MEGACITIES *vs* GLOBAL CITIES[1]
The institutional hypothesis

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1. INTRODUCTION

The new urban revolution, which begun in the second half of the XXth century, and has gathered pace for a quarter of a century, is going to challenge the relation between the size and the economic role of cities. This revolution is mainly characterized by two divergent phenomena.

On one side, the last decades have witnessed the emergence and the never seen growth of a number of megacities, *i.e.* of cities with more than 10 million inhabitants, most of them being located in less developed countries[2] (LDCs). In 1950, only two cities in the world exceeded this size, New York and London. In 2005, 20 megacities regroup 292 millions inhabitants. Three-quarters of these cities are located in LDCs. The phenomenon concerns more generally the cities with more than 5 million inhabitants, namely the "large urban agglomerations" (LUAs), the number of which has been multiplied by six between 1950 and 2005 (UN, 2004).

On the other side, the globalization of the post-industrial economy generates a new urban organization where a few number of cities concentrate a disproportionate part of economic power, *i.e.* of economic creation, decision and control. These global cities, also called world cities or world metropolises have been analyzed by Hall (1966), Friedman (1986), Sassen (1991, 2000), Lacour (1999) and Bourdeau-Lepage and Huriot (2005) and have been identified and measured in particular by Taylor (2004) and the Globalization and World Cities (GaWC) group and network. Most of the criteria used for identifying global cities refer to the concentration of specialized services – such as advanced producer services of financial services – and to their global interactions. But these activities are only the expression of what we consider as the very nature of the global city, *i.e.* its specialization in the function of coordination.

More precisely, the global city is defined as *a city in a position to realize the economic coordination of complex activities at a global scale*. Though it represents only a minor part of these cities' activities, the coordination function is considered as the major character of global cities. It is through that function that they gain their strategic position in the global economy, and the concentration of this function makes them different from other cities.

Coordination is thus the first key concept of this paper. "Coordination is defined as the set of interactions between economic agents brought into play in the aim of organizing production, exchange and consumption efficiently" (Bourdeau-Lepage and Huriot, 2005).

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2 This results from the United Nations' distinction between "more developed countries" (MDCs : Northern America, Japan, Europe and Autralia/New Zealand), and "less developed countries" (LDCs : the rest of the world, i.e. Africa, Asia (Excluding Japan), Latin America and the Caribbean, Melanesia, Micronesia and Polynesia). Among LDCs, 49 countries are considered as "least developed countries" (Least DCs), of which 34 are in Africa, 9 in Asia, 1 in Latin America and the Caribbean and 5 in Oceania (United Nations, 2004).

These interactions are brought into play by individual agents themselves and increasingly by specific advanced services.

Now megacities and global cities are partly diverging. In 1950, there were two megacities: New York and Tokyo. On the basis of GaWC's criteria, both were global cities, and both were located in developed countries. Since then, numerous megacities have emerged and a large number of them did not gain any global economic dimension or global function. The divergence is particularly marked in the poorest countries. Most of the largest cities are located in the less developed countries, while the most powerful global cities are mainly located in the developed countries. This might be an additional impediment to development, or even a factor of cumulative gap with the richest countries, and an increasing obstacle to the integration of the less developed countries in the global economy.

The abundance of contributions dealing with megacities and the richness of the literature on global – or world – cities contrast starkly with the poverty of attempts to investigate this "mega-global divergence". This is probably the consequence of a multiple segmentation of research.

First, it is common to separate the demographic nature of the megacities' dramatic growth from the specific economic dimension of the rise of global cities. In point of fact, the problem is less simple because demographic and economic factors are closely linked in both phenomena.

Second, the literature on global cities pays little attention to the less developed countries, where most megacities are located, while the literature on megacities describes the disastrous consequences of this over-urbanization in the LDCs in terms of development, but is not very prolix on the conditions of their economic globalization. Thus there is a second clear-cut separation, between economics of development and economics of global cities This is only a facet of the more general separation between economics of cities, which is mainly focused on city formation and growth in developed countries, and development economics which for the most part ignores the specific urban dimension of the process of megacity formation.

Despite such a confused scientific landscape, one idea is emerging. A general but not exhaustive survey of the two literatures on megacities and on global cities, in the "mainstream" economic theory as well as in the so-called "heterodox" economy, suggests that the nature and quality of institutions – in the sense of North (1990) – might be decisive in the process of emergence of a global city. Indeed, in a number of poor countries, institutions are actually not able to promote the emergence of global coordination functions.

As a consequence, *institutions* is the second key concept of this paper. They can be defined as "the rules of the game in a society, or the humanly devised constraints that shape human interaction" (North, 1990). Institutions define and limit the set of choices of economic agents and determine the form of economic organizations. They favor or discourage exchanges and all forms of interactions, and especially those needed by coordination of economic activity.

The paper is founded on the following rationale. The global city is able to coordinate complex global activities. This ability supposes the capacity to interact, to cooperate in accordance with coherent, well established and well accepted rules of the game. These rules are the institutions. They play a large part in the divergence we are interested in. This is the "*institutional hypothesis*"

The rest of the paper is organized as follows. First the divergence between the growth of megacities and the development of global cities is characterized more precisely and the relation between this mega-global divergence and the level of development of the countries concerned is described (section 2). Second, some tracks are given for understanding why some very large cities in LDCs hardly develop effective global economic functions. Institutional factors including governance, social connectivity, and more generally all kinds of

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formal and informal rules of the economic and social game are brought in the forefront (section 3). The main data concerning the 49 large urban agglomerations in 2005 are regrouped in the appendix.

2. THE NATURE OF THE MEGA-GLOBAL DIVERGENCE

Two major transformations affect world's cities: on the one hand, the rise of mega-cities; on the other hand, city globalization, *i.e.* the emergence of cities deciding, operating and interacting at a global scale. The fact is that the largest megacities are not necessary well ranked as global cities, if they are ranked however. What are the nature and the extent of this divergence? Does it simply reflect the more general divergence of development in the present-day economy or is it a specific phenomenon which obeys to original processes?

2.1. The modalities of megacities' inflation

The prefix "mega-" means one million, however the minimum size of a megacity is usually supposed to be comprised between 4 and 10 million, depending of the source (Daniels, 2004). Given such an imprecision, and given the scope of the discrepancy between the estimations of cities' populations coming from different sources[3], we shall retain two thresholds used by the United Nations (2001 and 2004): 5 and 10 million, the former defining "large urban agglomerations" (LUAs) and the latter "megacities" proper.

On the basis of United Nations data (table 1), there was 2 megacities in 1950 (New York and Tokyo), 5 in 1980 (of which 2 were in LDCs), 20 in 2005 (15 in LDCs). In 2015, there will probably be 22 megacities, and 16 will be located in LDCs.

47 cities are large urban agglomerations in 2005 (33 in LDCs) and 61 in 2015 (45 in LDCs).

The LDC-MDC classification of countries is rather rough, but it gives a first idea of the geographical distribution of large urban agglomerations and megacities.

Such figures must be carefully interpreted. The dramatic rise of megacities in the LDCs must be qualified. It is less dramatic when related to the scale of LDCs' population. Four features must be pointed out.

1/ *The weight of megacities population remains weaker in LDCs than in MDCs*, relatively to urban population as well as to total population, and it will still probably remain so in 2015. The same tendency is observed for all large urban agglomerations (table 1, lines 7, 8, 11, 12).

2/ *The rise of megacities is both strongly localized* (only a small part of the less developed world is affected) *and extremely rapid*. In its period of most rapid growth, London's population has been multiplied by 7 in 110 years (1800-1910). In comparison, the population of Mumbai has been multiplied by 6 and that of Sao Paulo by 8 in only half a century. Between 1975 and 2000, certain megacities exhibit average annual growth rates never seen in urban history, more often than not over 3% and even over 6% in Dhaka (6.17%) and in Lagos (6.09). This rate is very much lower in MDC's.

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[3] Even if most sources refer to the concept of agglomeration rather to that of cities, estimation can differ markedly. An extreme case is Seoul, the estimated population of which varies from 9.6 million in 2005 (United Nations, 2004) to 20.7 million in 2000 (Moriconi-Ebrard, 2000; quoted by Henry, 2005). Consequently, the numbers of megacities and of large urban agglomerations are only rough estimates.

Table 1: Mega-cities and large urban agglomerations, 1950-2015

		1950		1980		2005[1]		2015[1]	
	City size	Mega-cities[2]	LUAs[3]	Mega-cities[2]	LUAs[3]	Mega-cities[2]	LUAs[3]	Mega-cities[2]	LUAs[3]
(1)	**World's cities[4]**	**2**	**8**	**5**	**26**	**20**	**49**	**22**	**59**
(2)	Pop.(million)[5]	23.6	58.4	81.0	239.8	291.9	487.8	358.3	615.5
(3)	(2)/urb. pop.(%)	*3.2*	*8.0*	*4.7*	*13.8*	*9.2*	*15.4*	*9.3*	*16.0*
(4)	(2)/total pop. (%)	*0.9*	*2.3*	*1.8*	*5.4*	*4.5*	*7.6*	*5.0*	*8.6*
(5)	**MDCs'cities[4]**	**2**	**6**	**2**	**10**	**5**	**14**	**6**	**16**
(6)	Pop. (million)[5]	23.6	48.0	44.2	107.2	87.9	146.9	101.1	163.2
(7)	(6)/urb.pop. (%)	*5.5*	*11.3*	*5.9*	*14.3*	*9.7*	*16.2*	*10.6*	*17.2*
(8)	(6)/total pop. (%)	*2.9*	*5.9*	*4.1*	*9.9*	*7.3*	*12.2*	*8.2*	*13.3*
(9)	**LDCs' cities[4]**		**2**	**3**	**16**	**15**	**35**	**16**	**43**
(10)	Pop.(million)[5]		10.4	36.8	132.6	204.0	340.9	257.2	452.3
(11)	(10)/urb. pop.(%)		*3.4*	*3.7*	*13.4*	*9.0*	*15.0*	*8.9*	*15.6*
(12)	(10)/total pop. (%)		*0.6*	*1.1*	*4.0*	*3.9*	*6.5*	*4.3*	*7.6*
(13)	**Least DCs' cities[4]**					**1**	**2**	**1**	**4**
(14)	Pop.(million)[5]					12.6	18.3	17.9	37.2
(15)	(14)/urb. pop.(%)					*6.1*	*8.8*	*5.7*	*11.8*
(16)	(14)/total pop. (%)					*1.7*	*2.5*	*1.9*	*3.9*

[1] Estimates.

[2] Mega-cities have more than 10 million inhabitants.

[3] Large Urban Agglomerations have more than 5 million inhabitants. They include megacities.

[4] Number of cities in the world, in MCDs (most developed countries), in LDCs (less developed countries) and in Least DCs (least developed countries), the definition of which is given in footnote 1.

[5] Total population of these cities

Source: calculations after United Nations (2004).

3/ *Megacities are going to emerge and grow in LDCs, but rarely in the poorest countries.* Among the 20 megacities in 2005, 15 are in countries with a GDP per capita less than the world average and among them 6 are in countries with a GDP per capita less than one tenth of the world average. But there are only 2 large urban agglomerations and one megacity in the Least DCs. It could mean that a minimum level of development is required for the emergence of a megacity or even of a large urban agglomeration.

4/ *Megacities are probably of a specific nature in LDCs.*

The explosion of megacities in LDCs results from both the population growth (due to the demographic transition) – and the process of migration (due to economic factors: the gap between urban and rural productivities and incomes, and to sociological reasons: the attraction of the urban way of life). On the contrary, most megacities in MDCs have long been large cities, the growth of which has been much more slow and regular, in close relation with their economic activity (Henry, 2005).

2.2. City size and the logic of city globalization

From economics of cities (Huriot and Thisse, 2000; Fujita and Thisse, 2002) it can be expected that city size favors city globalization, all the things being equal. This can be explained by increasing returns, diversity and externalities.

The coordination function of global cities rests on advanced specialized services which are subject to increasing returns. They are using high-skilled workers and high interaction abilities. The implementation of these skills and abilities is more efficient at a large scale. It is one of the well-known reasons for the externalization of advanced services and for their

concentration in very large cities. Other reasons of this concentration could be added, such as the heavy real estate investments of these firms, and the search for urban amenities and high levels of culture and education by their skilled workers.

These services are intensive users of information. Their global coordination functions put them in connection with the world. The new information technologies make such interactions quasi-instantaneous and potentially unlimited. However, telecommunication infrastructures, them as well, are subject to increasing returns because of important fixed costs, and thus they are not present everywhere, but only in very large cities (Bourdeau-Lepage and Huriot, 2005).

City size usually goes along with urban diversity which is a source of interactions and of externalities, related notably to proximity and to information exchanges. Size and diversity are also factors of a good match between supply and demand of skills on the labor market.

The relation between city size and the correlative presence of diversity and of externalities on the one hand, and city globalization on the other hand, is circular and cumulative, so that city globalization causes city globalization and the process is more or less locked-in.

The next subsection states that the empirical relation between city size and city globalization does not fit so well the preceding theoretical statement.

2.3. Characterizing the divergence

Size and global functions
The global performances of a city are not closely linked to its size. The GaWC group proposes different evaluations of such performances. One of them is based on the presence of global firms in four categories of advances services (Beaverstock et al. 1999). It leads to the selection of 123 cities, the scores of which vary from 12 (the top level of the "alpha world cities") to 1 (the lowest level, "minimal evidence of world city formation"). This grading will be referred to under the name "GaWC1". There is no clear evidence of a strong positive relation between these scores and the sizes of the 123 global cities.

A great majority of these cities (more than 70%) have less than 5 million inhabitants.. Even if a number of them have relatively low scores (less than 6), the range of their global performances is very large (their scores vary between 1 and 10). Some of these cities, especially in Europe, have around 1 million or less (such as Amsterdam, Brussels, Geneva or Zurich) and have relatively high scores (Zurich: 9, Brussels: 8, Amsterdam and Geneva: 6).

Conversely, a large part of the large urban agglomerations (more than 5 million) have low scores. Among the 49 large urban agglomerations registered in 2005, only 15 have scores of 6 and more and 34 have scores less than 6. Among the latter, 15 have a null score: they have no evidence of any global function and are not included in the 123 global cities of the GaWC group.

Even megacities (more than 10 million) are not necessarily global cities. Only 8 of the 20 megacities in 2005 have global scores of 6 and more, and 4 (Calcutta, Dhaka, Karachi and Lagos) remain out of the GaWC's grading.

It results that *size seems to be neither a necessary nor a sufficient condition for obtaining the status of global city*. This is not a surprising feature. Even if it is a favourable factor, the quantity of people cannot as such generate the ability to coordinate complex economic activities at a global level without the aid of other qualitative elements. The global functions of megacities are probably more closely linked to the level of development and to other less measurable human elements.

Large size, global functions and human development

Large urban agglomerations have clearly higher global functions if they are located in more developed countries. Given the recognized limited significance of GDP as a development indicator, the level of development is evaluated in terms of the human development index (HDI). Besides an indicator of the GDP, this index includes indicators of the level of education and of the life expectancy which give an evaluation of the skill level and of the quality of life. Graph 1[4] retains all world's large urban agglomerations and relates their population to their GaWC1 rating. In the same time, large urban agglomerations are classified on the basis of the human development index of their respective countries in 2003. Three classes are distinguished: high HDI (more than 0.8), medium HDI (between 0.5 and 0.8) and low HDI (less than 0.5).


Graph 1: LUA: population & GaWC1
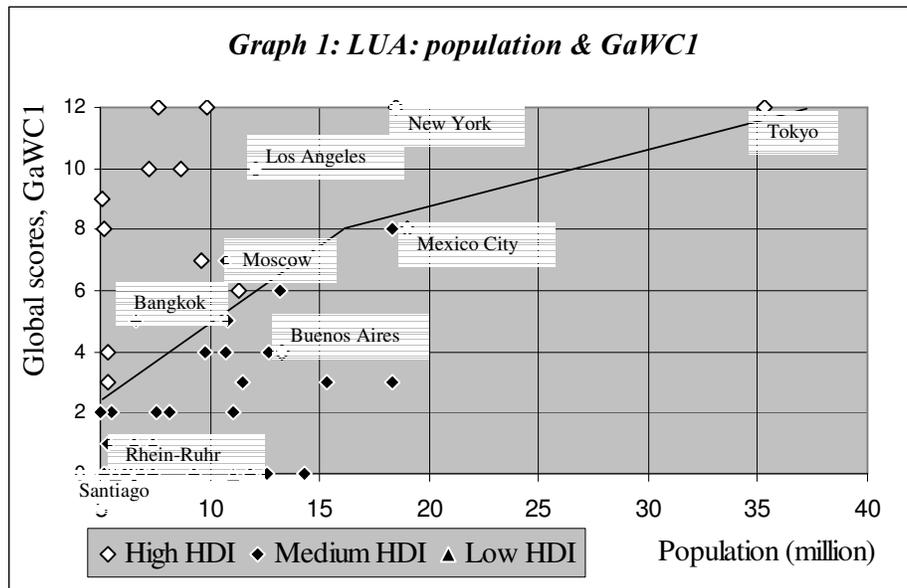
This graph shows a quasi perfect segregation between the large urban agglomerations in high HDI countries and the other ones. A continuous increasing line could be drawn such that nearly all the cities in high HDI countries are above this line – except Buenos Aires, the Rhein-Ruhr urban region, and Santiago – and nearly all the other ones are below – except Moscow and Bangkok). Moreover, a significant number of large urban agglomerations and of megacities are not considered as global cities, not even "in formation" (their scores equal zero on the graph), nearly all of them being located in medium or low HDI countries. Finally, 4 of the 6 megacities of the top level (score over 6) are in high HDI countries (Tokyo, Mexico city, New York and Los Angeles) Thus large agglomerations are more probably well ranked global cities if they are located in more developed countries.

Graphs 2 and 3 confirm partially this conclusion. Graph 2 relates the GaWC1 scores of 48 large urban agglomerations[5] to the HDI of their respective countries. In graph 3, GaWC1 classification of global cities is replaced by another GaWC's classification based on the level

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[4] Remark that in this graph as well as in most of the following ones, the variable measured on the vertical axe has only an ordinal meaning.

[5] The HDI is not available for Irak, so that Bagdad is excluded.

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of global interactions of cities (global network connectivity: Taylor and Catalano, 2001), for the 35 LUA for which we have the connectivity level[6].

Graph 2: HDI and GaWC1

Graph 3: HDI and GaWC2
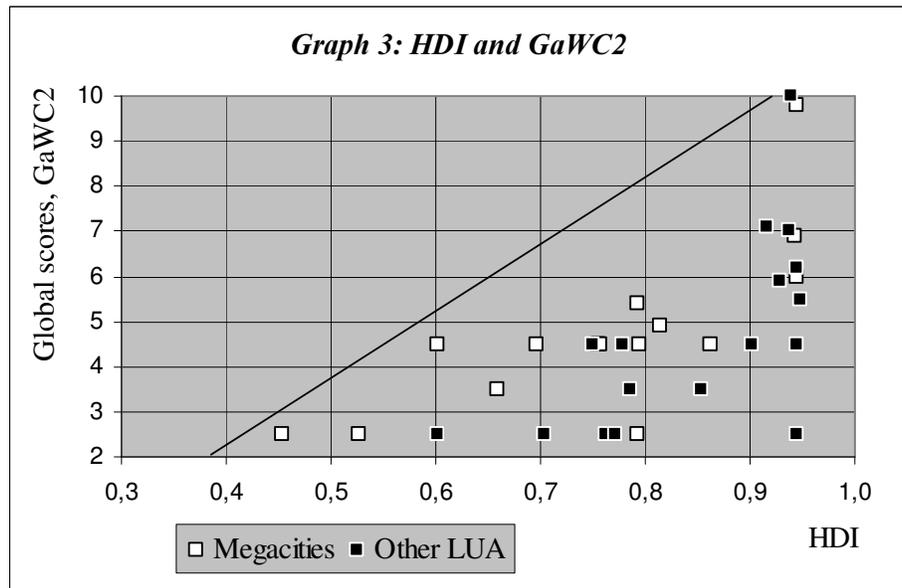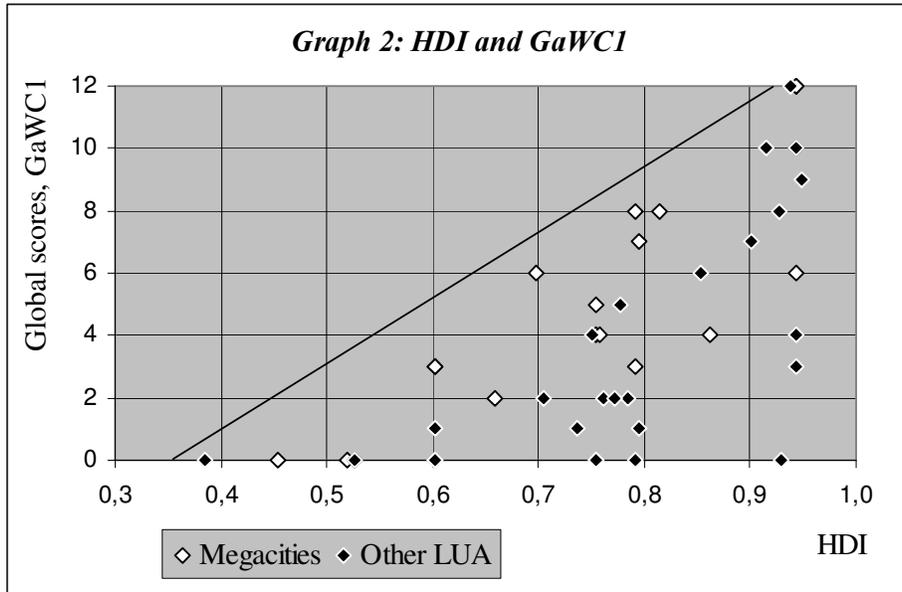
Whatever the classification, based on the presence of global service firms or on the degree of connectivity, the set of points has a typical form and occupy only a well identified part of the graph, below the oblique line[7]. In any case it shows that a number of large urban

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[6] The exact "global network connectivity" is available for the 20 top cities of the ranking (London = 10). For the other cities, global connectivity is approximated by the centers of the classes.
[7] Here these areas look like triangles, but their precise forms depend on the choice of the ordinal functions measuring global performances as well as on the mode of construction of the HDI. If HDI is replaced by GDP, the set of points is nearly shapeless. It is noticeable that with the logarithm of the GDP, the general shape of the graph looks like that of graphs 3 and 4.

agglomerations have a high HDI without the performances of an important global city, while none of these cities have high global performances and a low degree of development. It means that all the megacities and other large urban agglomerations of the low HDI countries have weak global performances.

This diagnosis is reinforced by examining performances in a more specific field which is particularly crucial for city globalization: transport and communication.

Two series of data converge to show that world's air traffic is highly concentrated in the more developed regions of the world, between these regions and between their megacities.

Air flows internal to Europe and to Northern America account for nearly the half of the total world traffic, while 1.3% of this total is internal to Sub-Saharan Africa and less than 1% to South Asia.

8% of the world traffic connects Europe and North America while 0.6% connects North America and South Asia and 0.3% connects North America and Sub-Saharan Africa (Witlox et al., 2004).

At the level of the megacities themselves, in percentage of the London traffic (the most important of the world), Calcutta traffic represents 2.4%, Dhaka 2.5%, Lagos 2.8%. Ten megacities among the 20 have each less than one tenth of the London traffic (from Airport Council International, data for 2002-2003).

The same tendency can be noted concerning the new communication technologies. For example, the United States have 55 internet users per 100 inhabitants, India 1.8, Pakistan 1, Nigeria 0.6 and Bangladesh 0.2 (International Communication Union, data for 2003).

From development to institutions
The data presented above do not exactly correspond to what could be expected from the theoretical role of city size, and the level of development seems to play an important role in the emergence of global functions in a large city. More precisely, *the level of development of its country is a necessary but not sufficient condition for a large urban agglomeration (and clearly also for a megacity) to be a global city*. No global city can emerge without a minimum level of development. But the direction of the eventual causality is hardly identifiable. Determining if underdevelopment blocks city globalization or if the explosive growth of megacities hampers development is not clearly relevant. The two processes are not exclusive, on the contrary, they are mutually reinforcing in a cumulative process, like in the case of the more general linkage between development and urbanization[8].

The failure of theory can be explained by its implicit assumptions. Indeed, city size is a factor of city globalization, only if it is able to create sufficient diversity, skills and information externalities to permit the emergence of global coordination functions. *That means city globalization is subject to the existence of coordination capacities, and of the ability to implement – and to take advantage of – increasing returns and information externalities.* This depends fundamentally on institutions. If the level of development is a significant factor of city globalization, it is probably mostly because of the nature and the quality of institutions. It will be illustrated in the next section.

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[8] However, the problem is quite different, because we are interested only in megacities and large urban agglomerations, and such cities may appear in countries with relatively low urbanization rates (ratios of urban population to total population).

3. INSTITUTIONS MATTER

Although they are really present in less formal analyses, institutions have still made only a discreet entry in economics of cities. Theory and the analysis of the preceding sections suggest the "institutional hypothesis". Institutions matter, because coordination depends notably on the form of governance and the level of social connectivity. It is illustrated by the role of corruption and of the informal sector.

3.1. Institutions and economics of cities

The disproportionate growth of megacities and the formation of global cities have generated a vast literature. But the possible divergence between the two phenomena has been largely neglected, even by economics of cities, although it deals with each of them. The mega-global divergence is not really tackled. Most of that part of economics of cities which treats the emergence of megacities is limited to three main questions.

1/ Under what conditions can a city reach the size of a megacity?
Concentration of people and activities in a city always results from a tension between centripetal forces – agglomeration economies – and centrifugal forces – agglomeration costs or diseconomies. When city grows, the resulting net benefit (or the utility) of a representative agent is represented by an inverted "U" like curve ROM on figure 1 (Henderson, 1974; Fujita *et al*, 1999).

Figure 1: City size: optimum vs maximum
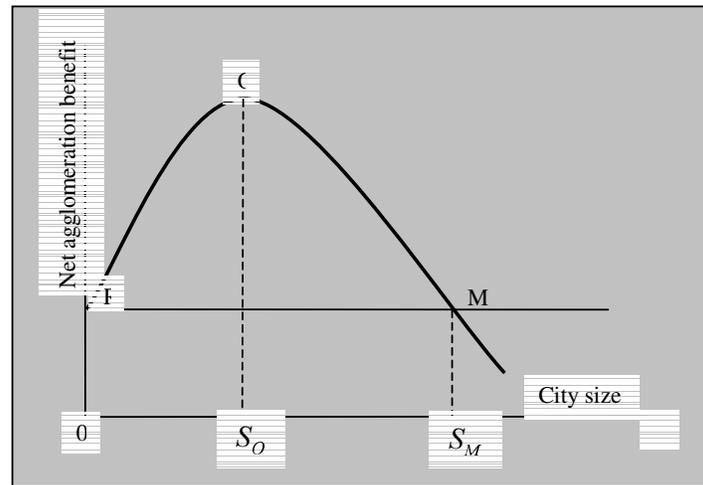
This suggests the existence of an optimal size S_O. But the probability of realization of that size depends on the mode of coordination of agents. In a self-organizing city, where individual agents maximize their private benefit in a non-cooperative game, the city size can increase up to the maximum S_M. If there is too few cities, and thus too large cities, the typical city is larger than S_O. In such a city, no individual agent will decide to move to another place, because this city yields a higher benefit than OR, which can be obtained in any isolated (or rural) place. On the contrary, this city can still attract new migrants from rural space or from small cities, as far as it reaches the maximum size S_M.

However, cooperation between agents or centralized coordination by a "large agent" (developer or local government) can incite a number of people to move to a new city where agglomeration benefit is at least that of the initial one. The condition is that those who coordinate this move can profit from the new situation, by getting back the new agglomeration benefits. These ideas have been developed for example by Becker and Henderson and Mitra (1996), Henderson (2000), and Venables (2003).

2/ Under what conditions can a system of cities be unbalanced, i.e. have a strong primacy?
A number of contributions (for example Ades and Glaeser, 1995; Krugman and Livas Elizondo, 1996; Puga, 1998; Duranton, 2000) stress the importance of a variety of factors of primacy, most of which are present in developing countries. Among them, institutional elements (mainly governance) are not inconsiderable. However, primacy is weakly linked with the megacity phenomenon. First, certain countries contain several megacities (Japan, the United States, India, China), so that the primacy index cannot be defines for every megacity. Second, the degree of primacy of the countries concerned is extremely variable: the share of the primate megacity's population in the total urban population of its country varies between 2.4% (Shangai in China) to 42.1% (Tokyo in Japan), and third, this gives no insight at all into the mega-global divergence.

3/ Under what condition does a megacity emerge without any economic growth?
Duranton (2000) shows that a high primacy configuration (and even a unique megacity) can emerge with no growth if the city system is centrally planned by a monopolist agent and/or if the fertility rate is high (*i.e.* if the rate of population growth is high). The role of institutions is decisive, through the more or less central management of the city system. This contribution half-opens the door of the mega-global divergence.

Finally, although most authors leave the mega-global divergence out, *they all need calling for some institutional elements to explain urban growth and/or the phenomenon of megacities*, with or without growth. Ades and Glaeser (1995) corroborate empirically the role of these elements in the emergence of "urban giants" in 85 countries.

From these analyses, and from the results concerning the relations between city size, city globalization and development (section 2), the "institutional hypothesis" can be drawn. *As far as the global city's main function is coordination, city globalization depends primarily of the institutional organization of the economy, on urban governance and on constraints affecting individual interactions.*

3.2. Institutions, governance, social connectivity and coordination

The ability to global coordination is a necessary condition for a city to gain the status of global city. This ability is measured by the presence of advanced services and by their global influence. The cumulative logic of the corresponding agglomeration process is known. However this logic remains virtual if the rules of the game of the society do not permit their effective running.

In the framework of the new institutional economics, these rules are represented by institutions. In this meaning, institutions include all forms of governance, as defined by United Nations Center for Human Settlement (2001): "Governance is much more than government. At the city level, it can be defined as the sum of the ways through which individuals and institutions (public and private) plan and manage their common affairs."

In the digital era, institutions also include what Sassen (2000) calls the social connectivity, which represents the set of individual and social capacities to use efficiently information technologies for coordinating and controlling the economy. "To maximize the benefits of the new information technologies, you need not only the infrastructure but a complex mix of other resources. Most of the value-added which these technologies can produce for advanced service firms lies in the externalities. And this means the material and human resources – state-of-the-art office buildings, top talent, and the social networking infrastructure that maximize connectivity. Any town can have the fiber optic cables. But do they have the rest?"

This is the core of the question. But it is necessary to go further in recognizing that all the cities cannot have technical infrastructures, for lack of money and of human resources. This is a matter of fact. In 2003, the United States have 65 personal computers per 100 inhabitants. India, Pakistan, Nigeria and Bangladesh have less than one (International Communication Union). The number of telephones is less in whole Africa than in Manhattan (Wackermann, 2000). Among the cities which could have technical infrastructures, some do not have the social connectivity required for their implementation. This means that economic development alone is not a sufficient condition for city globalization. Without social connectivity, no global coordination. Institutions are a decisive factor.

Institutions can be formal or informal. Their role is illustrated in three points: the efficiency of formal institutions, the conflict between formal and informal institutions, and the complementarity between formal and informal institutions.

3.3. The efficiency of formal institutions

Formal rules of the game include political, legal rules and economic rules relative to property rights and contracts. They aim at facilitating exchanges and cooperation, whatever their nature, provided that their consequences are judged positive by the society (North, 1990). One important aspect of this aim is the enforcement of contracts. Institutions must generate the trust required for the carrying out of exchanges. Yet, "the inability of societies to develop effective, low-cost enforcement of contracts is the most important source of both historical stagnation and contemporary underdevelopment of the Third World" (North, 1990)

The concept of "good institutions" (or even of "good governance") can be left out because it is not clearly defined, because it depends strongly on the objective and the point of view of those who define it, and therefore because it is more often than not full of ideology. Among the governance which permits the participation to the globalization movement, and the governance which is efficient to promote sustainable development with or without globalization, what is the best? The aim of this paper is not to judge institutions or governance, but to evaluate their capacity to promote city globalization. Consequently, institutions are positively evaluated when they make global coordination of complex operations possible, *i.e.* when they favor complex and global interactions and exchanges.

Even if it does not treat megacities *stricto sensu*, the study of Keivani *et al.* (2003) is a good illustration of these relations between coordination, interactions and institutions. It shows the effect of institutions on the globalization process of certain LDC's cities, namely cities of the United Arabic Emirates: Abu Dhabi, Dubai and Sharjah, in comparison with Singapore. Institutions are grasped through the modes of coordination and the nature and characteristics of public institutions. A survey was conducted on the perception of the quality of institutions in the two sets of cities. Remark that formal and informal institutions are hardly strictly separable in such a survey. Indeed, the judgment of formal institutions may be influenced by the informal practices.

The results confirm the central role of institutions in economic development and in the global functions of a city. In Singapore, institutions and their coordination capacities appear much more adapted to the global economy. In the United Arabic Emirates, governance is more centralized and even monopolized; interactions and cooperation between departments and institutions are rather weak, and inside and outside communication is judged insufficient. Moreover, the business environment is more stable in Singapore. This could be correlated with the fact that the Emirates have no real global city, despite their privileged location in the Middle East. Indeed, GaWC1 global cities grading (see section 2, scores varying from 1 to 12) gives the score 2 to Abu Dhabi and Dubai ("some evidence of world city formation") while Singapore obtains 10 and is included in the top 10 global cities in the world ("alpha world cities").

3.4. Formal and informal institutions in conflict: the case of corruption

"In our daily interactions with others, whether with family, in external social relations, or in business activities, the governing structure is overwhelmingly defined by codes of conduct, norms of behavior and conventions" (North, 1990). An informal convention becomes a social constraint when almost everybody follows it and if it is in the interest of each individual that all other individuals follow it provided that the individual does too (North 1990).

Informal rules are particularly important in LDCs and in medium or low HDI countries, but they are far from being absent in MDCs. In LDCs, formal rules usually cohabit with informal rules. Despite the importance of formal rules, informal rules are often stronger and more durable and they frequently have the final word. In the economy, the two sets of rules, formal and informal, are in conflict or in cooperation in production activities, in the modes of exchange, in land tenure rules or in housing conditions. The formal rules of the market can be in conflict with traditional conventions (individual haggling procedures) or with corruption.

Corruption rests on rules that differ radically from those governing globalization. Corruption is defined as "a crime perpetrated by officials who misuse public office for private gain, and, at an aggregate scale, denies citizens their right to self-determination" (United Nations Center for Human Settlement, 2001). Corruption is more probable where an official has a monopoly power, a discretionary authority and lack of accountability. It is less probable where the "ethical ambiance" (that is "the social norms relating to the public interest") is high. It discourages entrepreneurship, disfavors foreign investments and international interactions, and makes global coordination more difficult (Bourdeau-Lepage and Kolarova, 2005).

Corruption is widespread in developing countries (Transparency International, 2005) and in countries with medium or low HDI. It is negatively correlated with the degree of urbanization of countries. But if all the least urbanized countries have bad corruption index values, the most urbanized countries have a wider range of corruption index values (United Nations Center for Human Settlement, 2001, from a sample of 85 countries). It could be because "urbanized societies require more accountability and more transparency of public officials" (UNCHS, 2001).

Graph 4 relates the scores of all large urban agglomerations in GaWC1 grading to the 2004 index of perceived corruption proposed by Transparency International (2005). Cities are also distinguished by the level of their countries' HDI.

Curiously, the set of points is divided in two clearly separated parts. The right side (low corruption) is exclusively composed of cities located in high HDI countries. The range of their global performances is maximum (0 to 12) but the majority of these cities (9 of 13) have high global performances (subset [1], score at least equal to 6). The left side (high corruption) is mainly composed of cities in medium HDI countries. In addition, it includes the two large

urban agglomerations located in low HDI countries (Lagos and Kinshasa) plus three in high HDI countries (Buenos Aires, Mexico City and Seoul). Most cities of this second subset have low global performances (subset [2], scores inferior to 6). Thus *it seems that, among the large urban agglomerations, high corruption is rather associated with bad global performances and low corruption with good global performances.*

Graph 4: Corruption index and GaWC1
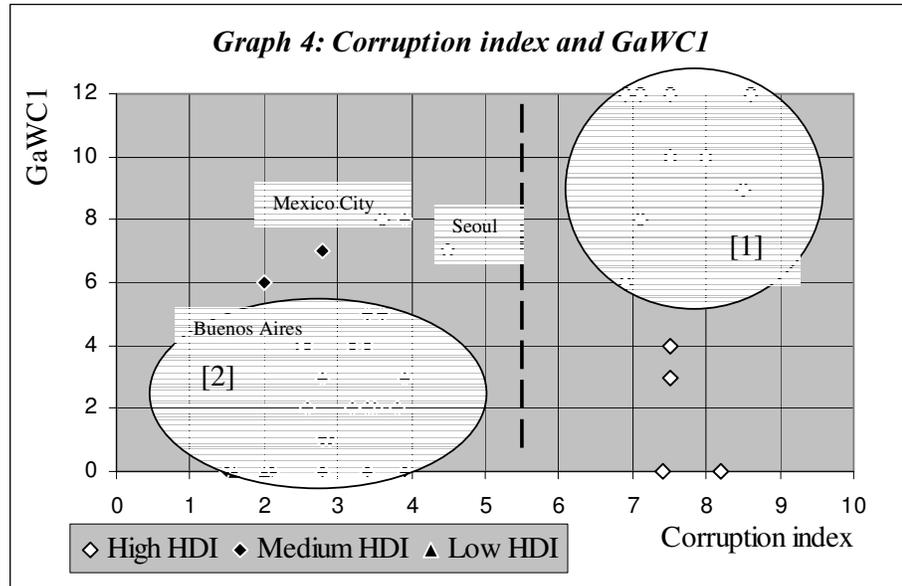
It can be remarked that the average level of corruption is a little bit less for megacities (3.7) than for the other large urban agglomerations (4.7). But the difference seems too low for a clear conclusion.

Corruption is an informal rule of the game and as such it is stronger and more durable than formal ones. Consequently, corruption can hardly be eliminated through formal ways only. Anti-corruption barriers could be inefficient if mentalities do not change (Bourdeau-Lepage and Kolarova, 2005).

The cohabitation of formal and informal rules is also observed in the case of formal and informal sectors. In this case, the two sets of rules are more complements than in conflict.

3.5. Formal and informal institutions in cooperation: the informal sector

Informal sector, informal employment, informal economy, are extremely difficult to define, and even much more difficult to measure, actually because they refer to something informal[9]. It can be tolerated or even encouraged. It includes a great variety of legal activities – from itinerant street vendors to industrial micro-enterprises and computing and telecommunication services – and of illegal activities such as drug dealing, smuggling, gambling or prostitution.

Informal sector has ever existed, even in the most developed countries. But nowadays it takes a dramatic extent in the LDCs. Despite statistical difficulties, United Nations Habitat

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[9] Definitions of the informal sector are multiple and differ from one country to the other (Daniels, 2004). Moreover, informal employment must be distinguished from employment in informal sector, as far as there is informal employment in the formal sector too. Anyway, this sector does not respect at least one of the MDCs' dominant rules concerning enterprise, labor market, salaries and workers' rights. It is generally non-registered and continually changing, and thus hardly measurable.

provides some data (which are only approximative) for a sample of world's cities, among Ewhich 11 large urban agglomerations and 8 megacities, essentially in LDCs. Employment in the informal sector represents a large part of these cities' total employment, with peaks of more than 60% in Delhi and Dhaka (table 2).

The role of the informal sector in the mega-global divergence is probably multiple. What follows only suggests some reflection avenues to be more thoroughly investigated.

The informal sector is both a product and a reinforcing factor of megacity growth without economic growth observed in a number of LDCs. But first of all it involves a particular form of self-organization that permits the survival of a population the size of which is disproportionate to the economic resources of the megacity. In other words, it makes possible the survival of a mass of new immigrants thanks to the implementation of original institutions. The informal sector is by nature the domain of informal rules, which regulate also slums, shanty towns, favelas and other informal human settlements. All these informal elements can be regrouped in what is called "informal society".

Table 2: The share of the informal sector in terms of employment

City	Country	% of total employed population in the informal sector
Delhi	India	65.70%
Dhaka	Bangladesh	63.00%
Lahore	Pakistan	50.70%
Rio de Janeiro	Brazil	40.10%
Bangalore	India	34.20%
Jakarta	Indonesia	30.00%
Sao Paulo	Brazil	25.40%
Moscow	Russian Federation	25.10%
Bangkok	Thailand	17.00%
Buenos Aires	Argentina	10.30%
Tokyo	Japan	0.00%

Source: UN-Habitat, urban indicators for 1998
www.unchs.org/programmes/guo/guo_indicators.asp

The informal society is usually considered as composed of marginal individuals, of people excluded from the "normal" society. In fact, things are less simple. In the informal society of a number of LDCs (especially but not only in Africa), exclusion is not only destructive but also creative (Baron, 1995; Huriot, 1997). One can be excluded only from a particular and well defined set of rules. But the victims of exclusion can create their own norms, their own rules of the game, their own institutions. Informal employment is not anarchy. It is organized on the basis of coherent and accepted institutions. Moreover, it is generally connected to the formal sector, directly of indirectly: formal employees may have a second informal job, the informal production is sold to formal workers, and informal workers spend their income on formal markets (Daniels, 2004).

The organization of the urban informal sector as a survival sector leads to the following hypotheses.
1/ Certain megacities of the LDCs are subject simultaneously to two different institutional systems, two forms of coordination built on different cultural foundations. These systems

interact in cooperation or in conflict. Institutional incoherence and conflict can reinforce the lack of coordination and exacerbate urban growth without economic growth, thus more or less directly aggravate the mega-global divergence.

2/ Informal society is organized

- in order to enable the rural migrant to survive with an income level and a standard of living higher than the rural ones, even if they are lower than in the urban formal sector (note that some informal incomes may be relatively high, especially in illegal activities);
- so as to maintain and encourage a massive immigration from rural hinterland, *i.e.* to support a huge urban growth, incommensurable with the formal economic potential of the megacity.

The latter proposition on megacity growth could be illustrated intuitively by figure 2, built on the basis of figure 1. It can be assumed that the existence of an important informal survival sector maintains a positive net benefit of agglomeration for larger sizes. The decrease of these benefits is less rapid with an increasing city size and the new net benefit curve is ROM'. In absence of any large agent and any efficient cooperation, the city can continue to grow up to the size $S_{M'}$ which might be much higher than the maximum size S_M without informal sector. This is a very simplified illustration of a possible effect, by no means a demonstration.

Figure 2: Potential city size with informal sector
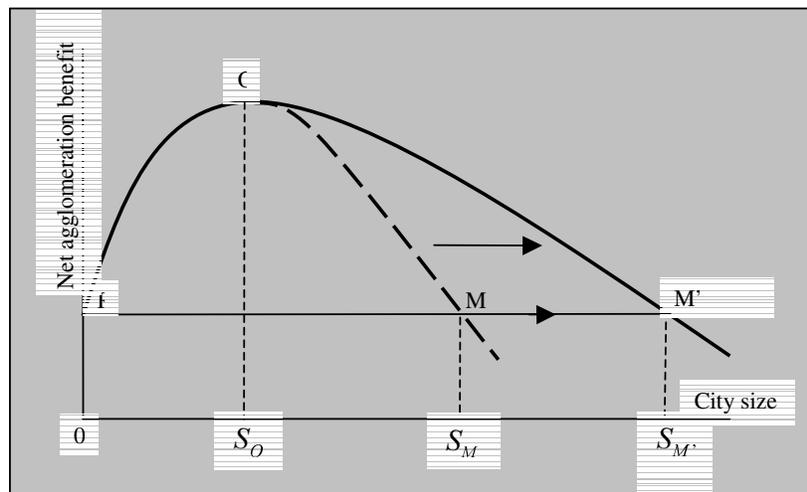
Informal society could contribute to the understanding of the simultaneity of two phenomena: the overwhelming growth of certain megacities and the lack of efficient urban coordination, and therefore the lack of global coordination. One of the reasons is that the informal sector permits the survival of a large number of immigrants so that it maintains immigration and urban growth despite poverty and underdevelopment.

In return, the informal sector can be a source of stagnation. It develops essentially in low technology industry, small retailing, low order services, and execution activities. It is rarely creative and innovative. In addition, the administrative sector has generally overdeveloped in most LDCs since decolonization, and low order services are overrepresented in the private formal tertiary sector ("pseudo tertiary sector" – Wackermann, 2000). Consequently, the conditions of city globalization may still be far away.

4. CONCLUSION

Bairoch (1988) emphasizes the "urban inflation" of the Third World. Sassen (1991, 2000) stresses the emergence and growing domination of global cities. Contrary to urban growth in the XIXth century in Europe, the Third Word urban inflation is cut off from economic growth or development. Contrary to the megacities in the LDCs, most megacities in MDCs are well rated global cities. This divergence has an important economic issue in the context of present evolution of the world's economy. To be a global city is a condition for the access to economic power. It makes possible the participation to strategic economic decisions, and permits a better economic integration (Bourdeau-Lepage, 2005). City globalization may well be a factor of growth of a new kind of inequalities, not only between cities, but between nations, and can contribute to the formation of a "new geography of centrality and marginality" (Sassen, 2000).

The core of this paper is the institutional hypothesis. In order to be able to coordinate complex and global activities, the city candidates to globalization must have technical resources and infrastructures, high skills and above all formal and informal institutions well adapted to this objective. As a consequence, the nature of institutions is crucial for the understanding of the mega-global divergence.

Finally, the mega-global divergence is directly or indirectly related to the level of development of the countries where megacites are located, which seems to confirm Polese position that cities are the products of national economic growth (Polese, 2005). However his analysis is founded on the national degrees of urbanization while the present one focuses on large urban agglomerations and megacities. Moreover, this paper suggests that megacities in LDCs, even if they depend on the national development, can in return be significant obstacles to development, because they generate or favor the emergence of specific informal organizations and institutions. The informal sector generates the conditions of durability of a dramatic urban growth without economic growth.

The avenue suggested in this paper might be conducted further and more deeply. Here, large urban agglomerations have been differentiated in terms of their population (megacities and other large urban agglomerations) and of the level of development of their countries (LDCs vs MDCs, and level of the HDI). It appears that megacities in LDCs and in MDCs obey to different processes and are probably of different natures. A number of studies show that global cities differ from one region to the other in the world, in terms of functional specialization (Taylor, 2003). It could be added that LDCs megacities, or more generally large urban agglomerations, follow two very different scenarios.

The first scenario maintains these cities in a cumulative process of under-equipment and under-development. It has been largely evoked above. It concerns mainly the megacities of Africa and of the poorest countries.

In the second scenario, certain megacities of South Asia, Pacific Countries, China and Latin America are entering in global business. Of the 20 present megacities, Mexico City, Sao Paulo, Mumbay, Jakarta and Cairo (by decreasing population order) show some signs of globalization (Gugler, 2004). Important financial places, business centers and rich enclaves appear in a number of "poor" megacities. Even in Africa, some cities are going to gain an international dimension (Van der Merwe, 2003).

These are only signs. It does not necessarily mean that the obstacles underlined above are got over, and that from now on institutions are well suited to global coordination functions. Conversely it cannot be excluded that the present mega-global divergence would be only a transition phase, and that a number of LDCs' megacities would follow a catching up process.

Such transformation would change radically the geography of centrality and marginality evoked by Sassen (2000).

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APPENDIX: LUA AND MEGACITIES, SELECTED DATA

Megacities and other large urban agglemerations	Country	Popul. 2005 (1)	HDI (2)	Air traffic (3)	Web users (4)	PCs (5)	GaWC1 (6)	GaWC 2 (7)	Corrup-tion (8)
1 Tokyo	Japan	35.3	0.943	77.0	48.3	38.2	12	6.9	6.9
2 Mexico city	Mexico	19.0	0.814	17.3	12.0	8.3	8	4.9	3.6
3 New York-Newark	USA	18.5	0.944	67.9	55.6	66.0	12	9.8	7.5
4 Sao Paulo	Brazil	18.3	0.792	10.7	8.2	7.5	8	5.4	3.9
5 Mumbai (Bombay)	India	18.3	0.602	10.3	1.8	0.7	3	4.5	2.8
6 Delhi	India	15.3	0.602	7.6	1.8	0.7	3		2.8
7 Calcutta	India	14.3	0.602	2.4	1.8	0.7	0	2.5	2.8
8 Buenos Aires	Argentina	13.3	0.863	7.4	11.2	8.2	4	4.5	2.5
9 Jakarta	Indonesia	13.2	0.697	13.2	3.8	1.2	6	4.5	2.0
10 Shanghai	China	12.7	0.755	21.6	6.3	2.8	4	4.5	3.4
11 Dhaka	Bangladesh	12.6	0.520	2.5	0.2	0.8	0		1.5
12 Los Angeles	USA	12.1	0.944	47.9	55.6	66.0	10	6	7.5
13 Karachi	Pakistan	11.8	0.527	3.6 (9)	1.0	0.4	0	2.5	2.1
14 Rio de Janeiro	Brazil	11.5	0.792	4.9	8.2	7.5	3	2.5	3.9
15 Osaka-Kobe	Japan	11.3	0.943	14.7	48.3	38.2	6		6.9
16 Cairo	Egypt	11.1	0.659	7.3	4.4	2.9	2	3.5	3.2
17 Lagos	Nigeria	11.1	0.453	2.8	0.6	0.7	0	2.5	1.6
18 Beijing	China	10.8	0.755	23.4	6.3	2.8	5	4.5	3.4
19 Moscou	Russian Fed	10.7	0.795	11.8	4.1	8.9	7	4.5	2.8
20 Metro Manila	Philippines	10.7	0.758	10.9	4.4	2.8	4	4.5	2.6
21 Paris	France	9.9	0.938	61.0	36.6	34.7	12	7.0	7.1
22 Istanbul	Turkey	9.8	0.750	11.6	8.5	4.3	4	4.5	3.2
23 Seoul	Rep of Korea	9.6	0.901	32.6	61.0	55.8	7	4.5	4.5
24 Tianjin	China	9.3	0.755	0.8 (10)	6.3	2.8	0		3.4
25 Chicago	USA	8.7	0.944	71.5	55.6	66.0	10	6.2	7.5
26 Lima	Peru	8.2	0.762	3.7	10.4	4.3	2	2.5	3.5
27 London	United King	7.6	0.939	100.0	42.3	40.6	12	10.0	8.6
28 Santa Fe de Bogota	Colombia	7.6	0.785		5.3	4.9	2	3.5	3.8
29 Tehran	Iran	7.4	0.736		7.2	9.1	1		2.9
30 Lahore	Pakistan	7.4	0.527	1.9 (9)	1.0	0.4	0		2.1
31 Hong Kong	China, H.K.	7.2	0.916	28.8	47.2	42.2	10	7.1	8.0
32 Chennai (Madras)	India	6.9	0.602	3.5	1.8	0.7	0	2.5	2.8
33 Bangkok	Thailand	6.6	0.778	27.5	11.1	4.0	5	4.5	3.6
34 Rhein-Ruhr North (11)	Germany	6.6	0.930	0.9	47.3	48.5	0		8.2
35 Bangalore	India	6.5	0.602	2.5	1.8	0.7	1	2.5	2.8
36 Hyderabad	India	6.1	0.602	1.6	1.8	0.7	0		2.8
37 Wuhan	China	6.0	0.755		6.3	2.8	0		3.4
38 Bagdad	Iraq	5.9					0		2.1
39 Kinshasa	Rep of Congo	5.7	0.385	0.3	0.1	…	0		2.0
40 Santiago	Chili	5.6	0.854	4.8	5.3	11.9	0	3.5	7.4
41 Riyadh	Saudi Arabia	5.5	0.772		6.7	13.7	2	2.5	3.4
42 Miami	USA	5.4	0.944	25.6	55.6	66.0	4	4.5	7.5
43 Philadelphia	USA	5.3	0.944	20.7	55.6	66.0	3	2.5	7.5
44 Saint Petersburg	Russian Fed	5.3	0.795	2.7	4.1	8.9	1		2.8
45 Belo Horizonte	Brazil	5.3	0.792	0.4	8.2	7.5	0		3.9
46 Ahmadabad	India	5.2	0.602	0.7	1.8	0.7	0		2.8
47 Madrid	Spain	5.1	0.928	28.9	23.9	19.6	8	5.9	7.1
48 Toronto	Canada	5.1	0.949	22.1	48.4	48.7	9	5.5	8.5
49 Ho Chi Minh City	Viet Nam	5.0	0.704	4.6	4.3	1.0	2	2.5	2.6

Blank cells correspond to lacking data. (1) United Nations (2004), estimates, million inhabitants. (2) United Nations Development Programme (2005), data for 2003. (3) Calculated from Airport Council International, data for 2002-2003, in % of London traffic. (4) International Communication Union; web users per 100 inh., data for 2003. (5) International Communication Union; personal computers per 100 inh., data for 2003. (6) Beaverstock et al. (1999); scores depend on the presence of global firms of advanced services in 4 sectors. (7) After Taylor and Catalano (2001); 10× (global network connectivity); roman: exact values (top ten cities); italic: centers of classes. (8) Corruption perception indicator, Transparency International (2005); this indicators varies from 0 (highly corrupted) to 10 (highly clean); data for 2004. (9) Calculated from Civil Aviation Authority, Pakistan, data for 2002-2003 - http://www.caapakistan.com.pk/aviation.htm. (10) Calculated from People Daily, January 16, 2001, data for 2000. (11) (3) Including Duisburg, Essen, Krefeld, Mülheim, Oberhausen, Bottrop, Gelsenkirchen, Bochum, Dortmund, Hagen, Hamm and Herne.