The Great Game
Clustering in Wholesale Financial Services

DR MALCOLM COOPER

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About the Author

Dr Malcolm Cooper

Malcolm is an historian by training, and has spent his entire career in the research profession, dividing his time between academia, the City and public policy/economic development. He holds a First Class Bachelor of Arts in History from Dalhousie University, a Master of Arts in History from the University of Western Ontario, and a Doctorate of Philosophy in Modern History from Oxford University.

His thesis on the formation of the Royal Air Force was subsequently developed into a book, The Birth of Independent Air Power, and published in 1986. His early career included a Research Fellowship at Downing College, Cambridge, a teaching post at the Memorial University of Newfoundland, and management of the research programme of the Institute of Chartered Accountants in England and Wales.

He then moved into investment banking, serving as Head of Research at Carnegie International, Senior Emerging Europe Equity Analyst as S G Warburg, before ending this phase of his career as Head of Emerging Europe and Middle East Research at ABN AMRO. Malcolm then moved to the public sector, becoming the City of London Corporations first Head of Research and overseeing a programme of independent research centring on economic development, competitiveness and regulatory issues. His last post before setting up Athena was as Head of Research for the independent public policy think tank Centre for Cities.

Malcolm was the first foreigner to take up coverage of the Istanbul and Athens stock markets and spent most of his investment banking career in European emerging markets. Most of his subsequent work has concentrated on financial service competitiveness and innovation, and on UK public policy, particularly in the area of economic development within UK Cities.

Malcolm has published widely, including books on British air policy, maritime history, and auditing practices, and articles in journals ranging from International Affairs and The Journal of Contemporary History to Local Economy and The Journal of Urban Regeneration and Renewal. Malcolm commissioned and worked with Z/Yen on the Global Financial Centres Index, and has since written several pieces on the impact of the recession on financial services employment in the UK.

He has recently published 'In Search of the Eternal Coin: A Long Finance View of History' and has co-authored three papers aimed at promoting greater collaboration between the scientific and financial services communities in the increasingly important areas of forestry, water, and biodiversity and ecosystem services.

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Preface

Having been a strong supporter of Long Finance since its establishment, I am very pleased to write the preface to this publication on the subject of clustering in wholesale financial services. In it, Dr Malcolm Cooper brings both his analytical and explanatory skills to a very important subject.

I am writing this in Singapore, a tiny country that 40 years ago had the same GDP per head as Uganda. Now it is the third richest country in the world, with GDP per head of $57,238 in 2010, according to the IMF, ahead of the US, Japan, Hong Kong and Switzerland. It has achieved this success by exploiting its geographic location, the vision of its leaders and the expertise of its people. Financial services clustering on a regional – and increasingly global – basis has been one of the main drivers of this prosperity.

The UK economy dwarfs that of Singapore and London is a much longer established global financial centre. While London has taken full advantage of its time zone, acting as a bridge between Asia, Europe and North America, its other historic advantages are increasingly open to all comers: Singapore, like New York, conducts its business in English under English Law (or laws that are very similar) and uses internationally accepted standards for accounting and much of its financial services regulation. Most importantly, as an educated and experienced financial services workforce becomes increasingly international and mobile, the key 'people' factor is becoming less of a differentiator.

It is fashionable to ask whether this matters. Does the UK – or any other country – need a strong financial services industry, a sector that politicians and the public deem responsible for the economic pain of recent years. Could they not compete in other industries, such as high tech manufacturing or renewable energy? As Malcolm points out, the financial services industry – largely through the wage bill of its employees and those of the accountants, lawyers and advisors that service it – pays an awful lot of tax. Building a similar position and reputation in industries where there is considerable competition and no discernable advantage will be challenging to say the least.

Malcolm's contribution to this topic is considerable. The future may or may not be like the past but, whatever it is, we as a nation are going to have to find our place in it and – taking the long view – decide just how we are going to do this. If established centres rest on their laurels or regulate away their competitive advantage, there are myriad other clusters willing to take their place. It is an important discussion that will determine the future prosperity of many countries and, as such, it needs to be informed. In this paper Malcolm has set a very high standard for the debate.

Brandon Davies,
Board Director, Gatehouse Bank plc

Foreword

"The sun, with all the planets revolving around it, and depending on it, can still ripen a bunch of grapes as though it had nothing else in the universe to do."
Galileo Galilei

The only industry that isn't clustering these days seems to be the clustering industry. Clusters are all the rage for policymakers and are popping up everywhere. When you consider the location parameters of two similar firms – their customers, suppliers, infrastructure, people, regulation, tax and so on – it would usually seem more peculiar that they deliberately choose *different* locations, rather than that they cluster around the same location. I am, of course, ignoring excludable goods, saturated markets, monopolistic resources and a number of other issues; but it is interesting that many people seem to laud clustering as a profound insight into economic development. Thus, it is exciting for Long Finance to have Dr Malcolm Cooper challenge some of the over-simplifications and circularities in the thinking on financial clusters.

For me, perhaps the most illuminating observation in Malcolm's paper is that clustering forces may well be strongest in one of the most weightless of industries – financial services. In fact I have often wondered why there should be more than one global financial centre. Malcolm reminds us that an industry that makes money from volatility only thrives in conditions of stability, particularly political, regulatory and tax certainty. Malcolm highlights the fact that established financial centres are less prone to revolution or conquest than their rivals. I have argued that the attraction of London, historically and globally, is its tradition of 'not treating foreigners unfairly'.

Business people and policymakers talk about certainty, but they frequently confuse the desire for certainty with a desire to maintain the status quo. Business people know that rules must evolve, but want certainty about the way rules are made, changed and enforced. Business people don't mind competition, but they want to know that competition will be fair. Business people don't mind rule changes for fairer markets, but do mind capricious rule changes for electoral gain or to fill depleted state coffers.

Financial clusters seem an easy win for policymakers. They have low investment costs (mostly rewriting rule books) and attract lots of high-paying jobs (it would be interesting to see how keen they would be on developing financial clusters if the jobs they created had average pay rates). While Malcolm questions policymakers' abilities to create financial clusters, he certainly doesn't question their ability to nurture them. For policymakers in aspiring financial centres, the gauntlet that Malcolm throws down is to create a stable regime while growing. Malcolm points out that policymakers in leading financial centres must be careful not to kill the goose that lays the golden egg. The challenge for established and emerging centres is to create and maintain the conditions that will allow financial clusters to grow and flourish. It is a game that few policymakers want to lose. For both, Malcolm's paper is required reading.

Professor Michael Mainelli,
Executive Chairman, Z/Yen Group Limited.

CHAPTER 1

Financial Services Clustering: The Paradox

"In most cases, new technology has had a centrifugal effect but, despite its almost total dependence on IT, the international financial services sector has moved in the opposite direction."

In an age when every aspect of modern living has been re-shaped by the increasing power, range and sophistication of information technology (IT), the international financial services industry stands out as having experienced the most profound transformation – it is now almost entirely based on IT platforms and digital communication networks. But there is a profound paradox. In most other cases, new technology has had a centrifugal effect: members of parliament stay in touch with their constituents via websites and blogs, rather than personal appearances; many working households rarely visit a supermarket, preferring instead to shop online and have their groceries delivered; multinational companies have deliberately de-centralised management, product and supply chain infrastructure, exercising operational control through proprietary information and control systems. Despite its almost total dependence on IT, the international financial services sector has moved in the opposite direction.

The IT revolution should pose a great threat to traditional financial clusters and should already be leading to their fragmentation. With little more than a laptop and a satellite phone it is possible to carry out any financial transaction sitting on top of a mountain thousands of miles from a financial marketplace. Whilst many investors lack the physical attributes to get to the top of a mountain, they can – and do – transact their business electronically, remote from any intermediary, exchange or counterparty. Traders in most financial instruments no longer need to leave their own desks to execute client orders. A large proportion of daily volume in most large cap stocks is generated by computer programmes that react automatically to price movements, seeking to generate returns by exploiting small pricing asymmetries, trading in and out of large positions in timeframes measured in fractions of seconds. Human ingenuity is required to write and adapt the programmes, but intervention is only necessary when a systems failure needs to be rectified.

If the need for human intermediaries to interact directly with each other was the first pillar of pre-computer financial clustering, the need to access market-relevant information was the second. The desire for timely and reliable information – one of the two raw materials of financial markets, the other being capital – was the driving force behind the formation of the first modern exchanges in the late 17th century. Both Lloyd's of London and the London Stock Exchange had their origins in City coffee shops where market participants would seek and exchange information on investments and the news that affected their value.

Information is now distributed worldwide in something very close to real time. Not only is this information accessible from just about anywhere, there is a great deal more of it. Regulatory demands have produced more detailed, regular and dependable dissemination of data on financial strength, operational performance and an increasing array of other disclosures, from directors' remuneration and share dealings to environmental impact assessments. Information itself has become a global market, occupied by the large data providers such as Reuters and Bloomberg and a host of specialist consultancies operating in almost every corner of the investible universe.

An unstoppable force?

In an environment where markets seem close to becoming 'weightless', location and distance should logically have become far less relevant. Traditional international financial centres such as the City of London and Wall Street ought to have been fragmenting or fading away. In fact, the opposite has occurred: large, highly concentrated financial centres have become increasingly global in their reach, growing at the expense of smaller regional competitors.

Market share figures for London, the world's largest and most competitive international financial centre, are particularly compelling. London emerged as a global financial centre because of its place at the centre of the largest colonial empire and trading network in the world. Whilst these factors are no longer present, London has maintained its financial primacy. Its share of international foreign exchange markets, for example, is 37% – larger than its two closest rivals, New York and Tokyo, combined; its share of over-the-counter (OTC) foreign exchange derivatives is 46%; the London Stock Exchange has more foreign listed companies than any other exchange in the world; and the London Metal Exchange is the largest non-ferrous metals exchange, while other institutions occupy leading positions in equity options and electronic trading for global energy markets.[1]

"London emerged as a global financial centre because it was the centre of the largest colonial empire and trading network in the world and, whilst these factors are no longer present, the City has maintained its primacy."

The continued strength of London's international cluster is clear from the competitiveness rankings in the Global Financial Centres Index (GFCI). London's score of 775 is more than 100 points above that of Chicago in 7th place, 150 points above Vancouver (22nd place), 200 points above Sao Paulo (44th place) and 250 points above Buenos Aires and Lisbon (equal 64th place). Only New York with 769 points and Hong Kong with 759 are within 50 points of London (although Singapore in 4th place falls short by only 53 points).[2] London has maintained its top ranking since the GFCI was launched five years ago, despite the physical and reputational damage caused by the financial crisis of 2007-2008.

A final measure of London's continued strength as a global financial centre is its banking sector. UK banking sector deposits are the third largest in the world, despite it having only the sixth largest economy. Half the deposits are managed by foreign banks which had 241 branches and subsidiaries in London in 2010. The combination of domestic strength and foreign presence meant the UK banking sector was responsible for 18% of cross-border lending, the largest share of any country in the world.

Lessons from history

London's continued primacy appears to present a second paradox. The City's rise to global dominance was achieved on the back of Britain's emergence as a great power in both economic and political terms. The core institutions of the 18th and early 19th centuries – the London Stock Exchange, the merchant banks, discount houses and the Lloyd's maritime insurance market – all rose to prominence as British naval power cleared the way for the nation's merchant fleet to dominate the expanding ocean trade routes. The Industrial Revolution transformed its economy into the 'workshop of the world', producing a mass export trade and generating large surpluses of capital for re-investment at home and abroad. Finally, having lost much of its first overseas empire as a result of the American War of Independence, Britain built up a second, far larger one over the course of the 19th century, including the entire Indian sub-continent, Australia, New Zealand and more than a third of Africa. It played the leading role in the western penetration of China, gaining a strategic base in Hong Kong, and building up significant trading networks based around Treaty Ports such as Shanghai and Ningpo. By the late 19th century the City was not only operating as the financial hub of this vast portfolio of home-controlled markets, but as a platform from which British capital could be deployed to finance a multitude of enterprises around the world.

Britain's global economic position deteriorated dramatically in the first half of the 20th century. Other countries, notably the United States and Germany, began to challenge her industrial competitiveness, and although the First World War temporarily removed Germany from the scene, it severely dented Britain's economy while stimulating acceleration in the US. British industry was only beginning to recover from the ravages of the Great Depression when the Second World War broke out. Britain's fiscal resources were rapidly depleted after its main European allies were defeated by Germany and, even before the US entered the war in late 1941 it was already subsidising the British war effort via the Lend-Lease programme, which grew steadily until victory was achieved in 1945.

Although the domestic economy gradually recovered in the 1950s, it was never more than a shadow of its former self. The dramatic implosion of Britain's colonial empire in the post-war period, led by India achieving independence in 1947, continued to weaken the UK economy. Residual assets such as a large merchant fleet and a number of large, well-established multinationals delayed the inevitable, but by the 1960s most of the actors that had originally supported the City's position at the centre of the world's financial system had departed.

Far from losing its position, the City's role as leading actor became more complex and more prominent. London became the centre of the new Eurobond market, due in no small part to the fact that there were large dollar deposits held in European banks to avoid potential US political risk. The first Eurobond, an international bond denominated in a currency foreign to the country in which it is issued, was a \$15m six-year loan arranged by SG Warburg for Italian motorway operator Autostrade in 1963. As foreign exchange controls were progressively lifted during the 1970s, the City emerged as the largest player in a rapidly growing market that is now approaching an average daily turnover of \$4 trillion.

"British-owned investment banks were swallowed up in the 1980s and 1990s by foreign rivals, but the re-branded institutions remained firmly anchored in a financial cluster whose global reach was enhanced by the multinational nature of its ownership base."

The 'Big Bang' de-regulation of 1986 was another boost to London's primacy. Foreign banks, particularly from the US, arrived in the City in increasing numbers but rather than divert business back to their home country, they sought to establish a position in the London market. While the bulk of the British-owned investment banking sector was swallowed up over the next decade by these new arrivals, the re-branded institutions remained firmly anchored in a financial cluster whose global reach was enhanced by the multinational nature of its ownership base.

A vision of the future

So why has London's financial services sector continued to cluster – at an increasing rate – in the face of a technological revolution that should not only be weakening the forces that grew its clusters together in the first place, but appears to offer obvious advantages for de-centralisation? Why have the two pillars of the old financial order, London and New York, retained their position as the world's premier global financial clusters in the face of the re-balancing of the world economy triggered by the rapid growth of 'new' economies, in particular those of China and India?

This paper will address these apparent paradoxes through a multi-level analysis of international financial services clustering. We will begin with a brief summary of cluster theory and its application to financial services before attempting a more detailed analysis of financial clusters by building a stylised model of the factors that contribute to their formation and fragmentation. Today's financial universe is a product of its history, so we will therefore follow our modelling exercise with an historical survey, beginning with the medieval banking institutions to which 18th century institutions such as discount houses and stock exchanges can trace their roots (though the history of financial intermediation in cities dates back through the Bronze Age).

We will combine the results of our cluster modelling with our historical analysis and apply it to the contemporary global financial centres universe as defined by the GFCI. We will pay a great deal of attention to London, not because of any attempt to produce a definitive analysis or health-check on the City, but because London, as the world's first global cluster and its leading global cluster today, provides the most obvious point of reference for charting financial cluster growth and competition.

CHAPTER 2

Cluster Theory: The Basics

Although its intellectual roots stretch back into the late 19th century, the concept of the industry or business cluster was developed and popularised by Harvard academic Michael Porter in his 1990 study *The Competitive Advantage of Nations*.[3] Porter defined clusters as:

"Geographic concentrations of interconnected companies, specialist suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standard agencies, and trade associations) in particular fields that compete but also co-operate.

A cluster is a form of network that occurs within a geographical location, in which the proximity of firms and institutions ensures certain forms of commonality and increases the frequency and impact of interactions."[4]

There is now an extensive library of work to describe what is a very simple premise. Businesses in the same field will tend to cluster together in places where resources and location offer competitive advantages. These businesses will in turn attract interconnected support industries and the overall effect will be to increase cluster productivity, stimulate innovation and act as a magnet for other firms in the same sector seeking to benefit from these advantages.

In its most basic form, this sounds obvious. Hybrid disciplines – economic geography in this case – sometimes strain to develop theoretical frameworks to guide their research, which can produce highly suspect generalisations, such as the assertion, taken from the introduction to Harvard's own Institute for Strategy & Competitiveness website, that "clusters arise because they increase the productivity with which companies can compete."[5] This statement might be mixing cause and effect. Clusters emerge because of a combination of economic, business and human factors, which in turn improve productivity, which then sustains cluster growth.

> "Any systematic survey of the emergence of clusters would make it clear that the only safe generalisations that can be made is that they are driven by a mixture of geographical, resource, technological and trade factors."

Much of the impetus for the development of the industrial clusters of 19th century Britain came from the exploitation of steam power, with the result that the clusters themselves grew up close to the country's major coal deposits in the North of England. The critical second stage followed in which specific industry-centred clusters emerged, for reasons that were partially geographic and partially historic. Yorkshire became the centre of an industrialised wool industry that had its roots in pre-industrial wool production, while Lancashire, with better access to the great trading port of Liverpool, became the centre of a cotton industry entirely dependent on imported raw cotton.

Any systematic survey of the emergence of different clusters in different industries over time would make it clear that the only safe generalisations that one could make on the emergence of clusters is that they are driven by a mixture of geographical, resource, technological and trade factors, and that, in the case of the last of these drivers in particular, the role of the state has been important. In the pre-modern era, the state generally shaped clusters through protectionism and restrictions on trade, while in the colonial era the development of industrial clusters was tied closely to state control and exploitation of overseas markets. The Lancashire cotton industry is a case in point: much of its imported cotton came from British-controlled India, while the same colony was a major market for finished goods. Taking all this into account, it would seem safer to modify the original assertion and posit that clusters grow rather than arise because of benefits of co-location. These benefits include economies of scale, the concentration of supporting infrastructure, the ability to attract both labour and talent and the impact they have on accelerating the diffusion of technology and ideas.

It is important to point out that much cluster analysis depends heavily on '20:20 hindsight'. In the 1880s the financing of British enterprise in India was heavily clustered on the west coast around Liverpool and the Lancashire cotton industry, and the east coast around London, home to the successors of the now defunct East India Company. A decade before, however, Glasgow was pressing hard for financial primacy, particularly in the development of industry in India's major west coast port, Bombay. The collapse of the City of Glasgow bank in 1878, brought on largely by over-speculation in colonial investments, effectively destroyed Glasgow's international financial cluster and ended its involvement in foreign trade finance. There was nothing inevitable about Glasgow's fall: it was the product of bad management by a small banking elite and the failure of counterparties to protect themselves with limited liability.

What is a cluster?

Two specific issues involving the application of the clustering concept are worthy of special notice. First, it can be easy to confuse clustering with what is actually ongoing urbanisation. Cluster theory makes a great deal of the agglomeration benefits of clustering, which sees the growth of individual clusters producing growth in other industries, but this is a chicken and egg situation. The extent to which industry clusters stimulate urban growth, as opposed to being attracted to a growing metropolis, is a function of the relative maturity of the economy in question. While the growth of high-tech industry in Bangalore might fall into the first category, the growth of similar companies along the M4 corridor between London and South Wales is clearly in the latter.

The financial services industry provides an excellent example of apparent clustering actually being the result of urbanisation. Financial and related business services are the largest private sector employer in every sizeable British city. In most cases, however, they are there simply to meet the needs of the population, and are no more clusters than general retailers on the High Street. Regional clusters do exist where the combination of attractively priced office space and an educated workforce has pulled together groups of call centres and asset-servicing facilities, but these lack many of the dynamics of true financial clusters.

The work of scholars in the late 1990s helps identify different theoretical models of clustering. A particularly useful piece of analysis identified three distinct cluster models. Two were derived from conventional economic thinking which defined clusters either as 'pure agglomeration economies' or in terms of an 'industrial complex', a form of geographic concentration of a traditional input-output model. The third was a 'social network' model, with its intellectual origins in the field of sociology, defining a cluster in terms of a network or 'club' in which the dominant drivers were essentially human.[6] This typology is extremely useful, not because it is usually easy to fit a given cluster into one category or another, but because it provides a simple way of classifying and measuring the relative importance of inputs that are likely to be present in most well-developed clusters.

The visible hand

The second issue involves attempts to create clusters through public policy intervention. 'Cluster policy' has become one of the major tools of economic development programmes. In

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the UK, the New Labour government expended considerable time and money attempting to create new business clusters as part of its regeneration agenda. The returns have been mediocre at best.

The bulk of the 'clusters' incubated were extremely small and only a minority have shown signs of sustainable growth, generally because of a failure to take into account the full range of factors affecting cluster development. Clusters depend on the existence of economic pre-conditions and will only succeed if they generate a viable and self-sustaining mixture of economic and social inputs and outputs. In the absence of such factors, they are highly unlikely to take root, let alone flourish. It is insufficient to identify a broad industrial grouping such as life sciences as a growth area and then attempt to spin off clusters from any university with some expertise in the subject.

We will apply these lessons to the new international financial services clusters that have sprung up over the past two decades as a result of state intervention to attract inwards investment, normally through the provision of tax incentives and the development of an undemanding regulatory regime. These new centres were tested to a greater or lesser extent by the Credit Crunch of 2007-2008.

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CHAPTER 3

The Modern Cluster: A Stylised Model

The most comprehensive academic study of financial services clustering, *Financial Services Clustering and its Significance for London*, is the starting point for our analysis of cluster dynamics. Written by academics from Loughborough University and the University of Manchester and published by the City of London Corporation in 2003, the report takes an orthodox, Porter-driven view of clustering to produce a reasonably sophisticated supply and demand model of clustering:

"On the supply side, large and complex financial services firms need access to large pools of specialised labour. Thus we observe that investment banks are almost exclusively based in financial centres such as London, New York and Frankfurt. This point is reinforced firstly by the fact that financial services skills are in large part acquired by shared experience... and secondly by the increased pace of innovation in financial services. This has further raised the importance of tacit knowledge, which is more easily exchanged when agents are geographically close...

"Another supply-related explanation for clustering arises from the reliance of financial services firms on a vast array of supporting services... and again these are most prevalent in major financial centres. Related to this, the co-location of associated markets... leads to economies of agglomeration resulting in improved flows of information, greater efficiency and higher liquidity. The importance of economies of scale has also increased in recent years, driven by the increased use of information technology. This new technology has enabled rapid innovation following a pattern... in which financial services innovation occurs in a 'reverse product cycle' manner (that is, the process of innovation is preceded by the adoption of new technologies developed in other sectors).

"Three distinct characteristics of services in general – that they are consumed simultaneously with their production, cannot be stored and are intangible – imply an extensive producer-consumer relationship and underlie many of the demand-side benefits of financial services clustering... Thus we observe new entrants preferring to locate in recognised financial districts. Also, the bespoke nature of some financial services... requires a close supplier/customer relationship built on the trust that can only be generated through frequent face-to-face contact. The producer-consumer relationship can also be a major source of innovation. Finally, positive reinforcement can be observed. Liquidity attracts further liquidity building the cluster's reputation as it grows."[7]

While this analysis provides a fair description of how financial service clusters function, it is less convincing on the dynamics that govern competition between them, and thus ultimately fails to fully explain the process of clustering itself. To do so it is necessary to look at each of the dynamic constituents of global financial clusters in depth and explore how they interact with each other to determine both competitiveness and durability. We have identified ten features that define a cluster:

1. Specialisation

Specialisation is the central component of any cluster. It can be broad – wholesale financial services in London – or narrow – private banking in the Swiss financial centres – but it defines the industry or service in which the sector competes. Specialisation is also a useful tool for identifying smaller competitive clusters within large urban economies. It would make little sense to claim that London has a retail cluster, but it could be argued there is a fashion cluster in the West End or a jewellery cluster around Hatton Garden. It is important to point out here that there are some industries where clustering is simply not an issue, such as UK food retail, which is dominated by four large companies but by its very nature not clustered.

"Specialisation is the central component of any cluster. It can be broad (wholesale financial services in London) or narrow (private banking in Switzerland) but it defines the industry or service in which the sector competes."

Beyond general specialisation in wholesale financial products there is a level of narrower specialisations. The full range is too wide to be listed here, but it includes equities, bonds, derivatives and commodities. Two characteristics of global financial clusters are that they deal in a common range of financial products and use a common language to describe them, though the composition of individual clusters will feature a mix of specialisations. London, for example, is the world leader in non-ferrous metals trading (90% market share), international bonds trading (70%), over-the-counter (OTC) interest rate derivatives (46%) and foreign exchange trading (37%).[8] London's nearest rival, New York, enjoys a huge advantage in equities trading, in part because of its advantage in foreign equities trading, but primarily because Wall Street is the centre of a domestic equities market that dwarfs its British equivalent.

The Global Financial Centres Index (GFCI) employs an extremely useful methodology of classifying second tier global financial centres in terms of their depth or breadth. There are three categories:

- Clusters that are both deep and broad.
- Clusters that are deep.
- Clusters that are broad.

"Financial services are transactional and revolve around intermediation. This distinguishes them from other industry clusters, where the driving forces are more likely to be access to resources, a common product or highly specialised innovation."

Centres in the first two categories pass a simple test of clustering. To achieve their classification, they must be attracting and maintaining participants who both seek and benefit from co-location. Those that are simply broad do not necessarily past the test. Most are the business (and often the political) capitals of the country in which they are located. In many cases, the range of financial services activities there is simply the product of there being no alternative national location, as is the case for Athens, Helsinki, Oslo and Vienna, where these cities are the major national centre for almost all economic activity.

2. Marketplace

The marketplace is the key feature of any financial cluster. Financial services are transactional and revolve to a considerable extent around intermediation. These properties distinguish them from most other industry clusters, where the driving forces are more likely to be access to resources, a common product or highly specialised innovation. Before the IT revolution the marketplace was a physical entity and, in larger centres, an interconnected web of entities. The usual core of any financial centre is the exchanges on which instruments such as equities, bonds, derivatives and foreign currencies can be traded. The degree to which these are integrated is variable. In London, for example, the equities, derivatives and foreign exchange markets are inter-related, with price movements on one likely to have an impact on the others, while the re-insurance market built around Lloyd's of London is related to other insurance and re-insurance markets, but not directly to the other exchanges.

All large international financial services centres are based on exchanges, but they can also have satellite clusters with other specialisations. Edinburgh, for example, is an international centre for fund management, pensions and insurance, but it is effectively a satellite of London, where most of its constituents actually transact their business. Another class of satellite provides a specialised service to a range of larger centres. Examples include the extremely strong private banking centres of Zurich and Geneva (which normally rank about 10th in the GFCI), and offshore centres such as Jersey to

Mauritius, whose prime functions are related to the provision of liberal taxation and regulatory regimes. Interestingly, all the major offshore centres are, or were, British possessions.

It is necessary to distinguish between an exchange and a marketplace. An exchange is a physical entity with physical infrastructure that is not readily moved. A marketplace is, and always has been, effectively weightless – its existence depends on the choices made by market participants. Companies can and do de-list on one exchange and re-list on another, or list on more than one exchange simultaneously. Investors can choose the markets on which they wish to do business, while intermediaries deploy their resources in line with the choices made by their counterparties.

This distinction is critical to understanding the fierce competition between exchanges, many of which are now listed companies and are increasingly fighting for a share of a single global marketplace. While the exchanges attempt to achieve dominance through mergers and takeovers, the overwhelming importance of the marketplace makes it questionable whether the mega-mergers currently being attempted are actually worth it. Technology ultimately benefits the investor and, as one consultant recently quoted in The Economist put it, "technology has made the idea of a global exchange questionable rather than compelling".[9]

"While exchanges attempt to achieve dominance through mergers and takeovers, the overwhelming importance of the marketplace makes it questionable whether the mega-mergers of exchanges currently being attempted are actually worth it."

If a given city has no financial marketplace and it is not part of the global infrastructure of wholesale financial centres, then it does not really possess a financial cluster. Financial services is one of the largest private sector employers in every British city, but in most cases employment is made up of a mixture of retail financial services to meet the needs of the local population and, particularly in lower cost cities away from London and the South East, back office and support functions. The Leeds city area, which stretches across the bulk of Yorkshire and combines ten separate local authorities, claims to be the second largest financial centre in the UK after London, but it is nothing of the sort. It is simply the second largest employer of people working in the industry, the bulk of whom work in regional headquarters, telephone contact centres and back office administrative facilities.

We will return later to the larger question of the extent to which the IT revolution has transformed the physical structure of markets. For now it is only necessary to make two points: international financial centres have existed on a continuous basis in Western Europe since the Middle Ages; and these centres have always interacted with each other and with their clients over considerable distances. This brings us neatly on to the second key feature of any financial cluster: connectivity.

3. Connectivity

While a variable – and often quite significant – proportion of the transactions conducted within a financial cluster are internal, the cluster itself would not exist if it was not connected to a wider universe. Connectivity can be broadly defined as a measure of the volume of trading and the transmission of information between centres. These now almost entirely depend on IT, but connectivity retains a distinctly human side through a steady two-way flow of visiting market professionals. All financial centres have a web of connections linking them with market participants in their own country, but an international financial cluster's competitiveness is based on the strength and breadth of its connections to other clusters around the globe.

Connectivity has two particular dynamics worthy of comment:

- The physical constraints or advantages arising from the level of its own IT capacity, such as its bandwidth and power supply.

- Second are time and time zones. Most markets have regular opening hours and, even if a great deal of work is done outside these hours, it is only when market time zones overlap that it is possible to have same-day connectivity. Historically London has been the major beneficiary of this as the beginning of its business day overlaps with the end of the business day in the Far East, while the closing hours of its exchanges overlap with the opening hours of their counterparts in North America. The major exception is the global foreign exchange market, which operates on a 24/5 basis, although the bulk of trading activity falls within normal working hours of the three major markets and these are the critical times for establishing market momentum.

4. Critical Mass

Any marketplace only becomes viable when it attracts a sufficiently large number of participants. It is important to get the chain of causation correct here. It is not a matter of building a market and then attempting to attract participants, rather market formation arises as a result of participants congregating because of a shared desire to trade and the possession of a range of goods, services and financial resources that are of interest to counterparties.

> "It is not a matter of building a market and attempting to attract participants. Markets form when participants congregate because of a shared desire to trade and the possession of a range of goods, services and financial resources."

To become an established institution a market must achieve critical mass. When it does, it begins to attract new customers and develop an infrastructure to support and facilitate higher volumes of trade with greater certainty and security. In this context, we will see that early European financial clusters grew out of the medieval textiles trade. Textiles were easily the most heavily and widely traded goods in the Middle Ages, and the development of critical mass in financial services was a direct result of successful textiles merchants capitalising on their accumulated wealth and trading networks to diversify into banking and trade finance.

Critical mass is the most important factor driving certain financial clusters into positions of competitive superiority over others. Once achieved, it accelerates the formation of market institutions and attracts supporting businesses that add to the attractiveness of the cluster. The same achievement often weakens rival clusters, whose participants begin to migrate to the larger marketplaces. While financial market forces are very important in determining the route of travel towards or away from critical mass, they have always been heavily influenced by political and geographic factors. The most salient example is London, whose rise to a position of global dominance in international finance was directly connected to the emergence of Britain as the world's first superpower. Critical mass is one of the most important reasons why the City has remained the premier global financial centre, despite the UK shedding most of the political advantages that supported its growth.

5. Liquidity

Liquidity is the ultimate measure of critical mass and thus of cluster strength. The most basic definition of liquidity is the volume of assets that can be traded without the trade itself having a significant impact on price. In equity markets, for example, it is broadly determined by the range and size of the companies listed and, more critically, by their free float – the percentage of shares that are not held on a long-term basis by an owner who is unlikely to sell.

In large, mature western markets, most listed companies have very high free floats. This tends not to be the case in less developed or relatively new markets, which are dominated by companies in which the state or the original private owner has retained a large enough stake to control the company. If the company has been listed to raise a relatively limited amount of new capital, or even just its profile, the free-float can be very small in percentage terms. Low liquidity is behind the relatively low ranking of the financial centres of some of the world's larger countries in the GFCI. The 'BRICs' (Brazil, Russia, India and China) provide a good example: Sao Paulo ranks only 44th and Rio de Janeiro 50th, while Mumbai and Moscow are 58th and 68th respectively.[10] China's clusters are more highly rated, though it is worth noting that Hong Kong's third spot is in no small measure due to its history as a British Dependent Territory and Shanghai's fifth spot a legacy of its role as a Treaty Port.

"Liquidity pulls new participants into a financial cluster. Companies will seek listings on highly liquid exchanges to access deeper pools of capital, while investors gravitate towards the same markets to trade quickly and in volume without distorting pricing."

Liquidity across all asset classes is essential to sustain a global financial centre. It is no coincidence that the three established global centres before the rise of the new markets of Asia were London, New York and Tokyo, which between them accounted for roughly two thirds of all world foreign exchange turnover. Forex markets are extremely important because of their sheer size. In London the daily average forex turnover in the fourth quarter of 2010 was £1.8 trillion, compared to just £882 billion for UK equities. The rapid growth of derivatives, particularly OTC derivatives, in the past two decades has reinforced the liquidity advantage of the established centres, as the derivatives are based on assets, such as equities, foreign exchange and commodities, that are themselves traded within the same cluster.

Finally, liquidity is the most important magnet pulling new participants into a financial cluster. Companies will seek listings on highly liquid exchanges to access deeper pools of capital. Investors will gravitate towards the same markets because of a desire to be able to trade quickly and in volume without distorting pricing. Intermediaries, particularly market-leading investment banks, will establish a presence in as many of the world's largest financial centres as is necessary to support their own principal trading activities, to win initial public offering (IPO) and mergers and acquisitions (M&A) mandates, and to provide broking, research and new product development services for institutional investors. Liquidity is also the force that pulls industrial participants, such as those with large commodity or foreign exchange exposures, directly into the financial cluster. If the marketplace is the nervous system of a financial cluster, then liquidity is its blood supply.

6. Skills

Public perceptions of those employed in financial services have always tended towards caricature. The bowler-hatted, be-suited gentleman of the mid-20th century, whose day revolved around lunch, has given way to an unsavoury and irresponsible risk taker with an excessive lifestyle, who earns huge bonus payments for making huge bets with other people's money. This report is not the place to debate investment banking models or bonuses – the point is that these highly-charged images have obscured two of the most important characteristics of global financial clusters: they employ large numbers of professionals with specialised skills unparalleled in any other industry sector; and they play a vital role refining the specific skills required in the sub-sectors of the cluster. While financial clusters are tied into networks of universities, think-tanks and other repositories of skilled labour, it is the cluster itself that turns the potential financier into a professional who can be trusted with a job every bit as difficult as flying a jet aeroplane.[11]

Given that financial markets are now so highly IT-intensive, it might be thought that there would be less need for human skills. The opposite is true. While IT has reduced the need for manpower in many basic administrative tasks, this has been more than balanced by the range of opportunities that have been opened up by digital technology. However advanced its applications have become, IT is still largely an enabling and enhancing tool that requires the application of human ingenuity to add value. This has opened the door for people with skills not traditionally associated with financial services. For example, constructing vendible derivatives is a competitive business that requires people with the mathematical skills required to build complex algorithms. As a result there has been extensive recruitment of graduates with degrees in mathematics and physics, and calls from the financial services industry for universities to increase their teaching capabilities in these subjects. Similarly, structured products require financial expertise and the accounting and legal knowledge necessary to construct products that comply with tax and regulatory requirements in multiple jurisdictions.

Ultimately, a financial cluster is only as good as the people who work in it. In an era when inter-firm job mobility has become the norm rather than the exception, financial services stand out as a sector in which the rate of employee turnover is exceptionally high. Today, the word 'mercenary' has pejorative connotations, but this has not always been the case. There are clear parallels between the experienced specialist financial services employee of the pre-2008 bull market with the Swiss pike men and halberdiers who dominated the battlefields of Western Europe in the 15th and 16th centuries. Both groups possessed highly sought after skills that were in sufficiently short supply for employers to pay premium rates. Both entered a contract in which the guiding principle was profitable employment, not loyalty. As a result, both groups were highly mobile and selective in their choice of employers.

"The market for experienced financial services employees is global and highly competitive. The continued cohesion of a cluster is dependent on its ability to attract the best talent when it wants it."

Both professions have their downsides. In the case of the Swiss pike man it is a matter of life and death – there was a fairly high chance of being killed. The downside for today's investment banker is less obvious, especially to those outside the industry. In the first place, the physical and mental demands of the higher value-added jobs are immense. Employees are paid very well, but they work exceptionally long hours and make extremely important decisions in rapidly moving and very stressful circumstances. Second, employer to employee loyalty is no higher than it is in the other direction. With profitability driven by turnover and turnover subject to considerable fluctuations, employers frequently resort to significant and sudden downsizing. Most employees will experience one or more redundancies or forced job changes during their career. Here the cluster often comes to their assistance as most new opportunities will be found within it.

The market for experienced financial services employees is global and highly competitive. The continued cohesion of a cluster depends on its ability to attract the best talent when it wants it. Employees are not robots, nor are they all driven entirely by the size of their pay packet – quality of life and diversity of its social milieu plays an important part in determining the attractiveness of a given centre as a place of employment. So too does its reputation. Established global leaders like London and New York enjoy a considerable advantage in the job market because both are global multi-cultural cities with many amenities, but they also attract professionals from all over the world who want the City or Wall Street on their CV. A successful cluster is always likely to have a floating population of foreign nationals who intend to spend three to five years working there before deciding where to put down roots. The advantage their presence gives to the cluster was neatly summed up by a respondent to a study of London's international competitiveness: "If you want a Greek quant, you'd look in London, not Athens."[12]

7. Tax, Regulatory & Legal Environment

Measuring the impact of the business and legal environment on financial clusters is complicated because the environment itself is multi-dimensional. Three external factors have the biggest impact on cluster competitiveness: the tax regime, both corporate and personal; the regulatory environment; and the wider legal system. Tax and regulation are important variables and are subject to change – to the benefit or detriment of a cluster – depending on which way the political wind is blowing. The legal environment, however, is the foundation on which a functioning economic system is built and certainty over the legality and enforcement of contracts is one of the most important building blocks for any financial centre. While it is important to avoid generalisations here, it is possible to construct a fair summary of the optimal mix from a financial markets perspective.

All businesses want low taxes on their earnings, but this does not mean they will rush to re-locate simply because of the tax regime. Financial services companies will bear the burden of taxation as long as it is broadly in line with that of equivalent centres. They will also place a high value on consistency in the tax regime and on the tax authorities not behaving in an overly intrusive or arbitrary fashion. All industries want a degree of certainty in taxation, but financial services firms also run the risk of being treated as cash cows with their earnings tapped by extraordinary industry levies when profits are high. Given that most large financial companies are multi-nationals with some scope for keeping their tax bills low by allocating income to different operating sub-units, there is often greater concern about personal taxation than its corporate equivalent. A significant percentage of the sector's workforce is professionally mobile and will take close account of the way their earnings will be taxed when calculating the net benefits of where to work.

"Given that most large financial companies are multi-nationals with some scope for keeping their tax bills low by allocating income to different operating sub-units, there is often greater concern about personal taxation than its corporate equivalent."

Whilst most companies can manage their tax exposure, the same cannot be said about regulation, which has become something of a one-way street for the leading global financial centres over the past two decades. In the UK, the major regulatory impetus has come from the European Commission with new directives aimed at constructing a single level playing field across the EU. They have, however, failed to create a single European market in financial services and their impact on the industry has been to impose heavy cost and time burdens and restrict flexibility and innovation. This has been most keenly felt in the City, which originally had a more liberal regulatory environment than its continental rivals. Despite a reputation for laissez-faire capitalism, the US has always had a more interventionist regulatory environment. The federal government is prone to react to perceived problems with sweeping legislation that might be characterised as 'shoot first, ask questions later'. The second Glass-Steagall Act of 1933, which imposed a separation of commercial and investment banking, is the best-known example and was not repealed until 1999. In addition, the national regulatory body, the Securities & Exchange Commission (SEC), created in 1934, has long maintained a more intrusive and demanding regime than its European counterparts.

Before the emergence of a multi-centred global financial centres environment, the dominance of London and New York was such that the damage from regulatory intervention was limited, with a more liberal City generally being the beneficiary of restrictions on Wall Street. By the 1990s, however, cross-border regulatory arbitrage was becoming a global phenomenon. In addition to the traditional use of tax incentives, national governments seeking to build global financial centres from the bottom up have made increasing use of liberal regulatory frameworks and practice to attract business away from established markets. Resorting to such arbitrage has obvious dangers and mainstream market participants have generally treated it with caution, if not outright disdain. One contributor to GFCI 9 put it bluntly: "I think that competition between locations from a regulatory perspective could be damaging to the overall financial services industry."[13]

The Credit Crunch made it obvious that a pre-requisite for success in the regulatory arbitrage game was deep enough pockets to weather a structural financial storm. The US and UK were able – albeit at huge cost to the taxpayer – to rescue large banks with massive bad debts. Small centres that had sought market advantage through lax regulation and easy money were swept away. Reykjavik, for example, is in last place (75th) in GFCI 9, 20 points below its nearest competitor. It is a fair judgement on a centre crippled by insolvent banks unable to repay the billions of deposits they attracted from Europe with unsustainably high interest rates. Dublin, once on its way to becoming a genuine off-shore rival to the UK, is sliding down the GFCI league table following a wave of unaffordable bank recapitalisations and a massive €85bn EU bail-out, its rating falling by 13 and its ranking from 4th to 33rd.

The banking crisis of 2007-2008 raises questions about a bank's relationship to its location. There is a significant difference between a country being 'home' to a bank and a country simply playing 'host' to it. A 'home' cluster effectively assumes financial responsibility for its financial institutions, while a 'host' cluster does not. When something goes wrong the 'home' country has to pick up the pieces. For example, the investment banking arm of ABN-AMRO was covered by the UK government's rescue of its new owner, Royal Bank of Scotland, while the Dutch bank's retail and fund management arms had to be re-capitalised by the Dutch and Belgian governments.

"Two of the major reasons why many emerging markets have significantly higher risk premia than their established counterparts are that the framework of laws is ill defined and that their enforcement is not consistent."

Whatever the attractions or otherwise of the tax and regulatory regimes, the legal system is the real foundation of any financial cluster. It would be possible to write an entire paper on the impact of law, but the basics can be spelled out in simple terms. Every financial transaction is a form of contract and the certainty underpinning that contract comes from the legal framework and its enforcement. Most financial contracts are based on information provided by one of the counterparties or assumed to exist by the other. The reliability of the information in forecasts, and the basis on which any assumptions about future events are made, must similarly be underwritten by legal clarity about the responsibilities of both parties. Given that few financial transactions are risk-free, the estimation, potential scope and documentation of that risk are also subject to legal requirements. International financial transactions are complex because of the different legal systems in different countries. These differences can be profound and conceptual, but even if two systems have sprung from a common root there will be differences in detail, practice and precedent.

Legal certainty is the single most important requirement of any financial market – certainty over exactly what the law permits, how it is enforced and access to redress if it is violated. Two of the major reasons why many emerging markets have significantly higher risk premia than their established counterparts are that the framework of laws is ill defined and that their enforcement is not consistent. A widely accepted legal system deeply rooted in precedent and case law is of huge importance in binding a cluster together and enhancing its competitiveness. The City enjoys an incalculable advantage on this score. Not only is English Common Law well established and highly respected, it forms the basis for the legal systems of many of the countries that were once in the British Empire. Such are the attractions of English Common Law that it acts as a magnet, drawing business between two foreign counterparties into the City. Of all the assets that make London the prime global financial centre, its legal environment is one of the least likely to suffer from competitive erosion.

8. Professional Spillover

The term 'spillover' is widely used in the cluster literature. The most common broad theoretical strain is that an industry cluster will produce a spillover effect through which related and supporting industries grow up around the cluster. This is a fair explanation for the proliferation of IT companies, business printers, restaurants and coffee shops in and around contemporary financial clusters. It does not, however, capture the most important spillover phenomenon: the growth of related professional service providers, primarily lawyers and accountants, within the working core of the cluster itself.

The presence of lawyers and accountants in the City or on Wall Street is nothing new. Over the past two decades, however, the number of professional services employees has grown at a rate far exceeding that in financial services at the cluster's core. This hugely significant shift is the product of three factors:

- Financial services employment within the main clusters has tended to level off or even decline slightly due to the outsourcing of back office and support functions.

- The increasingly global nature of markets and transactions has produced a dramatic increase in the requirement for complex cross-border due diligence that only professional specialists can provide.

- Finally, and most importantly, the large financial cluster based law and accountancy practices are a product of increasing regulation.

More onerous regulation, combined with regulatory zeal for independent assessors, has led to an increase in the need for compliance work well beyond the capacity of the in-house teams of even the largest investment banks. The burden is heavy enough when the bank only has to deal with the regulatory requirements of the host country it is operating from, but it increases disproportionately when a transaction becomes international. Regulators might be striving for greater transparency and fairer competition, but the immediate consequences of their actions has been an ongoing change in both the lines on the pitch and the rules of the financial game. Financial services firms are constantly playing catch-up and, to extend the sporting metaphor, the only way they can avoid a stream of penalties is to have a team of legal and accounting advisors in their dugout.

8. Physical Infrastructure

Modern global financial clusters depend upon large, complex and inter-related IT platforms for almost every aspect of their business. We will consider these later when we attempt an assessment of the impact of this technology on the durability of established financial centres. The important point is that market institutions exercise control over this IT infrastructure. There is, however, a matrix of external infrastructure over which financial clusters have either limited or no control, but which are just as important to their success. For the sake of simplicity, we will classify this as 'physical infrastructure'.

At the centre of the physical infrastructure network are the buildings that house the companies in the cluster. The extent to which a company can influence the sorts of buildings that are built is generally correlated to its size. The major employers, particularly the banks and investment banks, have high floor space requirements and can exercise considerable influence over the public sector planning authorities, architects and property developers who take the key decisions on the location and design of buildings. The trend in recent years has been to consolidate front-line executive and service functions in a single building located in or near the geographical centre of the financial cluster. Investment banks, and any other institution with a significant trading function, have special requirements for large floor-plates to accommodate dealing facilities. With space at a premium, the emphasis is normally on high buildings. This can sometimes cause problems in long-established centres containing protected buildings of historical significance and heritage-related planning restrictions, such as the maintenance of clear viewing corridors to St Paul's Cathedral on the western edge of the City.

Successful global clusters such as the City have long since outgrown the traditional boundaries of the Square Mile financial centre. With these clusters located at the centre of dense urban conurbations, their scope for expanding outwards is normally limited and sometimes all but non-existent. The result has often been the creation of a satellite financial centre, either on a green-field site if any are available within a reasonable radius, or on a brown-field site in the process of re-development. In London, the latter option produced the highly successful Canary Wharf financial centre, built on abandoned dockland a few miles to the east of the City. The important determinant for either option to succeed is that distance and transportation issues are not significant enough to prevent the old and new centres operating as one cluster.

Just as modern financial services firms have become more demanding in terms of the offices they work in, the availability of sufficient high quality housing stock has become a more and more important factor in attracting and retaining a multi-national labour force. In an industry where the majority of employees are in their 20s or 30s, this tends to mean a mixture of modern city-centre flats for those who are single or married without children, and houses of similar quality in prosperous suburbs or commuter towns for those with a family. Given that financial services workers will normally have the buying power to meet even very high ownership or rental costs, the most important variable is the availability of choice of location and type of accommodation. Here, older centres established in large cities will normally have the advantage over new competitors, such as those in the Gulf, which need to build residential quarters at the same time as they build the corresponding offices.

Global financial clusters require transportation links to other centres around the world, while those employed within a given cluster require dependable, high-density transport infrastructure to link their homes to their places of work. Here the older financial clusters tend to suffer by comparison. London and New York boast a number of large airports but have become victims of their own success: global hub status has increased traffic flows but, with relative proximity to their cities limiting the room for expansion, they have become congested and vulnerable to delays. The situation is if anything worse when it comes to commuting infrastructure: newer centres have built high-speed rail networks, while established cities are dependent on networks developed in the 19th century that are extremely difficult to modernise. London's underground system has become synonymous with delays, cancellations, over-crowding and ventilation problems – the line connecting Bank with Waterloo station and the stockbroker belt of Surrey is affectionally known as 'The Drain'.

"Just as modern financial services firms have become more demanding in terms of the offices they work in, the availability of sufficient high quality housing stock has become a more and more important factor in attracting and retaining a multi-national labour force."

London's infrastructure shortcomings were eloquently summed up by a London-based German banker responding to a pre-GFCI survey in 2003: "In Frankfurt, the stress ends when you leave the office. Here, that's when it starts."[14]

It is important to put transport issues into perspective. While research has shown that transport delays do cost the London economy billions of pounds in lost revenues, the state of the system is an irritant rather than a major determinant of its competitiveness as a global financial cluster. Long distance links are probably more important. It is vital for the mutually supportive position of London and New York that it is always possible to find a seat on a plane flying between the two at short notice, as well as easy access to all the significant financial centres around the world. Long distance links are even more important to satellite financial clusters. A prime example here is Edinburgh, where the Scottish global fund management cluster simply would not remain viable were it not for the East Coast mainline train service and hourly flights to London.

As far back as 1987, a Harvard academic observed that "a robust ICT infrastructure is no longer a motivator for financial services to set up shop, it is a hygiene factor."[15] A 2009 report for the City of London identified five main elements of ICT infrastructure: network connectivity; data centre capability; electrical power supplies; security and resilience; and skills. While four of these elements are obvious components of the equation, electrical power supplies could easily be overlooked. They are, however, potentially the weakest link within an increasingly energy hungry computing megalith. In this context, it is notable that the report concluded that electrical power supplies were the least tractable of the City's ICT challenges[16] – UK peak energy demand is expected to exceed supply by 23% in 2015.[17] With generation capacity being squeezed between increasing demand on one side and environmental concerns on the other, it would not be surprising if the same was not true for many other global financial centres.

9. Language

English is the universal language of international financial markets, a result of the dominance of two English-speaking countries, the UK and the US. It has retained its position, partially due to the ongoing dominance of London and New York as global financial centres, but more importantly because English is the international business language and on school curricula all over the world. Most developed countries now have a large cadre of multi-lingual university graduates from which the financial services industry can recruit.

Most studies of financial centre competitiveness cite the English language as one of the factors contributing to the premium positions of London and New York. It is doubtful if this is really the case any longer, except in the sense that both would be seriously damaged in the unlikely event of another language undermining the position of English, though it is difficult to visualize a world in which the international business language has switched to Mandarin. China does not require any such change to move closer to centre stage in global markets – there are already more English speakers in China than there are in the UK. English, like ICT infrastructure, has become a 'hygiene factor'.

> "It is doubtful if language is really a factor in London and New York's strength, except in the sense that both would be seriously damaged in the unlikely event of another language undermining the position of English."

The same cannot be said for other forms of language where early Anglo-American dominance has established a global standard. In the critical area of financial reporting, most countries – and all multinational companies of any size – have adopted International Accounting Standards (IAS) for their financial statements, even if they continue to report simultaneously under a separate national regime. The competitive advantage for English speaking financial clusters is that IAS are closely modelled on the Generally Accepted Accounting Principles (GAAP) of the US and the UK. US- and UK-listed companies have therefore had little difficulty in adapting to IAS and the financial clusters of the English speaking world consequently provide much of the accounting expertise for cross-border transactions around the world.

Other languages and systems exercise an even stronger grip on global markets. Oracle can boast that it "is the world's most complete, open, and integrated business software and hardware systems company", and such is its dominance that its use is virtually a pre-requisite for international business. Much the same can be said for Microsoft's Windows and Apple's Mac in PC systems, and for search engines like Google and Yahoo. Even social networking sites and services such as Facebook, LinkedIn and Twitter, which are making increasing inroads into business communication, are of American origin.

Taking all the above languages together, only one is really a factor in cluster strength. The English language and the matrix of computer hardware, software and applications are all factors that tend to level the playing field, at least for advanced and relatively advanced economies. In the case of accounting, however, the dominance of IAS provides a definite advantage for established UK and US centres, first because the analysts and corporate financiers working on the accounts they produce will be experienced in using them; and second – and more importantly – because the clusters will be supported by a breadth and depth of international accounting expertise which rivals will struggle to match.

10. The Human Factor

For all their dependence on IT systems and worldwide reach, financial services clusters retain an extremely important human dimension. The non-market related dimensions of clustering are as much a human as an institutional phenomenon. As the City of London's 2003 study made clear, a cluster's workforce and the relationships within it are what make it work:

- London's labour market is one of its greatest assets. The supply of skilled labour, from both domestic and international pools, is a major factor sustaining growth.

- Personal relationships supported by close geographical proximity and on-going face-to-face contact are vital processes that sustain the London financial cluster.

- The localised nature of relationships between skilled labour, customers and suppliers is a critical factor that helps firms achieve innovative solutions, develop new markets and deliver services and products to clients more efficiently. [18]

The international financial services workforce is potentially far more mobile than its equivalent in most other sectors. It is also highly ambitious. A financial services professional can often choose where he or she wishes to work, their skills are readily transferable, language is unlikely to be a barrier and the global market place is sufficiently large and varied to mean opportunities are always available. Superior financial incentives are often reason enough to move, but quality of life outside of the office can be even more important.

> "City professionals have always been well paid and will continue to be so. A cluster is only as good as the people who work in it and leading clusters will continue to pay handsomely for the best."

The bulk of the workforce is relatively young and in possession of much higher than average disposable income. This can shape decisions on where to work through a range of factors, such as the size and cosmopolitan nature of the city in which the financial cluster is located, the cultural milieu, the educational offering for young children, the real or perceived safety of the city, the size of the relevant expatriate community and even the climate. The variables are so disparate that generalisations are difficult, but two observations do seem justified:

- Rising financial centres such as Singapore can attract a skilled workforce as long as they offer both higher rewards and an attractive quality of life.

- The advantage continues to rest with the long-established clusters such as London and New York, which can offer just about anything a discerning investment banker could wish for, except an optimal climate. Global city status is a particularly strong magnet – it is difficult, for example, to imagine that either Zurich or Geneva could prise away a major financial institution or its employees from London, though some niche businesses such as hedge funds have relocated to Switzerland in recent years.

As the premier global financial centres, London and New York are the most attractive targets for the ambitious industry professional. Whether it be getting an early posting to improve promotion prospects or position in the job market, or achieving a senior management role, the major global clusters are centres of gravity. Thus the human dynamics of the global financial services industry have a built-in mechanism that reinforces the competitiveness of the market leaders.

It is fitting to end this analysis of the factors that contribute to the cohesiveness of global financial centres by considering the human factor. The only other industries that so heavily depend on the talents of a large number of individuals are those at the cutting edge of information technology and some sciences. Professional team sports are probably the closest parallel to the financial services industry in terms of emphasis on human talent and high rewards – it is no coincidence that the one sizeable group of employees in the UK whose earnings are roughly equal to the cream of the City are the footballers of the Premier League. Bankers' remuneration is an issue of considerable popular discontent and political sensitivity in the wake of the Credit Crunch and the rescue of Royal Bank of Scotland (RBS) and Halifax Bank of Scotland (HBOS), but this does not alter the fact that City professionals have always been well paid and will continue to be so. A cluster is only as good as the people who work in it and leading clusters will continue to pay handsomely for the best.

Financial Clusters: Infrastructure, Institutions and Interchange

Having completed our stylised model of a global financial cluster, we can impose a simple three-level hierarchy upon it:

- At the base is market infrastructure, a broad category that stretches from the buildings and transportation hubs of the financial centres themselves to the trading platforms within them. All are vital to the existence of the cluster but they are not generally sources of competitive advantage.

- Above these sit the political, regulatory and legal institutions that govern how the cluster operates. These are extremely important, not least because the trust and certainty that underpins any financial transaction would be impossible to guarantee without them. They represent a potentially strong source of market advantage but, because their control lies outside the market itself, they are also a potential source of vulnerability.

- Finally and most importantly, there is the interchange – the marketplace itself – which sits on top of the infrastructure and institutions. It is here that real competitive advantage is pursued through the interaction of high liquidity, large institutions, strong information flows and the retention of a highly skilled workforce.

CHAPTER 4

A History of Clusters: From Medieval to Modern

It is obvious from our structural analysis that history has played an extremely important role in shaping the global financial clusters of today, despite the fact that the language of contemporary society suggests the opposite. Terms like 'knowledge economy', 'information technology revolution' and 'globalisation' point to some sort of radical break with the past but are misleading. Western nations, for example, were trading far more intensively with China in 1875 than they were in 1975, while the dollar-sterling forex rate is still widely referred to as 'the cable' in recognition of the Transatlantic cable, laid in the mid-19th century, along which the business originally developed.

Global financial clusters have evolved in step with the wider sweep of history rather than through any recent revolutionary transformation. It is easier to trace their route back through time in the West than in the East and we will concentrate on the former. While China was easily the largest and most advanced economy in the world until the West was transformed, first by colonisation and then by the Industrial Revolution, its path was broken on several occasions by invasion or internal political collapse. Only with the metamorphosis of Communist state control into a workable system for tapping the county's huge market potential has China begun to take back its normal place in the global economic order.

"Terms like 'knowledge economy', 'information technology revolution' and 'globalisation' point to some sort of radical break with the past but are misleading. Western nations, for example, were trading far more intensively with China in 1875 than they were in 1975."

Financial Clusters: A Pre-History

While European cities have always been centres for financial transactions, this business was local in nature for most of the millennium following the collapse of the Western Roman Empire and its associated trading network. International financial centres began to re-emerge in the 13th and 14th centuries, primarily in the north Italian city-states of Genoa, Florence and Venice. Critically, the new financial institutions all grew out of a common heritage – participation in the only well developed trading network, that for textiles.

The family banks that emerged existed to facilitate cross-border trade and payments via bills of exchange and chains of agents in foreign cities. With the accumulated wealth and contacts from their trading activities, the leading houses diversified into banking. Beyond building up their deposit bases from local contacts, these banks developed what was often to prove a fatal attraction for lending to European monarchies. The two dominant banks in 14th century Florence both made substantial loans to Edward III of England to finance the early campaigns of the 100 Years War and went bankrupt when he followed the already well-established royal habit of defaulting.

Later medieval banking dynasties proved more durable, the Medici in Florence because they became the main banker to the papacy and the Fuggers in Augsburg because they secured a share in the revenues of Imperial mines as security on their loans to the Holy Roman Emperors.

Late medieval banking was quite sophisticated, using a system of multi-currency bills of exchange to get around religious prohibitions on charging interest, but the industry was dominated by extended family networks operating from different city bases. In the volatile political environment of the late 15th to early 17th centuries, the banking institutions proved far more durable than the clusters they created around themselves. In northern Italy, the centre of financial activity moved to Venice but the bankers themselves remained Florentines. In the Low Countries, the financial cluster moved successively from Bruges to Antwerp and then Amsterdam under the pressures of war. Amsterdam remained an important international financial centre long after the Dutch republic had passed its zenith as a maritime trading power and it was only invasion by revolutionary France and the arrival of Napoleon that drove its merchant banks overseas to the safety of the rapidly expanding financial cluster in the City of London. Alexander Baring left Amsterdam in 1795 as Baring's partner Hope & Co migrated to London, where it was joined by established banking families from Germany such as the Schroders of Hamburg and the Rothschilds of Frankfurt as French armies pushed eastwards.[19]

"Early financial centres provided places where information could be collected, pooled, discussed and translated into business decisions. It was no accident that the two most venerable institutions in the City, Lloyd's of London and the London Stock Exchange, began their lives in coffee shops."

The first clusters: durable and mobile

There is a valuable lesson to be learned from these early proto-clusters. Given the turbulent political situation within which they operated, the late medieval and early modern financial clusters were impressively durable. While there were casualties along the way, most major institutions survived for centuries. They generally stayed in their established geographical cluster well beyond the mother city's politico-economic decline and, when they moved, they moved en masse and intact. To put it another way, the financial clusters of the 16th to 18th century were very robust but, ultimately, also mobile.

Early financial centres shared two common features. In the first instance, they provided pools of trans-national liquidity in an environment in which most economic activity was still highly localised. More importantly, they provided places where information could be collected, pooled, discussed and translated into business decisions. It was no accident that the two most venerable institutions in the City, Lloyd's of London and the London Stock Exchange, began their lives in coffee shops. Financial activity has always depended on the interplay between liquidity and information and, in the 17th century, it was often the latter that was most valuable.

Employing an extremely broad-brush approach to history, it is possible to identify three overlapping developments that triggered the emergence of proto-clusters of financial services between the 17th and 19th centuries. The first two were the parallel emergence of modern, centralised states in Europe and their colonisation of large parts of the non-European world. These produced an explosion in seaborne trade, which was supported by governments that sought to benefit directly from it through taxation on the trade itself and indirectly through the growing wealth of its citizenry. It is highly significant that the continuing cycle of wars between European states now tended to be triggered by trade and colonial rivalries, rather than competing claims for territory within Europe itself. Long distance maritime trade required four things:

- Access to investors to finance trading ventures.
- Financial instruments to facilitate the movement of capital that was otherwise tied up in the holds of very slow sailing vessels.
- Information on distant markets.
- A way of spreading the not inconsiderable risks of total loss of vessel and cargo.

The answers to these problems were joint stock companies with tradable share capital, bills of exchange and a marine insurance market that maintained its own international news service.

Once established, the pace of growth was impressive. By the end of the 17th century there were approximately 150 joint stock companies in the UK alone and London had developed the foundations of a stock exchange in two coffee shops in the City. Bills of exchange had been in existence for centuries, but the take-off in trade produced specialist finance houses to deal in them. These were the predecessors of the investment banks of today, but they were originally known as discount houses and then merchant banks, as their business was built around buying, selling and discounting bills of exchange associated with foreign trade. Finally, the marine insurance market began to develop, also in a late 17th century coffee shop, in tandem with the other institutions. There was thus a functioning, albeit limited, financial cluster in London by the beginning of the 18th century. Similar clusters struggled to emerge in other countries due to Britain's increasing dominance of maritime trade routes. It is also worth noting here that London was not the only international financial cluster in the UK and that regional rivals such as Glasgow would survive well into the 19th century.

Limited liability: the key to growth

The third and final trigger to the growth of financial centres was the Industrial Revolution. The impact was limited at first, with much of the investment coming from local merchants who had made their money in overseas trade, but as fixed capital requirements grew as industry expanded to serve international markets, family partnerships gradually gave way to joint stock companies. The introduction of limited liability in the 1860s gave sounder foundations to a stock exchange that was still viewed with suspicion by many – it would take another half decade before a significant proportion of British industry was listed. The growing importance of the London Stock Exchange was critical to the City's growth as an international financial cluster, as was the consolidation of the banking sector which saw most regional banks absorbed into the large London (and in Scotland, Edinburgh) headquartered institutions we are familiar with today.

Three technological innovations of the Industrial Revolution played an important role in expanding the reach and accelerating the concentration of financial clusters:

- The rapid development of railway networks in the mid-19th century reduced domestic journey times from days to hours, aiding the flow of information and capital into financial centres.

- The advent of the marine steam engine and continuous improvements in its power and efficiency reduced and regularised oceanic voyage times. It is significant that the early success of companies such as Cunard was based not on mass European migration to North America, which only gathered momentum in the second half of the 19th century, but on government subsidies to carry business mail.

- The Transatlantic cable, driving connectivity, was only one of a growing web of cables that connected the businesses of the world in what can be seen as a precursor to the internet. Markets have always thrived on news and by the 1870s international financial markets were increasingly able to support clusters taking advantage of up-to-date intelligence from a rapidly growing portion of the globe.

Modern Cluster History and Financial Geography

History has played a significant role in shaping the geographic distribution of the world's international clusters. Financial clusters have proved as durable as the economies and political structures within which they grew. Given that the 19th century witnessed the emergence of competing global superpowers, mass colonisation and migration, and industrialisation, and that the 20th century saw two world wars, mass revolutions, the Great Depression, decolonisation, unprecedented technological change and tremendous overall economic and demographic growth, it is surprising how little the financial cluster map of the world has changed since 1900.

London and New York were dominant then as they are now, while Tokyo was emerging as the first independent Asian financial centre on the back of rapid industrialisation and aggressive military expansion and the Swiss private banking centres were establishing their unique position. While the financial geography of continental Europe would take some hard knocks during the world wars, the landscape was not dissimilar to the modern map.

London's pre-eminence was due more to its position at the centre of the world's largest empire than to Britain's early lead in industrialisation. The City grew its size, reach and reputation by helping finance first colonial expansion and then colonial development. It was helped by the fact that the British merchant marine was roughly twice the size of the fleets of the rest of the world combined and the Royal Navy at least as strong as the second and third largest navies combined for most of the period between 1815 and 1914. The returns generated by empire building helped the merchant banks to build worldwide businesses and profit from growth in areas not under British control.

Baring Brothers provides an illustrative example of the highs and the lows of this frontier age. In 1803 it helped facilitate the largest land transaction in history, the Louisiana Purchase by the US from France, a feat achieved despite the fact that Britain was at war with France. In 1890, buoyed by a series of successes in financing railroad expansion in North America, Barings was brought to the brink of ruin by over-exuberant underwriting of what would today be classed as 'sub-prime' Argentine and Uruguayan debt. It was rescued by a consortium put together by the Bank of England. The Barings crisis was only one of a series to hit the British banking sector as a result of high risk taking. When London discount bank Overend Gurney & Co went bankrupt in 1866 it dragged another 200 businesses, many of them smaller banks, with it. The collapse of the City of Glasgow Bank in 1878 virtually eliminated the city of that name as a financial centre.

Casting the global network

London was the undisputed centre of the marine insurance world, while British trading houses were dominant not only in India, but also in the three most important Far East trade centres: Singapore, Hong Kong and Shanghai. In addition, Sydney was emerging as the financial capital of Britain's dominions in the Antipodes as the economies of Australia and New Zealand expanded rapidly with large-scale agricultural exports funding industrial and infrastructure development. In Canada, which became a nation in her own right in 1867, Montreal on the St Lawrence River and Toronto on the northern shores of the Great Lakes served as twin financial centres, a situation that persisted until the 1960s and 1970s when separatist politics in Quebec triggered a mass business exodus from Montreal to Toronto. On the west coast, Vancouver emerged as a semi-independent financial centre heavily involved in timber and mining.

New York's emergence as a rival to London was due partially to its position as the main point of entry for people and capital from Europe, which helped fuel the rapid westwards expansion of the US. Its position was not unchallenged and as late as the 1870s it was facing serious competition from Philadelphia, due largely to the concentration of railroad, coal and steel interests. If London owed its position to financial strength overseas, New York's growth was largely driven by its increasing dominance in financing the westwards development of its own country, a position that was strengthened as financiers like JP Morgan and Andrew Carnegie used the stock market to seize and consolidate control of most of the country's major industries in huge cartels. As New York's reach extended overseas, so Chicago emerged as the country's second major financial centre. Its growth was based on its position as the hub from which the exploitation of the West was financed, and through which much of that huge area's produce was distributed eastwards. Finally, San Francisco became the financial centre of a west coast that, even after the completion of the transcontinental railroad in the late 1860s, was still a week's journey from New York.

"If London owed its position to financial strength overseas, New York's growth was largely driven by its increasing dominance in financing the westwards development of its own country."

The financial geography of the English speaking West developed largely undisturbed by war or political upheaval. The only major exception was the American Civil War, which completely dislocated the economies of the southern states for a decade and, through a curious mixture of wartime expedients and misguided post-war legislation, led to the virtual disappearance of the Stars & Stripes from the high seas for half a century.

The rise of the East

In the East, the situation was completely different. With the exception of Japan, financial centres emerged either within the existing colonies of the Western powers or as a result of armed Western intervention in imperial China.

India was easily the largest and most important colonial asset in Asia. While it had already experienced significant commercial expansion under the administration of the East India Company, it was only after the Indian Mutiny was crushed in 1857-58 and the British government took charge that domestic financial clusters began to emerge around the major ports of Karachi, Bombay, Madras and Calcutta. Although major capital inflows came from Britain and British merchant houses were financing economic development, there was a significant local presence. Indian merchant houses were dominated by ethnic Parsis, operating as family businesses or in partnerships with the British. The growth of financial clusters in India is hard to measure but should not be underestimated. With the development of a mass two-way trade built around the export of cotton, jute and tea, and the import of capital goods and fabric, the Indian clusters were significant players in the global financial centres matrix of the late 19th century.

In contrast to India, Singapore was a regional entrepot and the fulcrum around which the development of British economic interests in South East Asia was based. Here, local financial communities, largely composed of Chinese immigrants, played an even more dominant role than was the case in India. Here also we find one of the relatively rare examples of genuine cooperation between two colonial powers, with many merchant houses being joint ventures between British interests in the Straits Settlements and longer established Dutch establishments in the East Indies. Singapore was to become an ever more important international cluster as the economies of the countries around it developed. It would retain its status right through to modern times, with the exception of the Japanese occupation of 1941-1945.

The development of modern financial centres in China followed an entirely different path. By the early decades of the 19th century the long-established practice of isolationism was breaking down in the face of increasingly aggressive western merchants. The Qing Dynasty's hold over its sprawling empire was already in decline, but it attempted to assert itself by enforcing a ban on the import of the opium that foreigners were bringing in by the shipload. Opium was illegal in China (although use and addiction were becoming increasingly widespread) but legal in the West, and when Imperial officials seized the opium stores of British merchants the latter called for its government to intervene. British naval and military forces inflicted a series of humiliating defeats on the Chinese in the First Opium War of 1839-1842 and the Second Opium War of 1856-1860.

There is no room here to document the collapse of central authority in Peking. It is sufficient to focus on the three most important consequences of European armed intervention for the development of international financial centres. The first was the emergence of Hong Kong, ceded to Britain after the First Opium War, as what was effectively an offshore trading and financial centre for Canton and southern China. The second was the creation of the so-called 'Treaty Ports', of which Shanghai at the mouth of the Yangtze River was by far the most important, allowing foreign powers to operate from compounds which were free-trade zones in everything but name. Finally, foreigners were allowed unimpeded access to the whole country, with their safety guaranteed by the Chinese government but backed up by standing European military and naval forces on Chinese territory. The overall result of these developments was the emergence of Hong Kong and Shanghai as financial and business clusters from which the huge economic potential of China was exploited on terms very favourable to the colonial powers.

Thus, while the political geography of the world has changed significantly, particularly as a result of the disappearance of the British Empire, and the final emergence of China as a global economic power, the top 10 of a Global Financial Centres Index compiled in 1911 might not have looked that different from that of the GFCI of today. This reinforces the view that international financial clusters are very durable; and that a mixture of history and geography contributes more to the composition of the 21st century global financial centre universe than is usually thought to be the case.

"While the political geography of the world has changed significantly, the top 10 of a Global Financial Centres Index compiled in 1911 might not have looked that different from that of the GFCI of today."

CHAPTER 5

Building a Cluster: The Role of the State

Financial markets thrive on volatility. Without it, most trading strategies would not work, investment would be a long-term process, and liquidity would be severely reduced. Financial markets, however, do not cope well with external uncertainties. The two most immediate and important of these are the politico-economic environment around them, and the manner in which governments seeks to regulate them, in terms of rules and financial impositions.

The long-standing primacy of London and New York as global financial centres is in part attributable to the simple fact that neither has had to contend with revolution or invasion. Leaving aside the 'Glorious Revolution' of 1688, the last time London saw an invading army was 1066. The worst it had to contend with during the violent 20th century was the 'Blitz', a fairly mild experience compared to what much of the rest of the world went through. The last serious threat to the US was the American Civil War of 1861-65. Unless you are one of the romantic minority that believes the South had any chance of winning that conflict, you can extend the absence of external threat back to the end of the Anglo-American War of 1812-15. Apart from other North American financial centres, the only significant centres to have enjoyed similar levels of peace and stability are those in Switzerland, which have remained wrapped in neutrality since 1815.

Continuity of government alone is insufficient to support cluster cohesion if it is attended by unpredictable policy swings on the regulation of markets. Until 2008 at least, one of the advantages London enjoyed over New York was its 'light touch' regulation. A lot of nonsense has been written about the 'Governor of the Bank of England's eyebrows', but British governments had been by and large happy to let the City govern itself within fairly loose, commonly agreed parameters, until the Credit Crunch sparked what some see as a regulatory over-reaction. US legislators have tended to be more intrusive, on several occasions to the benefit of London, but again the political climate has been generally benign. It is ironic that the repeal of one of the most important pieces of intrusive legislation, the Glass-Steagall Act of 1933, has been seen by many as a contributory factor in the Credit Crunch, dealing New York the heaviest blow to its reputation since the Great Depression.

Both the industry and surveys of relative competitiveness such as the Global Financial Centres Index (GFCI) regularly pick out regulation and taxation as two of the most important factors in supporting stable financial clusters (see Chapter 3). While the expression of such sentiments in London and New York reflects the perceived influence of rule-books and taxes, there is also a sense that such comments are akin to complaints about the weather. Both centres owe their enduring strength in no small measure to the relative restraint and consistency of government. There are as yet un-quantified 'tipping points' on both the regulatory and taxation fronts beyond which both Whitehall and Washington should proceed with care. We are still in fairly choppy waters following state bailouts of distressed institutions in 2008. Public sentiment is generally hostile to the industry and politicians persist in efforts to be seen to make the industry pay for its undoubted fecklessness in the years leading up to the crisis. To date there have been no major defections from London or New York but there is a genuine need for common sense from policymakers.

This need was clearly spelled out in the 2003 study of the importance of financial services clustering for London:

"The research suggests that successful clustering can be facilitated or eroded by public policy. Government administrative and organisational boundaries, lack of policy

coordination and focused management relating to regulation and transport are perceived by the research respondents to be a barrier to effective decision-making and investment. Co-ordination across policy and departmental as well geographical boundaries will therefore be essential to support sustainable financial and business services clustering…"[20]

The financial services industry itself has a clear, pragmatic and widely shared view of what it wants and does not want from regulation. The two guiding principles are proportionality and consistency. The essence of this industry view can be distilled from a selection of responses to the GFCI 9 question "Which single regulatory change would improve the competitiveness of financial centres?

"Focus on the effectiveness of the regulatory supervision of firms, as opposed to capital, liquidity and product regulation, which increases costs and stifles growth."

"Effective regulation that does not stifle innovation but provides reassurance to investors – this may mean less bureaucracy but more engagement."

"Greater regulatory responsiveness to specific evidence of how a particular organisation conducts its business, rather than reliance on top-down, one-size-fits-all approaches which, in practice, usually discriminate against smaller organisations by imposing a disproportionate and inappropriate regulatory burden."

"The key factor that undermines competitiveness is difference between geographies. Increasing standardisation in any area reduces the amount of work required to enter a market/geography and increases competitiveness."

"I am not comfortable with the statement that regulation improves competitiveness, although I appreciate that it is the framework within which all centres should be working to a consistent standard."[21]

Regulation and taxation can be important tools for building up financial clusters. Offshore centres, which persistently rank higher in the GFCI than logic suggests they should, owe their position entirely to low or no taxation and permissive legislation. Taxation and regulation have been used as cluster-building incentives by countries intent on moving up the competitive ladder. It has often been possible to gain momentum quite rapidly in this fashion, but maintaining it is dependent on the ability of the national economy in question to underwrite the process. As we have seen, only large global centres can provide 'homes' for large international banks.

"It has often been possible for financial clusters to gain momentum quite rapidly through low taxes and light regulation, but maintaining it is dependent on the ability of the national economy in question to underwrite the process."

CHAPTER 6

Financial Services Clustering: Continuity and Change

The financial services industry has changed beyond recognition over the last century, particularly in the last two to three decades. The conventional argument attributes this to three factors: the information technology revolution; globalisation; and the rapid growth in the Asian economies, particularly China. There is no denying the importance of these factors but it can be argued that each card has been overplayed in making the case for a really big bang. In this chapter we will examine the two geographical engines of change: globalisation and the re-birth of Asia. The IT revolution is a more complex and contentious subject and will be covered separately in the next chapter.

In the context of the development of international financial markets, globalisation is probably the weakest of the three explanations for revolutionary change. There has been a quantum leap in the volume of global transactions, but their geographic range has changed less than might be expected. In essence, the globalisation of recent decades has been a matter of scale more than scope. With the exception of most of Africa, where penetration of global financial services is still relatively recent and weak, the international financial centres had already been in existence for some time by 1911. China might appear to be an exception, but classifying it as such is to confuse political boundaries with financial realities. Hong Kong and Shanghai were both large financial centres right up to Japan's entry into the Second World War in December 1941. Hong Kong, of course, was a British colony and major point of access to the markets of South China. Shanghai, was not, but as the largest of the Treaty Ports its position at the mouth of the Yangtze made it an even more significant centre of trade and finance. Pre-1930s photographs of the International Settlement along the Bund, where all of the major foreign trading and finance houses were located, are more reminiscent of the European capitals of the time than they are of any contemporary Chinese city. China would slip off the map of global financial centres as a result of war, revolution and isolationism. Its gradual return to the global stage initiated by Deng Xiaoping under an evolving Chinese form of state-managed capitalism is as much a matter of it re-asserting its natural place as a major player in the global economy as it is the emergence of an industrial superpower. It is also important to realise that the great British trading houses that had been at the heart of the 19th century financial clusters in Hong Kong and Shanghai are still there. Swire Group, established as Butterfield & Swire in Shanghai in 1866 and Hong Kong in 1870, is now a diversified multi-national with its headquarters in Hong Kong. In 2009 its listed arm, Swire Pacific, was ranked second in the *Wall Street Journal's* "Most Admired Companies in Hong Kong" list. First position went to the airline Cathay Pacific, in which Swire is the largest shareholder. Jardine Matheson & Co was founded in Canton in 1832 and moved to Hong Kong in 1842, the first major western commercial enterprise to do so. It too remains a major multi-divisional player in Asian markets. The company is substantively managed from Hong Kong but it is registered in Bermuda and listed on the London and Singapore stock exchanges, to protect it from a repeat of a 1980s hostile Chinese takeover bid for its extremely valuable Hong Kong property portfolio.

This leads us on to the second – and arguably the strongest – of the explanatory factors: the rise of the East. The emergence of China and India has had a huge impact on the financial geography of the world. While Hong Kong and Shanghai would certainly rank lower in our mythical 1911 GFCI than they do in the GFCI of today, they would probably still have been in the top 20. Japan had become a major industrial, financial and military power by the 1930s. While its sphere of influence was regional rather than global, it was expanding rapidly. It was only the disastrous upheaval in domestic politics that diverted expansion from economic to military goals that interrupted what might otherwise have been a smooth progression to the position Tokyo occupies today.

The status quo?

It is easy to argue for an ongoing change in the global economic balance, but less easy to do so for a complete upheaval in the geography of financial clustering. Asian financial clusters are growing to accommodate the rapid economic advances taking place around them and the associated growth in political power. The same five Asian financial centres – Singapore, Shanghai, Hong Kong, Seoul and Beijing – were ranked in the GFCI as the most likely to become significantly more important over the next two to three years and the most likely site of a new office for their organisation by respondents to the GFCI questionnaire. It is, however, by no means clear that these centres are expanding at the expense of established western clusters. They might even be strengthening them, as Western retail investors pour money into home-domiciled mutual funds and as Western institutional investors seek exposure to Asian growth through home-based multinationals with growing business interests in the East. More interesting questions are whether China can sustain four global financial centres – Hong Kong in 3rd place, Shanghai in 5th (equal with Tokyo), Shenzhen in 15th and Beijing in 17th equal (with Washington) – in the top 20 of the GFCI ratings; and why the only Indian entrant, Mumbai, languishes in a lowly 58th position behind Oslo, Johannesburg, Prague, Gibraltar and Helsinki, none of which have remotely comparable financial pulling power.[22]

"Asian financial clusters are growing to accommodate the rapid economic advances taking place around them and the associated growth in political power and are likely to become significantly more important over the next two to three years."

CHAPTER 7

Information Technology: Revolution or Acceleration?

The third factor believed to have transformed the financial services sector is the ongoing information technology 'revolution'. Logic suggests it should pose the greatest threat to traditional financial clusters and should already be leading to their fragmentation. IT and communications advances mean financial transactions can be completed at any time from any location. Information – one of the two raw commodities of financial markets along with capital – is now distributed worldwide in something very close to real time and is accessible from anywhere.

The impact of IT on the temporal dimensions of financial transactions has been profound. However, it has not necessarily worked against financial clustering and, on a global scale, has even worked to its advantage. With order and information flows working in close to real time, the importance of time zones has become much more significant. While machines do not need to sleep, people do, and although it would be possible to operate both exchanges and the headquarters of a global financial institution on a round-the-clock basis, there has been no serious attempt to do so outside of foreign exchange markets in which the baton is figuratively passed from centre to centre around the globe. Thus the location of financial centres relative to each other remains an important factor. That its business day overlaps with both that of New York to the west and Asia to the east is one of the key factors in London's maintenance of its position as one of the world's two strongest financial centres. Rather than London losing business to rival centres, major firms came to London from foreign centres.

The spatial impact of the IT revolution has been far less significant than might be expected. We have already mentioned the Louisiana Land Purchase of 1803, where the 'principals', Napoleon Bonaparte and Thomas Jefferson, never came within 3,000 miles of each other, let alone shook hands. Although there was a great deal of transatlantic negotiation through diplomats, the transaction itself went through the hands of a British and a Dutch merchant bank, which took delivery of the bonds the US government had issued to meet the bulk of the purchase price, discounted them to take their commission, and then paid Napoleon in cash. By the late 19th century, long-distance cross-border transactions were common and latecomers to the wider business world, like Germany and the US, particularly active. The colonial powers poured capital into new colonies in Africa, while their investment banks vied to realise the best results from underwriting the developing independent states of South America. While these activities involved managers 'in the field', the transactions themselves took place in the growing financial clusters of Europe, the US and, to a more limited extent, Japan.

With the laying of long-distance cables under the world's oceans in the mid-19th century, face-to-face negotiation in international financial transactions was increasingly concentrated in the major financial centres where international finance houses retained a permanent presence. The North Atlantic cable links were particularly important, with British capital playing a significant role in financing the construction of the US rail network; and US rail companies, anxious to gain market share in the lucrative immigrant trade, establishing European shipping companies to get round legislation that restricted their ability to operate under the American flag.

The compression of the spatial dimension made two other positive contributions to the growth of international clusters:

- It facilitated the rapid expansion of sovereign debt markets, during which a significant proportion of underwriting and distribution was channelled through established finance houses in London and New York.

- It witnessed the first major international takeovers. One of the largest was JP Morgan's ambitious attempt to gain control of the transatlantic passenger trade through a rapid series of acquisitions, including the White Star Line, which built the Titanic in Belfast with American capital. Increased corporate activity stimulated growth in equity markets, which began to attract significantly larger numbers of retail investors as well as the attention of men like Britain's Sir John Ellerman, the only Briton of the late 19th and early 20th century to build a financial empire rivalling those of the leading US entrepreneurs, with interests in shipping, coal, newspapers and property.

"The computerisation of trading has pulled clusters more tightly together in a physical sense because latency – the time delay experienced in passing information through a system – is partially a function of distance."

IT's gravitational pull

The third side of the IT revolution's impact on financial services clustering might outweigh the impact of remote dealing and global information dissemination. Financial markets are now built on extremely complex and expensive electronic platforms that not only execute, clear and settle trades, but also relay pricing information and transaction history. Thus any centre depends not on one system, but on a chain of inter-related systems. Electronic trading platforms represent a massive sunk cost and their efficiency, reliability and capacity are one of the weapons financial exchanges use to compete with each other. Exchanges sit at the heart of all large global financial clusters. Barriers to entry are high and, with the listing of a large number of the most important exchanges, cross-border mergers and acquisitions have further concentrated power in the hands of the market leaders. The contribution of electronic trading to the strength of leading clusters cannot be overemphasised. Whereas the real costs of establishing an exchange could be quite modest in the pre-IT age, and much of the competitive strength of incumbents lay in the realms of reputation and accumulated market share, it is now the capacity and robustness of their trading platforms that play a leading role in determining their position.

The computerisation of trading has pulled clusters more tightly together in a physical sense. Latency, the time delay experienced in passing information through a system, is partially a function of distance. The time increments may be very small, but they are also extremely important in a modern trading environment in which most information asymmetries have been eliminated and where a large number of big, automated trading programmes are dependent on the rapid exploitation of transient price differentials. It is therefore in the interest of all direct market participants to place their computer servers as close to those of the exchange as possible.[23] In this sense the IT revolution has brought financial clusters round full circle. In the past firms needed to be close to the exchange so their employees could get to the trading floor quickly; they now need to be there so that their machines can 'talk' to their market. It is estimated that high frequency algorithmic trading accounts for 60% of stock turnover in the US and 30-40% in the UK.[24] Once again it must be remembered that the trading algorithms are not themselves generated by machines but are the product of human expertise and interaction.

Overall, advanced IT infrastructure is one of the key requirements for maintaining the competitiveness and cohesion of a global financial services cluster. It is hardly surprising that the new challengers for a share of the global market in the Middle East and Asia have concentrated on building state of the art trading platforms as one plank of their bid to entice listed companies and financial intermediaries away from the established centres of the West. It is extremely important, however, to emphasize the difference between exchanges and markets. It is the location of markets, not exchanges, which determines the strength and durability of clusters. One of the most important but least understood aspects of the impact of IT on financial markets is the extent to which it has made the markets themselves effectively 'weightless'. Companies can – and do – de-list from one exchange and re-list on another. If enough of these companies make the same move they will pull the market with them. High quality IT infrastructure can help bind a cluster together, but only when other inputs are present.

It is one thing to argue that world class IT – not only trading platforms but also the structural supports of network connectivity, data centre capability, electrical power supply, security and back-up systems, and a skilled labour force – is now an integral part of any financial cluster and a key aspect of its competitive offer. It is another to explain why the vast majority of the financial services workforce is concentrated in close proximity to colleagues and competitors in what is usually expensive real estate with significant running costs. A 2009 report on the City's ICT infrastructure quoted one respondent saying, "Culturally we are not ready for home working but we think this will become common in three to five years."[25] The report itself concluded that "there is evidence that large organisations would like to use the flexibility of home working to reduce the costs of office space, although only a few have achieved this yet."[26] The problem with both the quotation and the conclusion is that both could have been dated a decade earlier. Remote working is a train that has been expected to arrive for a long time, but there is still little sign of it. To understand why it is necessary to look at one of the least studied aspects of the clustering equation: the human dimension.

CHAPTER 8

People Power: The Forgotten Factor

There are very few sectors so heavily dependent on interpersonal relations as financial services. It would be easy to assume that the traditions of 'my word is my bond' and a series of long lunches have been swept away by a dialogue carried out exclusively via digital and other remote media, but that is not the reality. Anybody working in the industry today will know that two of the major obstacles to arranging a business meeting are full diaries and a chronic shortage of meeting rooms. Telephone and video conferencing facilities notwithstanding, industry participants remain extremely keen to meet each other and therefore most market participants continue to value geographic proximity to their counterparties.

Beyond rather vague sociological postulating about bonding, there are some more tangible factors that help explain the continued importance of personal interaction and proximity. The first is the nature of the marketplace itself. The marketplace is neither a web of machines nor an abstract concept – it is a place where humans congregate to do business. Given that the business in financial services is entirely transaction-driven and based on established relationships between market participants, it is hardly surprising that academic research has shown that individual fund managers operating in large financial clusters deal more frequently than those outside these clusters.

> "The marketplace is neither a web of machines nor an abstract concept – it is a place where humans congregate to do business."

Beyond this, human proximity and interaction are important for three reasons:

- It is extremely rare for anything more than the most routine transactions to be executed without the principals or their counterparties meeting first to establish a personal relationship. This is an essential part of the establishment of mutual trust on which an ongoing financial relationship needs to be based.

- Earnings or currency forecasts and the investment recommendations they produce are themselves the product of a combination of close collaborative working within one institution and up-to-date intelligence on the views of competitors.

- The high informational content in financial markets produces its own cloud of shared secondary knowledge. While all are party to publicly available information, there is a market 'buzz' made up of everything from rumours and earnings forecasts to impressions formed in meetings with listed companies and the cumulative knowledge of traders on stock overhangs or shortages.[27]

People: the most valuable asset

At the end of the day the most important constituents of a global financial cluster are not financial institutions but the people who work for them. London provides the clearest example of this. After 'Big Bang', the City's long-established merchant banks like Morgan Grenfell, Kleinwort Benson and SG Warburg, launched major expansion programmes aimed at transforming their franchises into global investment banks. Simultaneously, a wave of mergers produced large independent international brokerages such as Smith New Court and Hoare Govett. The history of these ventures was not to prove a happy one. A combination of out-dated management techniques, poor decisions and lack of capital produced what Philip Augar famously described in his book, *The Death of Gentlemanly Capitalism*.[28] One by one the British houses fell by the wayside, either retreating to market niches, or in most cases surrendering to foreign takeovers. The largest beneficiaries were the US investment banks, already established in the City, which used their vastly superior capital resources to buy market share, either through outright acquisition or by wholesale recruitment from the ranks of the British incumbents.

The most symbolic fall, however, was that of a European bank. SG Warburg was receiving unofficial Treasury support to maintain its position as a British-owned global investment bank. Warburg pursued a policy of overseas expansion and mergers, but in the end these were not enough to save it. In the mid-1990s, the bank surrendered its independence to Swiss Banking Corporation which later merged with UBS – a Swiss bank that had already established a significant investment banking footprint in the City – and emerged as UBS Warburg. After a polite interval of a decade the name Warburg was dropped and the bank became known simply as UBS.

"Top-grade financial professionals, both young and ambitious and older and more experienced, want to work in London. They, rather than either their firms or their IT systems, are what really drives the marketplace."

These dramatic changes in ownership did not involve mass displacement of staff. While duplication produced some redundancies, most employees were hired by foreign arrivals in the City anxious to build market share and credibility. The only significant changes occurred at very senior board level. Front line operations were generally left in the hands of senior staff with established City franchises. The foreign invaders had not come to conquer but to assimilate. The prize was not really the brand or the often-fragile structures behind them, but the legions of skilled and highly experienced brokers, traders, market makers and corporate financiers that had kept the City at the forefront of international markets.

Ongoing globalisation, the emergence of London as one of the most cosmopolitan cities in the world and the development of a single European financial market have all played a role in increasing the proportion of foreign nationals working in the Square Mile and Canary Wharf. Their arrival, however, has been as much a product of London's allure as a global financial centre as of transfers from overseas. Far from damaging the skills base of the City the corporate storms of the past two decades have strengthened it. The balance of ownership has swung back partially in Britain's favour with the development of large investment banking divisions by several of the country's High Street banks, but this is not really a factor in the maintenance of London's global competitive position. The real strength comes from a self-reinforcing labour market. To put it simply, top-grade financial professionals, both young and ambitious and older and more experienced, want to work in London. They, rather than either their firms or their IT systems, are what really drives the marketplace.

Man and machine: a symbiotic relationship

There can be no doubt that IT has transformed some segments of international capital markets. Global foreign exchange markets could not operate as seamlessly as they do, handling such high volumes around the clock, without robust IT systems. At a different level, the over-the-counter (OTC) derivatives market is dependent on advanced software and integrated platforms that could not be replicated without heavy dependence on computing power. This said, the very fact that financial activity remains concentrated in global financial clusters is sufficient to merit caution about any conclusion that IT has triggered a structural revolution. The vast majority of the world's financial services workforce still commutes to its computer stations and trading screens and engages in a high level of person-to-person interaction in the course of the normal business day.

The impact of IT should be described as catalytic rather than revolutionary. Markets are larger, faster and more complex, but many of their basic features remain intact. If anything, advances in digital technology have strengthened global financial clusters rather than threatened their cohesiveness. Market professionals may rely on their Blackberries, Smartphones and iPads to organise their business lives, but these technologies are the linear descendants of the telephone, fax and cable – they do not represent a quantum leap away from the marketplace and their real utility is to collect information and to communicate. Given the huge ICT infrastructure required by the modern financial cluster, it would be easier to argue that the overall impact of advances in IT has been centripetal not centrifugal.

A recent academic study highlights the importance of the interaction between man and machines in the market infrastructure at the heart of each global financial services cluster:

"In summary, stock trading has become a much more competitive, technology driven and efficient industry, but it has not become people-less or dissolved in virtual space. People, hardware and physical infrastructure matter no less than ever before."[29]

All of this has tended to work in favour of the large incumbent financial clusters, which have benefited from the emergence of what one scholar has recently described as 'two-sided liquidity', in which the market is functionally composed of 'liquidity makers' and 'liquidity takers'.[30] The battle for supremacy has really been a battle for liquidity – a battle in which IT has acted as a force of concentration and one where physical proximity has become a more important binder of cluster strength.

> "Market professionals may rely on their Blackberries, Smartphones and iPads to organise their business lives, but these technologies are the linear descendants of the telephone, fax and cable – they do not represent a quantum leap away from the marketplace."

CHAPTER 9

The Durable City: From Coffee Shop to Gherkin

Throughout this paper we have focused on London, the world's oldest and most successful global financial cluster, as an example of how an incumbent market position has been strengthened by the key competitive drivers of liquidity and human talent, although the points are equally applicable to New York, Hong Kong, Singapore and Tokyo. Once the centre of an empire where the sun never set, London has transmogrified into a global financial cluster whose reach is if anything even more pervasive. Developments over the past 40 years have been critical in shaping the modern City, but the initial impetus was delivered by the legacy of empire and trading hegemony. With most of continental Europe and Asia recovering from the massive destruction of the Second World War and American bankers concentrating on the development of their domestic capital markets, the City had two decades to re-trench its institutions on a financial battlefield over which it no longer enjoyed political or economic dominance.

Even as Tokyo rose phoenix-like from its ashes to assert its position as the global financial centre in Asia, western European capital markets flexed their atrophied muscles and US investment bankers started to look across the Atlantic, a large part of the world was still effectively off the financial map. The Soviet Union had enveloped Eastern Europe in its inward-looking command economy; China was in a state of chaos, a state that would worsen under the destructive cult of Maoism; large parts of South East Asia were a war zone; India and Pakistan were feeling their way painfully towards sustained economic growth; and South Africa, the only wealthy and stable regime in the African or South American continents, had doomed itself to sanctions and isolation by maintaining apartheid. With the exception of Japan and parts of Central and South America, which were firmly under American influence, British investment bankers dominated the foreign investment community.

London's competitive position received two massive boosts at the beginning of the 1960s, in both cases because of obstructions to the international activities of US finance houses. With most foreign countries reluctant to hold dollars in US banks due to fears of asset freezes, New York looked on helplessly when London created the Eurobond market in 1963 and went on to build up a position of all but unassailable dominance. In foreign exchange markets the US maintained its defence of the 1944 Bretton Woods fixed currency pact too long and, by the time it renounced controls in 1971, London, Tokyo and the larger Western European centres had already established strong positions in international foreign exchange trading. The ultimate irony is that while the US dollar remains the most heavily traded currency, with volumes more than double those of the euro and five times those of sterling, London holds the dominant position in international forex trading with a market share roughly double that of New York.

The Iron Lady's legacy

Notwithstanding advances in international bond and foreign exchange markets, the old-fashioned core of the City, built around the trading of equities, was clearly acting as a competitive drag, particularly with New York. History will bestow Margaret Thatcher, UK Prime Minister from 1979-1990, with a reputation akin to that of Oliver Cromwell – a ruthless moderniser who rode roughshod over opposition, antagonised many and damaged the social fabric of Britain in pursuit of long-term economic objectives. Much of her policy legacy, however, was positive, particularly for the City. Thatcher saw the City as an inefficient and over-regulated Old Boys' Club. Employing her normal approach of forcing through one integrated package of reforms, she turned the City upside down in 1986. The 'Big Bang' abolished fixed commission rates, eliminated the distinction between stockbrokers and stockjobbers (effectively independent market makers), allowed foreign groups to buy British stock market firms and ended the UK discount house monopoly on issuing government securities. It was also intended that the London Stock Exchange would move from open outcry to a floor-based screen system, but this was rapidly overtaken by events and electronic screen-based trading moved outside the Exchange itself. While the 'Big Bang' would ultimately spell doom for most British would-be investment banks and open up the City to a wave of foreign takeovers, its impact on London as a global financial cluster was almost entirely positive – the City was catapulted into the modern world and has not looked back.

"While the 'Big Bang' would ultimately spell doom for most British would-be investment banks and open up the City to a wave of foreign takeovers, its impact on London as a global financial cluster was almost entirely positive."

The modernising record of the City's market infrastructure has been distinctly uneven over the quarter century since the 'Big Bang'. The London Stock Exchange went through a particularly torrid time in the years before 2000, with its performance neatly summed up in an analysis of London's market infrastructure and its impact on the City's competitiveness:

"In the case of the LSE, the performance of the exchange from Big Bang in 1986 for at least the following 15 years was disappointing to say the least. In 1986 it was without doubt the pre-eminent exchange in Europe, and its main competitors – Paris and Frankfurt – were not even within striking distance. In the period since then, the LSE failed to move from an electronic quote-based system to a full scale electronic trading system as quickly as it should have, failed with the Taurus project, designed to modernise its settlement system, failed to maximise the value of its derivatives market (which it then misguidedly sold to LIFFE in 1992), and as a result it ultimately failed to maintain its primacy over the other main exchanges in Europe. The LSE also failed to capitalize on the lead that SEAQ International had built up in trading international shares. Its final failure came when LIFFE was taken over by Euronext rather than the LSE in 2002."[31]

The performance of both privatised public infrastructure providers and new private sector ventures has improved significantly over the past decade and much of the lost ground has been made up, at least as far as operational efficiency is concerned. Predators, however, remain on the prowl, as the current wave of proposed mergers makes manifestly clear. It is, however, important to remember that it is the location of marketplaces rather than the location of exchanges that ultimately determines the competitive position of clusters. On this front, a re-evaluation of the other factors supporting market dominance suggests that the position as the European time zone's primary global financial cluster is London's to lose rather than Frankfurt's to win. Frankfurt is not in the current Global Financial Centres Index (GFCI) top ten, and her latest ranking of 14th represents a fall of three places since late 2010. London's closest European competitors in GFCI ranking terms are Zurich and Geneva in 8th and 9th place but neither has the capacity or ambition to unseat London. Europe's second world city, Paris, which mounted a challenge for primacy a decade ago, has now fallen back to 20th place.[32]

Streets of gold?

London has bounced back from its competitive slump through a mixture of the entry of a number of vigorous private sector infrastructure providers and by a long-delayed injection of entrepreneurial aggression into the former mutuals, particularly the London Stock Exchange:

"Notwithstanding its rather sad past, over the last few years the LSE has, through a combination of a global move away from the use of the US capital markets and management initiatives, succeeded in re-establishing itself as Europe's main international equity market. LIFFE and the LCH have had similar problems, which have now been vigorously tackled. The future of LIFFE seems to have been secured, initially by its acquisition by Euronext and now by Euronext's acquisition by the New York Stock Exchange. In

the derivatives field, however, it has to be conceded that LIFFE still lags some way behind the Chicago Mercantile Exchange, which has trading volumes well in excess of those of LIFFE."

"The story of the private sector infrastructure providers such as Reuters and ICAP is quite different. Of course Reuters has itself been through some painful periods of adaptation, but we would argue that it has been able to handle these more rapidly and efficiently than the formerly industry-owned providers. ICAP is an excellent example of a company that has grown dramatically over a relatively short period of time simply as a result of some inspired entrepreneurial leadership." [33]

There is only a spread of 16 points between London, New York and Hong Kong at the top of the GFCI Index. Frankfurt is just over 100 points below Hong Kong. The top three account for roughly 70% of global equity trading and with each solidly entrenched in a different continental time zone, it can be argued that London, New York and Hong Kong are supporting each other in a triangle of global capital flows, rather than competing. It is a very difficult triangle to break into and there is no real evidence that any other centre, with the possible exception of Singapore, is even close to doing so.

Of the three, London has benefited the most from the global geography of the 'two-sided' marketplace and the emphasis on proximity between 'liquidity makers' and 'liquidity takers'. The advantages it derives from financial geography have been clearly described in a recent academic study:

"The foremost factor affecting the geographic concentration of the stock trading industry is the value of proximity, which takes two principal forms: proximity between exchange professionals and marquee customers, and that between the matching engines of exchanges and computers generating orders used by marquee customers. On the side of liquidity takers, the marquee customers of exchanges are institutional investors and investment banks. As a dominant headquarter location for the British financial institutions as well as the leading location for European institutions with international operations and American institutions with European operations, London is the decision making centre for the largest pool of money in Europe. On the liquidity making side, marquee customers are high frequency traders, operating as departments of investment banks or as independent specialised firms. The latter are mostly US based firms, such as Getco, Tradebot and Infinium, for whom trading in London affords a familiar legal environment, as well as offers the neighbourhood of other US financial firms and a great pool of specialised labour."[34]

It is important to note here that the three critical competitive variables we are talking about are once again liquidity, people and legal environment. If anything, the passage above understates their importance. Liquidity is flowing in and out from all over the world and the agents of its exchange, themselves international in origin, are closely grouped in London because the rewards of working there are commensurate with the scale and status of the marketplace.

Market externalities provide the City cluster with sources of strength that most of its rivals will find difficult if not impossible to replicate. Many of these stem from its status as one of the world's truly global cities. London ranks 1st in the Global Intellectual Property Index and 2nd in both the Global Power City Index and the World Cities Survey (New York is in 1st place in both indices). Less quantifiable but equally important are less tangible factors such as English Common Law, compatible accounting standards and the draw of London's vibrant cultural and entertainment environment. London, in short, is a place in which aspiring professionals from all over the world want to live and work. Given the importance of the width and depth of the talent pool to a multi-functional, multi-national global financial centre, London has a significant advantage stemming from a constant inflow of potentially valuable recruits for the City to choose from. London-based firms rarely have to look far outside of the City and Canary Wharf to find the skills and experience on which their competitiveness is ultimately based.

London: durable but not unassailable

Market externalities pose the greatest threat to the City's hegemony. The relationship between the UK financial services sector and the national government – into whose Exchequer it is the most important contributor – has been erratic to say the least. Foreign commentators have often been bemused by a governmental approach that appears to swing between benign hostility and outright hostility. A US banker, quoted in 2003, summed up the sheer incredulity of outsiders: "The one thing the Brits do well is financial services, yet the government doesn't do a thing about it. We'd be all over it."[35]

The City-Whitehall relationship was pushed to breaking point by the financial crisis of 2007-2008, and as yet there are few signs of fence mending. The root cause was the near collapse of Royal Bank of Scotland (RBS) and Halifax Bank of Scotland (HBOS), which was only averted by £37bn of emergency capital from the Brown Government, as well as £61.6bn of emergency loans from the Bank of England. Both the government and British taxpayers had considerable cause for anger with the management of both banking groups, each of which had paid significantly over the odds for second-rate acquisitions, and worse, taken huge positions in sub-prime loans, often in the form of securitised no or low deposit US mortgages whose value was wiped out when the US housing bubble burst.

"London and New York are in danger of reaching a tipping point as governments seek recompense for the Credit Crunch. If that point is reached, we could see major institutions seriously considering moving away from the City and Wall Street."

Governmental anger and an undoubted desire to satisfy public demands for the perceived offenders to be punished have led to a stigmatisation of the British financial services sector under the newly pejorative label of 'bankers'. This reaction was scarcely surprising but the problem is that, three years on from the bank bailouts and a year into a new government, there has been little real change in the policies or rhetoric coming out of Westminster and Whitehall. Despite the imposition of heavier taxes and requirements for delayed payment, City bonuses continue to anger the public and politicians. There is a deep-seated refusal in British society to accept the completely correct position of City firms that high levels of remuneration are the product of competitive dynamics in the global marketplace rather than their own cupidity.

The political offensive against the City poses two particular dangers to the long-term cohesion of the London global financial cluster, which were identified by respondents to the GFCI 9 questionnaire in March 2011:

- The potential for firms to respond to harsh taxation, punitive regulation and unpredictable policy interventions by moving away to another centre.

- The choking off of the supply of talented professional staff by a more demanding personal tax regime, making it more difficult to recruit and retain talent.

Both London and New York are in danger of reaching a tipping point as governments seek recompense for the Credit Crunch. If that point is reached we could see major institutions seriously considering moving their headquarters away from the City and Wall Street.

The situation in Britain in the aftermath of the financial crisis, where the government is not only raising taxes on banks' profits but is also imposing onerous restrictions on financial services bonus payments, shows how the centre's continued success is guaranteed. Press and market speculation about the likelihood of an exodus of financial institutions has been widespread and there is anecdotal evidence that a significant number of foreign nationals departed, either to a different office of their current employer or back to their native country, as personal tax rates rose and the banker backlash gathered steam. However, London is sufficiently attractive that its financial cluster is probably managing to find fresh talent to compensate for this very real brain drain, but it is walking a fine line. The importance of this issue cannot be over-stressed – competitive advantage comes down to human talent and any serious loss of it can only have negative consequences.

There are some signs that David Cameron's government is gradually letting some of the steam out of the offensive against the City. There is still, however, a tendency across Westminster to view the City as an errant golden goose that can be coerced into producing multi-billion pound golden eggs via special tax levies to prop up the government's failing finances. The City is also concerned about the future course of regulatory intervention. Regulatory uncertainty is the enemy of any financial cluster and, given the City's global status, such uncertainty is particularly corrosive.

"There is still a tendency across Westminster to view the City as an errant golden goose that can be coerced into producing multi-billion pound golden eggs via special tax levies to prop up the government's failing finances."

Two cross sections of data from GFCI 9 underscore the strength of the positions held by the leading global financial centres:

Table 1 (page 45) cross-tabulates the 11 GFCI sub-indices for the top 20 global centres, showing how many of the latter were ranked in the top 20 for each pair of sub-indices. For example, 18 of the top 20 centres were in the top 20 for both 'people' and 'infrastructure', whilst just 12 of the top 20 centres were in the top 20 for both 'banking' and 'wealth management'. This is explained by the fact that wealth management centres such as Zurich and Geneva have evolved as specialised clusters. While there is only one perfect correlation – 'banking' and 'general competitiveness' – the number of top-20 centres ranked in the top 20 of each of the sub-indices is consistently high, except in the more marginal sub-indices we have identified, such as professional services and wealth management.

Table 2 (page 46) shows the rankings of the top 20 centres across the same range of sub-indices. This shows exactly why the leading four centres enjoy such a clear advantage over the rest of the field – consistently high ratings across the field of sub-indices. To take our wealth management example, Geneva manages 9th spot overall in GFCI 9, despite only ranking in the top 10 financial centres for 'government & regulatory' (9th), 'banking' (7th) and 'wealth management' (2nd).

Overall, the crisis of 2007-2008 has underlined one of the key messages we derived from our earlier structural and historical analysis. A well-developed international cluster, established as a liquid marketplace and supported by a deep pool of skilled labour, is extremely durable if the state institutions around it remain in place. It is outside the brief of this report to comment on the systemic faults in the international financial services industry that led to the Credit Crunch, or on the efficacy of remedies that national governments and transnational regulators are pursuing to cure the malaise (these are examined in detail in The Road to Long Finance: A Systems View of the Credit Scrunch, by Professor Michael Mainelli and Bob Giffords, published by the Centre for the Study of Financial Innovation in 2009)[36]. For this paper, the significant point is that London and New York, the global financial clusters that absorbed the greatest financial losses, have maintained their positions as 1st and 2nd in the GFCI rankings throughout the crisis.

Table 1 | Correlations of top 20 centres across sub-indices

	People	Business Environment	Market Access	Infrastructure	General Competitiveness	Asset Management	Banking	Government & Regulatory	Insurance	Professional Services	Wealth Management
People		18	17	18	18	18	18	18	18	16	12
Business Environment			17	18	19	18	19	17	18	15	13
Market Access				17	18	18	18	16	18	15	12
Infrastructure					18	18	18	17	18	15	13
General Competitiveness						18	20	16	18	14	12
Asset Management							18	16	18	16	13
Banking								16	18	14	12
Government & Regulatory									16	17	14
Insurance										14	11
Professional Services											14
Wealth Management											

Table 2 | Rankings of top 20 centres across sub-indices

Centre	People	Business Environment	Market Access	Infrastructure	General Competitiveness	Asset Management	Banking	Government & Regulatory	Insurance	Professional Services	Wealth Management	Average
London	1	1	1	1	1	1	3	1	4	1	1	1.45
New York	2	2	2	2	2	2	1	2	3	2	3	2.09
Hong Kong	3	3	3	3	3	3	2	4	1	3	5	3.00
Singapore	4	4	4	4	4	4	4	3	5	4	7	4.27
Shanghai	5	7	5	10	6	8	7	17	2	26	32	11.36
Tokyo	6	6	6	5	5	5	6	5	6	6	17	6.64
Chicago	7	5	8	7	7	6	11	8	9	4	14	7.82
Zurich	12	8	7	9	9	12	8	12	17	12	8	10.36
Geneva	14	11	12	10	17	13	16	9	25	7	2	12.36
Toronto	15	9	10	15	12	10	14	12	10	10	6	11.18
Sydney	17	9	11	13	8	11	10	16	11	15	15	12.36
Boston	9	15	13	8	15	9	20	14	14	8	19	13.09
San Francisco	9	17	14	16	12	6	18	10	15	9	26	13.82
Frankfurt	13	12	16	12	12	14	15	6	18	13	13	13.09
Shenzhen	8	18	9	26	16	16	9	52	7	46	45	22.91
Seoul	38	25	20	25	19	32	5	22	35	38	39	27.09
Washington DC	9	19	15	6	18	15	17	15	13	11	35	15.73
Beijing	15	13	26	19	9	17	12	30	8	41	43	21.18
Taipei	20	20	17	17	20	18	19	43	16	30	54	24.91
Paris	19	16	23	14	9	24	12	7	12	23	24	16.64

CHAPTER 10

Conclusions: Cluster Formation and Sustainability

To draw conclusions on the formation and sustainability of global financial clusters we will return to the tripartite division of academic cluster theory: industry-centred complexes, agglomeration and social networks, or 'clubs'. Testing their explanatory power through the twin lenses of history and contemporary cluster dynamics produces two fairly stark conclusions:

- Most clustering results from a mixture of all three inputs.

- Academic theory falls far short of providing comprehensive answers to the questions posed.

It is very clear that social networks played an extremely important role in early cluster formation. This is scarcely surprising, given that early financial services institutions tended to be family firms, partnerships and syndicates. Industry-centred complexes and agglomeration theories do, however, have some explanatory power in understanding early stage clustering. Market participants were pulled into early financial centres in the Low Countries because these centres were operating as capital nodes for trading networks that linked the Baltic, central Europe, Italy, Spain and Britain. This agglomeration was attended by the development of increasingly complex multi-tiered businesses and exchanges, the most significant of which in purely financial terms were trans-national banks and discount houses.

As clusters matured, the dynamic mixture changed. Growth was based on accelerated agglomeration and the expansion of industry-centred complexes. Social networks remained important, not least because most market institutions remained private businesses, but they effectively became intertwined with the industry-centred complexes which were completely dependent on human talent and interaction. Subsequent agglomeration has acted primarily as an indicator of cluster health – strong clusters continue to pull in new participants at the expense of weak ones.

"A combination of geography and international politico-economic history has always shaped the map of where clusters have grown and survived. This is as true today as it was when Barings and their neighbours fled from Napoleon to the safety of London."

The importance of externalities

While this exercise is neat enough, it tells us very little about why certain clusters have grown to positions of global dominance and maintained those positions in the face of a host of challenges. There is an extremely important set of factors that theoretical cluster models tend to overlook, which might be labelled 'externalities'. A combination of geography and international politico-economic history has always shaped the map of where clusters have grown and survived. This is as true today as it was when the Barings and their neighbours fled from Napoleon to the safety of London. The most significant change in the map of global financial clusters in our lifetime has been the emergence of China from internal chaos and self-imposed isolation to begin asserting her full potential on the international stage.

Below the level of geo-politics, however, the real battle for cluster supremacy is being fought on two different battlefields – one internal and one external – about which academic theory tells us very little. Neither of these have much to do with information technology which is a vital support system for any financial centre, but not a source of competitive advantage as imbalances can be, and usually are, remedied quickly through a combination of investment and imitation. The only sense in which IT can really be seen to have exercised a prolonged influence over the competitive position of international financial clusters is that it has, because of the sheer scale and complexity of modern multi-dimensional infrastructure, widened the gap between a small number of truly global players and a much larger group of national or regional financial centres.

The internal battle is for control of the various global financial marketplaces. The weapons are controlled by the clusters themselves, of which the strength and depth of their labour pool, the ability to attract flows of liquidity and the size and the strength of their large financial institutions are easily the most important. Although this battle is continually being fought, the general rule is that the largest and best-established global clusters maintain their positions and have sufficient reserves to retake any ground lost during periods of weakness, such as that experienced by London in the aftermath of 'Big Bang'. Global financial clusters and global marketplaces require global cities, and particularly the global concentrations of skilled market professionals that only the latter can support.

The external battlefield is – and always has been – that of tax and regulation, underpinned by the legal environment. In established centres, the legal system and the certainty it gives allows participants to transact and do business. Tax and regulation are more variable. It was the medieval Catholic Church's banning of usury that accelerated the use of bills of exchange as cross-border financial instruments, using the simple device of drawing the original instrument in one currency and making it payable in a second, with a built-in interest/cum-profit margin in the designated rate of exchange to avoid usury. Taxation tended to be a blunt instrument, usually employed by the state to finance wars, and financial centres were always vulnerable to such levies simply because they normally represented the largest and most liquid sources of capital.

"It is personal rather than corporate taxation that is the real danger. Ultimately, a financial cluster will rise or fall dependent on its ability to attract and retain a multi-talented workforce."

The battle today is a more complex war of attrition. The entire taxation regime has changed beyond recognition since the start of the 20th century with the pace of change accelerating over the past three decades as growing state sectors imposed higher and higher burdens on the public purse. While the financial services sector has had to shoulder the general increase in corporate and personal taxation, it has often also attracted additional taxes, such as the Stamp Duty on all equity purchases in the UK, as well as extraordinary levies on profits.

Large financial services institutions are international conglomerates with the expertise to manage their corporate tax payments around the globe. The same is not true of smaller firms, such as the financial boutiques that are often at the cutting edge of competition and innovation, and thus these are far more likely to seek lower tax regimes. As long as their destination is simply a tax haven, then no real damage will be incurred by the cluster they have left as their business will still be transacted in its marketplace. The situation changes completely if they decamp to a rival global cluster.

This time its personal

This said, it is personal rather than corporate taxation that is the real danger. Ultimately, a financial cluster will rise or fall dependent on its ability to attract and retain a multi-talented workforce. The bulk of that workforce is made of experienced professionals in their 20s and 30s who are extremely mobile. Only a small portion of this workforce will remain in the industry after they turn 40 and fewer still until retirement, so they focus on maximising income and savings while still in the mainstream of career development. The entire European Union is one labour market, but it does not have one tax regime. Confronted with rising personal tax rates, EU nationals can easily move elsewhere in the Union, particularly in cases where their existing employers have offices in other European centres. With aggressive new market entrants such as the Gulf States and Singapore offering significant personal fiscal incentives, there is also a general threat of a 'brain drain' from established global centres that push taxes beyond the level deemed a fair charge for the professional and social attractions of the global city in question. There is, for example, a very real fear that the recent UK increase of the upper income tax band from 40% to 50% has crossed that line.

The importance of the personal taxation issue cannot be overemphasized as it impacts directly on one the key assets of a successful global cluster, its skilled workforce. It is currently estimated that something in the order of 25% of the income tax collected in the UK is paid by about 275,000 people, of whom at least half are likely to work directly or indirectly in financial services.[37] As we have stressed before, many of these people are highly mobile and their continued presence in the cluster should not be taken as a given if the tax burden imposed on them is significantly out of line with that in rival centres.

"The impact of the IT revolution has been centripetal rather than centrifugal, concentrating liquidity in clusters. The result: global financial clusters are stronger than they have ever been and the largest continue to gain ground at the expense of smaller competitors."

The price of uncertainty

Regulation tends to be more of an institutional barrier than a personal one. As is the case with taxation, the financial services industry's pain threshold is fairly high when it comes to regulation. As long as a cluster is facing the same regulatory burdens as its competitors, and as long as the regulatory horizon is relatively stable, firms can generally pass on the increased costs of compliance to their customers. There is, however, an undercurrent of fear that politicians and their regulators could cause lasting damage to global clusters that have prospered when they held their futures in their own hands, but now see their grasp being prised loose. The fear of this Sword of Damocles is captured in the answer of one of the respondents to the GFCI 9 question "Do you have any comments on the specific factors that affect the competitiveness of financial centres?"

"There is a constant overhang of regulatory change in the major markets – those affected most by the global financial crisis – that can change the dynamics of our industry in major ways. In the interim, the financial centres must wait with uncertainty and trepidation, not fully knowing what governments will apply as solutions and new rules to counter future crises."[38]

This comment was not made with regard to any particular city, but to all global financial centres. Regulatory uncertainty is a global phenomenon, one that has grown in importance with the increasing number of international regulatory initiatives. As the comment itself hints, international initiatives are not necessarily implemented in the same way or with the same speed in different countries. Global financial clusters face both regulatory uncertainty and the possibility of being disadvantaged compared to some of their competitors.

Centres of the universe

None of the factors set out in the introduction of this paper as likely to erode the strength of global financial clusters have been shown to pose a real threat. Globalisation has strengthened the power of the dominant clusters by increasing liquidity flows and access to talent. The rise of Asia has simply produced a more balanced trading network within which transactions between the major centres act in a mutually reinforcing manner. The impact of the IT revolution has been centripetal rather than centrifugal, concentrating liquidity in clusters rather than scattering it across a host of mini-marketplaces. The result: global financial clusters are stronger than they have ever been before and the largest clusters continue to gain ground at the expense of smaller competitors.

The biggest threat to this position of strength comes from the external environment within which clusters operate. This is nothing new. The history of financial clusters has consistently shown them to be most vulnerable to changes in the political environment. In the past this has usually taken the form of war or revolution. Today it is a combination of higher personal taxation and a more restrictive regulatory regime.

There is nothing inevitable about the future of financial centres. The real determinant is the speed with which politicians and regulators come to terms with the recent financial crisis. If they do so quickly, reducing punitive taxation and eliminating regulatory uncertainty, then our global financial clusters will continue to stabilise and grow. If they continue to extract unsustainable taxes and debate seismic regulatory changes, then existing clusters could begin to fragment. There are too many unknown variables to forecast a future cluster hierarchy under this scenario, but it is difficult to believe that it would be as efficient as the one we have today.

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