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Clustering in the British Broadcasting and Financial Services Industries: A Comparative Analysis of Three Regions¹

Gary A. S. Cook², Naresh R. Pandit³

Abstract

This paper reports on clustering in British broadcasting and financial services industries in three British cities. Econometric evidence indicates that the dynamics of clustering in these *service* industries are very similar to those found in high technology manufacturing. The study also draws on 126 interviews with senior managers and policy-makers conducted during 2001 and 2002 and numerous secondary sources. We find that whilst both industries appear to have similarities in terms of greater rates of innovation and new firm start-ups, the underlying mechanisms are very different. Moreover, both differences in cluster type and cluster depth explain differences in cluster performance among different regions.

Key words: industrial clusters; growth; entry; broadcasting industry; financial services industry.

1. Introduction

Geographical clustering is a major characteristic of industrial growth and has recently become the subject of intense interest in academic (Fujita, Krugman and Venables, 1999; Porter, 1998; Saxenian, 1994; Swann *et al.*, 1998), business practitioner (*The Economist*, 1999; Owen, 1999) and government policy (DTI White Paper, 1998) circles. In line with the UK Department of Trade and Industry we define a cluster as a geographic 'concentration of competing, collaborating and interdependent companies and institutions which are connected by a system of market and non-market links' (DTI White Paper, Analysis and Background Report, 1998, p. 22). Perhaps the most famous example of clustering and economic growth is the microelectronics cluster located in the Santa Clara ("Silicon") Valley, California.

This paper builds on earlier work by Swann and others that investigated the rate of growth of the firm as a function of the strength of the cluster in which it is located and whether strong clusters attract a disproportionate number of new start-up firms (Baptista and Swann, 1999; Beaudry *et al.*, 1998; Swann *et al.*, 1998; Swann and Prevezer, 1996). This paper has two main objectives. First, to examine the extent to which the findings of the previous studies, which investigated high technology manufacturing industries (aerospace, biotechnology, and computing), can be generalised to non-high technology *service* industries, namely, British broadcasting and financial services. Second, to compare patterns of industrial clustering in the two industries with a view to highlight similar and different clustering dynamics at work in each case in each of three city regions.

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2. Literature review

The literature provides many definitions of what a cluster is. No one definition is entirely satisfactory simply because there are a number of cluster *types*; each type with different characteristics and sustainability potential (Markusen, 1996). However, a general definition is the one used by Porter (1998, p. 197-98):

Clusters are geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate.

This definition brings out several important points. First, the definition of a cluster does not relate to a single industry; rather it merely requires that companies in a cluster are *interdependent* in some way. For example, we know from Saxenian's (1994) work that the Silicon Valley cluster includes not only microelectronics firms but also venture capitalists. Second, a cluster is defined not just in terms of companies but also supporting institutions. We know that these are important in strong clusters. Third, non-market linkages are emphasised. These, borne out of a common culture and trust, are thought to be important particularly with respect to innovation. Finally, the definition encourages us to think of clusters as complex systems of industrial organisation. Furthermore, because clusters are complex systems that evolve naturally, they are difficult to imitate and therefore confer sustainable economic advantage to the locations in which they arise (Maskell and Malmberg, 1999).

A point that follows, and one that is stressed in the literature, is that the relevant geographical unit from a clustering point of view is not the nation but rather the city/region (Jacobs, 1984). Indeed, there is much support in the literature for the idea that core metropolitan areas in particular are the well-spring of economic dynamism and innovation and exert a profound influence on the prosperity of the nations in which they are located. Related to this, a recent and growing body of literature demonstrates that connections and flows between a clustered city-region and other similarly clustered cities/regions are more important than connections between a clustered city-region and the nation in which it is constituted.

2.1. Cluster Benefits and Costs

An obvious reason for maintaining location in a cluster is simple inertia: Sunk costs at a location make movement to another location unattractive. A firm may also be attracted to a cluster because of so-called "fixed factors". These are benefits that exist at a location that are not a function of the co-presence of related firms and institutions and include climate and cultural capital. Beyond these reasons and from the perspective of the clustered firm, clustering theory maintains that there are benefits and costs directly related to the co-presence that exists within a cluster. These can emanate on the demand or supply side. When benefits are greater than costs, the cluster grows (incumbent firms grow and new firms are formed). When costs are greater than benefits the cluster declines. These processes can constitute a 'natural' evolution of city-regions with 'declustering' of specific sectors as some activities get dispersed when they cannot justify their high cost locations (Hoover, 1948; Jacobs, 1984). In addition, some of the benefits and costs are dynamic in that they increase as geographical concentration increases. In the conventional analysis of clustering, positive feedback plays a central role. Agglomeration or external economies result in demand and supply conditions that are better in a cluster than in isolation and so promote the growth of incumbent firms and attract the entry of new firms. This growth and entry increase cluster strength and so promote further growth and entry which begin to accelerate once a cluster has reached a critical mass. Other effects include a higher rate of productivity growth (Henderson, 1986) and more prolific innovation (Baptista and Swann, 1998). Table 1 provides a summary and draws from the works of Swann *et al.* (1998) and Porter (1998).

Table 1

Cluster Growth and Decline Factors

	Demand Side	Supply Side
Growth	Customer proximity	Knowledge spillovers
	Reduced consumer search costs	Specialised inputs
	Informational externalities	Infrastructure benefits
		Better motivation and measurement
		Experimentation at lower cost
		Informational externalities
Decline	Congestion and competition in output markets (overheating)	Congestion and competition in input markets (overheating)
	Technological discontinuities	Cartels and over consolidation
	Changes in tastes and preferences	Powerful trade unions
		Stagnant local infrastructure

On the demand side, the firm may benefit from customer proximity which can be especially important when customers are sophisticated. Such customers can encourage innovation by being demanding and by alerting suppliers of new trends and innovations. Such knowledge exchange between customers and suppliers can be problematic because the value of knowledge is difficult for users to gauge before they have acquired or absorbed it. Accordingly, it is difficult for a market for the exchange of knowledge to arise. Clusters provide a solution to this problem. The clustered firm may also benefit from reduced consumer search costs. The idea here is that the firm is more likely to be found by customers when it is located in a cluster. Information externalities on the demand side may also exist, that is, a cluster's reputation rubs off on the firm that is located in it. This can be a major benefit when a cluster has a high reputation (e.g., Harley Street and Saville Row for medical and tailoring services respectively).

On the supply side a major benefit is that knowledge spills over in a cluster and this is particularly important when valuable industry knowledge is tacit rather than codified. In a sense, tacit knowledge becomes a public good. When this happens, innovation is more prolific. Mechanisms for knowledge spillovers include labour market churn, social interaction and diffusion via clients and suppliers.

A second supply side benefit is access to specialised inputs. As a result, the firm benefits from lower search costs because it can easily recruit from a pool of specialised labour and can tap into a specialised supplier base. Infrastructure benefits can go beyond access to a good transport network to include institutions that coordinate activities across companies in order to maximise collective productivity, for example, trade associations which set standards and/or conduct marketing for the cluster as a whole. Better motivation and benchmarking can also exist within a cluster as local rivalry and can act as a powerful spur. Another important supply side benefit is that it can be easier to try out new ideas in a cluster since it is possible to gain instant feedback and all of the inputs (including sympathetic venture capital) required for experimentation are likely to be present in the cluster.

With respect to decline factors, on the demand side, as the number of competitors increases, we would expect prices and so profits to fall. Also, a cluster specialised in a particular technology can go into decline if that technology is substituted. Porter (1998) provides the example of New England's loss of market share in golf equipment to California as the industry moved from traditional materials (steel and wood) to advanced materials. Finally, changes in tastes and preferences can lead to cluster decline.

On the supply side congestion and competition in input markets can lead to higher wages and rents which in turn could lead to movement out of the centre of a cluster. Cartels and over-

consolidation, traditional trade unions and stagnant local infrastructure are all potential decline factors as they can restrain competition and innovation and slow down productivity improvements. These potential supply side decline factors provide the main agenda for government industrial policy.

2.2. Cluster Types

As indicated above, the extent to which clustering benefits arise varies according to cluster *type*. A number of important ideal types have been identified by Markusen (1996), each of which manifests a certain type of economic logic. The classic cluster type is the Marshallian New Industrial District (NID) (Marshall, 1919). Such districts are populated by small, locally-owned firms. Major external economies exist in the form of access to a pool of suitable labour, specialisation, including specialised supply of inputs and knowledge spillovers. Information is likely to flow more easily due to the natural tendency of people in the same trade to share ideas and discuss and demonstrate improvements. Distinct but related to the NID are the Italianate or Third Italy (Best, 1990; Piore and Sabel, 1984) and Innovative Milieu (Camagni, 1991; Cappello, 1999) types where there is greater cooperation between incumbents to share risk, ensure stability and promote the region often embodied in strong trade associations and regional government (high “institutional thickness”).

Another very important type is the Hub-and-Spoke cluster where regional structure revolves around one or several major corporations in one or a few industries. The presence of large firms reflects available economies of scale and scope. Connections within the cluster are not evenly dispersed. Rather they tend to flow between hub firms and fringe firms. The orientation is external especially with respect to customers. High economies of agglomeration are present and particularly important in the pool of specialised labour. Also, knowledge spillovers may occur through labour market churn rather than informal social interaction as in the NID. Loosely related hubs in several industries may co-exist and intra-cluster connectedness (global nodes) may be reflected by labour mobility patterns.

A less important cluster type in terms of performance and sustainability is the Satellite Industrial Platform: A congregation of branch facilities of externally-based multiplant firms often attracted to the location by government inducements on tax and rents. The presence of a few large firms reflects moderate to high scale economies. The orientation is external, mainly towards the parent and minimal intra-district trade or even conversation takes place between platform “tenants”. High rates of labour mobility in and out of the region at the senior level (within the parent firm) is typical while more junior labour tends to be hired locally. Cluster growth and sustainability is constrained as the main sources of competitive advantage and innovation are external to the region. Weak trade associations are typical but a strong role is often played by local government for the provision of infrastructure, tax-breaks and other generic business inducements (e.g., good schools). The fourth cluster type is the State-Anchored District where a major government tenant (e.g., defence plant, government department, university etc.) anchors the regional economy. The classic instance is where state defence establishments lead to clusters of defence-related firms, but a wide range of different types of government establishment may be the centre of such a district. It is difficult to theorise about the origin of this type of cluster as it is more the result of administrative fiat than the result of natural forces. However, their on-going operation, once formed, can be similar to the Hub-and-Spoke cluster.

Most real-world clusters are what Markusen calls “sticky mixes” – hybrids of the above – although one type will probably dominate. For example, Silicon Valley has a NID in electronics but also has a number of important hub firms, such as Lockheed, Hewlett Packard and Stanford University. It also hosts a number of branch plants, as in the Satellite Platform model, such as IBM, OKI, NTK Ceramics, Hyundai and Samsung and benefits from proximity to the defence industry as in the State-Anchored District model. A final point with respect to cluster types is that a cluster may mutate from predominantly one type to another over time. The example that Markusen gives is the Detroit automotive cluster which began as a NID and transformed in to a Hub-and-Spoke.

3. Econometric evidence

A series of econometric studies by Swann and Prevezer (1996), Beaudry *et al.* (1998), Cook *et al.* (2001) and Pandit *et al.* (2001, 2002) have investigated the dynamics of industrial clustering in three high technology manufacturing industries: computing, biotechnology and aerospace, and two service industries: broadcasting and financial services. These studies have used a common methodology which allows comparisons to be made. In all cases, two types of model were estimated. The first, a growth model, estimated the extent to which cluster strength, measured in terms of employment in both the firm's own line of activity (own employment) and in related lines of activity (other employment), either impeded or enhanced the growth rate of firms located within the cluster. In almost every case, cluster strength in the firm's own line of activity *enhanced* the firm's growth rate, whereas strength in related lines of activity *diminished* firm growth. As shown in Table 2, there is a strong similarity between the results from the high technology manufacturing industries and the service industries. A '+' indicates growth-promoting effects and a '-' growth-impeding effects.

The second type of model was based on firm entry and investigated the extent to which cluster strength in sub-sectors within each industry either appeared to attract or repel entry of firms into each sub-sector. These models are more difficult to compare than the growth models but, once again, do reveal some very similar patterns, although with a somewhat lesser degree of consistency than in the case of the growth models. Entry into a given sub-sector is almost always *deterred* by existing cluster strength in that sub-sector and entry attraction typically emanates from *other* sub-sectors. Certain *core* sub-sectors appeared to be especially important in attracting entry into the cluster. For example, in computing these were manufacture of hardware, systems and components; in broadcasting, programme production and a variety of specialist services supporting programme production; and in financial services, banks, trusts and non-life insurance companies. In general, individual sub-sectors were either *entry attractors* or *subject to entry attraction* from a range of other sub-sectors and very rarely performed both roles equally. In only a few cases there were virtuous circles where sub-sector A attracted sub-sector B and sub-sector B attracted sub-sector A.

The broad-brush econometric investigations which produced these results can cast no light on the specific reasons why the identified dynamics have emerged. It is entirely plausible that while the patterns of growth and entry effects between high technology manufacturing and services appear to be similar, the underlying mechanisms which give rise to them are different. It is also possible that the similarity in the clustering dynamics is merely a spurious statistical artefact, although the degree of similarity across five different industries makes this unlikely.

4. The case study methodology

The study employed a comparative case study methodology (Yin, 2002). The comparative logic of the study required careful case selection. For each industry, three case studies of clusters were selected: Greater London which is the largest and most important for both industries and two further regional concentrations, one which had high performance in broadcasting and low performance in financial services and another which had high performance in financial services and relatively low performance in broadcasting. This enabled two important contrasts to be made. Firstly, holding industry constant and allowing geographic region to vary, we were able to examine high and low performing clusters and relate findings to the Greater London cluster. Secondly, holding region constant and allowing industry to vary, we were able to examine high and low performing clusters and relate findings to the Greater London clusters.

For each industry, high and low performance clusters were defined by using the models of growth and entry developed in our econometric studies as reported above. Every region was ranked from best to worst performing according to the extent to which it performed better or worse than our models predicted in terms of growth and entry. The two regions outside London which maximised the contrast between cluster performance in the two industries were the South West of England (mainly the broadcasting and financial services clusters in and around the city of Bristol)

and South Scotland (mainly the broadcasting and financial services clusters in and around the cities of Edinburgh and Glasgow).

Primary data were gathered via a series of semi-structured interviews. There were two criteria for the selection of interviewees: adequate coverage of the major industry sub-sectors; representation of firms of different maturity from long-established firms to very recent entrants. Some 126 interviews were completed broadly in line with this research strategy.

5. The case study Evidence

5.1. Cluster Costs and Benefits in Financial Services

The British financial services industry is highly clustered. Pandit *et al.* (2001) reports that over 44% of firms are located in the Greater London area. Broadening to include the South East gives a figure of approximately 58%. Broadening further to include North West of London increases the figure to approximately 64%. Other important centres are the North West (6.9%), the West Midlands (5.4%), the South West (5.2%) and South Scotland (4.7%). The industry employs 1,060,000 people (IFSL, 2001). Of these, 340,000 (32%) are located in Greater London, mainly in the City and Canary Wharf. 111,000 (10%) are located in Scotland, mainly in Edinburgh and Glasgow and 76,000 (7%) are located in the South West, mainly in and around Bristol.

Why do financial services cluster in this way? All of the three regions benefit from the existence of attractive fixed factors. They are well endowed with cultural capital in the form of first class theatres, restaurants, historical sites etc. Excellent schools are also available at each location and these can be important to the family-minded financial services professional. Other fixed factors include the use of the world business language, English, and a time-zone that lies conveniently between and so overlaps the daily trading times in New York and Tokyo and the far east. For London in particular, companies benefit by trading close to where liquidity is and so it is no surprise that the first to locate there did so in close proximity to the central bank and the stock exchange. Also, the relatively liberal British regulatory regime is a factor which partly explains why London experienced rapid growth in the eurocurrency market (Bonetti and Cobham, 1995) during the 1960s. Finally, firms are attracted because of the supply of suitable premises (buildings with large floorplates in the case of investment banks based in Canary Wharf).

Beyond these fixed factors, on the supply side, large and complex financial services firms need access to large pools of specialised labour. Thus we observe that merchant and 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 (e.g., knowledge of how to trade Eurobonds is usually gained under the supervision of a senior Eurobond dealer) and secondly by the increased pace of innovation in financial services which has further raised the importance of tacit knowledge which is more easily exchanged when agents are geographically close. Conversely, smaller scale financial services companies such as building society branches and independent insurers that are less complex and less reliant on tacit knowledge do not rely on large quantities of highly specialised labour and so tend to be located outside major financial centres.

Another supply related explanation for clustering arises from the reliance of financial services firms on a vast array of supporting services (e.g., accounting, actuarial, legal, management consulting, computing and software development, advertising and market research, recruitment, education, financial publishing, software development) and again these are most prevalent in major financial centres. Related to this, the co-location of related markets (banking, insurance, securities dealing, fund management, derivatives, maritime services, foreign exchange, bullion markets, and support services already mentioned) leads to economies of agglomeration resulting in improved flows of information, greater efficiency and higher liquidity.

A Comparison of Growth Dynamics between Service and High Technology Manufacturing Industries

Broadcasting ^a	Television broadcasting	Radio broadcasting	Programme production	Production services	Equipment supply	Broadcasting systems	Distribution	Artistes
Own employment	+	-	+***	+	+	+***	+	-
Other employment	+	-	-***	-	-*	-***	-	-
Financial Services ^b	Banks	Non-bank financial intermediation	Trusts	Life insurance	Non-life insurance	Activities auxiliary to financial intermediation	Activities auxiliary to insurance	Stock markets
Own employment	+**	+**	+***	+	+	+	+	+
Other employment	-	-***	-**	-	-*	-	-	-
Computing ^c	Communications	Components	Hardware	Distribution	Peripherals	Services	Software	Systems
Own employment	+	+	+***	+***	+	+	+	+
Other employment	-*	-	-*	-**	-	-	-	-
Biotechnology ^c	Therapeutics	Diagnostics	Equipment	Agriculture	Chemicals	Food	Waste	
Own employment	+***	+**	+***	+	+	+	+	
Other employment	-	-	-	+	+	-	-	
Aerospace ^d	Mechanical engineering	Electrical engineering	Engine manufacturer	Parts manufacturer	Cabin manufacturer	Maintenance and repair	Support services	Others
Own employment	+***	+**	+	+	-	+	+**	+
Other employment	-**	-	+	-	-	+	-	-

*** significant at 1%, ** significant at 5%, * significant at 10%

a Source: Cook et al. (2001). b Source: Pandit et al. (2001). c Source: Swann and Prevezer (1996). d Source: Beaudry et al. (1998).

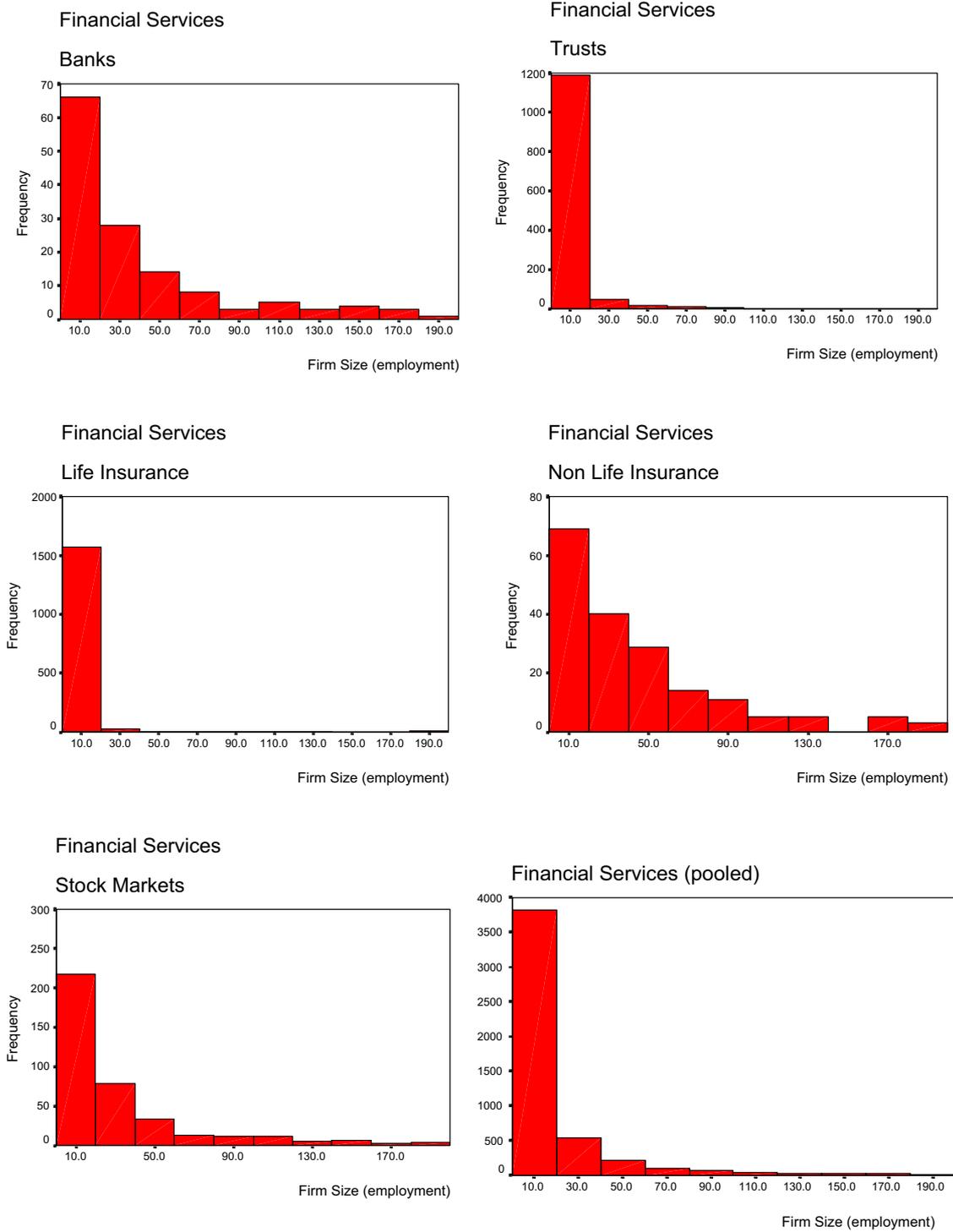


Fig. 1. Firm Size Distribution in British Financial Services

The importance of economies of scale has also increased in recent years and is being driven by the increased use of information technology. This new technology has enabled more rapid innovation following a pattern that conforms to Barras' (1986, 1990) view that financial services innovation occurs in a "reverse product cycle" manner (the process of innovation is *preceded* by the adoption of new technologies developed in other sectors). The association between large firms and cluster dynamism is implicit in Figure 1 which gives firm size distribution in five financial services sub-sectors. The pooled graph shows that on the whole, financial services are characterised by a large number of small firms. However, in general, dynamic sub-sectors such as banks and non-life insurance are dominated by large firms and the least dynamic sub-sectors such as life insurance are dominated by small firms. An exception to this arises in the case of trusts which are dynamic despite being dominated by small firms.

Three distinct characteristics of services in general, that they are consumed simultaneously with their production, cannot be stored and are intangible (Roberts *et al.*, 2000), imply an extensive producer-consumer relationship and underlie many of the demand side benefits of financial services clustering. For example, because financial services are intangible, quality is often not associated with a physical product (as in the case of many manufactured goods) and is instead associated with the reputation of the firm's location. Thus we observe, new entrants preferring to locate in recognised financial districts. Also, the bespoke nature of some financial services (e.g., primary issues) requires a close supplier/customer relationships built on the trust that can only be generated through frequent face-to-face contact (Davis, 1990). The producer-consumer relationship can also be a major source of innovation. An example that was described by a senior investment banker located in Canary Wharf is as follows. The investment bank's major customers are the pension funds in the City of London. These funds are demanding and encourage their investment bank suppliers to invent new products to better manage risk and liquidity. Once the innovation is delivered, it is by its nature easy to copy. Accordingly, the pension fund will approach other suppliers and ask for the new product under better terms than provided by the innovating supplier. Thus, knowledge of the innovation diffuses around the cluster strengthening its position relative to other clusters and incentivising the original supplier to innovate again.

Finally, positive feedback can be observed. Liquidity attracts further liquidity building the cluster's reputation as it grows. Similarly, one firm's movement out of the cluster or out of the centre of a cluster can lead to the same move by others as if following a herd instinct.

5.2. British Financial Services Cluster Types

What types of clusters exist at the three locations studied? The following is a brief overview. The South West (Bristol) resembles a Satellite Industrial Platform type of cluster. There are insignificant economies of agglomeration and the industry's history at this location is short: There was no financial services industry in Bristol until the 1970s. It was at that time that London companies such as Clerical Medical, Sun Life, Nat West Life and more recently Lloyds TSB Retail Banking moved the less knowledge intensive aspects of their business out of London to save costs. Incumbents are not well connected and are externally oriented towards their parents. Senior employees do not tend to move between cluster incumbents, rather they move within their geographically dispersed parent company. In contrast, South Scotland resembles a Hub-and-Spoke type cluster. The cluster is dominated by large banks (The Royal Bank of Scotland Group, HBOS, Lloyds TSB Scotland and Clydesdale Bank) and insurance companies (Standard Life, Scottish Widows and Scottish Equitable) which are specialised in serving banking and fund management markets. There is mobility of senior employees between cluster incumbents.

A larger contrast still is observed in London which is also resembles a Hub-and-Spoke type of cluster. Important hub firms are the major clearing banks (HSBC, Barclays, Lloyds TSB and Nat West, now part of the Royal Bank of Scotland Group) and the large investment banks (Lazard Houses, Barclays Capital, Rothschild Group and Citigroup). We detect significant economies of agglomeration in London and, what is more, unlike the Edinburgh/Glasgow cluster, these occur across the full-range of industry sub-sectors (banking, insurance, securities dealing, fund management, derivatives, maritime services and foreign exchange). Firm size is important espe-

cially for the larger banks and permits the exploitation of economies of scale, greater liquidity, more organised markets and helps support services.

A major benefit is access to a pool of specialised labour and the frequent churn of this pool is a major mechanism by which knowledge diffuses. An interesting feature of the London cluster is that labour mobility is also high between the four major international financial centres (London, New York, Frankfurt and Tokyo). Supporting institutions are important but not to the extent that is observed in the NID and variants. We observe the presence of the Stock Exchange, supportive local government (the Corporation of London), industry trade associations (e.g., the British Bankers Association), the industry funded data collection and promotion organisation International Financial Services, London (IFSL) and a plethora of specialist education providers including the London School of Economics, London Business School and City University Business School. London also has elements of a State-Anchored Region in that the presence of the Central Bank (the Bank of England) and the principal regulator (the Financial Services Authority) are significant.

Strong cluster benefits have been found to exist in the financial services industry at the three locations studied. In particular, access to specialised inputs and knowledge spillovers on the supply side and a cluster's reputation and close proximity to sophisticated customers on the demand side are important benefits in financial services clusters. However, these benefits do not arise equally at the three locations reflecting the fact that London, Edinburgh/Glasgow and Bristol represent different cluster types. They are the result of unique evolutionary trajectories and have different make ups and processes. In London and South Scotland the presence of large firms that serve many markets is a central driver of dynamism whereas the case of Bristol shows that agglomeration by itself does not necessarily entail superior economic performance. In addition, the connectedness of incumbent firms and institutions is important.

5.3. Cluster Costs and Benefits in Broadcasting

The British broadcasting industry is highly clustered, with an estimated 70% of employment in film and television concentrated in London. Within this, there is a very strong concentration on an area of approximately one square mile in Soho. As with financial services the analysis will revolve around two issues. The first is what general cluster benefits and costs are evident in the broadcasting clusters studied. The second is how each of the three regional clusters studied maps onto the Markusen typology.

Broadcasting differs from financial services in a number of important ways. Chief among them is the fact that clearly some sub-sectors, namely manufacture of broadcasting systems and equipment supply, are in high technology manufacturing. Broadcasters, programme producers, production services and the many specialist firms to which they subcontract are users of this high technology equipment. They play a vital role as lead users (von Hippel, 1988) in driving innovation. Tacit knowledge is an important element not only in the high technology manufacturing sub-sectors but also in programme production, production services, television and radio broadcasting and artistes. In broadcasting and production a feel for what the audience wants and how to deliver it is not codifiable knowledge. It is commonplace for those working in the industry in London to talk about the importance of "the buzz". This refers to the constant flow of ideas, gossip and rumour which inform people about the latest thinking on what are considered to be commercially viable ideas. There is also an important dynamic whereby people are able to keep abreast of important technological developments through word of mouth and the ability to see for themselves by visiting local facilities which own, or are conducting a trial of, the latest designs. Soho is renowned for its clubs, bars and restaurants which provide important social spaces where those in the industry can meet and talk. People talk of good ideas picked up in the queue for the sandwich bar. Ideas "hang in the air" in the fashion described by Marshall (1919). Similarly, the craft of acting or performing stunts is not something that can be learned from a book. Close proximity is important not only to be in touch with the flow of ideas from which innovation may spring but also to work out how ideas may be translated into products which ultimately relies on pooling the know-how of a diverse set of (economic) agents.

The labour market is of undoubted importance in broadcasting clusters. Due to the time pressures which exist teams have to be assembled quickly and must be able to form good working relationships. Personal relationships are important for a number of reasons. Communication is easier and more effective where people have worked together before, allowing convenient shorthand to be used without ambiguity. Relationships make it easier to have a frank exchange of views without giving offence which is also important in the creative process. There is perceived to be something of a "black art" in programme making with the success of the end result perceived as being uncertain and unpredictable. This can be interpreted as an example of tacit knowledge. Good producers and directors are sought after because they know how to make good programmes of a particular type, knowledge which is not easily transferable. Key personnel often insist on working with particular individuals who they know can be relied on to produce the type and standard of work they want. In many cases considerable sums of money are being expended which can be wasted if the programme is badly shot, the sound badly recorded or the material badly edited. It is also important that programme makers can rely on their teams, including providers of facilities, to work flexibly. Again personal relationships built on repeated interaction help provide this assurance.

Labour market pooling is highly important. High quality labour is attracted to London because this offers the most likely source of continuity of employment. It is easier to be on the networks which will lead to offers of work or recommendations to other people in London. Recruitment is almost always on the basis of personal knowledge or personal recommendation. An important counter-example is Bristol, which is the premier location for natural history producers, based around the Natural History Unit of the BBC. Here anyone who aspires to work at the highest level in this genre has to operate in this location (although until recently Norwich was another important location based on Anglia's Survival series). From the employer's point of view, London is an attractive location, despite the obvious congestion, because it offers such an exceptional pool of creative talent relative to other areas of Britain. There is clearly a dynamic at work where the reputation of particular regional centres, above all London, attracts talent which makes the centre a more desirable place to do business and so on (Nachum and Keeble, 1999). Most recruitment is done from the local labour market, although specialist skills may be sourced from much wider afield. Sharing of personnel is one important way in which firms demonstrate their allegiance to the cluster. It is not unusual for firms, particularly outside London, to allow other firms in the cluster to use key personnel. One reason they do so is to help valued individuals maintain continuity of employment for fear they will migrate (usually to London) never to return. Keeping talent in the cluster is genuinely perceived as being in everyone's interests.

Two important declustering forces are at work. The first is that high rents in Soho have seen a movement of firms eastwards to areas such as Clerkenwell and more recently Hoxton. Two things are interesting about this trend. As the media businesses have shifted, so cafes and bars have sprouted in the new areas to provide the "social infrastructure" which is an important element in the life of the industry. Secondly, there has been a process whereby the emergence, for example, of Clerkenwell as an area for television and media firms has led to rising rents and a further eastward displacement in search of cheaper properties. This illustrates the importance of traditional congestion effects and the ability of clusters to solve the problem, as Porter (1998) has suggested. The second element of declustering is that there has been a growing tendency for firms to engage in co-production arrangements which often traverse the borders of nations.

Institutional thickness does appear to be important. There are a variety of providers of specialist services in the industry. PACT (1997), the trade association for independent production companies lists around 50 organisations offering specialist services to production companies covering a range of areas including contracts, finance, industrial relations and health and safety. The vast majority of these organisations are headquartered in London, still by far the most important UK cluster. Such organisations play their part in the collective learning of clusters and other institutions are also important. The willingness to share ideas in informal networks and at industry events and informal social gatherings is one source.

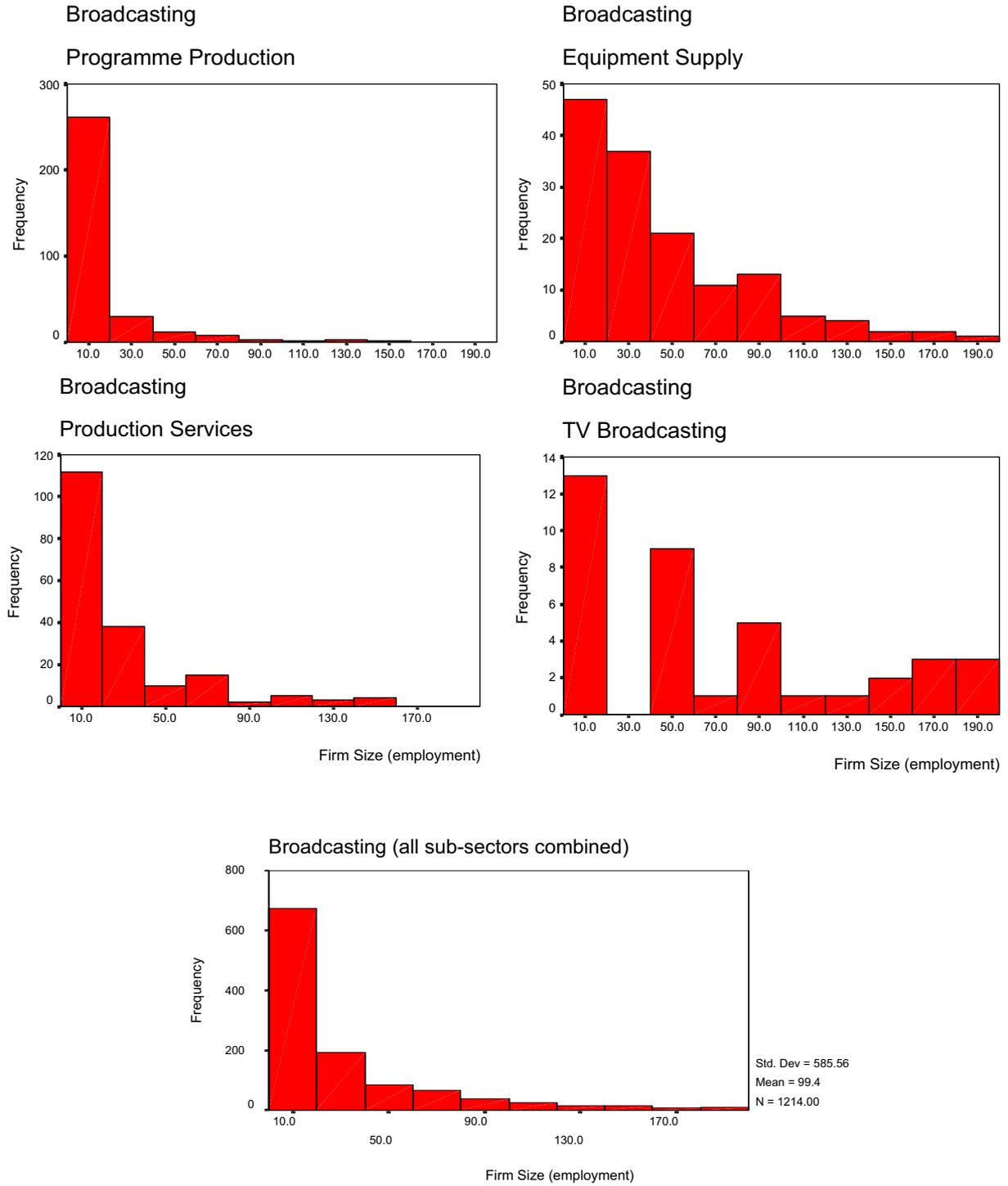


Fig. 2. A Comparison of the Size Distribution of Small Firms in British Broadcasting

5.4. British Broadcasting Cluster Types

Broadcasting appears to be a blend of three of Markusen's ideal types. Clearly the importance, almost since the inception of the industry in Britain, of the BBC, marks it as falling partly into the state-anchored model. The original geographic organisation of the industry was laid down by administrative fiat according to administrative and technical criteria. This was also the case for commercial television, which has continued to be heavily influenced by state regulation. The existence of dominant firms surrounded by fringe suppliers indicates elements of a hub-and-spoke type cluster. Firms supplying the BBC and the ITV companies have traditionally been in a very dependent relationships. The industry is still dominated by the major broadcasters even though many new types of broadcaster have entered the market and the major broadcasters themselves have been forced to vertically disintegrate (a trend being actively reversed at the BBC under Greg Dyke). Labour turnover within the major companies was traditionally low and little in the nature of collaborative and competitive innovation took place between these companies and a small fringe of independent firms. Both labour and new firms are powerfully drawn to the vicinity of hub firms, the more so the larger are the funds they control for commissioning programmes.

The hub-and-spoke nature of clusters is most strongly related to the fact that the major broadcasters remain the most important customers of the independent production sector. While the BBC, the ITV companies, Channel 4 and Channel 5 all have regional centres and quotas for regional independent production, London remains the hub of network production and therefore of the most remunerative commissions. Many firms regard it as being essential to have a London base in order to be able to interact closely with the London commissioning editors of the major broadcasters. The key information is what type of programmes the commissioners are looking for. It is possible for firms in the regions to interact with these commissioning editors as well, but it is far more expensive and time consuming for them to do so. Another important demand-side effect which attracts firms to Soho in particular despite the high rents, is simply the kudos of having a W1 address which "signals you are a serious player".

Aspects of a NID type of cluster are the result of two events which changed the nature of the broadcasting industry. The first was the establishment of Channel 4 in 1982 as a broadcaster without its own in-house production capability. Almost immediately a comparatively large number of independent production and post production companies emerged, many choosing to locate in the vicinity of Channel 4's original headquarters in Charlotte Street (Allen and Miller 1994). The second major change was the Broadcasting Act 1990 which *inter alia* brought in competitive tendering for ITV contracts and obliged the BBC and ITV companies to commission 25% of most types of new programmes. Both of these gave a further impetus to independent production (Renton, 1994).

Programme production appears to have many features reminiscent of a Third Italy variant of the NID. Taking the sub-sector together with production services, there is a high degree of specialisation, both in terms of the types of programme companies focus on and in the range of elements of the production process in which they specialise. For example there are specialist firms in underwater and aerial photography, even in particular types of make up. The Production Guide (2001) has entries divided into over 500 categories of activity related to production of programmes for broadcast. It also contains details of 12,000 companies, 1,500 of which are new entries from the previous year. There is a high level of both vertical and horizontal disintegration, in the independent sector at least. There is a strong craft element in many of the disciplines required in programme production, such as camerawork, sound, and lighting and these craft skills are often combined with specialised equipment. The independent sector is atomistic and networking is important. Numerous independent firms have to combine to produce a programme which will then disperse only to re-group in a different constellation for the next project. Programme production, including post-production, requires a wide variety of different human and physical resources to be combined, typically under tight time constraints. In bringing together these resources in a successful collaboration, personal reputations and relationships of trust are highly important and word-of-mouth recommendation is an essential mechanism by which the sub-contracting system works (Newby, 1997). Related to the need for close interaction because of tight interdependency and time

constraints, most services are sourced locally. A common remark is that the producer likes the post-production house to be "just around the corner" to make it easy to engage in frequent face-to-face interaction at crucial stages of the production process.

The broadcasting industry is therefore increasingly represented by the NID type of cluster. The independent production sub-sector is atomistic in nature, as indicated in Figure 2. These new independent production companies are entrepreneurial and innovative. In common with Piore and Sabel's description of the Third Italy, innovation is the key to competitive success and active competition is a key driver of innovation. Innovation in programme production all hinges on coming up with successful series or formats. The trade association for production companies, PACT (1998) reports that since 1992 almost 40% of new television formats have come from the independent sector, which at the same time was responsible for about 17% of new output. Between 1990 and 1998 23 of the 32 Golden Rose awards at the Montreux Festival awarded to British firms were won by independent companies. Similarly, between 1992 and 1998 49% of Royal Television Society awards went to independent companies.

In comparing the three regional centres a number of important comparisons and contrasts can be made. All three exhibit important elements of the hub-and-spoke and state-anchored models. In each case the size and reputation of the major broadcasters is a powerful contributor to the health of the cluster. London as headquarters to the BBC and so many other broadcasters is on a completely different scale to other regional broadcasting centres in the UK. The jewel in the crown of Bristol is the BBC's Natural History Unit, which enjoys a worldwide reputation and acts as a magnet both for international demand and for skilled labour in an analogous fashion, if on a much lesser scale, to the major broadcasters in London. Bristol also possesses a small but not insignificant number of leading edge facilities companies which also command a national and international clientele, again analogous to but on a far smaller scale than the facilities sector in Soho.

Glasgow is distinguished by being a national centre, distinct from regions of England outside London and on a larger scale than Cardiff. There is no doubt that the cluster has received a substantial boost from devolution, not merely in cash terms, but also in reinforcing the collective identity of firms in the cluster. The fast rate at which the pull of Glasgow has all but denuded Edinburgh of broadcasting activity in the decade or so since the Broadcasting Act 1990 throws into relief the situation in England where the natural process of clustering is somewhat inhibited by political imperatives to sustain broadcasting activity in England's major cities.

London stands apart from Bristol and Glasgow in the extent to which it has developed a vibrant independent production and facilities sector in the twenty years since the formation of Channel 4. There is no doubt that this sector no longer stands in a dependent relationship to the major UK broadcasters and several major independents are international competitors in their own right. Bristol also stands apart from Glasgow in that it too developed a relatively mature, if small scale, independent programme production and facilities sector. Several natural history programme makers have conquered international markets, as has Aardman Animations. Bristol is also distinct from Glasgow in two other respects. Firstly, it has a heavier degree of concentration of particular genres (natural history and factual programmes). Secondly, there is evidence of a higher degree of collective identity and interaction among the firms there. Therefore in terms of developing from a hub-and-spoke cluster to a hub-and-spoke with functioning NID, London is in a class apart, but the relative success of Bristol explains why, at least until very recently, it has outperformed other regional clusters in the UK. Probably the key asset Bristol possessed which allowed it to do this was the world-renowned Natural History Unit. It also is apparent that the city has been blessed with a number of highly talented individuals.

One further thing distinguishes Glasgow and that is the role of policy-makers. Creative industries are one of the small number of "clusters" identified for promotion by Scottish Enterprise. Not only Scottish Enterprise, but also Glasgow City Council, through the Glasgow Film Office, and Channel 4 among others, have expended both money and effort to help businesses formed in the city to grow and develop, effort which is ongoing. This contrasts with the *laissez-faire* approach of Westminster Council and Bristol City Council.

6. Conclusion

Both industries reveal the importance of classic cluster dynamics. The broad features of growth and entry dynamics are highly similar to those found in high technology manufacturing. What a more in-depth case study of the industries reveals is that the processes underlying those dynamics are familiar from those identified in studies based on manufacturing, albeit that they manifest themselves in different contexts and with differing degrees of importance in each of the two industries studied.

In both industries the labour pool is of fundamental importance. Both rely on a ready supply of labour with disparate and often highly specific skills. The dominant cluster, London, has a supreme advantage both in terms of its ability to attract labour and in the incentives it provides individuals to invest in highly specific human capital. London offers the prospect of the highest financial rewards, the most interesting and challenging work and the continuity of employment. The London labour market in both industries is characterised by a high degree of labour mobility which is an important conduit of knowledge transfer.

Sharing of tacit knowledge is important in both industries, however it tends to take place within firms in financial services to a greater degree than broadcasting, where inter-firm networks are correspondingly more important. Trust is important in enabling mutually beneficial relationships and transactions between firms in both industries. The ability to form "production teams" composed of disparate skills quickly and have people able to work effectively together at short notice and under pressure is a classic feature of a New Industrial District, again prevalent in both industries, but especially in broadcasting. Shared norms and the importance of reputation within the cluster are vital elements enabling such cooperation to work.

Innovation is a vital dimension of competition. Both industries see firms constantly striving to find something new to stay, however briefly, ahead of the competition. This innovation is fostered by similar factors: the pressure of competition; a ready flow of ideas through repeated interaction; the existence of important places, organisations and institutions where people meet and exchange ideas; and the constant churn of labour and especially in broadcasting of new firms. While in terms of directly competing for custom there is fierce rivalry, nevertheless this is tempered by norms of cooperation. Firms help each other to fulfil their contracts by sharing personnel, expertise and equipment, seeing this as being important in maintaining the reputation of the cluster.

Both industries benefit from the existence of specialised suppliers. Broadcasters rely on programme production firms who in turn rely on a now vast array (in London at least) of specialist subcontractors to help both produce and post-produce their programmes. As the independent sector has blossomed, so this supplier network has developed both in terms of numerical strength and degree of specialisation.

In the case of financial services the differences in performance of the three clusters came down to two things. Firstly, the low performance of Bristol was because of the fact that it was a different type of cluster, a satellite industrial platform, from the other two, which were identified as hub-and-spoke. The theoretical result that satellite industrial platforms are less dynamic than other types of cluster has been borne out. Secondly, London has developed as a hub-and-spoke well beyond Edinburgh both in terms of the number and size of firms and the range of sectors well-represented. In part this is due to and in part reinforces London's position as a major node in a global space of flows.

In the case of broadcasting, all three regions were seen as being essentially of the same type: a sticky mix of state-anchored district and hub-and-spoke with a recently developed element of an industrial district in the independent production and post-production sectors. The essential differences between the performance of the regions relate to two factors. Firstly, the size and status of the hub firms. Here London is again a class apart, although Bristol has benefited from the worldwide status of the Natural History Unit. Second is the degree to which the independent production and facilities sectors have developed into a functioning "industrial district".

Since clusters vary, it follows that clusters policy-making should also vary to meet specific needs. This point is underlined by the finding that even when clusters can be put in the same category, as in the case of London and South Scotland, they are still different in important re-

spects. Accordingly, the recommendation here is that policy should proceed on a case-by-case basis. In addition, since dynamic clusters are unique and complex they are impossible to create or replicate. Indeed this is the very source of their sustainability. The proper role for policy should therefore not be cluster creation but support where a cluster already exists. Simple clusters such as the Satellite Industrial Platform type that may be created through government inducements are of doubtful longevity and may exist only until another region offers a bigger enticement.

The experience of the success of Glasgow in helping its broadcasting cluster develop is something of a model for others to study. Two ingredients in this success have been the ability to get different agencies to work broadly to the same agenda and secondly the focus on sustained support of individual businesses which have been aided in many practical ways in growing and developing their businesses. These efforts have been sustained over a long period, underlining a somewhat obvious conclusion that there is “no quick fix” in terms of policies to support cluster development.

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