

British Industrial Districts: A Thing of the Past or a New Golden Age?

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Abstract

This paper traces the co-evolution of industrial organization and the ideas and policies that have influenced Britain's industrial development from Alfred Marshall's pioneering work on the English industrial districts to the present. It then examines four contemporary districts – in footwear, motorsport, sparkling wine and cyber security – that are internationally competitive, despite decades of ill-informed policy choices, if not neglect, before considering the implications that might emerge from the policy model that has transformed the competitiveness of UK elite sport since its nadir in Atlanta 1996 and how it might inform a strategy for strengthening British industry.

Key words: Industrial districts/clusters; Industrial strategy/policy; Industrial organization; Competitiveness; UK elite sport

JEL Codes: B21, B52, L10, I50, Z2

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1. Introduction

Liberal economics² emphasizes individualism and specialization; and struggles with the notion of co-operation. In the context of production, the question of securing co-operation has been subsumed in theories of market exchange and managerial authority, where both the “invisible hand” of the market and the “visible hand” of management co-ordinate and control. An important exception was Alfred Marshall’s analysis of the English industrial districts – localized clusters of small enterprises and their suppliers, which were at the heart of British industrial development during the 19th century. Based on first-hand observation,³ Marshall identified “external economies” of scale and scope, derived from the concentration of production in particular localities, where the balance between competition and co-operation was an important determinant of success of both the district and its constituent firms.

During the early 20th century, however, the increasing size of highly successful American and German enterprises revived the question among economists of how to reconcile increasing returns (in production) with perfect competition (in markets). From the perspective of (static) neo-classical theory, the first firm adopting the most efficient scale of production in relation to the size of the market takes the whole of the market and becomes a monopolist. In this context, Marshall’s theory of industrial districts sparked a vigorous debate by purporting to resolve the problem of increasing returns and competitive equilibrium through “external economies” – *external* to the firm but *internal* to the clusters – that enabled member firms to *compete effectively*, even with much larger, vertically integrated firms.

Perhaps the most influential attack on Marshall’s theory came from Piero Sraffa, who dismissed external economies and argued that “[e]veryday experience shows that a very large number of undertakings ... work under conditions of individual diminishing costs” (Sraffa, 1926, p. 543). He contended that increasing returns were pervasive in industry and incompatible with competition, suggesting that the solution was the theory of monopoly.⁴ His conclusion – that “in the circumstances, I think it is Marshall’s theory that should be discarded” (Robertson, Sraffa and Shove, 1930, p. 93) – apparently settled the debate; and Marshall’s dynamic and evolutionary theory of industrial organization and development was abandoned (O’Brien 1990).

During the 1920s, as Britain experienced high levels of unemployment and excess capacity, economic theorists, including Sraffa, attempted to explain the micro-economic (firm/industrial organization) effects of low levels of demand. However, their focus was on the supply side. Taking a static equilibrium approach based on a priori reasoning and assuming a given market size, theories of perfect, oligopoly and monopolistic competition maintained that capacity utilization – and hence employment – is determined by the equilibrium level of output, which

² “Liberal economics” is a term for the classical and neo-classical economic theories that emphasize individualism in free markets and laissez-faire policies in which the government’s role is limited to the provision of support services.

³ Marshall’s methodological approach involved a combination of induction and deduction – of combining history and empirical observation with theory – in such a way as to evolve dynamic theories on the basis of observed reality. According to Marshall, “the function ... of analysis and deduction in economics is not to forge a few long chains of reasoning, but to forge rightly many short chains and single connecting links” (Marshall, 1920 [1890], p. 450).

⁴ This position was strongly challenged by Allyn Young (1928), among others, who returned to Adam Smith’s conceptualization of the division of labor and its relation to the extent of the market. For further elaboration, see Konzelmann and Wilkinson (2016).

only in perfectly competitive markets is at full employment. From this perspective, as in any other market, unemployment is considered voluntary; and the solution is a reduction in the price of labor.

During this same period, Keynesian macro-economic theory was evolving in quite a different direction, contending that the problem of unemployment is *involuntary* and the consequence of an insufficient level of effective demand, with the solution being government spending on public works to compensate for weak private sector spending. However, although economists have long lamented the absence of “micro-economic” foundations for macro-economic theory, the inconsistency between these conflicting explanations of output and unemployment appears to have gone un-noticed.

As the focus of study in industrial organization shifted from the industrial sector to individual firms competing in particular market structures, the conventional wisdom evolved to contend that the historical tendency in capitalist development is towards large firm dominance, with the progressive reduction of the small firm sector to a residuum. Thus, at the same time as “Keynesian” theory was evolving to inform macro-economic policy, micro-economic theories of monopolistic and oligopolistic competition informed industrial policy. From this point on, the role of small firms and localized productive systems was progressively marginalized; and the idea of geographic location and external economies generated only a “thin trickle” of contributions in relation to forms of firm agglomeration in local and regional productive systems (De Propris, 2009, p. 361).

However, interest was revived with their “re-discovery” by Italian scholars during the 1960s and the crisis of “Fordist” mass production during the 1970s and 1980s (Best, 1990; Piore and Sabel, 1984; Pyke, Becattini and Sengenberger, 1990). The success of these modern industrial districts in securing inter-firm co-operation and channeling their joint efforts towards quality upgrading and product and process innovation brought them to the attention of the international research community (Landstrom, 2002). Yet the success of this form of industrial organization challenged the orthodox view that inter-firm co-operation is mainly an attempt to fix prices⁵ and is therefore inefficient; and it questioned the strict dichotomization of “firms” and “markets”.

The proliferation of research on industrial district forms of organization since the 1960s has produced a plethora of new terms – including, among others, “territorial clusters”, “new industrial spaces”, “local productive systems”, “innovative milieu”, “regional innovation systems” and “learning regions”. In this context, scholars have accepted Marshall’s ideas about external economies and the dynamic benefits of the districts’ “industrial atmosphere”. But they have tended to add more explicit “social” and contextual features drawn from empirical studies, leading some to suggest that the industrial district debate would benefit from moving away from a model based on stylized accounts of particular national experiences towards a model capable of accommodating a variety of empirically observable forms (Zeitlin, 1992; 2008). In this, a return to Marshall’s theory serves as a useful starting point.

But have rumors of the death of the *British* industrial district been “greatly exaggerated”? Despite their decline in numbers, some – such as the British footwear industry in Northamptonshire – have survived; and new ones – such as Motor Sport Valley in the Home

⁵ Adam Smith wrote: “People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices” (Smith, 1999 [1776], p. 232).

Counties, English sparkling wine in Sussex, Kent and Cornwall and the Malvern Cyber Security Cluster in Worcestershire – have emerged. In many respects, the firms in these districts, like their predecessors, have benefitted from both the economies of large scale (district) production and the agility of being small. They are able to compete effectively with much larger producers; and in the face of fluctuations in demand, their constituent smaller firms are able to adjust capacity, innovate and adapt. By contrast, large firms, when confronted with an unexpected shift or downturn in demand, are often less responsive and forced to eliminate capacity, which is then no longer available when the trade cycle reverses.

This paper traces the co-evolution of industrial organization, policies and ideas that have influenced Britain's industrial development from Marshall's pioneering work on the English industrial districts to the present. It then examines the cases of four successful British industrial districts whose constituent (mostly small) firms are highly competitive internationally, despite decades of policy choices, informed by economic theory, that served the interests of large multi-divisional and trans-national firms whilst undermining some of the key sources of the industrial districts' competitive capabilities and external economies.

Taking our point of departure from Marshall's original definition of the industrial district – a geographically localized productive system based on an extended division of labor between small and medium sized firms, specialized in distinct phases of complementary activities within a common industrial sector – we use the term “industrial district” to describe the cases in our study. We recognize that there is no standard structure or dynamic for an industrial district and that by their very nature, districts are evolutionary, developing to accommodate the requirements of their industry sector at any given point in time. We are interested in the kind of environment that is conducive to the emergence and competitive success of the industrial district as well as the threats and obstacles to its development. The fact that new industrial districts are emerging whilst others are re-energizing themselves and adapting shows that smaller and medium-sized businesses have significant dynamism – which is itself an essential force supporting the competitiveness of the various forms of local business groupings that are being observed. Thus, although the terms describing them have proliferated since the 1970s, in practice, there are few hard dividing lines between “industrial districts”, “competitive clusters”, “resilient” regions and economies – and the plethora of other such forms of agglomeration.

The penultimate section considers the implications for industrial strategy that might emerge from the policy model that has successfully transformed the international competitiveness of UK elite sport – which itself is a high performance industry sector – since its nadir in the 1996 Atlanta Summer Games. Of interest is how the policy and institutional framework underpinning this approach might inform the development of a strategy for strengthening existing industrial ecosystems and supporting the development of new ones.

2. Marshall's Theory of Industrial Districts

Between the invisible hand of the market and the visible hand of managerial authority in large firms are organizational forms composed of “small- and medium-sized firms in particular branches of industry, localized in a specific area and participating in a production system characterized by divisions of labor between firms” (Hirst, 1999, p. 111). The organization of such systems involves a blending of networks of interdependent actors and firms, of hierarchies and markets that evolve over time as the structures of these relationships are cast and re-cast and as the environments within which they are embedded change. Alfred Marshall was a

pioneer in theorizing these systems, which he identified as *industrial districts* (Marshall, 1920 [1890], p. 157).

Welding Adam Smith's notion of the division of labor as the primary vehicle of economic progress to Darwinian evolutionary theory,⁶ Marshall argued that in economic life, the struggle for survival selects the fittest and fitness depends upon two complementary factors: increased differentiation and more sophisticated co-ordination. A finer division of labor – which requires ever improving co-ordination of productive activities – leads to a more efficient use of resources, the development of specialized skills, knowledge and machinery and increased differentiation.

Marshall was acutely aware of the systemic nature of production; and central to his understanding of the evolutionary trajectory of capitalism was the interaction between organization and knowledge. He argued:

“Capital consists in a great part of knowledge and organization ... Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organization aids knowledge; it has many forms, e.g. that of a single business, that of several businesses in the same trade, that of various trades relatively to one another” (Marshall, 1920 [1890], p. 84).

The central role of organization is thus the *integration* of the increasing subdivision of production with the increasing division of labor.

Marshall drew a clear distinction between relationships within and between firms. Within the firm, relationships are coordinated by the manager-entrepreneur and take the Karl Marx form, in which co-operation permits the realization of increased output per worker. By contrast, outside the firm, relationships are coordinated by the market and take the Adam Smith form, where co-operation in exchange, secured by competition among individuals motivated by self-interest, permits the realization of gains from trade. At both levels, dynamic forces are at work, with increased specialization and improved organization operating both within and between firms, creating opportunities for others, who could thus see the benefits from economies generated beyond their own boundaries. In this process, freedom of enterprise and the rivalry it generates is a vital element, rewarding successful firms and punishing failures.

Marshall identified “external economies” and an “industrial atmosphere” resulting from the localization of industry as being important determinants of the competitive success of both the district and its constituent firms. The close proximity of firms provides opportunities for specialization and for the district as a whole to secure economies of scale and scope (both static and dynamic) in production and of technical and organizational innovation, that are beyond the reach of individual firms. Benefits of proximity also include improvements in and specialization of skills; their diffusion creating a supply of appropriately qualified labor; the growth of “subsidiary” trades and services; and expansion of highly specialized machinery based on the combined demand of local firms. Firms concentrate on what they do best and establish an environment that improves the overall competitiveness of the locality.⁷

⁶ See Marshall, 1920 [1890], Book IV, Ch VIII.

⁷ Contemporary analyses of industrial districts put greater stress than did Marshall on the collectivist and institutional basis for successful co-ordination. See, for example, Amin and Thrift, 1994; Brusco and Sabel, 1981; Brusco, 1982; Piore and Sabel, 1984; Sengenberger, Loveman and Piore, 1990).

In his early analysis, Marshall placed limits on firm size associated with growing problems of internal co-ordination, the aging of the founder and failure to find a successor. But these are individual failures and the development of the district is maintained as vigorous newcomers replace the old.

In Marshall's view, industrial districts occupy both a physical and a social space, with its own structure and history; and district effects are long-term, cumulative and dependent upon co-operation in knowledge creation and innovation:

“When an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighborhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus becomes the source of further good ideas” (Marshall, 1920 [1890], p. 156).

He added “[t]he broadest, and in some respects the most efficient forms of constructive co-operation are seen in a great industrial district where numerous specialized branches of the industry have been welded almost automatically into an organic whole” (Marshall, 1920 [1919], p. 380).

However, Marshall considered individualistic initiative and free enterprise to be drivers of progress. While collective action may foster individual success, it risks blunting initiative and inhibiting competition. Thus, institutions such as trade associations had a role in coordinating production, enforcing quality standards, redressing power imbalances, ensuring constructive competition and providing other specialized services; but, lacking the profit motive, they are of secondary importance to individual entrepreneurs. For similar reasons, public sector intervention was seen to have a limited role in industrial and technical progress.⁸

3. The Evolution of British Industrial Organization since Marshall

For Marshall, the industrial district's vitality stems from its ability to innovate and respond flexibly to change. Although he recognized that districts could decline as easily as they could prosper, he expressed confidence in the resilience of this form of industrial organization and

⁸ This is in contrast to more recent discussions of industrial districts, where collectivity in the form of direct inter-firm relationships, formal and informal institutions and public policy are seen to play a central role in establishing and guaranteeing business and labor standards, fostering innovation and technology diffusion and organizing education and training. This collective framework serves to generate and release widespread enterprise and entrepreneurial talents which are the source of the dynamism of productive systems. There are therefore important differences between Marshall and his modern followers in the boundaries between direct economic relationships and those mediated by the market. For Marshall this boundary by and large coincided with that of the firm, whereas in more recent accounts, direct relationships extend beyond that of the firm, with significant implications for our understanding of the nature of industrial organization, the positioning of the firm within it and how these factors influence economic performance.

its dynamism. In *Industry and Trade*, published 5 years before his death in 1924, Marshall wrote:

“Thus, although even a little obstinacy or inertia may ruin an old home of industry whose conditions are changing; and although the opening out of new sources of supply or new markets for sale may quickly overbear the strength which old districts have inherited from past conditions: yet history shows that a strong center of specialized industry often attracts much new shrewd energy to supplement that of native origin, and is thus able to expand and maintain its lead” (Marshall, 1920 [1919], pp. 190-91).

Nevertheless, during the 1920s Britain suffered de-industrialization and the decline of its industrial districts. Whilst Marshall’s students of the “Old Cambridge School”⁹ studied this phenomenon, his view was shifting towards seeing large size as the next stage in industrial evolution. Increasing industrial concentration in Germany and the USA led Marshall to place less emphasis on both limits to firm size and the importance of external economies.

“[W]ith the growth of capital, the development of machinery and the improvement of the means of communication, the importance of internal economies has increased steadily and fast, while some of the old external economies have declined in importance; and many of those which have risen in their place are national or even cosmopolitan, rather than local” (Marshall, 1920 [1919], p. 115).

What economists and policy-makers ultimately took from Marshall’s theorizing on industrial organization informed economic theories of firms and markets, which provided an underpinning for explanations – and justification – of large-scale capitalism, which was vigorously pursued from the inter-war period onward.

3.1 From Industrial Districts to Large-Scale Production

But why did the British districts decline so rapidly? Based on their reading of the work of Marshall and his students, Belussi and Caldari (2009) suggest that this was due to the cumulative impact of the gradual acquisition of knowledge, skills and competitive capabilities, along with superior innovation and technological development by competitors and the conservative attitude of British entrepreneurs. “The local industrial atmosphere degraded, and so did the capabilities of local firms to absorb external technical change further accelerated the process – as did industrial secrecy and cut-throat competition. The automatic organization and the district division of labor were suffocated” (ibid., p. 354). Thus, by this account the decline of the British industrial districts from the 1920s onwards could be explained not so much by the superior performance and efficiency of administrative co-ordination in large firms as by “exhaustion of the original conditions and the ill-conceived Victorian heredity of believing themselves technologically superior to any international competitor” (ibid.). This ultimately prevented local entrepreneurs from recognizing and responding effectively to radical changes in international competitive conditions.

⁹ Becattini (1990) distinguishes two Cambridge Schools of Economics. The first is the one surrounding JM Keynes and his followers, including, among others, Richard Kahn, Joan Robinson, Gerald Shove, Nicholas Kaldor, Austin Robinson and Piero Sraffa. The second – ‘the ‘Old Cambridge School’ – surrounds Alfred Marshall and his students who studied and developed research fields within industrial economics. These included, among others, SC Pigou, DH Robertson, Arthur Bowley, Sydney Chapman, DH MacGregor, Charles Sanger, CR Fay and Philip Sargent Florence.

However, as discussed below, there is also substantial evidence that the decline of the British industrial districts was hastened by banking concentration, which starved them of finance, as well as by policy choices favoring industrial concentration and *inter-firm* competition.

3.1.1 Industrial Finance

During the 19th century, the market power of British banks was widely dispersed; and the system was mainly comprised of small local banks whose fortunes were closely tied to the communities they served. Few had branch networks. The main source of funds was local deposits and most lending took the form of short-term credit and medium- and long-term loans to local businesses (Cottrell, 1979; Collins and Baker, 2003). However, following the banking crises of 1866, 1878 and 1890, there was a shift away from private sector financing towards larger holdings of government securities (Goodhart, 1972, pp. 167-01; Collins and Baker, 2003, p. 105; Checkland, 1975, pp. 469-81). The banking system was consolidated with the five largest banks (London and Midland, Barclays, Lloyds, Westminster and National Provincial) accounting for approximately 80 percent of English deposits by 1920, each with a head office in London and a national branch system (Carnevali, 2005, p. 15).

Incentives driving this process included standardization of operations, diffusion of credit risks and transferring surpluses through branch networks whilst institutional regulations created incentives for provincial banks to move their headquarters to London, typically by acquiring a London-based bank. However, branch managers had little discretion with regard to the terms of lending to local businesses; and the administration of small loans was expensive because of the difficulty of assessing the lending risks. The near absence of local and regional banks also meant that there were no financial institutions aligned with the interests of smaller, regional firms. The disappearance of bank funding forced businesses to turn to the stock market – ultimately making them vulnerable to hostile action, in the event of share prices failing to meet share-holders' expectations.

3.1.2 Rationalization of the Industrial Structure

The economic difficulties of the 1920s and 1930s led many to question both the market's ability to deliver growth and whether the economy might be better managed at a macro-economic level with Keynesian tools and at a micro-level by "rationalizing" the industrial structure. The 1929 Report of the Balfour Committee concluded that industry should be re-organized along the lines of large American and German businesses; and following the merger wave of the 1920s, industrial output became increasingly concentrated. In 1948, under the Marshall Plan, the Anglo-American Productivity Council was set up to exchange knowledge of industrial organization and methods, with the aim of assisting British industry in raising productivity levels; and between 1948 and 1952, teams of supervisory, technical, and workshop personnel went to America to study production methods and make recommendations – all of which stressed the need to emulate American techniques (Hannah, 1983, pp. 140-2).

Thus, following the Second World War, there was acceptance of a role for the state in managing the economy; and governments of all persuasions prioritized *re-industrialization*, promoting concentration through mergers and acquisitions as a means of raising efficiency (Meeks, 1977). Fueled by strong war-time demand and post-war reconstruction, large mass production firms reaped the benefits of internal economies of scale, giving the appearance of improved productivity. Nationalization was also a key feature of postwar industrial policy, with the initial

targets being utilities (coal, electricity, gas and railways), with manufacturing firms being nationalized much later.¹⁰

However, instead of developing new industries and technologies, due to well-connected special interest groups, British industrial policy tended to take the form of shoring-up ailing industries.¹¹ Whilst British management and governments were dominated by a belief in the advantages of large firms and the efficiency gains of internal economies of scale, the conglomerates put together by nationalizations, mergers and acquisitions were larger than the most efficient size and often composed of groupings of inefficient plants (Prais, 1976) which were either state-owned or owned by widely-dispersed share-holders – that would eventually make them vulnerable to further “restructuring” via the stock market. Manufacturing capability was severely weakened, but rather than evolving a strategy for addressing the problem, the view was that the economy was progressing to a “post-industrial” service-based stage of capitalism (Gibson, 1993; Dunham-Jones, 2000).

3.1.3 Competition Policy and the Dismantling of the Industrial Districts’ Institutional Infrastructure

The revival of competition policy during the 1950s – in an economy full of anti-competitive practices inherited from the Great Depression and the War – worked to the advantage of large, multi-divisionals and the disadvantage of small firms in industrial districts. The 1956 Restrictive Trade Practices Act, for example, was the first of a series aimed at increasing competition as a means of promoting investment and rationalization in industry, with the aim of boosting productivity, economic growth and employment. However, it dealt a serious blow to the industrial districts by making many of their informal co-operative agreements either illegal or subject to scrutiny. Important among these were resale price maintenance agreements which had prevented sellers from competing too fiercely on the basis of price but were now specifically prohibited. The Act also required the registration of all collective agreements and set-up the Restrictive Trade Practices Court to investigate them – and judge whether they were anti-competitive. But no such strictures applied to large multi-divisional firms.

The Act also undermined the industrial districts’ institutional infrastructure by curtailing the activity of trade associations, which not only provided valuable services for their members, such as joint marketing and dissemination of technical knowledge, but also played a role in pricing agreements which were now considered anti-competitive. Meanwhile, the 1962 Robbins Report, which recommended that all Colleges of Advanced Technology be converted into “polytechnics” undermined the training infrastructure of the industrial districts.

3.1.4 The Stock Market as Industrial Re-organizer

From the 1960s onward, with growing confidence in financial markets, the stock market came to be viewed as a mechanism for restructuring industry.¹² This was based on the “efficient markets hypothesis”, that a firm’s share price is an accurate reflection of the value of the underlying productive enterprise. Using this logic, the stock market was theorized to be an

¹⁰ British Steel was created in 1967, bringing together the 14 largest British steelmakers under public ownership and to create large integrated steelworks; and during the 1970s, nationalization was extended to shipbuilding, aerospace and motor vehicles (Rolls-Royce and British Leyland), resulting in further concentration.

¹¹ See, for example, BIS, 2010; Wren, 1996; Silbertson, 1981; Vickers and Yarrow, 1988.

¹² British industry was particularly vulnerable, since it had historically been reliant on the stock market, instead of banks, for financing that could not be generated internally.

efficient “market for corporate control” and the “discipline mechanism” by which under-performing management teams could be replaced by more effective ones when share price fell (Schleiffer and Vishny, 1997). Restructuring through hostile take-over was therefore viewed as performance-enhancing (Fama, 1970).

However, the leverage used to finance these take-overs meant that targets needed to be asset rich, the selling of which would more than repay the debt (Lazonick and O’Sullivan, 2000). Thus, investors targeted companies whose assets were under-valued by the stock market, creating enormous profits and a stock market bubble – interpreted as evidence of improved industrial performance. The reality, however, was that it dismantled vast segments of British industry, setting-off a process of de-industrialization.

3.2 The “Stagflationary” 1970s, De-industrialization and the Crisis of “Fordism”

The UK’s entry into the European Economic Community in 1973 abruptly exposed British industry to further competitive pressures. Many workers lost their jobs; and the resulting industrial unrest was met with fierce government opposition, exacerbating the problem and further weakening manufacturing capability. At the same time, progressive relaxation of exchange rate controls and the growing importance of multi-national firms drove globalization, as firms relocated production abroad to escape higher labor and social welfare costs. This accelerated de-industrialization and significantly weakened the ability of the government to influence macro-economic outcomes.

During the 1970s, the effects of simultaneously rising unemployment and increasing inflation – “stagflation” – were exacerbated by rapidly rising state expenditure to meet the growing costs of mass redundancies. Ultimately, stagflation, de-industrialization and import penetration put a halt to mergers and acquisitions and led to a process of vertical *dis*-integration and a crisis of “Fordist” mass production.¹³

During the 1980s, as attention turned to the small firm sector, policies were aimed at promoting small business growth – of *individual* firms as a generic category – rather than upgrading the performance of local or sectoral networks of firms (Zeitlin, 1995). This was supported by the idea that the emphasis should be on the competitiveness of individual firms rather than the districts or sector of which they formed a part. The survival of old industrial districts (like footwear) and the success of newer ones (like motorsport, sparkling wine and cyber security) is therefore of empirical and theoretical significance since they have succeeded – in spite of the conventional wisdom and policy.

4. Co-operation and the “New Competition”: Re-discovery of the Industrial District Model

During the 1970s and 1980s, the emergence of more co-operative forms of industrial organization – labelled the “new competition” (Best, 1990) – originated with Italian, Japanese and German producers who had evolved more co-operative relationships with both their workforce and suppliers than was usual in the large-firm dominated Anglo-American system. Greater motivation to co-operate resulted in better operational and dynamic efficiency based on improved productivity; better quality control; and more effective use of both equipment and

¹³ See, for example, Best, 1990; Harrison, 1994; Herrigal and Zeitlin, 2009; Hirst and Zeitlin, 1991; Piore and Sabel, 1984; Storper, 1997.

materials as well as the skills and knowledge of workers and suppliers in the improvement of products, processes and the organization of production (Howes, 1991).

In Italy, this took the form of the re-activation of the “Marshallian”¹⁴ industrial district in the “Third Italy”,¹⁵ the study of which was pioneered by Giacomo Becattini and Sebastiano Brusco during the 1960s and 1970s.¹⁶ However, it was not until the failings of Fordism became increasingly obvious, during the 1980s and 1990s, that the wider international research and policy community took notice (Landstrom, 2002). This can be partly explained by the fact that the early research findings were mainly published in Italian; so their dissemination outside of Italy was limited.¹⁷

Contemporary studies of industrial districts identify them as local agglomerations of small firms engaged in the production of particular products or services, in close association with their suppliers. Strong links with local knowledge centers – such as universities, public research institutes and training institutions – facilitate the development of both a regional capacity for collective learning, technological, scientific and managerial development and an adequate source of appropriately skilled labor (Keeble and Wilkinson, 2000). Inter-firm relationships are typified by a mixture of competition and co-operation, where member firms are specialized but closely linked by subcontracting and the mutual benefits derived from co-operation. This often takes the form of technical, design and other linkages between firms at different stages of vertical subcontracting chains, but can also involve firms supplying similar products. Such “horizontal” co-operation involves common provision of services and advice – such as accountancy, finance and legal; technical and design; marketing and export – and the subcontracting to potential competitors of orders in excess of their own productive capacity. Repeated interaction among specialists fosters innovation (Amin and Cohendet, 2004; Doring and Schnellerbach, 2006); and by contrast to the “Chandlerian” model, in which the distribution and coordination of resources is governed by hierarchy, within industrial districts, “heterarchical” governance structures involving inter-firm and organizational networking and relational

¹⁴ However, “[t]he industrial districts that the district interpretation of Italian development identified in economic reality were not simply replicas of the nineteenth century English industrial districts on which Marshall had worked: the reference to districts being “Marshallian” related to a particular analytical tool, not to an empirical identification. An industrial district can be said to be a “Marshallian industrial district” if it is so identified by empirical research using methodological criteria derived from the Marshallian analytical tool” (Sforzi, 2015, p. 16).

¹⁵ Prior to the emergence and discovery of the thriving industrial districts in Italy’s Central and Northeast regions (the “Third Italy”), the country had been divided into the “First Italy” in the Northwest, composed of large-scale producers and capital-intensive industries, and the ‘Second Italy’, the poor Southern regions.

¹⁶ For a further elaboration, see Konzelmann and Wilkinson, 2016.

¹⁷ The international diffusion of the analysis of the re-emergence of Marshallian industrial districts in Italy began with publication of the 1981 Conference papers of the International Working Party on Labor Market Segmentation (Wilkinson, 1981), which included a paper by Brusco and Sabel (1981), entitled “Artisan Production and Economic Growth” and with Brusco’s (1982) paper in the *Cambridge Journal of Economics*. Soon after, the classification “Emilian Model” entered into discussions of regional policy-makers and international researchers, where it has figured prominently in the debate about alternative modes of production. In 1990, the International Institute for Labor Studies in Geneva made a major contribution to the understanding and dissemination of the theory and practice of industrial districts, with publication of *Industrial Districts and Inter-firm Co-operation in Italy* (Pyke, Becattini and Sengeberger, 1990), which contained influential papers by both Becattini and Brusco.

contracting foster a balance between competition and co-operation and a sharing of collective resources (Herrigal and Zeitlin, 2009; Keeble and Wilkinson, 2000).

Nevertheless, district firms remain highly competitive in their product markets; and the balance between competition and co-operation in industrial districts is crucial to their viability. Co-operative aspects of inter-firm relationships help to minimize disadvantages of small size, while competitive aspects, along with specialization, impart the dynamism and flexibility that are often lacking in large, vertically-integrated firms.

In recent years, efforts have been made to explain the formation, life cycle and “resilience” of industrial districts. However, Ron Martin and Peter Sunley (2011) argue that their trajectories over time are unpredictable due to the complex feedbacks and interactions between micro-level actors and the macro-structures within which these take place. While most researchers take a “linear” life cycle approach¹⁸, Martin and Sunley propose an *adaptive* life cycle model, in which development is evolutionary and contingent on district-specific dynamics. In this context, empirical studies show that whilst some clusters develop organically, in others, the support and intervention of “facilitators” can play an important role in building a platform for trust and “co-opetition”¹⁹ and promoting a flow of information, ideas and resources (Gagne et al, 2010; Ingstrup and Damgaard, 2013; Mesquita, 2007). Thus, the presence of a facilitator, by coordinating and promoting the process of district development, has the potential to contribute to its resilience. However, this is an area of research that is still in its infancy (Ingstrup and Damgaard, 2013).

5. Contemporary British Industrial Districts: Northamptonshire Footwear, Motor Sport Valley, English Sparkling Wine and Malvern Cyber Security

Our case studies of contemporary British industrial districts represent four very different industry sectors: footwear, a (mostly) traditional craft industry; motorsport, in high tech design and manufacturing; sparkling wine, an emerging agriculturally-based sector; and cyber security, in information technology (IT). Three – motorsport, agriculture and IT – are included in the government’s industrial strategies (BEIS, 2016), whilst at the time of writing, this was not the case for footwear. The sectors are of different ages and phases of evolution. Whilst English Sparkling Wine and cyber security have only really been a force in the market since the turn of the millennium, Motor Sport Valley originated after the Second World War, but has developed a set of skills that are allowing its businesses to enter new high tech markets. In contrast to these, shoe making has been a Northamptonshire industry for at least 900 years; and its traditional skills are valued by the market – although technology has helped this district develop in recent decades.

The four in-depth case studies were constructed on the basis of a combination of primary and secondary sources. Interviews with senior management and business owners provide a detailed view of business development, with a broader perspective offered by trade associations, industry bodies, media experts and training institutions – all of which have a close association with the businesses they serve. Finally, a more strategic viewpoint from a governmental level, was provided by interviews with the EEF – The Manufacturers Association (EEF), The Department of Business, Energy and Industrial Strategy (BEIS) (formerly the Department of

¹⁸ See, for example, Brenner, 2004; Menzel and Fornahl, 2010; Ter Wal and Boschma, 2011.

¹⁹ See, for example, Brandenberger and Nalebuff, 1997; Dorn, Schweiger and Alters, 2016; Bengtsson, and Raza-Ullah, 2016.

Business, Innovation and Skills (BIS)), the Confederation of British Industry (CBI) and the recently created British Business Bank. This primary data is supported secondary data drawn from published statistics – where these are available – and other publicly available sources of information.

Northamptonshire Footwear is a traditional industry that has operated in the same location for centuries. An early adopter of both the factory system and automation of parts of the design and manufacturing process, mass production eventually allowed lower cost overseas producers to dominate the mass segments of the market. However, high quality shoes for men, made in the traditional, labor-intensive fashion, remain a strong industry throughout Northamptonshire. Not only have businesses in this market segment survived, they enjoy strong demand for their products; and new companies have emerged to develop and exploit novel markets within the sector. Nicholas Cooper, for example, who founded Stamp Shoes in 2011, recently introduced the innovative “No Place Like Home” handmade shoes – with built-in GPS. Much the same evolutionary phenomenon can be seen in the British textile industry, where the mass market segments are largely supplied by low cost foreign producers, with smaller British manufacturers supplying high value luxury markets and often remaining in their original locations. According to the British Footwear Association (2016), the industry employs around 5,000 people producing approximately 5 million pairs of shoes each year (of which over 60 percent are exported), with an annual turnover of £2.3 billion.

Motor Sport Valley has a much shorter history, only beginning to develop after the Second World War. As with luxury shoes, the cost of motorsport products is very much a secondary factor governing demand. But unlike shoe-making, there is little room for tradition, with the pressure of competition demanding constant innovation. Having started out as a “garage” industry, this ever present requirement to develop has produced a highly technical skill set and an ability to design, develop and deliver advanced products to very short time-scales. However, rather than being a residuum of what was once a much larger industry, businesses in Motor Sport Valley are finding that their skills and reputation are opening up new markets in defense, the marine industry, aerospace, high performance sporting equipment and health technology. Motor Sport Valley is the largest of our four industrial districts, with over 4,500 businesses, (of which around 90 percent are exporters), employing around 40,000 people (of whom some 25,000 are engineers), with a combined annual turnover of around £9 billion. (Motorsport Industry Association, 2013; Nathan, 2015).

Sparkling Wine is an emerging district; and only in the last decade or so have English wines begun to make their presence felt on the international stage. Being at an early stage of development, English sparkling wine does not yet have a strong international reputation to support it; but it is the recipient of an ever-increasing number of international awards. There is some question regarding the footprint of the English sparkling wine “district”, which has largely been a consequence of climate change – and the ability to ripen classic Champagne grape varieties. At present, the best known, award winning estates are in Sussex, Kent and Cornwall, where networks of grape and wine producers are regionally organized – although there are vineyards as far north as York. It may be that as the sector develops, local groups of associated businesses will coalesce around initially isolated vineyards and wine producers – and a range of regionally defined districts will emerge. Thus, although the term “English sparkling wine” applies to wine produced anywhere in England and Wales, it might eventually need to be re-defined if particular sub-regions develop strong reputations of their own. Like motorsport, English sparkling wine is a fast growing sector. According to English Wine Producers (2016), the land devoted to viticulture has doubled in the past decade and currently

stands at over 2,000 hectares; and it is predicted to increase by a further 50 percent by 2020. Annual production has also increased, standing at over 5 million bottles, up from 3 million just four years previously. Sales reached a record £100 million in 2015, with exports expected to increase from 5 percent of current production to 25 percent by 2020. Sparkling wines account for 66 percent of all production.

The *Malvern Cyber Security Cluster* is also a relatively young district, but unlike the others it acquired a “facilitator” or “strategic enabler” very early on in its development and has benefitted from state interest and support, due to the critical – and growing – importance of cyber security in an ever more connected world. The Malvern Cluster is also the best example of “co-opetition” in our study as well as being perhaps the closest comparator to the UK elite sport system, discussed in Section 6, below. The Malvern Cyber Security cluster is also unusual in that its strategic enabler, Key IQ Limited, is itself a business within the cluster, rather than a conventional industry body. It was set up in 2010 to help people leaving the region’s large, privatized company, Qinetiq, to set-up and grow their own businesses. Key IQ offers consultancy and facility management services, including the Wyche Innovation Centre, which is now populated by tech companies in the cyber security, business assistance and tourism industries. The Malvern Cyber Security Cluster was formally established the following year, in 2011; and a year later, Malvern hosted the inaugural “Festival of Innovation”, to showcase innovation in all walks of life; the annual festival now brings together entrepreneurs, professionals, educators, students, families, young people and the general public. The Malvern cluster consists of more than 80 small companies, which between them, have achieved a 71 percent increase in employment, 48 percent increase in turnover and 58 percent increase in gross value added since 2011, which puts it among the most dynamic in our study (Tech City and NESTA, 2016).

5.1 Industry Origins and the Value Associated with “Place”

In all four districts, the presence of key resources was the catalyst for the sector’s emergence in its original location. Yet in the cases of footwear and motorsport, after the district had outgrown these, the “value” associated with its place of origin was high enough to attract both new entrants into the sector as well as talent from around the world.

The footwear industry in Northamptonshire was the result of it having one of the largest cattle markets in the country; as well as hides for leather, there was a plentiful supply of oak trees for bark to assist in tanning, a process which requires a considerable amount of water – supplied by the River Nene, which also provides good transportation links for shipping-out the finished product. Although shoe-making originally became a Northamptonshire industry for practical reasons, by the 21st century, a Northamptonshire location has established itself as a significant part of a shoe company’s trademark, particularly if it makes gentlemen’s shoes; and it is a source of value in itself, especially in overseas markets.

Motor Sport Valley also owes its original location to the availability of essential resources. Prior to the Second World War, Grand Prix motor racing was largely the preserve of Italian, French and German manufacturers while British involvement was hampered by a lack of sites – other than the already outdated Brooklands Circuit – where motor racing could actually take place. After the war, however, land was returned to private ownership – along with large numbers of ex-military airfields – many of which were located in the Midlands and Eastern regions of the country. There was suddenly no shortage of motor racing venues, or, indeed, engineers to take advantage of the opportunities they provided.

The British Grand Prix has mostly been hosted by the Silverstone Circuit, which began life in 1943 as an RAF training airfield, and was first used for motor racing just four years later in 1947. Silverstone is now home to motor sport businesses and a University Technical College, with a number of Formula One teams based close by. Other circuits, such as Hethel (where Group Lotus is based) and Snetterton, also started life as military airfields. Since air bases needed large amounts of equipment, motorsport businesses benefitted from well-developed transportation and communications systems; and although the motorsport industry has now largely out-grown the immediate need for some of the resources which originally brought it to life, ever-improving communication and transport links remain a very high priority.

A location in Motor Sport Valley also adds value to a motorsport business; but, equally significantly, it helps to attract the best talent, internationally. Many companies in Motor Sport Valley either supply components or build products that then carry the client's brand, rather than their own. By contrast, well-known Formula One teams – such as Williams, McLaren and Red Bull – have become household names, with the industrial district of which they form a part being less obvious. Motor Sport Valley is now no longer restricted to the UK; many companies originating there – such as Ilmor, Cosworth and Judd – also have a strong presence in the USA, one of the largest markets in the world.

English sparkling wine is inseparably connected to its location. Like Champagne – which can only be produced in the eponymous region in France – it can only be made in England or Wales. Whilst there has never been a shortage of appropriate soil conditions in the south of England, it wasn't until a degree of climate change from the 1980s onwards that English vineyards could successfully ripen Chardonnay, Pinot Noir and Pinot Meunier varieties and the estates were finally able to produce a very high quality product. English wines are of necessity targeting small market segments, due to limited (albeit increasing) quantities. The English sparkling wine industry is at an early stage of development and has not yet been able to turn its English origins into significant “place” value. However, this may well change as English producers have, during the past few years, accumulated an ever-increasing succession of global awards for sparkling wine – frequently beating established Champagnes. If the wines continue to improve, English sparkling wine or perhaps a collective brand – similar to Italy's “Prosecco” or Spain's “Cava” – will eventually add value in the way that “made in Northamptonshire” adds value to a pair of men's shoes.

The Malvern Cyber Security Cluster also owes its location to the availability of local resources – in this case, the presence of the Defence Evaluation and Research Agency (DERA) and subsequently its privatized commercial arm, Qinetiq. The choice of Malvern as a location was largely due to it being beyond the range of hostile bombers during the Second World War; but at the cessation of hostilities, the groups of scientists and technicians there continued to grow. Aside from being a very pleasant location to be based in, since 2010, Malvern has also benefitted from the leadership and resources provided by Key IQ. Key IQ also offers various kinds formal membership of the Malvern Cluster to businesses in the sector, but located elsewhere in the country. The system is based largely on the relative distance from Malvern, and hence the companies' ability to take part in – and benefit from – the various formal and informal meetings and discussions. But since like English Sparkling Wine, cyber security is not restricted to one location, in 2014, Key IQ founded the UK Cyber Security Forum; this was in response to demand from small and micro cyber security businesses across the UK, located in places like Cambridge, to facilitate the sharing information and to put them into contact with others clustered around them. The UK Cyber Security Forum is a UK government and industry-led partnership that aims to develop skills and infrastructure to combat cyber security threats.

Key IQ also recently set-up an online communication and collaboration platform, “CyberCollaborate”.

5.2 High Value-Added, Price-Insensitive Products

In all four districts, the focus within the businesses is not purely on money and profits: there is a drive to produce the best possible product, which is essential to survival in a relatively small, high value-added sector – and a source of satisfaction in itself. Very little, if any, competition is based on price.

Motor Sport Valley must continually innovate in order to remain competitive and a high priority is placed on research and development; on average, around 30 percent of profits are ploughed back into the businesses for this purpose. During the Formula One season, teams will use hundreds of different components, but few of any one type. By the following season, the vast majority, if not all of these will be obsolete. The ability to rapidly design and produce high quality components requires not only a highly technical manufacturing system but also one that is very flexible, fast-moving and capable of reliably delivering products against a very tight schedule. This means that although the cost of each component – as well as the finished product using it – is typically very high, the emphasis is firmly on performance rather than price.

The Malvern Cyber Security Cluster also, for the most part, specializes in partly or fully bespoke services and products. Given the potential cost of a business’s systems being breached, in terms of financial cost, loss of intellectual property and damage to the business’s reputation, cyber security is increasingly seen to be an area where cutting corners is likely to be extremely risky. Also like motorsport, last year’s product is rarely good enough, as hackers continue to up their game; the result is constant pressure to innovate and try to stay ahead – providing an ongoing spur for development within the sector.

In the case of a pair of bespoke shoes, the emphasis – whilst still on producing a high quality product – is on a very different process of production, which is more about traditional skills and the investment of time and care that they demand. This is an essential part of the value of the product; and is key to the appeal of these products to their target market. Whilst mass produced alternatives are available, customers favour the more hand-made approach and appreciate the higher “human” investment involved. But the relationship between the shoemaker and the customer is supported not only by repeat purchases; repairs and maintenance are also important.

With English sparkling wine, the emphasis is also on producing the highest quality possible. As Nicholas Coates, co-founder of Coates and Seely observed, “to us, it is not a numbers game; it’s not how big we can be, it is how good our wine is” (quoted in Stodell, 2016, p. 48). The more lucrative revenue stream associated with the production of higher value products has also attracted farmers into the industry, many of whom have experienced sustained downward pressure on their prices from supermarkets and other retail outlets for produce. Some have set up wineries whilst others grow grapes to supply other wineries or rely on neighboring estates to produce the wine for them.

5.3 Ownership Structures and Ease of Market Entry

In all four districts, the ability to strive to deliver the highest possible quality is supported by a wide range of ownership structures; but widely-dispersed shareholding – which would increase pressure on firms to prioritize the short-term financial interests of shareholders over the longer-term interests of the productive enterprises involved – is noticeably rare.

Shoe-making has always been something of an artisan industry, with low barriers to market entry. Many companies started out individually or family owned, either wholly or by a small group of controlling share-holders. Many have continued in this way, whilst others are now owned by large fashion and footwear companies. Church's, for example is owned by Prada, but continues to operate successfully in much the same way as it always has done, but with better access to global markets. This tendency to respect a new acquisition's origins and independence, is largely due to recognition of the importance of authenticity in limited quantity luxury products. Thus, whilst there remains a risk that acquisition will threaten the smaller shoemaker's ability to maintain autonomy and the quality standards required by its customers, this recognition plays a role in the success of both enterprises involved.

Whilst motorsport is nowadays a highly skilled and capital-intensive business, it was not always so. Neither large car manufacturers nor glamorous Grand Prix teams initially drove the development of British motorsport. Rather, it was smaller engineering companies in the lower cost formulae that provided a rich pool of talent. At present, many businesses in Motor Sport Valley are share-holder owned, usually by a small group of investors, with close connections to the sport, instead of distant investors whose primary interest is in short-term financial returns. This is important, as it allows established businesses to continue, following the retirement of their original owners; and it facilitates the raising of capital to fund what is becoming an increasingly expensive development process – both in motorsport and beyond. It is also a key means of entry for “new” teams, obviating the need to start from scratch, and keeping groups of engineers and designers together, along with their skills, networks and relationships. For example, the team now based at Enstone in Oxfordshire has, since 1981, competed as Toleman, Benetton, Renault, Team Lotus and presently Renault again; for this reason it is usually known as the “Enstone Team”. Likewise, the present Mercedes AMG Petronas Formula One Team at Brackley, which originally started out as Tyrrell Racing in 1968, has competed as Brawn Grand Prix, Honda Racing and British American Racing.

Others have taken a different route. Williams Grand Prix Holdings, for example, floated on the Frankfurt stock exchange in 2011, selling a minority interest, with Sir Frank Williams retaining over 70 percent of the existing shares. This has the benefit of raising the required funds without losing control of the company. The choice of Frankfurt over London is also significant; in London, the International Accounting Standards Board's International Financial Reporting Standards 8 requires the disclosure of the value of any contracts amounting to 10 percent or more of turnover, whilst the Generally Accepted Accounting Practice in force at Frankfurt does not. In a highly competitive business and racing environment, the ability to keep such information confidential is a clear advantage. The ownership of the McLaren Group is also closely held. As of 2014, 25 percent was owned by its Chairman, Ron Dennis, with the remainder split between his business partner, Mansour Ojjeh (25 percent) and the Bahraini investment company, Mumtalakat (50 percent). Both Dennis and Ojjeh have had a long involvement in motorsport, which provides the group with both a narrow range of share-holders and a significant understanding of the businesses the group is involved in. A more widely-dispersed group of share-holders would be likely to dilute this and to prioritize short-term returns to share-holders over the longer-term objectives of the group.

The English sparkling wine sector also accommodates a range of ownership structures. Many vineyards and wineries are family-owned, having been established on existing farms, such as Camel Valley, with others, like Ridgeview, being funded by the sale of the founding owner's previous businesses. Forty Hall is run as a charitable foundation in co-operation with the local authority; whilst Chapel Down is partly crowd-funded. Again, very few, if any, are funded

through widely-dispersed share-holder ownership. This is partly because of the time it takes to bring a winery on stream (around 5 years), with most of the investment being required in advance – so investors have to have an eye to the long-term. Once the winery is in place, and the vines are producing grapes, development of the product and its subsequent marketing is a relatively incremental, skill-driven process. For many producers, the main investment is the land itself – and time – which allows existing land-owners and tenants a variety of means of entering the sector. Since many farmers already own the land – and have suitable buildings available for a winery – the planting of vines and the winery are usually the most significant expenses. As the sector develops and evolves, some wineries will eventually change hands – and as a result, the nature of ownership is likely to also evolve.

The Malvern Cyber Security Cluster is composed of many very small businesses; and Key IQ set up the Wyche Innovation Centre to help most of them take their first steps. Having serviced office and laboratory space is part of the package on offer, but equally critical are the contacts with other local businesses and the availability of consultancy. These elements help to enable a focus on the core idea of the business – essential in a small start-up – whilst also helping it to be outward-facing. The relationships that Key IQ is able to facilitate also include potential finance partners – although Key IQ themselves also offer assistance of various kinds, with remuneration being on a fee paying, or equity/profit sharing basis. Facilitation of a constant stream of new businesses is a vital part of the cluster’s future, since creativity is essential to stay ahead of cyber criminals – both individuals and those which are organized. Since a single, generic security product would make online systems extremely vulnerable, this tends to mitigate against large, dominant players within the industry.

5.4 Co-operation and Competition – “Co-opetition” – and the Role of Industry Bodies and Collective Institutions

In all four of our districts, effective and successful co-operation forms the basis for creative and constructive competition. In this context, co-operation takes the form of working together – often in collaboration with the sector’s industry body – to provide and upgrade such collective resources as training, marketing, research and development and export-related services as well as to encourage and facilitate innovation.

In Malvern, co-operation is relatively informal since, by its nature, cyber security tends to involve fairly secretive organizations, which until the advent of Key IQ, rarely met each other. Subsequently though, the highly specialized nature of many of these businesses has meant that there was often advantage to be found in working together on certain types of project; whilst on other projects, the same businesses might find themselves in competition. This is effectively the embodiment of “co-opetition” – much of it being facilitated by Key IQ.

Co-operation has played a key role in the development of Motor Sport Valley. The Cosworth DFV Formula One engine, for example, originally designed for Colin Chapman’s Team Lotus, was put into series production by Ford Motor Company during the 1970s and 1980s and made available for purchase by any private team entering the sport. Along with the Hewland gearbox, this provided the basics for producing a car with a good chance of being competitive. This relative ease of entry helped many new teams enter the market; and it provided work for other suppliers, significantly spurring the development of the district.

Whilst the basis for competition is reasonably clear in motorsport, its underpinnings in both footwear and sparkling wine are more complex. In footwear, where production levels are relatively low – necessitated by the labor-intensive methods of production – and demand is

increasing, there is little pressure on individual shoemakers to directly compete with each other. Given the nature of the product, some customers form a long-term relationship with a favored firm, whilst others might well buy from a number of manufacturers. This relative under-supply to the market is an important component of strategy in many true luxury categories, which tends to promote both co-operation and constructive competition, when a district is tackling a large market.

Even though the largest English wine producers are relatively small, co-operation with larger businesses plays an important role. For example, Waitrose – the grocery division of the John Lewis Partnership – offers significant publicity as well as another channel to market for English wine producers; it is also a producer itself. This has raised the profile of English sparkling wines as well as English still table wines. Waitrose’s involvement has also helped the industry to get beyond what could perhaps be described as a “novelty” stage. Within the young English wine-making sector, although co-operation tends to be more ad hoc than in either shoe-making or motorsport, a number of wineries make wine for other estates; and some growers supply grapes to larger producers. Instead of investing in their own bottling line, some groups of estates have opted for a mobile bottling plant that visits each estate in turn. All of these can reduce the initial investment – crucial in an industry where the average vineyard is less than 5 hectares. There has also been a degree of regional organization and co-operation emerging in both Sussex and Kent; and it is likely that this will continue as the sector matures. However, the Managing Director of both a large family wine producer and a winery run as a charitable foundation, expressed the view that English producers, individually and as a group, would be much better off if they could see themselves as in competition with the rest of the world instead of with each other. This view is based on a current lack of co-operation in such basic areas as the sourcing and bulk buying of shared requirements – such as commonly used supplies – to help reduce needless costs, to the benefit of all concerned.

In this context, an active industry body is instrumental in the construction (or re-construction) and maintenance of the institutional infrastructure for collective resources such as training programs, facilitation of innovation, enforcement of quality standards and provision of specialized services and advice. It promotes the interests of the sector in terms of marketing and represents the industry politically. Since these bodies are largely sustained by the sector itself, they must be felt to be doing the right things, and doing them sufficiently well to justify the effort and cost.

The British Footwear Association (BFA) is influential and actively involved in marketing bespoke English shoes abroad, often reinforced by association with other British products. When James Bond puts his foot down in an Aston Martin, for example, that foot will usually have a Northamptonshire boot on it. It also organizes and accredits training, which takes the form of both formal college-based training programs and learning through apprenticeships, which the BFA both organizes and accredits. The BFA also provides technological input; and it has contributed to major developments in the industry’s manufacturing and design processes.

The Motorsport Industry Association (MIA), is also influential, representing the interests of the sector, assisting the development of partnerships, and supporting the provision and accreditation of professional qualifications to underpin the industry’s future. Like bespoke footwear, motorsport is a very skills-intensive sector, relying on a supply of highly qualified recruits. For this reason, the MIA set up the first degree-level course in Motorsport Engineering and Design in partnership with Swansea Institute. The MIA now has both a Motorsport Education Forum and a Motorsport Employers Group, to ensure that training remains appropriate and up-to-date. But Motor Sport Valley is not solely reliant on local talent: as a

consequence of its international reputation, it draws in talent from around the world. The MIA also works with UK Trade and Investment (UKTI) to promote both exports and entry into new markets.

As English sparkling wine is the youngest of our districts, it is perhaps no surprise that the industry body, the UK Vineyard Association (UKVA), is less well-developed than its counterparts in footwear and motorsport. Whilst the UKVA looks after technical matters and represents the industry's interests to government, marketing is provided by English Wine Producers (EWP), which was originally set-up by a few leading producers to promote their wines to the trade, media and consumer. EWP now serves as a complementary industry body to UKVA, carrying out a marketing role both within the UK and abroad. It remains to be seen how the industry structure will develop over the next few years; it may remain fragmented, adopt a strategy with similarities to comparable industries elsewhere – or something uniquely its own. In training, the wine industry early-on realized that its growth and development depended very significantly upon improved educational resources. Plumpton College, now a state-of-the-art facility offering courses in viticulture, was by its own admission, until recently, based in “a few old chicken sheds”. Much of the funding for the transformation of Plumpton College came from the industry, both from wineries and the educational sector itself.

The Malvern Cyber Security Cluster is unusual in that it does not have a conventional industry body, but is instead facilitated by a private company, Key IQ, which also served to formalize the cluster. The Malvern cluster attracts many highly skilled and highly qualified people from local sources, such as Qinetiq; and as a result of the region's growing reputation in cyber security, it now attracts talent from all over the country. Thus, although there is less of a focus on industry specific education than in the other districts, the Malvern cluster actively facilitates the search for new talent. As well as visits to schools, which serve the dual function of raising awareness of the importance of good practice on the internet and educating young people about the career possibilities in cyber security, this has the additional benefit of promoting future entry into the industry. The cluster also offers puzzles and tests, so that anyone can test their aptitude to work in the cyber security – regardless of age.

5.5 Evolution and Development

Growth and development in all four districts has typically been a primarily bottom-up process, driven by a continuous inflow of market entrants. Thus, whilst involving organizations of a variety of sizes and types – themselves at different stages of evolution – it is the innovative dynamism of the districts' smaller, newer and more agile members that supports their longer-term health. Some companies will fail and others will merge, but a steady stream of replacements provides incentives for innovation, maintains the critical mass for retaining key collective resources and upholds the value of the regional location which, in turn, reinforces the dynamism of the district and its ability to sustain itself and evolve.

Whilst discussing high technology, it might be easy to imagine that the footwear industry, being largely based on tradition, has changed very little over the centuries; but this is certainly not the case. Production has always involved a combination of function and fashion input; and although automation of the production process occurred as long ago as the late 17th and early 18th centuries, both the design and manufacturing processes have undergone varying degrees of change. However, handmade products that take a considerable amount of skill and time to produce remain significant. An important recent advance – which has also been a significant contributor to the sparkling wine industry's development and expansion – is direct marketing using the Internet. Not only does this provide a closer relationship with existing customers and

access to new customers, it also reduces the cost of sales for more frequent short runs of seasonal styles, encouraging customers to return regularly.

English wine has learned much from its more established continental counterparts. However, whilst this has resulted in the sector having much in common with the Champagne producers, the dynamism in this growing sector means that there are already signs of English wine makers starting to diverge from those in other countries, and developing their own ways of doing things. Bob and Sam Lindo of Camel Valley argue that it is already possible to discern an emerging English style, for example, whilst the debate as to whether or not there should be a collective brand for English sparkling wine – and if so, what – is ongoing. To differentiate themselves from their older and more established French and continental counterparts, many English wines are also sporting much more contemporary packaging.

Whilst some Formula One teams have past cars on display – or locked away in storage – there is little place for tradition or resting on past glories. What is competitive now, may not be good enough to win next week, let alone next year. This emphasizes constant development and innovation in every detail of the production of racing car components and the overall package. The pressure to innovate has resulted in many companies becoming highly advanced technologically. They have also evolved skills in short-run design and manufacturing, opening up new markets in other high-tech industries. This is reflected in recent changes in company names. In 2015, for example, McLaren Group was renamed McLaren Technology Group, to reflect diversification into healthcare, oil, gas and financial services. McLaren have, like BAE Systems, also partnered with UK Sport to produce training equipment for Olympic teams, such as rowing and canoeing; and Red Bull Technology is contributing to the design process for Sir Ben Ainslie's Land Rover BAR America's Cup team. Motor Sport Valley companies also provide specialist consultancy, with Williams effectively setting-up Jaguar's new formula E racing team, having already worked on various of their concept road cars. Of our four districts, Motor Sport Valley has evolved furthest from its original roots; in contrast to English wine or Northamptonshire footwear, it could be said that in many respects Motor Sport Valley has developed a set of capabilities rather than a range of products.

The evolution and development of the Malvern Cyber Security cluster is unusual, having had a coordinating body to provide leadership and facilitation from a very early stage in its development; aside from the benefits this brings, the importance of cyber security to both commercial and national interests has brought with it significant government interest. Not only has the location in Malvern attracted talent as a result of the pleasant lifestyle it offers, proximity to the UK Government's Communication Headquarters (GCHQ) in Cheltenham and Special Forces training areas has resulted in local businesses being awarded both government contracts and funding.

5.6 Summary

Many factors governing the appearance and development of modern industrial districts have been discussed above. However two key factors stand out, upon which the others mostly depend.

The first is the nature of the district's main product or service. Whether the priority is luxury, the objective of winning or the need to stay secure, the price-insensitive nature of the product or service provides the margins required to fund innovation, education and ever-better – rather than cheaper – products and services. Whereas price/cost competition typically leads to fewer producers, since there can only be one price leadership position in a market, innovation is

sacrificed to volume; downward pressure on wages and margins undermines local living standards; and large size stifles new market entry, which is a key source of dynamism in a successful industrial district.

The second key factor is the importance of place. With the exception of English Sparkling Wine, all of the products and services produced in our districts could, in theory at least, be produced anywhere in the world. Whilst some, such as Motor Sport Valley and Northamptonshire footwear have out-grown the initial resources that gave rise to them, the relationships and reputation that have developed since are not easy to replicate, serving to reinforce the locational value for the businesses located within. These relationships bring with them both the incentive to innovate and compete – as well as to co-operate in exploiting opportunities that would not otherwise be open to individual small businesses; they also allow the district to collectively fund and operate the resources that member companies all require, to their mutual and collective benefit. As discussed above, these resources, as well as the way they are delivered, may vary; but together they bear a close resemblance to Marshall's "industrial atmosphere".

We now turn to the case of UK elite sport, which in many respects represents both a high performance industry sector and a significant British industrial policy success story.

6. Building International Competitiveness: Could British Government and Industry Learn from the Olympic Policy Model?²⁰

The British Olympic Team's low point at Atlanta 1996 – placing 36th with only one gold medal – served as the catalyst for the development of a vision for the future of UK elite sport and a strategy for achieving it. In 1990, when John Major – a life-long cricket supporter who understood the political significance of sport – succeeded Margaret Thatcher as prime minister, a decade of political indifference to sport abruptly ended. Major's strong personal backing proved instrumental in the strategic changes that underpinned elite sport's competitive turn-around (Houlihan and Lindsey, 2013, p. 40), with political support being crucial, since both the institutional and legal framework supporting elite sport development required reform.

Another problem was the absence of a predictable, competitive source of funding. However, addressing this, both in absolute terms and by comparison to other countries, was a challenge since the UK was in recession; and the government's reputation for fiscal prudence had been damaged by Sterling's humiliating exit from the European Exchange Rate Mechanism in 1992. However, taking inspiration from Europe, the new National Lottery, which was set up in 1993, provided a viable alternative to exchequer funding, with around 30 percent of the proceeds earmarked for good causes, including sport.

But additional funding was not in itself sufficient to change the game. The absence of leadership, a clearly articulated vision, and a strategy for achieving it – along with processes for identifying and developing talent – all needed to be addressed. Since the difficulties afflicting elite sport were no secret, it was possible for an interested government to engage with existing sporting institutions to facilitate the most pressing changes quickly. This involvement would not only make it easier to create the system, but also to develop it further as required.

²⁰ This section draws heavily on Konzelmann and Fovargue-Davies, 2016.

Funding was thus the second of only four – albeit highly significant – changes in the government’s relationship with elite sport. The third was the primary institutional change, also initiated by the Major government: In July 1994, then Sports Minister, Iain Sproat, outlined proposals (1) to replace the Sports Council of Great Britain with the England Home Country Sports Council (Sport England) and a new arms-length body, the United Kingdom Sports Council (UK Sport) that would focus on elite sport only, with much closer links to the British Olympic Association; and (2) to shift the focus of the Home Country Sports Councils to mass participation sports. In January 1997, UK Sport became fully operational; and it was granted a license to distribute Lottery funding to elite sport shortly afterwards.

Crucially, political support for elite sport – with a key message for industrial strategy development – survived subsequent changes of government. Tony Blair’s New Labour came to power in 1997, bringing a fundamental change in the uses to which lottery funding could legally be put. Instead of being limited to facilities, it could now be allocated to teams, athletes and support staff, meaning that athletes no longer had to juggle employment with training and competition; and coaches and other specialists could be funded. This fundamentally changed the way the system worked: Instead of government dictating what teams spent money on, they were now free to spend it on what was *actually* needed and *when*. Discipline came with the hard-nosed rule that funding was contingent upon competitive success – or the demonstrable likelihood of it – within set timescales as well as implementation of strict, new governance procedures by funding recipients to account for their use of public investment.

6.1 The British Olympic Team’s Competitive Turnaround

Table 1 shows the medals won by the British Olympic team and its Summer Games world rankings since 1996, illustrating the speed of the Team’s competitive turnaround as well as its sustained improvement ever since. At the Summer Games in Rio, Team GB made history by improving its performance following a home games – whilst also winning medals across more sports than at the previous Games (Rio 19, London 17) by more athletes (Rio 130, London 114) and winning gold in more sports (15) than any other nation. The ambition is to improve even further at Tokyo 2020.

Table 1. British Olympic Team’s Performance in the Summer Olympic Games

Olympic Games	Total Funding from UK Sport* (£millions)	Number of Funded Sports*	Number of Medals				World Ranking
			Gold	Silver	Bronze	Total	
Atlanta 1996	NA	NA	1	8	6	15	36 th
Sydney 2000	£58.9**	13	11	10	7	28	10 th
Athens 2004	£ 71.0**	16	9	9	12	30	10 th
Beijing 2008	£ 235.1	27	19	13	15	47	4 th
London 2012	£ 265.1	27	29	17	19	65	3 rd
Rio 2016	£ 274.5	20	27	23	17	67	2 nd

* **Source:** UK Sport, 2016.

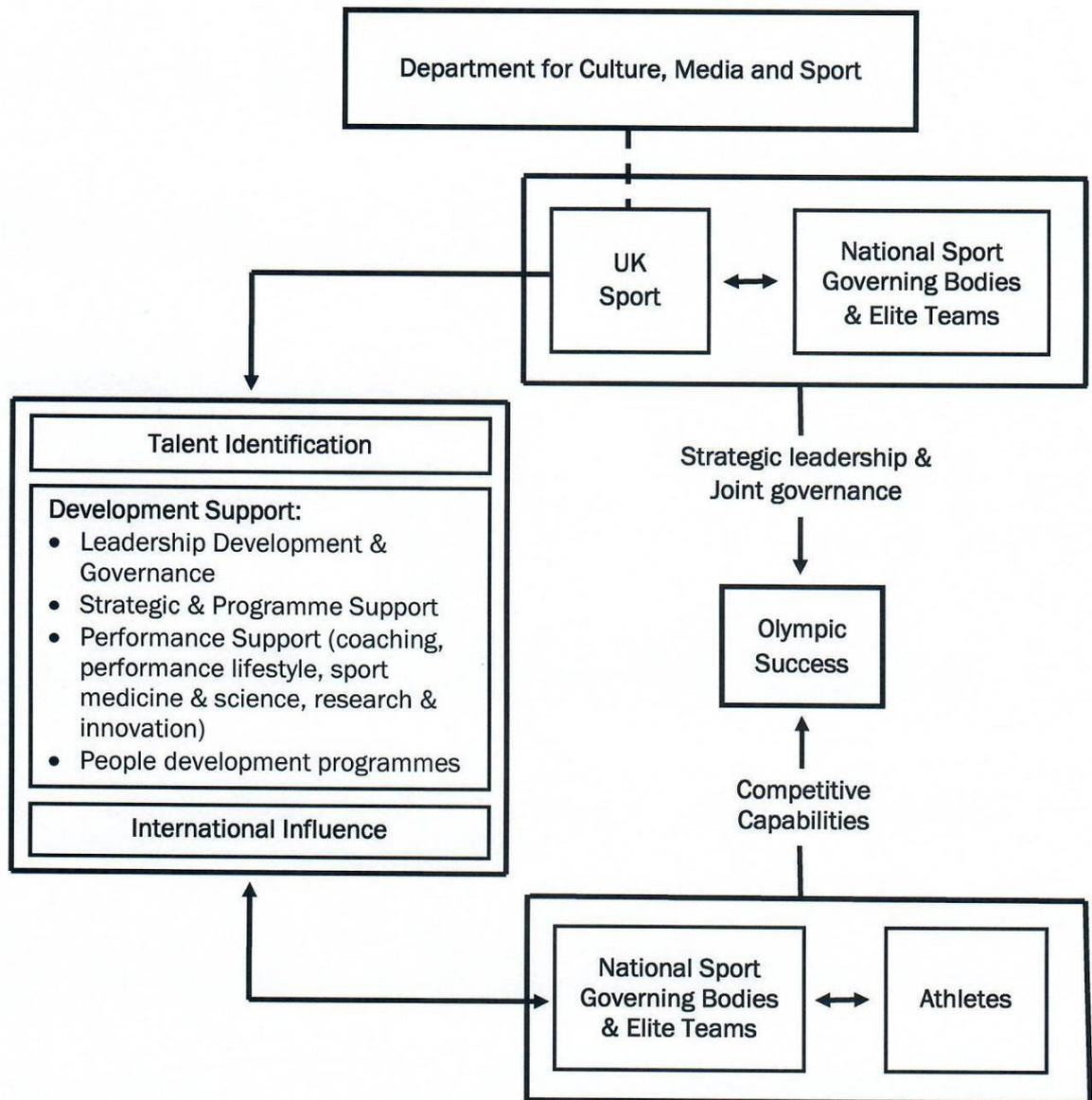
** Figures for the Sydney and Athens Olympiads relate only to Podium level funding as during that time the Home Countries Sports Councils were responsible for supporting athletes at the Foundation and Podium Potential levels.

6.2 UK Elite Sport Institutions — and Their Relationship with the State

Figure 1 illustrates the structure of the UK elite sport competitiveness development system, showing the limited, but still essential role that the state plays in the integrated system.

UK Sport is an executive non-departmental public body of – and accountable to – the Department for Culture, Media and Sport (DCMS). It sits between DCMS and the rest of the system and is unusual in many respects. Although a public institution, it is run at “arm’s length” from government, working in *partnership* with the Home Countries Sports Councils, National Sport Governing bodies (NGBs) and elite teams to *lead* elite sport to world class success. This makes UK Sport an integral part of the system, rather than a top-down instrument of government policy. UK Sport is also staffed – and led – largely by former sporting world champions, who know what it takes to win medals in international sporting events. This underpins the quality of its relationships with the rest of the system and its ability to put a clear case to government for the needs of elite sport. UK Sport is also pragmatic and adaptive; and it has so far avoided capture by both political and sporting interests.

Figure 1. The UK Elite Sport Competitiveness Development System



There is strategic collaboration between UK Sport, the NGBs and elite teams, with UK Sport serving as the strategic lead body and facilitator of the processes required, and the NGBs and elite teams having input into what those processes are and how they are operationalized. Because recognizing and developing talent within particular disciplines takes place at the level of the individual sports, effective information sharing between the NGBs, elite teams and UK Sport is essential. The state’s involvement is thus indirect, horizontal and integrated, relying on open and regular communication to function effectively.

Most of the system is composed of institutions which develop athletes. The result is an “expert driven” system, with access to state resources, rather than the other way round. By distributing resources to the most successful athletes and teams, UK Sport enhances the “market” within which British elite sport operates, ensuring that it is highly competitive with a focus is winning. There is competition for team places as well as funding, both within sports and between them.

But competition is constructive and takes place within a transparent framework designed to maximize performance of athletes, sports and the team as a whole. In this, UK Sport plays a central role.

This also makes it possible to learn from failures, and, where possible, turn them into successes. By facilitating the sharing of information *among* the NGBs, different sports can learn from each other. Although development programs within particular disciplines vary, by facilitating information flows between UK Sport and the NGBs and between the individual sport disciplines – and continually mapping the international sporting landscape – the competitiveness development system is able to evolve to meet changing requirements, exploit opportunities, and address obstacles as they appear. The focus on winning is thus realized via a system producing a steady stream of talent, (rather than a few individuals), which is what produces sustainable success in the short- and longer-term.

To ensure that sports focus not only on their own performance but also on the systems and processes that sit behind them, in 2008 UK Sport developed its “Mission” review process. This tracks, assesses and challenges each funded sport, to ensure continuous improvement, identifying – and finding solutions for – issues before they can impinge upon performance. The effectiveness of this approach can be seen in the response to Team GB’s disappointing performance in the pool at London 2012. Along with the inevitable reduction in funding came significant support – including input from other teams as well as performance experts from outside sport – to identify and address areas of weakness. The result, at the next Games in Rio, was the best performance in the pool since 1908.

In short, whilst increased funding and intelligent, arms-length state involvement have certainly helped, they are not the whole story. Equally important are the overall leadership and vision, the institutions making up the system, the way they work together, and their relationship with the state. The constructive nature of competition – “co-opetition” – is also centrally important in creating an enabling competitive environment for elite athletes and teams. All of these principles – along with longer-term planning and investment horizons – have clear implications for the development of an industrial strategy.

6.3 Could British Government and Industry Learn from the Olympic Policy Model?

Sport, generally, has its own structure, culture, and criteria for success – as do the various disciplines within it. The same is true of business and industry. For this reason, the approach adopted by UK elite sport should be seen for what it is: a strategy designed to build, maintain and develop international competitiveness. The detailed approaches required to win medals in any particular discipline are usually the focus only of those most directly involved. Again, this would also be the case in a strategy for business and industry.

Seen from this perspective, the transformation of elite sport reveals transferable insights for industry in terms of vision, leadership and state involvement as well as funding, allocation of – and accountability for – resources. There are also insights in terms of strategy and planning horizons; and structures, systems and processes for identifying opportunities, building and developing competitiveness, providing support services to promising sectors and managing sectors facing decline. We consider the implications for industrial strategy of a systems-based, expert driven approach, in which the government assumes a “market enhancing” role (Aoki, Kim and Okuno-Fujiwara, 1997).

British elite sport is a high performance industry sector that has not attracted much attention in contemporary industrial strategy and policy debates. Unlike the four industrial districts analyzed above, it has benefitted from strategic public-private leadership and targeted public investment; and in many respects it embodies a highly successful industrial policy model. It also has surprisingly much in common with Marshall's analysis of the English industrial districts of his time – as well as the factors that have contributed to the success of the districts analyzed above. The focus of competition is on the performance of the collective; and success is based largely on co-operation in areas that strengthen competitiveness (of individuals and the collective), the quality of relationships throughout the system, timely and appropriate information sharing, innovation and continuous development. In Malvern, Key IQ comes closest to providing the sort of strategic leadership and facilitation that the British elite sport system receives from UK Sport; and in both cases, intelligent, arms-length state support and the presence of an institution to facilitate communication and information sharing, to provide strategic leadership and vision, and to help direct the right resources to the right places at the appropriate time – in order to deliver the desired outcomes – are significant sources of competitive advantage.

Four broad areas stand out as key contributors to the success of UK elite sport: (1) a clearly articulated shared vision – and a strategy for achieving it; (2) an institutional structure to provide strategic leadership, identify talent and support the development of internationally competitive athletes and teams – insulated from interference by short-term political (and sporting) interests; (3) an enabling competitive environment in which access to a reliable source of finance forms a part; and (4) an institutional system that encourages learning, innovation and responsiveness to opportunities and constraints. Taken together, these – if made available to British businesses, clusters and sectors – would be likely to facilitate significant improvement in the UK's international industrial performance. Thus, the answer to our initial question – “Could British Government and Industry Learn from the Olympic Policy Model?” – is most assuredly “Yes”.

7. Conclusions

We conclude by returning to Alfred Marshall, who was keenly aware of the evolutionary nature of productive systems and of the environments within which they are embedded. He viewed competition as “an activity, a process with evolutionary dimensions” (Kerstenetzky, 2010: 576), rather than a market structure; and he was concerned with “competitiveness” – of firms as well as local, regional and national productive systems. Marshall saw the evolution of industrial organization and development as encompassing different routes to industrialization and involving alternative organizational forms – including both large factories and small firms in industrial districts – that are variously inter-twined as they evolve and co-exist over time.

After Marshall's death in 1924, his methodological approach and evolutionary theory of industrial organization and development were increasingly abandoned as Neo-classical micro-economic theory focused attention on individual firms competing in particular market structures, instead of groupings of firms operating within localized productive systems and industrial sectors; and static equilibrium models of perfect, monopolistic and oligopolistic competition were developed to explain optimal output and employment levels of firms operating in these markets. Although Keynesian ideas were emerging to inform macro-economic policy during the 1930s and 1940s, Neo-classical micro-economic theories informed

industrial policy; and the conventional wisdom came to view large scale production as the next stage of industrial evolution.

From a Marshallian perspective, the economic situation is a dynamic process of change and progress; and since Marshall's time, financialization and globalization have fundamentally altered the character of the local, national and international environments within which firms and sectors in advanced industrial economies find themselves competing. This has had a profound effect on the fate of the English industrial districts. Having virtually disappeared, older, surviving districts are re-vitalizing themselves; younger ones have emerged and are competing successfully in international markets; and new industrial ecosystems continue to appear. The vitality of Britain's contemporary industrial districts – despite decades of ill-informed policy choices, if not neglect – attest to the potential this form of industrial organization offers for industrial renewal.

From the cases analyzed above, it is clear that Britain possesses the entrepreneurial, production, and innovation capabilities required to successfully compete in global markets. However, in many ways, these businesses and the industrial districts of which they form a part are succeeding against the odds. UK elite sport, on the other hand, has systematically set about stacking the odds in favor of its athletes and teams. The absence of a coherent institutional framework, within which existing and future businesses and industrial ecosystems can develop the competitive capabilities required for success, is limiting the numbers of successful businesses and clusters, and thus the performance of the broader economy. In this, the UK elite sport system – which has been successfully developed and implemented in a British cultural and institutional context – provides an approach to building international competitive capabilities from which important lessons could be learned.

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