

Globalisation: Countries, Cities and Multinationals

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1. Introduction

Paul Krugman's 2008 Nobel prize-winning research career was built on theoretical investigations of the role played by economies of scale in the performance and behaviour of firms-industries, of countries, and of cities. Krugman's profound insights into the role of home-market effects and agglomeration are so well documented that we need not deal with them here. However, from the perspective of economic geographers, these different aspects of economies of scale lead to another fundamental question: in today's globalised economy, is the scale of a firm, the scale of a country or the scale of a city more important?

This question arises when we consider rapidly-integrating areas such as the European Union, in which the role of an individual nation-state as an arbiter of its own economic prosperity has changed over recent decades. The nature of the scale economies associated with home national home market effects obviously becomes much more complex as national borders become more porous, institutional boundaries become increasingly blurred, and multinational investment accelerates. Yet, different disciplines tend to view this issue implicitly in terms of different priorities. International business scholars (Dunning and Lundan 2007) see the size and scope of the multinational firm as being the most important issue. Meanwhile, institutional economists employing a largely aspatial perspective (Alesina and Spolaore 2005) see the size of the nation-state as being the crucial issue, which major advantages perceived for countries being small. In contrast, economic geographers tend to see the scale effects of cities and regions as being more important than the scale effects of either countries or firms (Rodriguez-Pose 2003; Scott 1998, 2001), with many of these city-regions traversing national borders (Chisholm 1990; Cheshire and Gordon 1995; Delamaide 1994). Yet, the institutional arguments would appear to be somewhat at odds with the Krugman insights regarding the home market scale effects associated with large countries. Similarly, neither the institutional nor the economic geography arguments appear to provide any real role for multinational firms. In terms of this question regarding the relative importance of different aspects of scale, the international business, institutional economics and economic geography approaches therefore appear to sit rather uneasily together.

The aim of this paper is to explain that the answer the question actually has two distinct features to it. The first feature is that the answer to this question is not static, in the sense that it depends on the time-period in question. The importance of the size of countries, cities and

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firms has changed over different eras. By taking this type of historical perspective, we are therefore able to situate the question within the current era of globalisation. This allows us to demonstrate the second feature of the answer to the question, which is that in today's world the importance of the scale of countries cannot be understood without considering the importance of the scale of the cities in the country, and in turn the importance of the scale of the cities in a country cannot be understood without considering the scale of the multinational firms in the city.

In order to explain these issues the paper integrates in a novel manner three rather different literatures and lines of inquiry, namely the literature on the optimum size of a country, the literature on historical urbanisation processes and the rise of mega-cities, and finally the recent literature on multinationals firms and global cities. By combining these literatures the paper will seek to demonstrate that the most recent phase of globalisation is challenging the modern notion of a country by redefining the relationship between cities, multinational activities and economic growth.

The paper is organised as follows. The next section discusses the question of the size of the country, section 3 discusses the historical relationship between city sizes, urbanisation and the wealth of countries, section 4 discusses the contemporary relationship between multinationals and geography, and section 5 discusses the nature of global cities. On the basis of all of the foregoing analyses section 6 then answers the basic question as set.

2. Countries and Nation States

In the late Middle Ages, prosperous cities and states were often synonymous entities. Early developments of the nation state were primarily driven by military power (Pomeranz 2000; Findlay and O'Rourke 2007), in which mutual trade between adjacent nations was relatively very limited, as countries sought to develop their own independent empires. However, since the advent of the industrial revolution the growth of urbanisation has been intrinsically associated with both increasing industrialisation and also the growth of the national-empire market. Over time, therefore, city-states and micro-states gradually gave way to the emerging nation states, which spurred the early stages of globalisation via their colonial ventures. The modern notion of a nation state is therefore primarily a result of the economies of scale and home market effects associated with the industrial revolution, and as such is also largely a product of the nineteenth and early twentieth century (Easton 2007).

In orthodox trade theory and international business theory, economists generally assume that the size of the country is exogenous, being determined by history. While much research focuses on the role played by institutions and trade barriers in promoting growth (World Bank 2003, 2007, 2008a), it is generally assumed in these models that the size and border geography of a country is given, at least for the short to medium term in which such models are assumed to operate. Yet, the above observations suggest that over the medium to long term, the number and size of countries is itself variable (Easton 2007). While the formation and fragmentation of states is central to the work of many historians and political scientists, outside of economic history such issues have tended to play almost no role in modern economics, until very recently that is.

The seminal work of Alesina and Spolaore (2005) argues that the size of country depends on a trade-off between the benefits of size versus the costs of heterogeneity. On the one hand, the benefits of being a large country relate to the efficiency gains in the provision of public goods. Indeed, empirical evidence suggests that the relative size of the public sector is inversely related to the size of the country. National size also helps with interregional fiscal transfers, both of a temporary insurance nature or of a more systematic income distributional nature, since independent states cannot be partially stabilised by other countries.

These scale benefits associated with large countries are in contrast with the benefits of being a small country, which arise primarily in an environment of preference heterogeneity. Such preference heterogeneity arises out of local variations in culture, language, ethnicity, and historical experience (Alesina and Spolaore 2005). In a context of heterogeneous preferences, the centralised provision of public goods would exhibit congestion costs and diseconomies of scale. In terms of a welfare perspective the optimum size of a country is the size which maximises the average level of citizen welfare. From this logic of Alesina and Spolaore (2005), it can be argued firstly, that the more open is a country, the smaller will be the country's optimum size. Secondly, democratisation will lead to a greater number of smaller countries. Thirdly, the greater are the heterogeneity of preferences in a country, the greater will be the pressure for fragmentation.

There is much empirical evidence from the second half of the twentieth century, a period of increasing democracy and economic integration, which prima facie appears to lend support to these claims (Alesina and Spolaore 2005; World Bank 2007). However, there are also other more recent analyses which cast doubt on the apparently straightforward nature of these arguments. Firstly, the vast majority of the world's poorest countries are very small (Collier 2006). Secondly, almost all of the rapidly growing developing countries are large countries able to sustain large home market and agglomeration effects (Collier 2006; Venables 2006; World Bank 2009). This second observation in many ways also mirrors the observation that during the nineteenth century, the number of countries within the industrialised world actually fell as countries became larger in order to facilitate economies of scale (Easton 2007). Thirdly, these arguments of Alesina and Spolaore (2005) are really about institutions, whereas modern economic geography arguments imply that the optimal size of a country cannot be divorced from the issue of the home market size and role of cities contained within the country.

3. Cities and Urbanisation

On both sides of the Atlantic, the three centuries of economic globalisation which took place from the beginning of the seventeenth century through to the turn of the twentieth century were characterised by increasing industrialisation, urbanisation, trade and economic growth. These four phenomena were completely interrelated. As such, when Alfred Marshall (1890, 1920) was writing about what we now call agglomeration effects, he was observing the culmination of a long process in which modern cities had developed as the internal engines driving the economies of the empire-nation systems of trade, resource acquisition and development (Findlay and O'Rourke 2007). In these development processes urban scale was

the key feature of economic growth and the relationship between urban scale and wealth was rather straightforward. Indeed, by 1925, all of the world's largest cities were located in the world's richest countries.

Table 1 The World's Largest Cities in 1925

As we see in Table 1, in 1925, as the dominant city of the world's dominant economy, New York had emerged as the world's largest city. It had taken over from London as the world's largest city almost exactly at the same time as USA had overtaken Great Britain as the world's richest per capita economy. Moreover, by now all of the world's largest fifteen cities were located in the world's richest and largest economies.

In the first half of the twentieth century was a period characterised by the slowing down of urbanisation processes, and this was associated with the difficult global economic environment. Since the early seventeenth century, overall levels of urbanisation (Findlay and O'Rourke 2007) and also the urban scale of the dominant cities (Chandler 1987) had always been closely associated with the level of industrialisation and wealth (Findlay and O'Rourke 2007). As economic growth and trade fell, so therefore did the growth of urbanisation. The ratio of world trade to global GDP fell during the period 1929-1950, while the ratio of foreign assets to global GDP declined from 1914 onwards, and was not attained again until 1980 (Crafts 2004; Fisher 2007). During the inter-war years, all major economies increasingly re-oriented their trade primarily to within the sphere of their own colonial systems (Findlay and O'Rourke 2007). As such, much of the twentieth century was actually characterised by long periods of anti-globalization, during which economic growth was dominated by internal growth within individual nation-states, which itself limited urban growth.

Table 2 The World's Largest Cities in 2000

During the post WWII Bretton-Woods era, the growth in urbanisation once again picked up. This post-war period also saw the emergence for the first time of rapid urbanisation in developing countries, and this process accelerated from the 1970s onwards. By the year 2000, there were over one hundred and forty cities globally with populations of over two million inhabitants, and nineteen cities with populations over ten million (Le Gales 2002). Moreover, by 2008, at 3.3 billion, the number of people living in urban areas across the world for the first time passed 50% of the global population (OECD 2007; UNFPA 2008), and this process of increasing urbanisation was common to both the industrialised (OECD 2007) and the industrialising world (World Bank 2009). As we see in Table 2, by 2000, ten of the world's largest fifteen cities were from the developing world, and this tendency towards mega-cities in the developing world was not specific to one or two countries, in that these ten cities were located in eight different countries. Moreover, all of the evidence suggests that the rate of urbanisation in the developing world will increase even faster relative that that of the developed world (UNFPA 2008; World Bank 2009), and this unprecedented urbanisation is not simply a result of population growth, in that over the same period, the global rural population is expected to actually decrease (UNFPA 2008).

In the early part of the twenty first century, as depicted in Table 2, the relationship between city size and the wealth of countries is very different to that which existed in early part of the twentieth century, as depicted in Table 1. Today, the majority of the world's largest cities are nowadays longer located in the world's most productive economies, whereas in the early twentieth century this was the case. On the other hand, as with Table 1, it is still very much the case that the world's most productive cities are currently located in the world's most productive economies. Indeed, as we see in Table 3, fourteen of the world's fifteen highest per capita productivity cities are located in the USA, with London ranked at thirteenth being the only top-fifteen city located outside of the world's most productive economy.

Table 3 The World's Highest Productivity Cities

There is clearly an important country effect operating in that the twenty-three largest urban areas of the USA all rank in the top twenty-seven most productive cities in the world. The next fifty-five of the world's highest productivity cities are all located in the high income countries (OECD 2007), including Taiwan, Israel, Hong Kong and Singapore. Therefore, in order to examine the role played by these high productivity cities in the modern economy we can also calculate their relative performance, defined as city gdp per capita divided by national gdp per capita. These relative performance scores are reported in columns four and eight of Table 3, which separately presents the results for both US cities and also non-US cities in the OECD, respectively.

As we see in columns two and six of Table 3, the majority of the world's highest productivity cities today are not what the OECD (2007) classifies as 'mega-cities' of over 7 million inhabitants. In fact, of the world's seventy-five highest productivity cities (including Singapore, Hong Kong and cities in Taiwan and Israel), 29 are what the OECD (2007) classifies as 'small metro areas' of less than 3 million inhabitants; 32 are what the OECD (2007) classifies as 'medium to large metro areas' of between 3 and 6.99 million inhabitants; and only 14 are mega-cities of at least 7 million inhabitants. If we exclude the top twenty-three cities in the US and thereby focus just on the rest of the world, of the world's 52 most productive non-US cities, 21 are small metro areas of less than 3 million inhabitants; 20 are what the OECD (2007) classifies as 'medium to large metro areas' of between 3 and 6.99 million inhabitants; and only 11 are mega-cities of at least 7 million inhabitants.

The result of this is that for OECD cities of over 1.25 million inhabitants, although it is statistically significant, there is only a very weak cross-sectional relationship between city per capita productivity and city population, and this relationship, if anything, is slightly negative (OECD 2007). This negative effect appears to be related to the effect of the very large cities, in that for OECD cities of over six million inhabitants, there is a weak but statistically significant negative cross-sectional relationship between city per capita productivity and city population. In contrast, for cities of less than ten million, there is a positive relationship between city per capita productivity and city population which is both statistically significant and strong (OECD 2007). As such, amongst OECD cities there appears to be something of a \cap -shaped relationship between city per capita productivity and population scale. Moreover, if the largest cities from developing countries listed in Table 2 were also to be included in such

cross-sectional estimations, then clearly the effect of population scale will be very much more negative amongst mega-cities than is the case with just the OECD cities.

Part of the problem here is that it is not clear which cities such be included in cross-sectional estimations. Pooled cross-sectional samples of cities from different countries will provide different overall pictures. In order to see this we can consider Table 4 which represents similar rankings to Table 3, but here the first three columns report ranking scores which are constructed after excluding all US cities, as well as former transition economy or developing country members of the OECD. The second three columns in Table 4 now also include all OECD countries, except for the USA.

Table 4 The Highest Non-US Relative Performing Cities in the OECD

If we consider the first three columns of Table 4 we see that twelve of the cities are the same as those in the second three columns of Table 3. However, the top fifteen cities in terms of relative per capita productivity in the first three columns of Table 4 are smaller on average than the top fifteen productivity non-US cities. If we now consider the second three columns of Table 4, however, we see that the rankings change dramatically, as they are now dominated by cities in the poorer nations of the OECD, some of which are very large cities indeed. Ten out of the top fifteen relative performance cities in the OECD are located in either former transition-economy countries or in developing country members of the OECD. As such, the productivity advantages associated with urban scale nowadays appear to be relatively more important for lower income than for rich countries economies.

Although the relationship between city size and productivity is nowadays not so straightforward for rich countries, there is still clearly a very important role for large cities in the industrialised world in terms of driving productivity (Rosenthal and Strange 2004). Yet, it may be that other characteristics of the city are also just as important as scale, and much recent research suggests that key centres of knowledge (Caniels 2000), creativity (Florida 2005) and innovation (Acs 2002). Amongst the rich countries, twelve out of the fifteen most entrepreneurial cities are small to medium sized cities (Acs et al. 2008), while eleven out of the world's fifteen most competitive cities are small to medium sized (Corporation of London 2008). In the European Union the contribution to GDP of cities of over a quarter of a million in population has stayed almost constant over the last decade; indeed during this period, more cities in the developed world have actually shrunk in size than the number of cities that have grown (UN-HABITAT 2008). As such, the \cap -shaped relationship between city per capita productivity and population scale may have actually shifted to the left slightly, as well as changed shape, as labour out-migration from cities specialised in declining industries gives rise to the growth of other cities specialised in growing sectors.

For advanced economies today, knowledge, creativity, innovation and connectivity, appear to be far more important for productivity than simply scale, with the result that across the OECD higher income cities are actually outgrowing lower income cities, irrespective of population scale (OECD 2007). These findings all suggest that there have been qualitative changes in the role of cities in the industrialised world which favour the competitive advantages associated with cities being centres of knowledge. As Porter (1990) points out,

however, it is not regions which compete but firms located in regions. As such, the clues as to why particular cities are highly productive lie in the types of firms which are located there.

For firms which invest heavily in knowledge assets, in order to generate the required returns to their knowledge investments, many of the knowledge-based firms located in such cities must capture markets which extend well beyond the borders of their own country. Traditionally, these returns were generated by exports. However, one of the key features of the current phase of globalisation is that there is now an increasing premium associated with face-to-face contact (McCann 2007, 2008), and this implies that the global engagement facilitated by direct international investment is becoming relatively far more important than exporting as a means of global engagement. As such, the relationship between cities, countries, and globalisation is therefore increasingly dependent on the role of multinational firms as conduits and facilitators of such global engagement. This is the issue we now discuss.

4. Multinationals, FDI and International Economic Integration

Globalization is not a new phenomenon, in that the process of investment internationalisation has been taking place over several centuries (Steger 2003). However, even today, at a global scale, domestic private investment still dominates foreign direct investment by approximately a four to one ratio, and in developing or transition countries these ratios are often significantly higher than this. As such, it might be argued that it is still the case that domestic investment issues rather than international investment issues which are paramount in understanding a country's economic growth (World Bank 2005). However, the situation is far more complex than this, because in the current phase of globalisation, foreign direct investment (FDI) which is undertaken by multinational companies is becoming increasingly critical in determining a country's growth trajectory.

Over the last four centuries each of the technological or institutional developments driving globalisation has also been associated with increasing urbanisation, and the links between trade, growth and urbanisation at various stages in history have also both challenged, and in many ways also, also defined the notion of a state (Ferguson 2008). Although the first multinational enterprises were the Dutch, British and French East India companies formed in the early seventeenth century, modern multinationals as we understand them today first arose in nineteenth century UK and USA, most of which began expanding outside of their own national and colonial systems during the first few decades of the twentieth century (Jones 1996, 2005; Chandler and Mazlish 2005). Today, there is a wealth of evidence (McCann 2008, 2009) emerging which suggests that unlike in the earlier eras of globalisation, multinational firms now play a critical role which is largely outside of the national or colonial spheres of influence of their parent countries. The reason for this is that the technological and institutional changes associated with the recent phase of globalisation nowadays make it easier than ever for multinational enterprises (MNEs) to invest in different countries and to engage in cross-border trade within their own corporate structures (McCann 2008, 2009a), irrespective of national interests of their home country.

This most recent phase of globalisation can be seen as beginning in the period 1989-1994 with the 1989 fall of the Berlin Wall and the rapid opening up of China after Tiananmen Square, the opening up of South Africa after the 1990 release of Nelson Mandela, followed by the 1991 economic reforms in India and Indonesia, the 1991 invention of the internet, the creation of the EU single market in 1992 and NAFTA 1994, and the 1993 flotation of the new Real currency in Brazil. The last two decades have seen enormous improvements in both transportations and communications technologies, dramatic increases in the openness of international capital and labour markets (Venables 2006), and the development of areas of international economic integration in which many nation-specific institutional structures are to differing degrees harmonised and merged between countries (McCann 2008, 2009a). The period since the late 1970s and early 1980s has therefore been characterised by the re-globalisation of trade and international investment (Findlay and O'Rourke 2007).

It is multinational enterprises (MNEs) which are best-placed to take advantage of this increasing global economic inter-connectedness precisely because of their specific capabilities in the arena of international investment and the cross-border coordination of commercial activities. Yet, this point regarding the centrality of MNEs in the modern era of globalisation may initially appear to be somewhat tautological or circular; while MNEs are best-placed to take advantage of globalisation, at the same time, the very firms which in many ways are driving globalisation, themselves tend to be MNEs. However, the argument is rather more subtle than this and is not tautological for two reasons. Firstly, many of the institutional and technological development initially driving the current phase of globalisation were largely independent of MNEs. For example, the enormous institutional changes associated with the opening up of China, India and the former Warsaw Pact countries were not primarily related to the behaviour of MNEs per se, but to the failure of planned economic systems in relation to the whole of the capitalist system, with its associated elements including varying degrees of democracy and freedom of the press. Similarly, many of the major technological advances now driving globalisation were not all initially developed by MNEs, the most notable being the software developed by Tim Berners-Lee which gave rise to the world-wide-web, as well as the software originally developed by both Microsoft and Google, neither of which were originally MNEs. Secondly, although MNEs are spearheading many aspects of globalisation, this process itself has several aspects to it. In particular, many of the firms which were already MNEs by the late 1980s were in an ideal position to take advantage of the new globalising opportunities, and many have done. However, at the same time, the institutional and technological changes between the late 1980s and the early 1990s allowed many more firms for the first time to become MNEs, and these newly-emerging MNEs are also driving much of the process of globalisation as well as the longstanding MNEs.

There is overwhelming evidence for the importance of MNEs in the current and most recent phase of globalisation. At the end of the 1960s there were approximately only 7,000 MNEs in the global economy, and the ownership of these firms was accounted for almost entirely by just fifteen countries. By 2006 there were an estimated 78,000 MNEs in the global economy with some 780,000 foreign affiliates (UNCTAD 2007). As such, the number of MNEs in the global economy has increased by more than eleven-fold in four decades, with the number of MNEs in the global economy currently increasing at a rate of approximately 1000-2000 per

annum, while the number of MNE foreign affiliates has been increasing by 10,000-20,000 per annum. These figures reflect that fact that foreign direct investment has been growing at approximately twice the speed of world trade, which itself has grown at twice the rate of world income (UNCTAD 2007). The levels of output, trade and employment which are associated with multinational firms have also increased much more rapidly than the growth of global trade (McCann and Mudambi 2005). Multinationals currently account for some 10% of global GDP, one third of global exports, and the sales of multinational affiliates are some two and a quarter times the scale of global exports (UNCTAD 2003, 2007).

The enormous growth in the number of MNEs during the current phase of globalisation has also been accompanied by major changes in both the composition and the modes of FDI, and the importance of particular types of MNEs. Service sector FDI now accounts for 69% of global FDI (World Bank 2005) having grown from only one quarter of global FDI in 1970 (UNCTAD 2007). In contrast, manufacturing's share of global FDI inflows has fallen from 41% in 1990 to approximately 30% (UNCTAD 2007) today, with the balance accounted for by share of global inward FDI into primary industries, which is currently little more than 6% (UNCTAD 2004). Associated with this rise of service FDI is the fact that global FDI is now dominated by mergers and acquisitions (M&As), which now account for two-thirds of all FDI inflows (UNCTAD 2007; World Bank 2007). Over recent decades the increasing levels of FDI have also been accompanied by an increasing degree of skewness in the role of major multinationals. Of the global total of 78,000 MNEs, the top 700 multinationals account for over 90% of the world's stock of FDI, nearly 50% of global trade (Rugman 2005), 46% of all global R&D expenditures, and 69% of global private sector business R&D expenditure (UNCTAD 2005). More than half of these 700 firms are in just the three sectors of IT hardware, automotive, and pharmaceuticals or biotechnology (UNCTAD 2007), and over 80% of these firms come from just five countries: US, Japan, Germany, UK and France (UNCTAD 2005). Indeed, just the largest 100 MNEs alone account for 10% of the foreign assets of MNEs, 17% of their foreign sales, and 13% of the total employment in affiliates of MNEs (UNCTAD 2007). These very largest MNEs are concentrated in industries such as finance, automobiles, pharmaceuticals, telecommunications, electronics, power, and petroleum, and the rankings and composition of the top 100 global firms have remained relatively stable over the last decade.

While multinationals are in the vanguard of the current era of globalisation, when we consider the geography of multinational activities we see that multinationals are actually primarily characterised by global-regionalism rather than globalisation. This is because the geographical patterns of their sales, investments and R&D are dominated by the same 'super-regions' or trade blocs in which their parent companies are located (Rugman 2000, 2005). For example, if we take the case of the three major global 'super-regions' of NAFTA, EU and East Asia, we find that the average same-regional sales share of the world's top 500 MNEs, is over 70% (Rugman 2000, 2005), and these MNE sales patterns are also reflected in terms of MNE investment and employment distributions (Rugman 2000, 2005). This global regionalism phenomenon is being spurred by enormous cross-border institutional changes taking place within super-regions. The number of preferential trade agreements between

countries doubled between 2000 and 2006 (UNCTAD 2007), while the number of international investment agreements (IIAs) between countries, which includes both bilateral investment treaties (BITs) and double taxation treaties (DDTs), increased from 900 in 1980 to just over 3800 in 1999 (UNCTAD 2000), and had reached almost 5,500 by 2006 (UNCTAD 2007). The geographical distribution of these bilateral institutional changes closely resembles the localised cross-border patterns of FDI (UNCTAD 2003). As such, multinational investment is nowadays characterised more as a global-regionalism phenomenon than simply a globalisation phenomenon. As the three super-regional groupings of countries increase their share of global output, global R&D and global trade (World Bank 2007; Fujita 2007a), they are also increasingly dominated by the trading relationships of the multinational firms emanating from the same super-regions.

5. Global Cities

Section 3 argues that urban scale is not necessarily an indicator of urban productivity, such that other issues are at play. Section 4 demonstrates that the role played by MNEs in globalisation processes, and most notably the role played by the very largest groups of multinational firms, is of an order of magnitude which is entirely unparalleled in economic history. In particular, the importance of these firms to knowledge generation activities is both quantitatively and qualitatively different to any previous era of globalisation, and there is no evidence that these processes will abate. At the same time, the geography of these processes has much more of regional than a global flavour to it, and this observation also provides clues as to the emerging role of cities in globalisation.

Following these various observations, the argument in this paper is that location behaviour of MNEs is crucial for explaining why particular cities are knowledge centres. The evidence comes from the economic geography literature on 'global cities' (Sassen 1994; 2002; Taylor 2004), which examines the role played by particular cities and city-regions as the principal location bases for globally connected firms. The analysis of global cities suggests that in the current phase of globalisation, the links between a city and other parts of the global economy are a key determinant of the city-region's performance. In this particular geographical literature, which draws heavily on sociological approaches, the importance and influence of a city in the global economic system is discussed in terms of the extent of its global 'connectivity' (Sassen 2002) whereby 'connectivity' refers not only to the various aspects of the knowledge and information exchanges which take place between particular locations, but also to the discretionary decision-making power to act on those knowledge exchanges. As such, global connectivity may be manifested via a variety of different mechanisms such as corporate headquarter functions, corporate decision-making linkages, human capital mobility patterns, trade linkages, transport linkages, financial linkages, and asset management roles (Taylor 2004; Sassen 2006). In the international business and international management literatures the importance of these connectivity mechanisms is more or less taken for granted (Dunning 2000), yet amongst most economists and even amongst many geographers there are still many who give little credence to these issues.

For example, if we take one particular aspect of this notion of connectivity, namely that of the relationship between the location of major corporate headquarter functions and the spatial

structure of global intercontinental airline linkages, recent evidence from European regions suggests that controlling for endogeneity bias, the supply of direct intercontinental flights is found to be a major determinant of corporate headquarter location decisions (Bel and Fageda 2008). While proximity to large markets and specialist suppliers is also important as expected, the size of the city has little if any explanatory power, and the size of the city relative to the country is not at all significant. As such, in the modern European context urban scale and national scale alone appear to be much less important as location determinants for key corporate knowledge functions than the structure of global airline networks (Bel and Fageda 2008).

Additional empirical evidence in support of these findings comes from Button et al. (1999) and Wickham and Vecchi (2008). Button et al. (1999) examined the relationship between US high technology employment and the location of hub airports. They found that proximity to a hub airport increases local high-technology employment, and the Granger causality test implies that the former drives the latter. Following the case study research of Wickham and Vecchi (2008) the reason for this is that proximity to hub airports allows companies, and small companies in particular, to easily access a much wider market, thereby reducing the constraints associated with a lack of scale. Moreover, the importance of the access to the hub airport appears to dominate any role played by local cluster institutions, a finding which is consistent with the Bel and Fageda (2008) finding that the size of the city is not significant.

Following the connectivity arguments, the reasons for these findings are that the spatial network structure of global airline system (Grubestic et al. 2008, 2009) determines the geographical patterns of knowledge flows embodied in particular high human capital individuals with the discretionary power to act on that knowledge. More specifically, the spatial network structure of the global airline system determines the ease and frequency (McCann 2007) with which business and corporate decision-makers are able to engage in direct face-to-face contact with similar decision-makers in other locations (McCann 2008; Aguilera 2008). As such, the implication of these arguments is that global hub airport functions are critical for facilitating the types of higher-order knowledge flows which result in investment decisions being made. Greater proximity to such infrastructure should increase the both the likelihood of investment being forthcoming in the nearby regions and also the resulting level of innovations generated by the regions.

Table 5 Global City Rankings

In order to provide an index of this much broader concept of connectivity it is possible to apply weighting measures and algorithms to data on these various connectivity linkage characteristics such as corporate headquarter functions, corporate decision-making linkages, human capital mobility patterns, trade linkages, transport linkages, financial linkages, and asset management roles (Taylor 2004; Taylor et al. 2008). This allows us to rank cities according to their degrees of global connectivity. Both the global-city centres of commerce rankings (Mastercard 2008) and also the rankings of global financial centres (Corporation of London 2008) are calculated in this way, and they therefore provide composite indicators of the level of global connectivity of different cities viewed from different perspectives. Not

surprisingly, there is a very close correspondence between the level of global connectivity of the cities via its multinational corporations and its GDP per capita. Of the top 50 most productive cities in the world, 35-five of them are in the top fifty of the global-city centres of commerce rankings (Mastercard 2008). If we were also to include the highest productivity non-OECD cities of Tel Aviv, Taipei, Singapore and Hong Kong³, then the number would rise to 39 out of the top 50 most productive cities in the world are also in the top 50 globally connected cities. In terms of the global financial centres, ignoring small tax havens⁴, including Hong Kong and Singapore, 30 out of the top 37 global financial centres are among the world's 50 most productive cities. Of the ten largest cities from the newly-industrialising world which from Table 9 are all amongst the 15 largest cities in the world, 9 are amongst the world's top 70 worldwide centres of commerce (Mastercard 2008), and 2 are also amongst the world's top 37 global centres of finance (Mastercard 2008).

This striking correspondence between the worldwide centres of commerce rankings (Mastercard 2008), the global financial centre rankings (Corporation of London 2008), and the world city-productivity rankings (OECD 2006), is consistent with the argument that the cities with the highest levels of global connectivity are also largely the world's most productive cities. Moreover, these observations are also entirely consistent with the argument that the performance of these global cities is largely related to the scale of the global engagement of the multinational companies located there. That is not to say that small and medium sized companies are not important for growth, nor does this imply that agglomeration is not important. On the contrary, small entrepreneurial start-ups are critical for innovation and growth, and agglomeration is crucial for promoting their success (Acs 2002). However, our arguments also imply that in the current era of globalisation the probability of success for small and medium sized firms will be higher in the very city-regions which are the most globally-connected. The reason is that the types of local spillovers which are likely to operate, mean that the export potential of non-exporters and non-multinational firms will be higher in regions which are characterised by lots of multinational firms. This is because it is multinational firms which are the primary conduits via which global knowledge flows operate and the natural channels via which domestic firms can distribute their goods (Aitken et al. 19979). As such, it is the multinational firms which facilitate and provide for regional connectivity. This is exactly what was found by Aitken et al. (1979) who demonstrated that it is proximity to multinationals, and not proximity to other exporters, which increases export propensities. Moreover, their finding was robust to the inclusion of other measures such as the overall industrial activity of the region, proximity to the capital city and border regions, and price and costs variables. More recent evidence from Sweden shows that the export propensities of non-MNEs is not only higher for those firms located in larger and denser cities, but in addition is also correlated with the degree of MNE activity in that city (Andersson 2009; Johansson and Loof 2009). As such, it is clear that urban scale is only part of the story. Global connectivity is also a critical part of the story, and one which is largely overlooked by urban economists, institutional economists, and trade modellers.

³ For our purposes we can regard Singapore and Hong Kong as city-states

⁴ Of which there are thirteen in the top fifty world financial centres

6. Are the Scale Economies of Countries, Cities or Firms more Important?

On the basis of the arguments in sections 2-5 it is now possible to reconsider the original question, and as indicated at the beginning of the paper, there are two features to the answer to this question.

The first feature of the answer to this question is that it depends on the time period we are interested in. During the early stages of the industrial revolution the size of nation states and their associated empire systems increased and the number of states declined. This was largely a result of the economies of scale afforded by the new technologies, and this process lasted right up to the eve of WW1. This period also saw the first major phase of global urbanisation, dominated by the industrialisation processes of the high income economies. The result was that by the early twentieth century, the world's leading economies contained all of the world's largest cities and largest companies. As such, during this period there had emerged a fairly direct relationship between urban scale and the performance of the economy, and this relationship emerged at the same time as the modern notion of a nation state was also emerging. City agglomeration economies were the internal engine driving each of the individual national economies, whose raw material requirements were provided for by their respective colonial arenas. As such, for two centuries both the size of the city and the country were equally important for productivity, along with firm size. However, the direct relationship between city size and national performance started to change in the middle of the twentieth century. In the post WWII era, urbanisation in terms of population scale has increasingly become dominated by the developing world, and this dominance has become particularly marked in the last three decades. Urban productivity in wealthy countries, on the other hand, is now relatively much less dominated by urban scale than in previous eras. Although cities have grown in absolute scale all over the world, most of the world's most productive cities are nowadays classed as either medium or large size cities, rather than as mega-cities. The optimum size for many cities seems nowadays to be largely equivalent to the scale of the world's largest cities in the early part of the twentieth century. Moreover, the fact that this is so both in the US as well as in other OECD countries also suggests that this outcome is not necessarily related to the size of the country. Therefore, over the last sixty or seventy years there appears to have been a fundamental change in the previously fairly direct relationship between city size, city productivity and the performance of the national economy.

Whereas up until the early twentieth century city growth was largely a matter internal to the individual nation-empire-state, today, the situation is reversed. In a world of falling trade barriers and increasingly permeable national borders, combined with falling spatial transactions costs for low knowledge activities and rising spatial transactions costs for high knowledge activities, the global connectivity of cities is therefore critical, rather than simply the scale of cities. Modern transportation and communications technologies and the ability to exploit knowledge assets globally mean that the performance of a country increasingly depends on its city-regions, whose performance in turn increasingly depends on the connectivity, global engagement and competitive performance of its multinational firms. The direction of causality is therefore becoming reversed from previous historical eras. The scale of a city-region is no longer critical in the way it was when Marshall (1890, 1920) was

writing in that larger cities are not necessarily more productive than smaller cities. Obviously, cities which are too small to provide the scale of international transportation infrastructure necessary to be part of these global networks will be unable to sustain global companies in the long term. Yet, infrastructure alone is not the answer, as there does appear to be a minimum threshold of approximately 1.5-2 million people in order for a city-region to achieve sufficient knowledge-related agglomeration effects to sustain the local multinationals. For the MNEs located in these global cities, the emerging relationships between geographical proximity, trade, FDI, and the patterns of DTTs and BITs mean that global regionalism will continue to develop around these global cities, as groups of countries located in the same parts of the world develop stronger economic integration.

The second feature of the answer to the question is that the arguments in this paper imply that in the current era of globalisation, the role of multinationals means that Krugman's emphasis on home-market and agglomeration effects (World Bank 2009) applied across super-regional areas of integration built around global cities, is a far more realistic explanation of national economic performance than the smallness arguments of Alesina and Spolaore (2005). Obviously national macroeconomic, fiscal and institutional policies are still extremely important as are cultural issues. However, the individual nation-state is in many ways becoming weaker than ever as an arbiter of its own destiny, and this weakness is magnified the smaller is the nation state (Beck 2000; Collier 2006) and the less globally connected are its cities. As such, the conclusions of Alesina and Spolaore (2005) which support fragmentation in favour of cultural heterogeneity only make sense if we assume that the fragmenting regions in question either already contain, or are in close proximity to, such global cities. Increasing independence and fragmentation without such city-regions becomes very problematic because the major effect is actually to *increase* institutional barriers to trade. Therefore, without any serious consideration of economic geography the Alesina and Spolaore (2005) arguments are reduced to a cultural-institutional twist on various fiscal federalism debates.

Finally, the fact that the geography of multinationals is characterised by global city locations and global-regional patterns of activity, suggests that globalisation has a far greater spatial logic to it than flat-earth proponents such as Friedman (2007) assume (McCann 2008). The relationship between the nation-state, the city-region and the multinational firm is the context (Storper 2009) in which globalisation processes operate, and it is a context which has not only been evolving over long historical periods, but one which has also changed radically even in the last two decades. Yet, our knowledge of these relationships is still very limited (OECD 2008). As John Dunning pointed out in his last ever publication (Dunning 2009), in order to better understand current globalisation processes, a much greater integration of the behavioural analysis of international business and multinational firms (Navaretti and Venables 2004) with the insights of economic geography is required, and this will require us to rethink many of our models and theoretical approaches to the location behaviour of multinationals (McCann and Mudambi 2004, 2005).

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Table 1 The World's Largest Cities in 1925

1925	City Population 000s (% change 1900-1925)	Country Population 000s (% change 1900-1925)	GDP \$000s (% change 1900-1925)	GDP per Capita \$ (% change 1900-1925)
New York	7774 (83.2)	116,284 (52.2)	730,545 (233)	6282 (53.5)
London	7742 (19.5)	45,059 (9.48)	231,806 (25.4)	5144 (14.5)
Tokyo	5300 (354)	59,522 (86.0)	112,209 (216)	1885 (59.7)
Paris	4800 (44.1)	40,610 (11.7)	169,197 (44.9)	4166 (44.8)
Berlin	4013 (48.2)	63,166 (87.2)	223,082 (37.4)	3532 (18.3)
Chicago	3564 (208)	116,284 (52.2)	730,545 (233)	6282 (53.5)
Ruhr	3400 (443)	63,166 (87.2)	223,082 (37.4)	3532 (18.3)
Buenos Aires	2410 (299)	10,358 (221)	40,597 (233)	3919 (53.5)
Osaka	2219 (228)	59,522 (86.0)	112,209 (314)	1885 (18.3)
Philadelphia	2085 (47)	116,284 (52.2)	730,545 (216)	6282 (53.5)
Vienna	1865 (9.8)	6582 (10.2)	22,161 (233)	3367 (204)
Boston	1764 (64.1)	116,284 (52.2)	730,545 (28.7)	6282 (53.5)
Moscow	1764 (57.5)	158,983 (27.2) (USSR)	231,886 [1928] (50.5)	1370 [1928] (10.)
Manchester	1725 (20.2)	45,05 (9.48)9	231,806 (25.4)	5144 (14.5)
Birmingham	1700 (36.2)	45,059 (9.48)	231,806 (25.4)	5144 (14.5)

Sources: City Population Data (Chandler 1987); Country Population, GDP and GDP per Capita Data (Maddison (2006)

Table 2 The World's Largest Cities in 2000

2000	City Population 000s (% change 1975-2000)	Country Population 000s (% change 1975-2000)	GDP \$000s (% change 1975-2000)	GDP per Capita \$ (% change 1975-2000)
Tokyo	29,896 (30.0)	126,737 (13.6)	2,589,320 (204)	20,431 (80.0)
New York	24,719 (44.1)	270,561 (25.2)	7,394,598 (210)	27,331 (67.8)
Seoul	20,674 (275)	46,898 (30.7)	624,582 (559)	13,317 (421)
Mexico City	19,081 (68.3)	98,553 (62.0)	655,910 (209)	6665 (29.5)
Sao Paulo	17,396 (73.2)	169,897 (56.0)	926,918 (203)	5459 (30.2)
Manila	16,740 (310)	79,376 (78.5)	181,886 (201)	2291 (12.9)
Los Angeles	15,807 (76.4)	270,561 (25.2)	7,394,598 (210)	27,331 (67.8)
Mumbai	15,769 (223)	991,691 (63.3)	1,803,172 (3.31)	1818 (202)
Djakarta	15,086 (284)	207,429 (58.9)	628,753 (3.2)	3031 (201)
Osaka	15,039 (-3.0)	126,737 (13.6)	2,589,320 (204)	20,431 (80.0)
Delhi	13,592 (309)	991,691 (63.3)	1,803,172 (3.31)	1818 (202)
Kolkata	12,619 (60.2)	991,691 (63.3)	1,803,172 (3.31)	1818 (202)
Buenos Aires	12,297 (44.7)	36,235 (39.2)	334,314 (57.8)	9219 (13.2)
Shanghai	11,960 (49.5)	1,252,704 (36.6)	4,082,513 (509)	3259 (372)
Cairo	11,633 (38.4)	66,050 (78.7)	140,546 (339)	2128 (89.8)
World [1998]		5,907,680 (45.3)	33,725,631 (202)	5709 (39.4)

Sources: City Population Data (Chandler 1987; Le Gales 2002); Country Population, GDP and GDP per Capita Data (Maddison (2006)

Table 3 The World's Highest Productivity Cities

US Cities	City Population Million	City GDP Per Capita US \$000s PPP	Relative Performance	Non US OECD Cities	City Pop Million	City GDP Per Capita US \$000s PPP	Relative Performance
San Francisco	4.2	62.3	1.72	London	7.4	46.2	1.59
Washington	5.1	61.6	1.70	Paris	11.2	42.7	1.53
Boston	4.4	58.0	1.60	Dublin	1.6	38.9	1.18
Seattle	3.2	54.4	1.50	Vienna	2.2	37.6	1.27
Minneapolis	3.1	53.0	1.46	Stockholm	2.2	36.7	1.29
New York	18.7	52.8	1.45	Stuttgart	2.7	36.4	1.34
Denver	2.3	50.8	1.40	Milan	7.4	35.6	1.29
Philadelphia	5.8	50.5	1.39	Lyon	1.6	35.2	1.26
Dallas	5.7	50.1	1.38	Munich	6.1	35.2	1.30
Atlanta	4.7	47.8	1.32	Oslo	1.7	35.0	0.95
Houston	5.2	47.4	1.31	Sydney	4.2	35.0	1.07
San Diego	2.9	46.8	1.29	Brussels	3.8	35.0	1.19
Chicago	9.4	45.6	1.26	Toronto	4.7	34.9	1.08
Los Angeles	12.9	45.3	1.25	Helsinki	1.8	34.0	1.19
Detroit	4.5	44.0	1.21	Frankfurt	5.6	33.6	1.24

Sources: Calculations based on OECD (2007 pp.38-40); OECD (2008); World Bank (2008)

Table 4 The Highest Non-US Relative Performing Cities in the OECD

Non US OECD Cities Excluding Former Transition Economies, Mexico and Turkey	City Population Millions	Relative Productivity	Non US OECD Cities (All OECD countries)	City Population Millions	Relative Productivity
London	7.4	1.59	Warsaw	3.0	1.99
Paris	11.2	1.53	Monterrey	3.2	1.98
Lisbon	2.7	1.39	Istanbul	11.4	1.60
Auckland	1.2	1.34	London	7.4	1.59
Stuttgart	2.7	1.34	Budapest	2.8	1.59
Milan	7.4	1.31	Paris	11.2	1.53
Munich	6.1	1.30	Prague	2.3	1.51
Stockholm	2.2	1.29	Mexico City	18.4	1.49
Vienna	2.2	1.27	Izmir	3.4	1.46
Lyon	1.6	1.26	Ankara	4.0	1.41
Frankfurt	5.6	1.24	Guadalajara	3.5	1.39
Madrid	5.6	1.24	Lisbon	2.7	1.39
Rome	3.7	1.21	Puebla	2.1	1.36
Brussels	3.8	1.19	Auckland	1.2	1.34
Helsinki	1.8	1.19	Stuttgart	2.7	1.34

Sources: Calculations based on OECD (2007 pp.38-40); OECD (2008); World Bank (2008)

Table 5 Global City Rankings

Global City	2004 Pop 000s	2008 Global City Index	Global Financial Centre	Pop 000s	2008 Global Financial Centre Index
London	7400	79.17	London	7400	795
New York	18,700	72.77	New York	18,700	786
Tokyo	34,200	66.60	Hong Kong	7000	695
Singapore	4000	66.16	Singapore	4000	675
Chicago	9400	65.24	Zurich	2500	665
Hong Kong	7000	63.94	Frankfurt	5600	642
Paris	11,200	63.87	Geneva	450	640
Frankfurt	5600	62.34	Tokyo	34,200	628
Seoul	23,500	61.83	Sydney	4200	621
Amsterdam	7500	60.06	Boston	4400	618
Madrid	5600	58.34	San Francisco	4200	614
Sydney	4200	58.33	Dublin	1600	613
Toronto	4700	58.16	Paris	11,200	612
Copenhagen	2400	57.99	Toronto	4700	610
Zurich	2500	56.86	Washington	5100	597

Sources: Global City Index (Mastercard 2008); Global Financial Centre Index (Corporation of London 2008); City Populations (OECD 2007); World Bank 2008)⁵

⁵ Combining the OECD (2007) metropolitan productivity data with PPP national productivity data at current prices (World Bank (2008) would also rank Singapore as the 30th highest productive city in the world, below Stuttgart and above Milan, and Hong Kong as the 48th highest productivity city in the world, below Auckland and above Hamburg.