first part of this assumption is obviously very plausible again. The second part reflects (i) the fact that larger offices with more practitioners have the capacity to create more potential dyads, and (ii) the hierarchical nature of office networks where larger offices have special functions like control and provision of specialised knowledge (Derudder and Taylor, 2005, pp. 70-71). The limiting case is a city that shares no firms with any other city so that all of its service value products in equation (1) are 0 and it has no connectivity. The global network connectivity GNC_a of city a in this interlocking network can then be defined as follows:

$$GNC_a = \sum_{i,j} v_{aj}.v_{ij} \quad (a \neq i) \qquad (2)$$

To make GNC measures manageable in our use below (i.e. independent from the number of firms/cities), we express connectivities as proportions of the largest computed connectivity in the data, thus creating a scale from 0 to 1.

Conveniently from a geographic point of view, this methodology also allows disentangling the spatial makeup of a city's overall GNC: two cities with the same overall connectivity may well be connected to very different cities, and this geographical specificity can be measured through the concept of a city's 'hinterworld' (Taylor, 2001), which refers to the spatial distribution of a city's connectivity at large. Although a city's hinterworld in principle refers to the entirety of its connections across the world, it is also possible to derive a number of summarizing features of this overall distribution, e.g. how well a city is connected to other cities in its own region and/or how well it is connected to the most connected world cities. In this paper, for each city in China, the FEB, the FSU, and India considered in our analysis, we will therefore measure the relative strength of its connections with (i) cities in each of the four sub-regions, (ii) the New York/London dyad (i.e. the most connected cities in each of the analyses we have carried out thus far), and (iii) the ten most connected non-Eurasian cities as to give a more general idea about how cities are connected to leading cities across the world[2]. In practice, these different dimensions of a city's hinterworld are calculated as shown in this particular example for Beijing's connections to the London-New York dyad:

$$Beijing\ (New\ York - London) = \frac{\sum r_{Beijing-(NY-LN)}}{GNC_{Beijing}} - \frac{\sum GNC_{NY-LN}}{\sum GNC} \qquad (3)$$

In this case, a positive value would imply that Beijing is relatively more connected to the NY-LON dyad than the average city in the dataset; a negative value would imply that Beijing is relatively less connected to the NY-LON dyad than the average city in the dataset. The more important/outspoken the spatial pattern, the larger the values will be. In our calculations below, the calculation shown in (3) is carried out for all cities under investigation vis-à-vis each of the different spatial dimensions (Eurasian 'sub-regions', NY-LON, ten most connected non-Eurasian cities).

- Data

This precise specification of the WCN has guided our data collections: information is required on the office networks of leading service firms. Details of these exercises can be found in Taylor et al. (2002) for the year 2000 and in Taylor et al. (2009a) for the year 2008, here we will summarize the main features of our data gathering approach as these data are the key input to our analyses. In practice, service values v_{ij} are allocated based on information that can be found on the firms' corporate websites. The multifaceted information for every firm is thereby simplified into standardized values ranging from 0 (no presence) to 5 (global headquarters) by focusing on two features of a firm's office(s) in a city: (i) the size of the office(s) (e.g. number of practitioners) and (ii) extra-locational functions of the office(s) (e.g. regional headquarters).

[2] The 10 most connected non-Eurasian cities in 2008 are London, New York, Paris, Singapore, Tokyo, Sydney, Milan, Madrid, Seoul, and Toronto (see Taylor et al., 2009a).

In 2000, global APS firms were defined as firms with offices in 15 or more different cities, including at least one in each of the prime globalization regions: northern America, Western Europe and Pacific Asia. Firms meeting this criterion were selected from rankings of leading firms in different service sectors. The other key criterion was purely practical - whether adequate information could be found on the firm's website. In the event 100 firms were identified in six sectors: 18 in accountancy, 15 in advertising, 23 in banking/finance, 11 in insurance, 16 in law, and 17 in management consultancy. Selecting cities was much more arbitrary and was based upon previous GaWC experience in researching global office networks. Capital cities of all but the smallest states were included plus many other important cities in larger states. A total of 315 cities were selected. The end result is a 315 cities x 100 firms matrix of 31500 service values.

In 2008, this data gathering exercise was carried out for 175 firms in 525 cities. Firms were selected by their ranking in lists of the largest firms in each of the following sectors. We combined the banking/finance and insurance categories from 2000 and included the top 75 such firms as ranked in the Forbes composite index, a measure that combines rankings for sales, profits, assets and market value lists. For the other four of the previously studied services – accountancy, advertising, law and management consultancy – we included the top 25 firms: for law the Chambers list of Corporate Law firms was used (www.chambersandpartners.com/global/); for advertising agency networks we used Advertising Age's ranking of 'marketing organizations' by revenues (www.adage.com/images/random/lna2007); for accountancy firms' networks we used the ranking by revenues of World Accounting Intelligence (www.worldaccountingintelligence.com/); and for management consultancies we used the 2007 edition of the Vault Management & Strategy Consulting Survey, which ranks firms in terms of their 'prestige' based on a large survey of professionals (www.vault.com). In all cases the lists of firms selected are the latest available at the planning of the research project in 2007 and these tended to be based upon 2006 data. There was no way to overcome this two year delay: one year was because planning the project takes time and the second year was because of a one year time lag in reporting such data. For all lists substitute firms were identified (ranked just below 75 and 25) to cover for situations where a firm had disappeared (e.g. been taken over) in the two years before the actual data collection. In addition to the larger number of firms, we also carried out a thorough review of cities and added many new cities from emerging markets to create a list of 525[3]. The end result is a 525 cities x 175 firms matrix of 91875 service values.

Feeding these 31500 and 91875 service values into the models specified in (1) and (2), we obtained measurements of the GNC and hinterworld for each of the cities. In the next section, we summarize some of the major findings for Eurasian cities. For reasons of clarity, however, in this paper we only make

[3] In practice, a number of overlapping criteria were used to select cities. All cities with a population of more than 2 million inhabitants were included, which led to the consideration of far more cities located in China, India, Pakistan and Iran. We also included a 'second city' of all but the smallest states plus other important cities in larger states. The latter selection was in part based on a systematic comparison with the airline data presented in Derudder and Witlox (2008). For instance, the most connected city in the global airline networks that is not included in our dataset is Nice, one of the major tourist centres and a leading resort on the French Riviera.

use of and report on the connectivities and hinterworlds of the 248 cities with a GNC of at least 10% of the leading city in 2008 (London)[4].

[4] There is one exception in that – in order to maintain consistency with earlier reports – overall connectivities (GNC) are calculated on the basis of 307 cities that featured in both 2000 and 2008 datasets (see Derudder et al., 2010). In practice, this use of different sets of cities for computing connectivities and hinterworlds has very little influence on the results.

Results

- Global network connectivity

Table 1 summarizes the GNC of cities in China, the FEB, the FSU, and India in 2000 and 2008, and also outlines the level of GNC change between 2000 and 2008[5]. The latter score should be interpreted as a *relative* measure of GNC change as it is based on a transformation of absolute connectivity change ($GNC_{2008} - GNC_{2000}$) into a z-score by comparing this value to the overall connectivity change in the WCN. As a consequence, cities scoring more than +2 on this measure have witnessed exceptional connectivity gains compared to the rest of the WCN, while cities scoring 0 have witnessed a connectivity change equal to the average for the entire WCN. As there has been a general rise of connectivity throughout the WCN in the period 2000-2008 (Derudder et al., 2010), this implies that cities that have only marginally increased their GNC will have a negative score on this relative measure.

The first and foremost thing to note in Table 1 is this general rise of connectivity: *all* cities in the Eurasian realm have increased their connectivity in absolute terms in the period 2000-2008. Moreover, these increases have been more marked than in other parts of the world, as all but three cities (i.e. New Delhi, Calcutta, and Almaty) have also increased their connectivity in relative terms: overall, Eurasian cities have become more connected to the wider WCN than cities in other parts of the world. Furthermore, in addition to this general trend, another interesting finding is that size does seem to matter: it is especially Shanghai, Beijing and Moscow that have increased their connectivity in absolute and relative terms.

In addition to these general trends, it is also possible to identify a number of variegated trends in China, the FEB, the FSU, and India respectively: (i) while both GNC rankings are led by the three 'global' Chinese cities, the gap between Hong Kong on the one hand and Beijing and Shanghai on the other hand has diminished over time, reflecting the rise of the latter two cities as complementary gateways into the Chinese market (see also Lai, 2009); (ii) in the FEB, Warsaw has left behind Prague as the leading city in 2000; (iii) in the FSU the WCN configuration is increasingly dominated by Moscow, in spite of significant connectivity growth for Kiev, Tallinn and Riga; (iv) and finally, in India, Mumbai remains the best-connected city, leaving behind New Delhi, which is also losing ground to South-India's booming city Bangalore. In general, cities in Northern India are performing substantially less than the booming cities in Central and Southern India.

[Insert Table 1 about here]

- Global network connectivity in sectoral terms

[5] Although the 2008 data gathering is slightly different in terms of the number of cities, the number of firms, and the distribution of firms over sectors, we transformed the data so that both sets of results can be compared (for technical details, see Derudder et al., 2010).

GNC measures and changes therein can also be assessed on a sectoral basis, which allows for a more detailed account of which sectors drive the connectivity growth of individual cities or regions in general. Table 2 lists the changes in GNC in the period 2000-2008 for accountancy, advertising, financial services, law, and management consultancy. Similar to the relative changes in GNC outlined above, these measures should be interpreted as standardized levels of change (i.e. z-scores) for each of the sectors separately.

[Insert Table 2 about here]

The table reveals that each of the sub-regions has indeed a more or less distinct underlying pattern of sectoral growth/decline. Chinese cities have, on average, experienced an all-round growth, but appear to be mainly driven by large positive change in accountancy, management consultancy, and finance. FSU and FEB exhibit a somewhat similar pattern with large growth in terms of advertising and modest growth in accountancy services, while other sectors have either lost ground or remained status quo. Indian cities, on the other hand, have mainly seen growth in terms of management consultancy and accountancy.

Table 2 also allows us to go into further detail by looking at each city separately. In China, illustrative of the general rise of Beijing and Shanghai, both leading cities exhibit all-round sectoral growth, while Hong Kong has – in relative terms – become less-connected in the office networks of management consultancy services firms. These services, together with financial services and accountancy, have also shifted more towards Guangzhou and Shenzhen in the broader region, where they have become the main drivers for GNC change. In the FSU, the primacy of Moscow is becoming evident as it is the only city to develop as a centre for globally organized financial services firms. Apart from the general rise in advertising servicing across all FSU cities and decline or modest growth in most other sectors, Kiev also shows an idiosyncratic evolution towards accountancy services. In the FEB, Warsaw is the only city to experience all-round growth, not only in the ubiquitous advertising sector, but also terms of management consultancy, law and accountancy services. In other FEB cities, such as Bratislava (financial services), Bucharest (accountancy), and Sofia (accountancy), growth much more depends on a smaller range of service sectors. Indian cities as well show a number of remarkable shifts: New Delhi is losing ground in almost every sector except for accountancy, while Calcutta has become far less connected in the office networks of leading advertising services firms. Mumbai on the other hand has become a crucial hub for management consultancy and financial services. Further South, Bangalore is growing as a financial centre.

- Hinterworlds

Overall GNC measures can be complemented with a spatial dimension by looking at the geography of a city's relations. For instance, although Guangzhou and Bratislava had similar GNC levels in 2008, it is likely that both cities derive their connectivity from relations with other cities. It is this geography that is captured in the hinterworld concept. As explained in the methodology section, in this paper we summarize the hinterworld results along two lines. First, we will review some of the general tendencies by focusing on cities' connections with each sub-region and the world's most connected cities through a

systematic application of equation (2). And second, we will also provide a more comprehensive outline of a selected number of hinterworlds (= looking at all inter-city connections).

Table 3 summarizes some of the main geographical tendencies in the hinterworlds of Eurasian cities. Two of the most notable patterns are the (i) relatively large degree of 'regionalism' in connectivity (as epitomized by the predominance of positive values for connections to cities in the own region) and (ii) the fact that sizable connectivity is almost consistently associated with strong relations with the world's most connected cities (as epitomized by the fact that Moscow, Hong Kong, Shanghai and Beijing also have – in relative terms – the strongest connections to NY-LON on the one hand and the most connected non-Eurasian cities on the other hand). Both findings clearly show 'end of geography' arguments to be very misleading: in an allegedly 'borderless world' geography most certainly matters: (i) cities are still more connected to nearby cities than to faraway cities, while (ii) the 'globality' of key cities is clearly not just defined by their overall levels of connectivity but also by their being connected to other key cities in the WCN.

[Insert Table 3 about here]

Figures 1-4 summarize all major inter-city relations for the fastest growing city in each of the sub-regions. These 'hinterworld archipelagos' place cities in their approximate relative geographical positions, which has the benefit of giving an instant and almost intuitive insight in the spatial distribution of a city's connectivity pattern. Each city is represented by a two letter code (e.g. LN = London), as listed in Appendix A. In line with the interpretation of overall GNC change, hinterworld measures need to be interpreted as z-scores indicating relative degrees of over-linkage/under-linkage[6]. As a consequence, a city scoring more than +2 in, say, Shanghai's hinterworld is significantly more connected to Shanghai than could be expected based on this city's overall GNC, while a city scoring less than -2 is significantly less connected to Shanghai than could be expected based on this city's overall GNC. The figures can therefore straightforwardly be interpreted as follows: the darker the colour, the more important a connection. Combining the hinterworlds for Shanghai, Moscow, Bucharest and Bangalore with some of the broader findings in Table 3, we can now turn to a more detailed discussion of the spatiality of transnational inter-city relations of Eurasian cities.

First, Chinese cities show very high levels of regionalism, a configuration that points to a relatively coherent, 'inward-looking' Chinese urban network within the overall WCN. At the same time, Chinese cities are well-connected to NY-LON and other leading cities more generally, cf. Shenzhen and Suzhou are the only Chinese cities that are slightly less-connected to these leading cities than can be expected on the basis of their overall GNC levels. All this clearly suggests that although Beijing, Hong Kong and Shanghai are obviously the key gateways between the Chinese economy and the global economy, a broader set of Chinese cities is increasingly being integrated in the core zones of the WCN. All this is

[6] Over- and under-linkages are thus systematically computed by applying a regression analysis in which we relate a city's connectivity distribution to the GNC distribution. The resulting standardized regression residuals can then be interpreted as z-scores indicating degrees of over-linkage/under-linkage.

exemplified by Shanghai's hinterworld (Figure 1), which is clearly over-linked with other Chinese cities and regional world cities (Tokyo, Singapore). Crosscutting this overall regional tendency, Shanghai has strong connections beyond Pacific Asia, e.g. with European cities (especially London, but also Paris, Frankfurt, and Munich) and Middle Eastern cities (Dubai).

Second, FSU cities are not only less connected in the office networks of globalized service firms (as shown by their low GNC values, see Table 1) than Chinese cities, they are also characterized by higher degrees of regionalism and weaker connections with the most connected cities in the WCN. Only Moscow, the leading FSU city in terms of GNC, has a clear-cut 'global' orientation in its hinterworld (see Brade and Rudolph, 2004). Moscow's 'globality' also shows from the fact that it is the only FSU city that is strongly connected to Chinese cities (although Tashkent and Almaty are also fairly well-connected to Chinese cities). Taken together, these results confirm earlier observations that Moscow is evolving away from a regional 'European' orientation, and complements its function as a focal point for the post-Soviet world with its new role as node on global flows of capital, knowledge and people that go beyond the regional or European market (Kolossov et al., 2002; Gritsai, 2004). This becomes clear if we zoom in on Moscow's hinterworld (Figure 2). Moscow's links with FEB cities are strong, but are surpassed by links to Western European cities (Amsterdam, Brussels, Paris, Frankfurt, Milan, Madrid, but not so much London). For regions beyond the European realm, e.g. in case of Northern America and the MENA region, Moscow tends to be strongly over-linked with only one key city (i.e. New York and Dubai respectively). Links with Pacific Asia on the other hand tend to be stronger, as there are significant connections with Singapore, Hong Kong, and Tokyo.

Third, FEB cities as well exhibit a strong tendency towards regionalism, supplemented with moderately strong connections with most FSU cities. Once again, the most connected cities – especially Warsaw, Budapest, Prague, and Bratislava – have the most 'global' connectivity profile with strong connections to NY-LON and other well-connected cities. The likes of Poznan and Krakow, in contrast, are poorly linked to these well-connected cities. Furthermore, key FEB gateways have an unambiguous 'European' inclination in their connectivity distribution with important connections to cities like Vienna and Brussels (e.g. through the office networks of Belgian banks that pursued major expansion strategies in the FEB) – a clear indication of the region's increasing economic and political integration within the European Union. Bucharest's hinterworld (Figure 3) is illustrative for FEB cities' regional tendencies: the city is highly over-linked with other FEB cities such as Bratislava, Budapest, Prague, Sofia, and Warsaw. However, there are also strong connections with Western European cities, such as Vienna and Brussels.

Fourth, with the exception of Mumbai, Indian cities as well show high levels of regionalism, being well connected to other Indian cities and less connected with NY-LON or other leading cities across the globe. Although Mumbai, New Delhi and Bangalore are particularly well-connected to Chinese cities, only Mumbai has a clear global pattern in its connectivity distribution, showing that this city is somehow an exception in India's urban network. Turning to Bangalore, India's fastest growing city in terms of GNC between 2000 and 2008 (Figure 4), the 'Silicon City of India' because of its booming IT sector, we find that this city's hinterworld has indeed definite national and regional tendencies. Bangalore's strongest links are with other Indian cities and with South and Pacific Asian cities such as Kuala Lumpur, Taipei, and Tokyo.

Conclusion

This paper has implemented the GaWC network model to tease out the geography of urban connectivity in the Eurasian realm in the year 2008, complemented with measures of how this connectivity has shifted in the period 2000-8. The results clearly confirm the commonsensical assumption that Eurasian cities in general and Moscow, Shanghai and Beijing in particular have become much more integrated in the WCN in the last decade. Furthermore, our analysis not only shows that Moscow, Shanghai and Beijing have become more connected overall, but also that they are – like Hong Kong – set apart by their strong connections with other leading cities in the WCN. However, the latter observation is true for Chinese cities more generally in that they are uniformly characterized by strong inter-connections on the one hand and major connections to key cities in the global economy on the other hand. This strong regionalism in the geography of inter-city relations is a general result for each of the four 'sub-regions'. In hindsight, it can be said that this suggests that we are indeed dealing with four more or less coherent economic-geographic regions. More generally, our findings hint at the fact that although cities in China, the FEB, the FSU, and India have indeed a common recent history in that the economies in which they operate evolved from closed and state-centred to open and market-based, they are today marked by geographical idiosyncrasies in their connections across the globe.

These results can therefore also be cast in a different form, namely as being indicative for the more general idiosyncratic evolution of the economies of each of these 'sub-regions'. In the case of FEB cities, it is clear that their connectivity profiles can be understood in light of the transition from ties with the FSU to the introduction of market-led economies in general and EU expansion in particular (see Smith, 2002): the sudden demise of communism after the fall of the Iron Curtain created a vacuum that vectors of Western capitalism have sought to fill (e.g. the expansion of European banks in the FEB).
As for China, its evolution towards capitalism has been fast but in a way also more gradual through the continuing imprint of the Party-state, resulting in a state-led transformation of the economy towards a unique variety of capitalism (see Ma, 2002, p. 1546). Combined with the sheer size of its domestic market and its strategic position in Pacific Asia, this implies that China's urban-led economic integration has a major geopolitical dimension vis-à-vis Western Europe and Northern America in particular. And finally, within this context of enduring state-control, the results presented in this paper support the idea that China is now being opened up not only through the well-established gateway of Hong Kong, but also through Beijing and Shanghai. The latter cities are developing along complementary lines, respectively as a political centre and as the mainland's premier business and financial centre (see Lai, 2009).

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Table 1. GNC and GNC change* for Eurasian cities (2000-2008)

*: GNC change should be interpreted a standard deviation (see Derudder et al., 2010).

Rank	City	GNC 2000	GNC 2008	GNC Change 2000-8*
1	Hongkong	0,73	0,83	0,25
2	Shanghai	0,44	0,69	2,59
3	Beijing	0,43	0,68	2,47
4	Moscow	0,41	0,64	2,49
5	Mumbai	0,47	0,60	0,89
6	Warsaw	0,42	0,56	1,09
7	Prague	0,42	0,49	0,08
8	Budapest	0,39	0,48	0,54
9	New Delhi	0,35	0,41	-0,12
10	Bucharest	0,24	0,40	1,53
11	Bangalore	0,23	0,36	1,04
12	Kiev	0,19	0,33	1,16
13	Guangzhou	0,22	0,32	0,48
14	Sofia	0,18	0,32	1,24
15	Bratislava	0,18	0,30	1,00
16	Chennai	0,21	0,29	0,21
17	Shenzhen	0,11	0,25	1,00
18	Calcutta	0,23	0,24	-0,74
19	Riga	0,13	0,22	0,60
20	St Petersburg	0,16	0,21	0,00
21	Tallinn	0,11	0,21	0,74
22	Almaty	0,16	0,20	-0,02

Table 2. Sectoral GNC change for Eurasian cities (2000-2008)
*: GNC change should be interpreted a standard deviation (see Derudder et al., 2010).

City	ACC	ADV	FS	LAW	MC
Beijing	2,45	0,94	1,75	2,80	1,92
Guangzhou	1,18	-0,94	0,70	-0,12	2,01
Hongkong	0,97	-0,07	0,16	-2,06	0,74
Shanghai	1,94	1,61	2,06	3,16	2,55
Shenzhen	0,85	0,46	1,21	-0,12	2,03
China	**1,48**	**0,40**	**1,18**	**0,73**	**1,85**
Almaty	0,06	1,55	-0,10	-1,68	-0,32
Kiev	1,78	0,89	0,15	-1,55	-0,35
Moscow	0,82	2,23	2,71	1,36	0,54
Riga	0,04	0,98	0,67	-0,12	-1,23
St Petersburg	0,60	0,85	-0,73	-1,06	0,03
Tallinn	0,00	1,17	0,77	-0,12	-0,85
FSU	**0,55**	**1,28**	**0,58**	**-0,53**	**-0,36**
Bratislava	0,51	0,52	1,64	0,01	-1,17
Bucharest	1,80	0,89	0,35	1,14	-0,14
Budapest	-0,04	1,20	-0,20	-1,22	0,97
Prague	-0,18	0,33	-0,06	-1,16	0,57
Sofia	1,46	0,31	0,74	1,35	-0,76
Warsaw	0,62	1,23	0,38	0,76	1,63
FEB	**0,69**	**0,75**	**0,47**	**0,15**	**0,18**
Bangalore	0,57	-0,53	1,46	-0,12	1,00
Calcutta	0,04	-1,90	-0,32	-0,12	0,47
Chennai	0,37	-0,71	-0,21	-0,12	2,11
Mumbai	0,01	0,27	0,93	-0,50	2,48
New Delhi	1,11	-0,46	-1,27	0,10	-1,10
India	**0,42**	**-0,67**	**0,12**	**-0,15**	**0,99**

Table 3. Hinterworlds for Eurasian cities

City	China	FSU	FEB	India	NY-LON	Top ten
China						
Hongkong	-0,46	-0,08	0,09	0,03	0,85	2,92
Shanghai	-0,13	-0,05	0,15	0,12	0,71	2,54
Beijing	0,06	-0,02	-0,03	-0,01	0,82	2,65
Guangzhou	0,81	-0,06	0,30	0,42	0,07	0,84
Shenzhen	0,63	-0,06	-0,28	-0,06	-0,12	-0,24
Chengdu	1,84	0,49	-0,03	0,99	0,31	1,69
Tianjin	1,85	-0,31	-1,22	0,07	0,25	0,96
Nanjing	1,52	-0,34	0,09	0,57	0,24	0,01
FSU						
Moscow	0,65	-0,91	0,46	-0,03	0,61	2,34
Kiev	-0,39	0,00	0,56	-0,24	-0,32	-0,82
Riga	-0,57	0,74	0,61	-0,34	-0,26	-1,11
St Petersburg	-0,32	0,12	-0,01	-0,51	-0,38	-1,44
Tallinn	-0,55	0,66	0,48	-0,01	-0,19	-1,09
Almaty	0,22	0,67	0,85	-0,22	-0,17	0,38
Vilnius	-0,44	0,77	0,87	0,03	-0,19	-0,94
Baku	-0,37	0,84	-0,45	-0,26	-0,59	-1,99
Tashkent	0,02	0,82	-0,22	-0,10	-0,53	-1,38
Tbilisi	-0,77	0,54	-0,18	0,22	-0,68	-2,96
FEB						
Warsaw	0,30	0,40	-0,05	-0,08	0,41	1,13
Prague	0,30	0,18	0,11	0,00	0,25	0,88
Budapest	0,09	0,19	0,26	0,07	0,32	0,98
Bucharest	-0,10	0,55	0,51	0,15	-0,05	-0,08
Sofia	-0,37	0,53	0,43	-0,07	-0,14	-0,41
Bratislava	-0,10	0,60	0,55	0,08	0,05	0,26
Krakow	-0,84	-0,14	-0,44	0,25	-0,80	-2,87
India						
Mumbai	0,51	-0,05	0,00	-0,52	0,22	1,28
New Delhi	0,12	-0,13	0,00	0,17	-0,16	0,17
Bangalore	0,22	-0,21	0,10	0,23	0,00	0,51
Chennai	-0,02	-0,21	-0,08	0,55	-0,19	-0,41
Calcutta	-0,01	-0,14	0,11	0,54	-0,15	-0,51
Hyderabad	-0,06	-0,16	0,28	0,70	-0,44	-1,21
Pune	-0,07	-0,47	-0,08	0,63	-0,39	-0,69

Figure 1. Shanghai's hinterworld

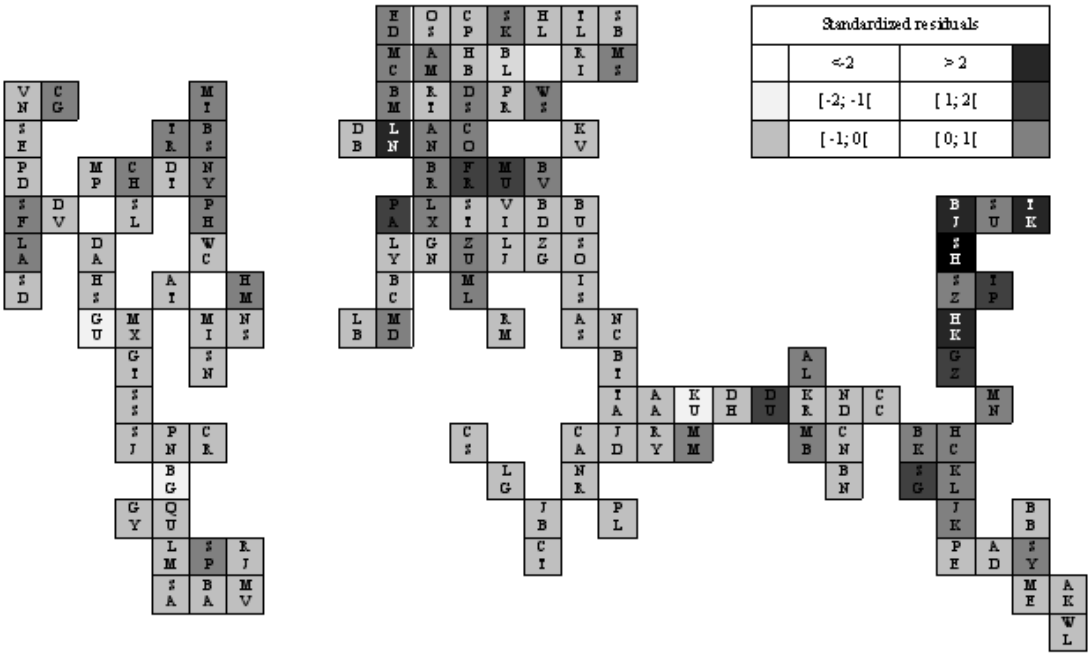


Figure 2. Moscow's hinterworld

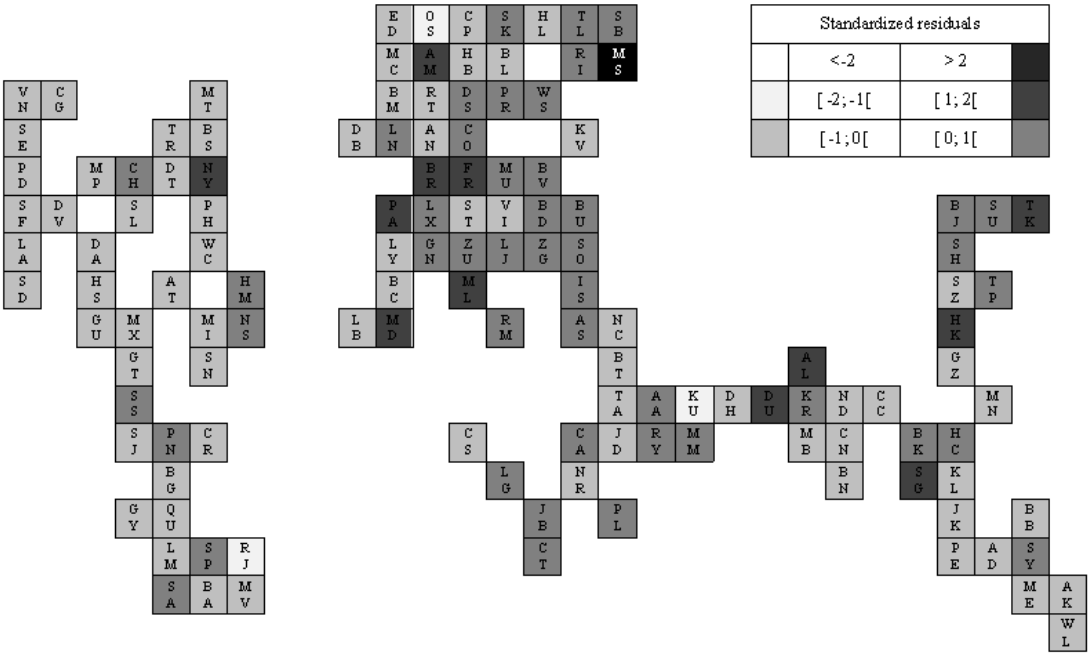


Figure 3. Bucharest's hinterworld

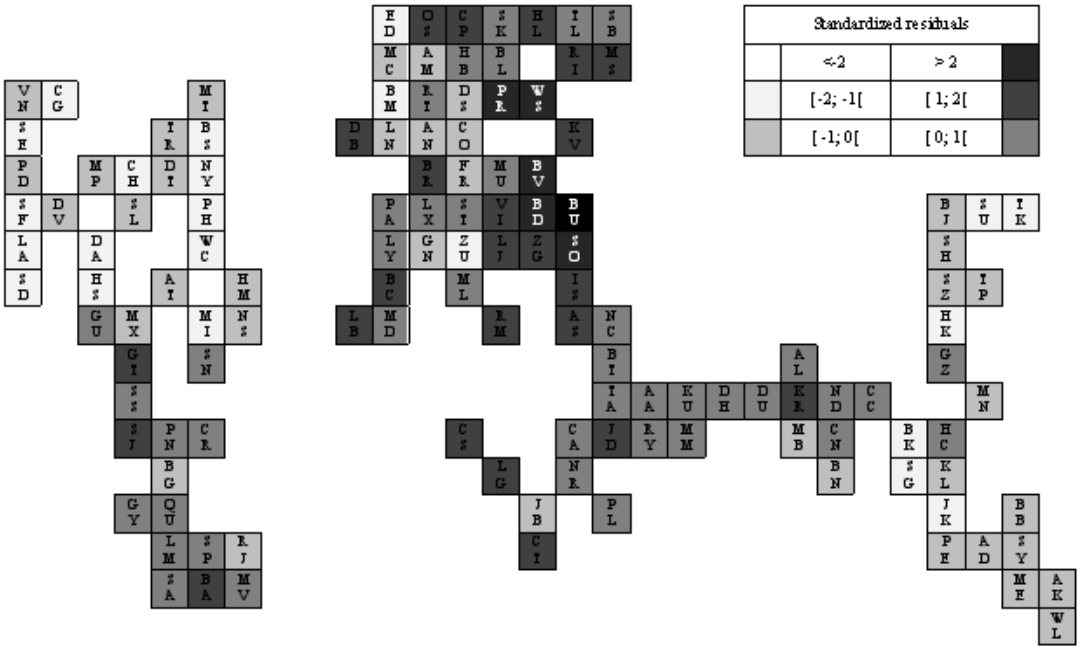
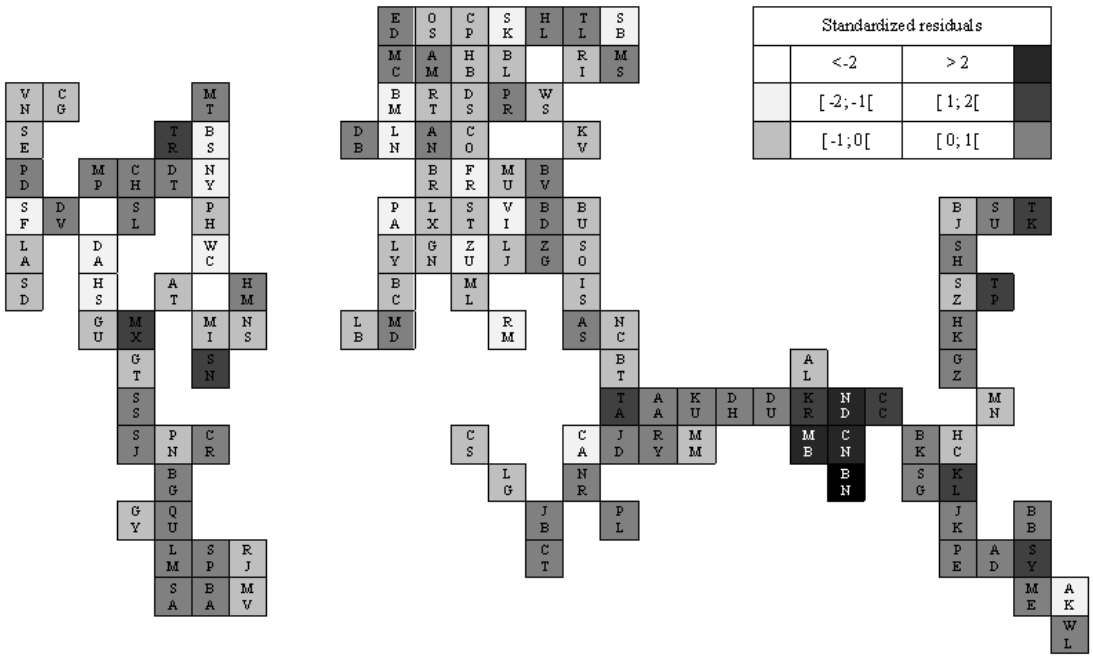


Figure 4. Bangalore's hinterworld



Appendix A: List of abbreviations

AA	Amman	DB	Dublin	LN	London	RT	Rotterdam
AD	Adelaide	DH	Doha	LX	Luxembourg	RY	Riyadh
AK	Auckland	DS	Düsseldorf	LY	Lyon	SA	Santiago
AL	Almaty	DT	Detroit	MB	Mumbai	SB	Saint Petersburg
AM	Amsterdam	DU	Dubai	MC	Manchester	SD	San Diego
AN	Antwerp	DV	Denver	MD	Madrid	SE	Seattle
AS	Athens	ED	Edinburgh	ME	Melbourne	SF	San Francisco
AT	Atlanta	FR	Frankfurt am Main	MI	Miami	SG	Singapore
BA	Buenos Aires			ML	Milan	SH	Shanghai
BB	Brisbane	GN	Geneva	MM	Manama	SJ	San José
BC	Barcelona	GT	Guatemala City	MN	Manila	SK	Stockholm
BD	Budapest	GU	Guadalajara	MP	Minneapolis	SL	Saint Louis
BG	Bogota	GY	Guayaquil	MS	Moscow	SN	Santo Domingo
BJ	Beijing	GZ	Guangzhou	MT	Montreal	SO	Sofia
BK	Bangkok	HC	Ho Chi Minh City	MU	Munich	SP	São Paulo
BL	Berlin			MV	Montevideo	SS	San Salvador
BM	Birmingham	HK	Hong Kong	MX	Mexico City	ST	Stuttgart
BN	Bangalore	HL	Helsinki	NC	Nicosia	SU	Seoul
BR	Brussels	HB	Hamburg	ND	New Delhi	SY	Sydney
BS	Boston	HM	Hamilton	NR	Nairobi	SZ	Shenzhen
BT	Beirut	HS	Houston	NS	Nassau	TA	Tel Aviv
BU	Bukarest	IS	Istanbul	NY	New York	TK	Tokyo
BV	Bratislava	JB	Johannesburg	OS	Oslo	TL	Tallinn
CA	Cairo	JD	Jeddah	PA	Paris	TP	Taipei
CC	Calcutta	JK	Jakarta	PD	Portland	TR	Toronto
CG	Calgary	KL	Kuala Lumpur	PE	Perth	VI	Vienna
CH	Chicago	KR	Karachi	PH	Philadelphia	VN	Vancouver
CN	Chennai	KU	Kuwait	PL	Port Louis	WC	Washington D.C.
CO	Cologne	KV	Kiev	PN	Panama City		
CP	Copenhagen	LA	Los Angeles	PR	Prague	WL	Wellington
CR	Caracas	LB	Lisbon	QU	Quito	WS	Warsaw
CS	Casablanca	LG	Lagos	RI	Riga	ZG	Zagreb
CT	Cape Town	LJ	Ljubljana	RJ	Rio de Janeiro	ZU	Zurich
DA	Dallas	LM	Lima	RM	Rome		