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Article (Published version)  
(Refereed)

**Original citation:**

Owen, Geoffrey (2011) *Corporate strategy and national institutions: the case of the man-made fibres industry*. [Capitalism and society](#), 6 (1). ISSN 1932-0213

DOI: [10.2202/1932-0213.1080](https://doi.org/10.2202/1932-0213.1080)

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Available in LSE Research Online: October 2011

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# *Capitalism and Society*

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*Volume 6, Issue 1*

2011

*Article 3*

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## Corporate Strategy and National Institutions: The Case of the Man-Made Fibres Industry

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**Recommended Citation:**

Owen, Geoffrey (2011) "Corporate Strategy and National Institutions: The Case of the Man-Made Fibres Industry," *Capitalism and Society*: Vol. 6: Iss. 1, Article 3.

**DOI:** 10.2202/1932-0213.1080

**Available at:** <http://www.bepress.com/cas/vol6/iss1/art3>

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# Corporate Strategy and National Institutions: The Case of the Man-Made Fibres Industry

Geoffrey Owen

## Abstract

This article discusses the impact of national policies and institutions on the strategies that companies adopt when they are faced with disruptive changes in their external environment. The article focuses on the man-made fibres industry in the U.S., Western Europe and Japan between 1980 and 2010 and describes the different ways in which the leading fibre manufacturers in those regions responded to the shift in textile, clothing and later fibre production to low-cost countries, principally in Asia. These companies had to decide whether they could continue to compete profitably in the man-made fibres industry, and, if not, what non-fibre businesses they should invest in. In countries such as the U.S. and the UK, where capital markets are powerful and companies are under pressure to enhance shareholder value, virtually all the former leaders have withdrawn from the industry and a set of new entrants, including private equity firms, have taken their place. In Japan, by contrast, leading companies such as Toray and Teijin remain committed to man-made fibres, although they have also diversified in other directions. Despite the increasing role of Anglo-American investors in Japan, Japanese companies see themselves as responsible to a broad range of stakeholders, not just to shareholders; the continuity of the enterprise and of employment is given a higher priority than in the U.S. or the UK. In Continental Europe, the restructuring of the man-made fibres industry has involved numerous divestments and demergers, and this partly reflects the growing influence of Anglo-American investors, but in some of these countries the stakeholder view of the enterprise continues to carry considerable weight. Lenzing in Austria, which is now the largest European man-made fibre manufacturer, is an example of a company which has combined commercial success with a strong sense of responsibility to the region where its main factory is based. In reviewing these different strategies the article shows how Japanese-style “long-termism” can be a source of strength in certain industries such as carbon fibre, but has the disadvantage of allowing companies to persist for too long with low-return businesses which might do a better under different owners. Some further movement towards the Anglo-American model is likely in Japan and in Continental Europe, but these countries have a different view of what companies are for, and this will continue to affect how their companies respond to industrial change.

**Author Notes:** This article draws on the author’s recently published book, *The Rise and Fall of Great Companies: Courtaulds and the Reshaping of the Man-Made Fibres Industry*, Pasold Research Fund/Oxford University Press (2010). In preparing this article, I have benefited from advice from Elie Cohen, Jan Eijssbouts, Bob Hancké, Markus Höllner, Frank Horn and Colin Purvis.

## 1. Introduction

Most large industrial companies, at some point in their lives, go through periods of turbulence which force them to change direction, acquire new skills and perhaps abandon businesses that they have relied on for many years. These crises can arise from a variety of causes: the appearance of a new competitor with an unbeatable cost advantage; a technological advance that makes obsolete the company's existing products or manufacturing methods; a change in government policy which alters the dynamics of competition in the industry.

How companies handle disruptive changes of this kind depends partly on their earlier history – their inherited skills and capabilities, their mix of businesses, their culture and management style – and on the actions taken by the executives who happen to be in charge at the time. If they make the right choices about which new businesses to go into and manage them well, the company may be able to navigate its way through the crisis and emerge intact. But management is only part of the story. The strategies that companies adopt in these situations, and the outcomes of these strategies, are shaped by the national environments in which the companies are based.

Some countries have policies and institutions that facilitate the rapid transfer of resources from one set of owners to another; often a wave of divestments and acquisitions transforms the structure of the industry as a consequence of an external shock. Others put a higher premium on continuity. In these countries managers of large companies, especially ones that have existed for a long time, feel a sense of obligation to current and future employees, and to customers and local communities, to hold on to loss-making businesses and to nurse them back to health. Unless forced to do so by the prospect of imminent disaster, they have no wish to sell or close long-established divisions, still less to see the whole company taken over and broken up.<sup>1</sup>

The principal exemplars of the first approach are the US and the UK. These countries share several characteristics, including a shareholder-based approach to corporate governance, an active takeover market, and weak trade unions. In the second group are Japan and some European countries which have stakeholder- rather than shareholder-oriented governance systems. Here the stock market plays a smaller role, hostile takeovers are rare and employees have the power to influence management decisions. Some of these countries, such as Austria, Germany and the Netherlands, have a corporatist tradition — a

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<sup>1</sup> This classification broadly corresponds to the distinction between liberal market economies and coordinated market economies, as set out in Peter A. Hall and David Soskice (eds), *Varieties of capitalism*, Oxford 2001. See also Ronald Dore, *Stock market capitalism: welfare capitalism, Japan and Germany versus the Anglo-Saxons*, Oxford 2000.

commitment to partnership between labour, business and the state — that encourages consensual decision-making both at the national level and in firms.

France and Italy fall outside this two-group classification. In France the influence of the state on the structure and ownership of industry has been much greater than in Germany. The trade unions are also weaker and there is no tradition of social partnership. Italy has a preponderance of family-owned firms, an under-developed stock market and, for much of the post-war period, an intrusive and often erratic role for the state. Some of the distinguishing features of these countries are set out in Table 1.

**Table 1. Institutional differences among some OECD countries**

	Corporatism ranking (a)	Stock market as % of GDP in 1995 (b)	Stock market as % of GDP in 2005 (b)
Austria	0.960	14	41
Germany	0.795	24	44
Japan	0.774	70	104
Netherlands	0.578	89	93
Italy	0.439	17	45
France	0.395	33	82
UK	0.096	124	134
US	0.023	92	134

a) This corporatism index was created by scoring each country between 0 and 1 on seven measures of economic cooperation, including business centralisation, wage-setting coordination, and cooperation between labour and management. Source: Peter A. Gourevitch and James Shinn, *Political power and corporate control, the new global politics of corporate governance*, Princeton 2005:154

b) Source: IMF International Financial Statistics

Globalisation has eroded some of these differences. As Anglo-American investors have become more active in Continental Europe and Japan, managers in these countries now give more weight to the impact of their decisions on shareholder value. But convergence has been only partial. National business systems - the set of institutions and norms which govern relations between users and providers of capital, between employers and employees and between the state and business<sup>2</sup> - have deep historical roots, and they continue to constrain what firms do at times of crisis. This is not to say that companies are the prisoners of their environment. Powerful individuals can sometimes drive through changes

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<sup>2</sup> This definition is based on Richard Whitley, *Divergent capitalisms, the social structuring and change of business systems*, Oxford 1999.

that run counter to prevailing views in their country about how companies should behave. Moreover, managers can make mistakes or have bad luck; the misfortunes of their companies may have little to do with the country in which they are based. The balance between company-specific and country-specific factors varies from case to case.

## **2. The man-made fibres industry**

To illustrate the link between corporate strategy and national institutions this article examines an industry that has experienced an exceptional degree of turbulence in recent years: the man-made fibres industry. In the 1950s and 1960s fibre manufacturers in the advanced industrial countries enjoyed booming demand as nylon, polyester and acrylic fibre increased their share of the textile market at the expense of cotton and wool. During the 1970s the rate of substitution of man-made for natural fibres slowed down. At the same time the textile industry, the main outlet for fibres, was shifting to low-wage countries, principally in Asia. These problems were compounded by the slowdown in the world economy that followed the increase in oil prices in 1973-74. The result was a crisis of over-capacity in man-made fibres, especially severe in Europe, which prompted several companies to reduce their stake in the industry.

Meanwhile several of the textile-exporting countries, including South Korea and Taiwan, and later China on a much bigger scale, began to invest in their own fibre plants. Today more than three quarters of the world's fibre-making capacity is located in Asia, with China by far the largest producer. The bulk of China's capacity is in polyester fibre, which has become the most important of the man-made fibres (Table 2). Some of the companies based in these countries, and in other emerging markets such as Turkey and Mexico, have become international players in the man-made fibres industry, both through exports from their domestic factories and by building or acquiring plants overseas.

**Table 2. World man-made fibre production share by region and by fibre in 1988 and 2008**

*By region*

	1988 (%)	2008 (%)
North America	22	8
Western Europe	21	9
Eastern Europe	15	2
Asia	36	77
Others	6	4

*By fibre*

	1988 (%)	2008 (%)
Polyester	41	69
Nylon	19	8
Acrylic	12	4
Olefin	13	13
Cellulosics	15	6

Source: Fiber Economics Bureau, Division of AFMA

The man-made fibres industry in high-wage countries did not disappear, since there were some end-uses, principally outside clothing, which were less exposed to Asian competition. Manufacturers had to decide whether, by focusing on these markets or by developing unique technology that Asian producers could not match, they could maintain a profitable fibres business. The alternative was to pull out, in which case they had to decide how and when to do so, and what non-fibre businesses to invest in.

Companies responded in different ways, and with very different results. Most of the fifteen firms listed in Table 3 have been drastically reshaped. Some of them, such as Courtaulds in Britain, once the world leader in man-made fibres, no longer exist. Only three — Lenzing in Austria and two of the three Japanese companies — are still making fibres on a large scale. This article looks first at the history of the industry up to the end of the 1970s, and then at the changes that took place over the following three decades in the US, Japan and Western Europe. The concluding section assesses the role of national policies and institutions in shaping responses to industrial change

**Table 3. *Leading man-made fibre producers in 1978, and their status in 2010***

<b>Leading producers In 1978</b>	<b>Status in 2010</b>
<i>US</i>	
<b>Celanese</b>	<b>Acquired by Hoechst in 1987, demerged in 1999, independent company</b>
<b>DuPont</b>	<b>Independent company</b>
<b>Monsanto</b>	<b>Independent company</b>
<i>Western Europe</i>	
<b>Akzo</b>	<b>Re-named Akzo Nobel after merger with Nobel Industries in 1994, independent company</b>
<b>Bayer</b>	<b>Independent company</b>
<b>Courtaulds</b>	<b>Taken over by Akzo Nobel in 1998</b>
<b>Hoechst</b>	<b>Merged with Rhône-Poulenc to form Aventis in 1998; Aventis was subsequently acquired by Sanofi</b>
<b>ICI</b>	<b>Taken over by Akzo Nobel in 2007</b>
<b>Lenzing</b>	<b>Independent company</b>
<b>Montedison</b>	<b>Part taken over by ENI in 1990; rest of the company broken up during the 1990s</b>
<b>Rhône-Poulenc</b>	<b>Merged with Hoechst in 1998 to form Aventis; chemicals and fibres businesses demerged as Rhodia</b>
<b>Snia Viscosa</b>	<b>Renamed Snia BPD, then Snia, entered bankruptcy proceedings in 2010</b>
<i>Japan</i>	
<b>Asahi Kasei</b>	<b>Independent company</b>
<b>Teijin</b>	<b>Independent company</b>
<b>Toray</b>	<b>Independent company</b>



### **3. The evolution of the industry up to the end of the 1970s**

The man-made fibres industry was born at the end of the 19<sup>th</sup> century when a French inventor found a way of converting cellulose, extracted from woodpulp, into artificial silk; this fibre was later given the more attractive name of rayon. The best of three competing processes for making artificial silk was the viscose process, developed in Europe and adopted later in the US and Japan. Rayon (or viscose – the two terms can be used interchangeably) was initially produced in filament form and processed in the same way as silk. During the 1920s the manufacturers began to produce rayon staple as a substitute for cotton, and this opened up a much bigger market. Another cellulosic fibre introduced during this period was acetate yarn, which was superior to rayon in some applications and used in finer fabrics.<sup>3</sup>

By 1939 a substantial industry had taken shape, based almost entirely on cellulosic fibres. By that time DuPont had invented nylon, the first of the synthetic fibres – so called because, unlike rayon, which was based on woodpulp, nylon was synthesised by a series of chemical processes out of coal, water and air. (Oil later displaced coal as the starting raw material.) By 1945 polyester and acrylic fibre were under development. The industry was about to enter a period of spectacular growth as the advantages of synthetic fibres over cotton and wool, especially their easy-care properties, became more widely appreciated. Demand for rayon (a cellulosic fibre with some cotton-like properties, notably absorbency, that the synthetics could not match), continued to increase up to the end of the 1970s, but at a slower rate.

In Europe and the US the industry was made up of two groups of companies. One comprised firms such as Courtaulds in Britain, AKU (later Akzo) in the Netherlands and Celanese in the US, which had been early leaders in cellulosic fibres. Most of them added synthetics to their range after the Second World War. The other consisted of diversified chemical companies such as ICI and Hoechst in Europe, and DuPont and Monsanto in the US, which focused mainly on synthetics. (DuPont was exceptional in the latter group in having been an early entrant in rayon.) These chemical companies generally handled all stages of the process, making intermediate chemicals as well as extruding the polymer into fibre.<sup>4</sup> The ex-rayon firms mostly bought intermediates from outside suppliers

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<sup>3</sup> The acetate process was later used to produce acetate tow, which came to be widely used after the Second World War as the filter material in filter-tipped cigarettes.

<sup>4</sup> The manufacturing process in synthetic fibres begins with the production of intermediate chemicals, from which the polymer is produced; the polymer is then extruded into fibre. In the case of polyester, the key intermediate chemicals are purified terephthalic acid (PTA) and mono ethylene glycol (MEG), out of which the polymer, polyethylene terephthalate (PET), is produced.

In Japan the big chemical groups did not diversify as widely as their counterparts in the West after World War II, and the man-made fibres industry remained in the hands of the rayon producers. All of them were eager to get into synthetics, and they did so on the basis of a “staggered entry” formula devised by the Japanese government to prevent over-investment.<sup>5</sup> Thus Toray was allowed to negotiate a nylon licence from DuPont in 1951, and a second nylon entrant, Nippon Rayon, was set up in 1954. These two companies had the market to themselves for nearly a decade, before Teijin and Asahi Kasei joined in. In 1958 Toray and Teijin jointly negotiated a polyester licence from ICI, and they controlled the market for six years before others were allowed to enter the market.

At the end of the 1970s, as Table 4 shows, the leading companies varied in the mix of fibres they produced and in the extent of their dependence on fibres. The question for all of them, as the post-war boom came to an end, was whether they should continue to invest in fibres or divert resources into other areas. Some of them, including Lenzing and the three Japanese firms, were too dependent on fibres to contemplate withdrawal. The multi-product chemical groups had more options because of their many other businesses, but that did not necessarily make their task easier. The whole chemical industry (with the exception of pharmaceuticals) had entered a period of maturity.<sup>6</sup> Not only fibres, but other products such as plastics which had driven the industry’s growth in the earlier post-war decades had acquired the status of commodities, subject to bouts of over-capacity and fierce price-cutting. The chemical companies, finding themselves with too many slow-growing businesses, had to decide which of them justified further investment, and which should be closed down or sold. What to do about fibres was one of several portfolio issues that had to be resolved.

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<sup>5</sup> Terutomo Ozawa, Government control over technology acquisition and firms’ entry into new sectors: the experience of Japan’s synthetic fibre industry, *Cambridge Journal of Economics*, 4 (1980):133-146.

<sup>6</sup> Ashish Arora and Alfonso Gambardella, Evolution of industry structure in the chemical industry, in Ashish Arora, Ralph Landau and Nathan Rosenberg (eds), *Chemicals and long-term economic growth*, John Wiley 1998.

**Table 4. Estimated output of leading man-made fibre companies in 1978**

Company	Output (000 tonnes)	Composition of output (%)				% of total sales from fibres
		Rayon/ Acetate	Nylon	Polyester	Acrylic	
<b>DuPont</b>	1840	1	31	60	8	33
<b>Akzo</b>	660	42	29	27	2	37
<b>Toray</b>	545		36	49	16	75
<b>Courtaulds</b>	541	62	6	5	27	47
<b>Rhône</b>						
<b>Poulenc</b>	431	22	34	34	10	16
<b>Celanese</b>	418	24	12	64	-	57
<b>Monsanto</b>	416		51	16	33	16
<b>Teijin</b>	404	2	11	87	-	70
<b>Hoechst</b>	336	16	1	68	16	8
<b>Asahi</b>						
<b>Kasei</b>	272	13	21	2	64	44
<b>ICI</b>	240	-	40	60	-	8
<b>Snia</b>						
<b>Viscosa</b>	212	40	32	7	21	50
<b>Montedison</b>	189	12	16	22	50	18
<b>Bayer</b>	160	-	22	16	62	4
<b>Lenzing</b>	115	90	-	-	10	74

*Sources:* These figures are estimates drawn partly from T.A.J. Cockerill, *The man-made fibres industry: international comparisons of structure, conduct and performance*, Unpublished PhD thesis, University of Manchester 1985 (Tables 3.9 and 9.10), and partly from industry sources.

#### 4. The US

In the US, the maturing of the man-made fibres industry in the 1970s and 1980s coincided with a change in the character of the financial system and in the relationship between companies and their investors. In the earlier post-war decades the ownership of most listed companies was spread across a large number of investors, mostly private individuals who had neither the power nor the incentive to influence the management of the firms in which they held shares. This was the era of managerial capitalism, in which senior executives had wide

discretion in deciding how to allocate their company's resources; some of them built large, unwieldy empires without much regard to the interests of shareholders. By the end of the 1970s the ownership structure had changed. Financial institutions now held a larger proportion of the shares, and some took a close interest in the management of the firms in which they invested. The 1980s also saw a wave of financial innovation, notably the leveraged buy-out (LBO), a technique by which financial entrepreneurs, later known as private equity firms, used large amounts of debt to acquire the unwanted subsidiaries of diversified corporations. As private equity firms acquired greater experience, they acquired entire companies in the same way.<sup>7</sup>

With powerful shareholders pressing for higher returns, managerial capitalism was giving way to investor capitalism; shareholder value came to be seen as the principal measure of corporate performance. Some of this shareholder activism was directed at companies that had diversified too widely; they were criticised for destroying shareholder value by propping up bad businesses out of profits made in the good ones. A new group of financial predators emerged during this period, who saw that there was money to be made by breaking up badly managed conglomerates and either selling the component parts or floating them on the stock market as independent firms. Unless diversified companies could demonstrate that they were adding value to the businesses they owned, they were likely to become takeover targets.

These changes had a profound effect on the man-made fibres industry, most of which was in the hands of large, diversified chemical companies. Although these companies had not generally strayed outside chemicals, they had a mixed bag of low-return and high-return businesses, and if they were to meet the expectations of shareholders they needed to be more selective in what they did. This often involved the sale of unwanted subsidiaries to outside investors, including private equity firms; leveraged buy-outs played a large role in the restructuring of the US chemical industry during the 1980s and 1990s.<sup>8</sup> Another option was to demerge the subsidiary and to list it on the stock market as an independent company. In the case of fibres, the effect of these transactions was to transfer virtually all the industry's capacity from the former incumbents into the hands of a new set of players.

The largest of the incumbents, and the unquestioned leader of the industry, was DuPont. Having achieved its great triumph with nylon, it went on to launch an acrylic fibre, Orlon, in 1950 and Dacron, a polyester fibre, in 1953. Another

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<sup>7</sup> The most celebrated of these acquisitions was KKR's acquisition of RJR Nabisco for \$31 billion in 1989. See George P. Baker and George David Smith, *The new financial capitalists, Kohlberg Kravis Roberts and the creation of corporate value*, Cambridge 1998.

<sup>8</sup> Sarah J. Lane, Corporate restructuring in the chemicals industry, in Margaret M Blair (ed) *The deal decade*, Brookings 1993.

success was Lycra, an elastomeric or spandex fibre made out of polyurethane, which had outstanding stretch and recovery properties.<sup>9</sup> Other more specialised fibres, such as Kevlar, a high-strength aramid fibre used for bullet-proof vests and a variety of industrial applications, came out of DuPont's laboratories a few years later.<sup>10</sup> During the early 1950s, when sales of nylon were growing fast, the Textile Fibers Department generated about half of the company's profits, and it was still a big contributor – about 30-40 per cent of total profits – in the early 1970s.<sup>11</sup>

Over the next few years the fibres market slowed down and new sources of growth were needed. Edward Jefferson, a DuPont veteran who became chief executive in 1981 (he had joined the company as a research chemist thirty years earlier), believed that the life sciences could give DuPont the same sort of boost that polymer science had provided in the 1940s and 1950s.<sup>12</sup> What followed was a series of acquisitions, divestments and new ventures as the company sought to make itself less dependent on fibres and more attractive to investors.

The biggest acquisition was that of an oil company, Conoco, giving DuPont a big stake in petrochemicals on which many of its other businesses depended. But the best growth opportunities were thought to lie downstream, in areas where DuPont could gain a competitive edge through science and technology. It made several small acquisitions in pharmaceuticals and agrochemicals, formed an alliance with Merck, and stepped up its research in the life sciences. Yet the company seemed to lack a sure touch in reshaping its portfolio. At a time when investors were pressing companies to focus on their strongest businesses, DuPont was criticised for sticking too long with low-return, commodity products. The first move to reduce its involvement in fibres came in 1990, when it stopped making Orlon, the least profitable of its synthetic fibres. Polyester was also suffering from the continuing decline of the US textile industry and the build-up of capacity in Asia. In a partial exit from this sector DuPont put several of its US polyester plants into joint ventures with other companies, two of which, Alpek in Mexico and Sabanci in Turkey, were based in emerging markets, a sign of the changing balance of power in the world man-made fibres industry. The non-American partners later bought full control of these plants.

DuPont still saw a good future for nylon, especially carpet fibre where it had strong upstream technology and well-established brands (carpets were also much less vulnerable to import competition than clothing), and for Lycra, where it

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<sup>9</sup> This type of fibre is designated 'spandex' in the US, 'elastane' in Europe.

<sup>10</sup> DuPont introduced improved versions of nylon, including Bulked Continuous Filament (BCF) for tufted carpets which was launched in 1958. DuPont also pioneered the development of spun-bonded or non-woven products, which became an important part of the man-made fibres industry.

<sup>11</sup> David A. Hounshell and John Kenly Smith Jr, *Science and corporate strategy, Du Pont R & D, 1902-1980*, Cambridge 1988: 425.

<sup>12</sup> Hounshell and Kenly Smith, *Science and corporate strategy*: 507.

had a commanding market position. In 1992 DuPont increased its commitment to nylon when it bought ICI's European nylon business. But the apparel market became increasingly difficult in the course of the decade and by the turn of the century DuPont's managers had recognised – belatedly in the view of some observers – that withdrawal from commodity fibres was unavoidable.

In 2002, Chad Holliday, the chief executive, announced that the nylon, polyester and spandex plants, which had been put into a free-standing subsidiary, DuPont Textiles and Interiors (later renamed Invista), would be divested, either through a demerger or a trade sale. Two years later, after discussions with several other possible buyers, DuPont sold Invista to Koch Industries, a private US company owned by the Koch family, for \$4.4bn. Charles Koch, head of the company, believed that by squeezing costs out of the business, and without the overheads of a large research-based corporation, he could make a good return in commodity fibres. The sale did not include DuPont's aramid fibres, Kevlar and Nomex, which were protected by patents and not yet exposed to Asian competition.

This was part of an extensive reshuffling of assets that took place during Holliday's tenure as chief executive. In addition to the disposal of fibres, he also demerged Conoco and withdrew from pharmaceuticals.<sup>13</sup> Although DuPont had had some success in its pharmaceutical research, it lacked the scale of the leading companies such as Merck and Pfizer. The involvement in life sciences continued, but the focus shifted towards agrochemicals; DuPont bought a leading hybrid seed producer, Pioneer Hi-Bred, in 1999, and briefly considered a merger with Monsanto, which had become a specialist in agrochemicals.

At the time of Holliday's retirement DuPont was still a diversified group, with a collection of businesses, including paints and advanced materials, some of which did not obviously benefit from being part of the same organisation. One commentator complained that Holliday “had swerved into buying and selling businesses as if he had a compass in his hand that pointed every direction except where DuPont had been”.<sup>14</sup> Another described the 1997-2007 period as DuPont's “lost decade”, and suggested that shareholders would have done better if the company had been broken up.<sup>15</sup> Despite these criticisms, DuPont's performance was never so poor as to provoke a hostile bid. Successive managers may have been reluctant to withdraw from a business that had been at the heart of the company for so long.

Monsanto was less dependent on fibres than DuPont, but it, too, had a wide range of chemical businesses, upstream as well as downstream. During the 1970s it sought to enlarge its stake in speciality chemicals, and this strategy was

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<sup>13</sup> DuPont's pharmaceutical business was sold to Bristol-Myers Squibb in 2001 for \$7.8 billion.

<sup>14</sup> *Fortune*, April 15, 2010.

<sup>15</sup> *ICIS Chemical Business* July 17 2008.

taken further when Richard Mahoney became chief executive in 1984. A visionary and ambitious manager, Mahoney resolved to refocus the company on the life sciences. Monsanto already had a strong position in pesticides – its biggest sellers were Lasso and Roundup - and this was the starting-point for a major investment in research and in acquisitions. “The company aggressively pursued R & D efforts in plant biology, hiring prominent academics, forming its own biotechnology subsidiary, and acquiring stakes in biotechnology start-ups”.<sup>16</sup> Mahoney sold off some of the older chemical businesses, and bought a medium-sized pharmaceutical company, G. D. Searle. By the early 1990s Monsanto derived more than half its revenues from agricultural and health care products.

In 1997, Robert Shapiro, Mahoney’s successor, took the logical step of hiving off what was left of chemicals and fibres into a separate company, Solutia. Investors praised the demerger and Shapiro was briefly a stock market hero, but subsequent acquisitions over-stretched Monsanto’s finances. It had some promising drugs in the pipeline, but investors questioned whether the company had the financial strength to hold its own against bigger pharmaceutical firms. In 1998 Monsanto came close to joining forces with American Home Products, but that deal fell through and two years later it merged with another pharmaceutical company, Pharmacia & Upjohn, which Pfizer acquired in 2002. The agrochemical business was put into a separate subsidiary, given the Monsanto name, and spun off as an independent company. After a shaky start, and despite opposition in some countries to the use of genetically modified organisms in agriculture, the new Monsanto established itself as a world leader in seeds and agrochemicals. Hugh Grant, who was appointed chief executive in 2003, described the company as “a vibrant biotechnology company with all the dynamism of a Silicon Valley start-up”.<sup>17</sup>

Celanese, the third largest of the US companies listed in Table 3, has also gone through wrenching changes over the last thirty years. This company, set up in the 1920s as a manufacturer of cellulose acetate, had moved into synthetics, principally polyester, after the second world war; it also extended its range into engineering plastics and other chemicals. Celanese had several joint ventures with Hoechst, and when the German company was looking for a way of expanding its presence in the US, it identified Celanese as an acquisition target. An agreed merger was negotiated in 1987, but antitrust authorities challenged it on the grounds that the merged group would have too large a share of the polyester

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<sup>16</sup> Alfred D. Chandler, Takashi Hikino and David C. Mowery, *The evolution of corporate capabilities and corporate structure within the world’s largest chemical firms: the twentieth century perspective*, in Arora et al (eds), *Chemicals and long-term economic growth*. See also Nitin Nohria, Davis Dyer and Frederick Dalzell, *Changing fortunes, remaking the industrial corporation*, John Wiley 2002:85-95.

<sup>17</sup> *Financial Times*, June 15 2009.

market; Hoechst was already making polyester at its own plant in Spartanburg, South Carolina. To win approval for the merger Hoechst sold two Celanese plants to an investment group led by Gordon Cain, a former manager in Continental Oil who had made a name for himself as a pioneer in leveraged buy-outs. (Two years later Cain sold the ex-Celanese polyester business to another American company, Wellman, which up to that time had been primarily a recycler of waste fibres.<sup>18</sup>)

After the sale to Cain, Hoechst remained a major player in fibres, as well as having, through Celanese, a sizeable stake in other branches of the US chemical industry. In the mid-1990s, however, for reasons described later in this article, the German company went through a radical overhaul, the outcome of which was to focus the group entirely on the life sciences. All its other businesses, including fibres, were divested, either through demerger or sale. The US polyester plants were sold to a consortium called KoSa, formed by Koch Industries and a Mexican company controlled by Isaac Saba. Koch later bought out its Mexican partner. Celanese, which by then had become a chemicals rather than a fibres company, was demerged in 1999<sup>19</sup>.

These transactions – the DuPont sale to Koch, the Monsanto demerger, Hoechst's exit from fibres – were part of a broader restructuring process which saw virtually all the multi-product chemical companies withdraw from the man-made fibres industry.<sup>20</sup> Some of the newcomers were private equity firms, which believed that by buying fibre plants from the diversified groups and running them more efficiently they could make a good return for their investors. Sun Capital Partners, for example, bought a polyester business, Performance Fibers, from Allied Signal and went on to acquire other plants in the US and overseas; it became one of the leading world producers of polyester industrial yarn.<sup>21</sup> Sun Capital Partners has done well in the fibres business, as have several other private equity firms.<sup>22</sup>

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<sup>18</sup> Gordon Cain, *Everyone wins! A life in free enterprise*, Chemical Heritage Press, Philadelphia, 2001:234-5.

<sup>19</sup> Celanese continued to make acetate yarn and acetate tow after the demerger. It remained on the stock market until 2004 when it was taken private by the Blackstone Group, a private equity firm; a year later it was brought back to the stock market, generating a large profit for Blackstone.

<sup>20</sup> DuPont continued to manufacture its aramid fibres, Kevlar and Nomex. Honeywell (formerly Allied Signal) sold its commodity fibres, but retained its Spectra high-strength fibre.

<sup>21</sup> Allied Signal, part of Honeywell, was the descendant of Allied Chemical, which had been one of the leaders in the US man-made fibres industry in the 1950s and 1960s. In the 1990s it began to divest its fibre-making assets. Its nylon carpet fibre operations were sold to Shaw Industries, a carpet manufacturer.

<sup>22</sup> Other private equity firms which have been active in the sector include Sterling Group, which bought Universal Fiber Systems, a manufacturer of nylon and polyester, in 2007, and SK Capital Partners, which bought Solutia's nylon business in 2009; that business now operates as Ascend Performance Materials.



Other new entrants were foreign companies seeking to establish themselves in the US. In 2010 two of the largest man-made fibre manufacturers in the US were DAK Americas, owned by Alpek in Mexico, and Kordsa, controlled by Sabanci in Turkey; both had started as joint ventures with DuPont. Another Asian group, Nan Ya from Taiwan, a subsidiary of Formosa Chemicals and Fibre Corporation, had entered the US market directly by building a polyester plant in South Carolina. In 2009 Indorama, a company based in Thailand but with operations in other Asian countries, bought two of Invista's polyester plants, including the ex-Hoechst factory at Spartanburg.

Not all of the newcomers or newly formed companies were successful. Solutia, for example, struggled for some years after the spin-off from Monsanto and filed for bankruptcy in 2007. It came out of bankruptcy in 2009 and is now a speciality chemical company with no involvement in fibres. Wellman also had a spell in bankruptcy and has largely withdrawn from fibres.<sup>23</sup> Casualties were inevitable in a contracting industry, especially among firms supplying the apparel market. As Table 5 shows, the decline in apparel fibre was partially offset by the continuing strength of demand in carpets and in industrial end-uses, and these were the two sectors on which merchant producers such as Invista and Performance Fibers mostly concentrated, although in the case of carpets an increasing proportion of the industry's capacity was taken over by the carpet manufacturers themselves; there were cost advantages in integrating fibre and carpet production.

The US government played no role in the restructuring of the industry, except to enforce the antitrust laws. In the early post-war years the antitrust authorities took steps to ensure that DuPont's first mover advantage did not allow it to dominate the market; the threat of antitrust action prompted DuPont to license its nylon technology to Chemstrand, the Monsanto affiliate, in 1951. DuPont was also required to break up its long-standing technical agreement with ICI, freeing the British company to invade the US market; in 1959 it formed a joint polyester venture with Celanese.<sup>24</sup> (DuPont also built several plants in Europe.) As noted earlier, the Federal Trade Commission intervened in the Hoechst/Celanese merger, and the effect was to establish a new competitor in polyester fibre. An active competition policy, together with the absence of barriers to inward investment, reinforced the pressure on the industry coming from both the marketplace and investors.

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<sup>23</sup> Wellman continues to make PET packaging resin in the US. In 2007 it sold its European recycled fibres business, including the Fortrel brand, to Aurelius, a Munich-based private equity firm.

<sup>24</sup> ICI sold its share in this venture in 1981.

**Table 5. US shipments of man-made fibres in 1990 and 2006**

	1990		2006	
	'000 tons	%	'000 tons	%
<b>Apparel</b>	930.7	26.8	330.8	10.8
<b>Carpet face fibre</b>	1,097.2	31.6	1,437.9	47.1
<b>Home Textile</b>	345.9	10.0	155.1	5.1
<b>Industrial</b>	1,101.6	31.7	1,131.3	37.0
<b>Totals</b>	3,475.4	100.0	3,055.1	100.0

*Source: Fiber Economics Bureau, Division of AFMA*

## 5. Japan

The adjustment that took place in the Japanese man-made fibres industry after 1980 could hardly have been more different from that of the US. There were no new entrants, little foreign investment and none of the corporate break-ups that took place in the US. In 2010 the industry was still in the hands of the same companies that had dominated the industry in the early post-war years; most of them had their origins in the inter-war period or earlier (Table 6).

**Table 6. Leading Japanese man-made fibre makers in 2010**

Company (founding date in brackets)	Original product line	Principal fibres produced in 2010
<b>Toray (1926)</b>	<b>Rayon</b>	<b>nylon, polyester, acrylic</b>
<b>Asahi Kasei (1922)</b>	<b>Rayon</b>	<b>nylon, spandex, cupra</b>
<b>Teijin (1918)</b>	<b>Rayon</b>	<b>polyester, aramid</b>
<b>Toyobo (1882)</b>	<b>Cotton yarn</b>	<b>nylon, polyester</b>
<b>Kuraray (1926)</b>	<b>Rayon</b>	<b>polyester, vinylon</b>
<b>Unitika (1969*)</b>	<b>Cotton yarn/rayon</b>	<b>nylon, polyester</b>
<b>Mitsubishi Rayon (1933)</b>	<b>Rayon</b>	<b>acrylic, polyester, acetate</b>

*\*Unitika was formed in 1969 by a merger between Nichibo and Nippon Rayon; the latter had started rayon production in 1926*

In Japan the company has traditionally been seen as a community which exists for the benefit of all its stakeholders - employees, suppliers and customers as well as shareholders. Except at times of crisis, Japanese investors did not force companies to sell off or close down low-profit businesses. Partly for this reason the rationalisation of the Japanese man-made fibres industry took place more slowly, and over a longer period, than in the US. The three leading producers, Toray, Teijin and Asahi Kasei, never considered withdrawing from fibres even when returns were low or non-existent. They regarded it as a “foundation business” which defined their identity as companies. It was also a source of technology on which other businesses could be built.

The structure of the Japanese industry was also influenced by the keiretsu system that was widely adopted after the Second World War. The keiretsu was a group of companies that were linked to each other through cross-shareholdings, usually with a “main bank” at the centre. They were mostly put together in the 1950s as a form of protection against take-overs; the cross-shareholdings, though individually small, together amounted to a large enough block to obstruct any possible bidder.<sup>25</sup> As members of the same family keiretsu firms were also discouraged from trespassing into another member’s territory. The chemical companies within a particular keiretsu found that when they tried to enter a new product area, another member of the group was operating there. Thus the petrochemical companies within the Mitsubishi and Mitsui groups could not integrate vertically into synthetic fibres because Mitsubishi Rayon and Toray (a member of the Mitsui group) were already established in that industry.<sup>26</sup> There were supply links between chemical and fibre companies but ownership and management were kept separate.

As Table 4 showed, the leading Japanese companies, especially Toray and Teijin, were more dependent on fibres than most of their Western counterparts at the end of the 1970s. Although they had begun to diversify, their core business was fibres, and they were determined to keep it viable in the face of what had become a very difficult environment. The domestic textile industry was declining fast in the face of rising imports, and international competition in fibres was increasing as newly industrialising countries, especially Taiwan and South Korea, built up their fibre-making capacity.

For Toray, the largest producer, the key to competitiveness was technology. The most important of its fibres was polyester and its researchers looked for ways of adding functional properties both for apparel and for industrial

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<sup>25</sup> Randall Morck and Masao Nakamura, Banks and corporate control in Japan, *Journal of Finance*, 1989, 54 (1): 319-339.

<sup>26</sup> Takashi Hikino, Tsutomu Harada, Yoshio Tokuhisa and James A. Yoshida, The Japanese puzzle: rapid catch-up and long struggle, in Arora et al, (eds), *Chemicals and long-term economic growth*:117.

uses. A notable success was a silk-like version of polyester called Sillook (Silkijoy for export), a lightweight material that could replace silk, not just in stockings as nylon had done, but in a wider range of apparel including kimonos. First marketed in the mid-1960s, it became a profitable part of Toray's polyester division. Toray also launched a polyester-based suede material known as Ecsaine, aimed at the fashion industry in the West. At the same time it established a network of fibre plants in Indonesia, Malaysia and Thailand, partly to supply local textile mills, partly as a base for export. Through a partnership with a Hong Kong-based firm it formed links with spinning, weaving and knitting companies throughout East Asia. The network was extended in the mid-1990s with the construction of a polyester plant at Nantong in China. Although textile and clothing production in Japan was decreasing, Toray still saw textiles as a growth industry in international terms.

The second strand in Toray's strategy was diversification. This had begun in the 1960s with plastics and film, closely related through polymer science to fibres. Polyester film was used as the base material for audio and video tape, linking Toray to Japan's powerful electronics industry. Another non-textile business, carbon fibre, was started in the late 1960s, and Toray later became a supplier to Boeing and other aircraft manufacturers.<sup>27</sup> It also targeted the health care sector, starting with artificial kidneys and later making prescription drugs.<sup>28</sup>

Diversification did not imply that fibres would be neglected, much less disposed of. Toray's commitment to playing a role in all phases of the textile chain was underlined in 2006 by an agreement with a Japanese retailing group, Uniqlo, to create what was described as "a seamless product development system that unifies all the stages from material selection through final product sale."<sup>29</sup> In 2010 Toray was one of the few companies still producing all three high-volume fibres, polyester, nylon and acrylic. It derived nearly 40 per cent of its sales from fibres and textiles, although this proportion was declining as more investment went into higher-growth businesses such as carbon fibre.

Toray's main rival in fibres through the post-war period has been Teijin. The two companies cooperated in some areas – for example, they jointly negotiated a polyester licence from ICI – but they were also fiercely independent. In contrast to ICI and Courtaulds in the UK (see below), there was never any question of a merger between them, still less of one taking over the other. A merger would only have made sense if it led to rationalisation and factory closures, and that was not acceptable in Japan.

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<sup>27</sup> Carbon fibre, which uses acrylic fibre as the precursor, is the reinforcing agent in a lightweight, high-strength material used in sporting goods, the aerospace industry and a range of engineering applications.

<sup>28</sup> *The History of Toray 1926-1996*, Toray Industries, Tokyo, 1999: 181.

<sup>29</sup> Toray press release, 19 June 2006.

Like Toray, Teijin started life as a rayon producer. It was a latecomer in nylon, and, partly for that reason, began to build up non-fibre businesses earlier than Toray had done. Some of these ventures were outside Teijin's core skills and later abandoned.<sup>30</sup> But the pharmaceuticals business was successful. Teijin launched its first prescription drugs in 1980 and later started a home health care business, providing oxygen therapy for respiratory problems. Research continued in man-made fibres, leading to several new products including an aramid fibre, competing in the same market as DuPont's Kevlar. But Teijin's biggest business was polyester and profit margins here fell sharply in the 1990s as a result of the build-up of capacity in China.

Shosaku Yasui, who was then chief executive, recognised that polyester, especially apparel fibre, would never regain its former levels of profitability, and that Teijin needed strong businesses in other sectors. He bought an aramid fibre business from Akzo Nobel in Europe, thus establishing Teijin as the principal rival to DuPont in this sector, and acquired a controlling interest in Toho Rayon, the second largest Japanese carbon fibre producer after Toray. These two businesses, along with pharmaceuticals and home health care, became the principal profit earners, but Teijin continued to battle on in polyester; thanks to rationalisation and cost reduction this business got back to a small profit in 2010.

Asahi Kasei, the third of the Japanese firms listed in Table 3, had closer links to the chemical industry than Toray and Teijin, but it regarded fibres as a "foundation business" and by the 1960s it was a full-line fibre manufacturer, making nylon, polyester and acrylic as well as cellulosic fibres; it later launched an elastane fibre, a competitor to DuPont's Lycra. By 1990, although chemicals accounted for the bulk of Asahi's sales, textile fibres were still an integral part of the group. Then came a combination of pressures – the stagnation of the Japanese economy, the continuing decline in the textile industry, and falling prices in the world fibre market – which necessitated a change of approach. Under a new policy of "selectivity and focus", Asahi withdrew from nylon textile filament, cut back polyester, and abandoned rayon. An even more painful decision, in 2002, was to stop making acrylic fibre, which had been at the heart of its fibres division for nearly fifty years.

In 2009 the president, Shiro Hiruta, told shareholders that Asahi Kasei had been transformed "from a fiber-centered operation to the diversified enterprise we are today".<sup>31</sup> Yet the fibres business was not abandoned, and Asahi Kasei was

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<sup>30</sup> Teijin's diversification strategy in the 1960s and 1970s was criticised by an American observer as an extreme example of the tendency for Japanese managers, supported by their banks and unconstrained by their investors, to expand their empires in ways that destroyed shareholder value. W. Carl Kester, *Japanese takeovers, the global contest for corporate control*, Harvard Business School Press, Boston, 1991: 232.

<sup>31</sup> Asahi Kasei 2009 Annual Report.

prepared to increase its stake in sectors where it had a competitive advantage. In elastane fibre Asahi Kasei is now the main competitor to Invista's Lycra, with plants in the US and Germany as well as in Asia.<sup>32</sup>

The continuing commitment to fibres is one feature that distinguishes the Japanese companies from most of their American and European counterparts. Another is their conglomerate form. In 2010, even after the pruning that had taken place over the preceding decade, all three Japanese companies were still diversified and showed no inclination to narrow their focus, still less to break themselves up into smaller pieces. The rationale was explained by Shigeo Ohyagi of Teijin in his statement to shareholders in 2008: "There is a tendency to think that companies involved in only one industry have an easier time formulating clear-cut business strategies, but the truth of the matter is that many such companies are eventually swallowed up by the waves of technological innovation. Among the many virtues of the conglomerate business model is a greater essential ability to adapt flexibly to changes in the operating environment."<sup>33</sup> At the same time, he assured investors that Teijin set a profitability hurdle in all its businesses, "thereby demanding that each consistently demonstrates the value of its existence within the conglomerate."

This emphasis on meeting the expectations of shareholders stemmed in part from the growing influence of Anglo-American institutions, including hedge funds and private equity firms, as investors in Japanese companies.<sup>34</sup> There had also been a partial unwinding of the cross-shareholdings that had previously insulated them from takeover.<sup>35</sup> While this did not lead to hostile takeovers or US-style break-ups, it was no longer acceptable for diversification to be used as an excuse for prolonging the life of unprofitable businesses. There was also a greater willingness to use mergers and acquisitions, overseas as well as inside Japan, as a means of reshaping their portfolios. To that extent the Japanese fibre companies, though still not as shareholder-oriented as their Western counterparts, had moved some way towards the Anglo-American model.

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<sup>32</sup> Asahi Kasei also manufactures cuprammonium rayon (cupra) and nylon.

<sup>33</sup> Interview with Shigeo Ohyagi in the 2008 Teijin Annual Report.

<sup>34</sup> Christina L. Ahmedjian and Gregory E. Robbins, A clash of capitalisms: foreign shareholders and corporate restructuring in 1990s Japan, *American Sociological Review*, 70 (3), June 2005: 451-471. See also Ulrike Schaeede, *Choose and focus, Japanese business strategies for the 21<sup>st</sup> century*, Cornell, Ithaca, 2008.

<sup>35</sup> Hideaki Miyajima and Fumiaki Kuroki, The unwinding of cross-shareholding in Japan: causes, effects and implications, in Masahiko Aoki, Gregory Jackson and Hideaki Miyajima (eds), *Corporate governance in Japan*, Oxford 2007.

## **6. Western Europe**

As in Japan and the US, the maturing of the industry in Western Europe first became evident in the 1970s, but the European situation was made worse by the overinvestment that had taken place in earlier years. Too many plants had been built in anticipation of continuing growth in demand (some of them, especially in Italy, had been financed by governments), and when the market collapsed after the increase in oil prices in 1973-74 virtually all the manufacturers were losing money. Some order was restored to the market through a Europe-wide rationalisation scheme, approved by the European Commission, which took effect in the early 1980s.<sup>36</sup> As part of the agreement companies were allowed to maintain or expand their capacity in fibres where their competitive position was strong, as long as they withdrew from the ones where they were weak. For example, Bayer gave up polyester to concentrate mainly on acrylic, where its Dralon brand was well established. ICI took the painful decision to stop making polyester, where it had been the European first-mover, but continued in nylon.

By 1985 manufacturers were operating closer to full capacity, but it was clear that the fibres business would never return to the profitability of the earlier post-war decades. What followed, starting in the early 1990s, was a series of divestments and disposals that redrew the map of the industry (Tables 7 and 8). Of the ten leading fibre manufacturers at the start of the period, only Lenzing continues to exist in its old form. The other nine have been replaced by a new set of players that have very different styles and backgrounds than the industry's former leaders. Some of them are based in Turkey, which has retained a sizeable textile and clothing industry and is the home of several large man-fibre manufacturers. Others are privately owned Italian firms – Orlandi, Fraver and Radici – which have close links to the textile industry.

The changes set out in Tables 7 and 8 are similar in some respects to what happened in the US: withdrawals by the multi-product chemical companies; demergers; sales to private equity firms; and the entry of companies based in emerging markets. But, as the following sections will show, the timing and form of restructuring varied from one European country to another, reflecting the different institutional environments in which the companies were operating.

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<sup>36</sup> Jean-Louis Juvet, *Restructuring of the man-made fibres industry in Western Europe*, CIRFS, Brussels, 17 February 1988.

**Table 7. Leading man-made fibre producers in Europe, including Turkey, in 1992 and 2008 (annual capacity in tonnes). The country of ownership is given in brackets.**

1992	2008
Enichem/Montefibre (Italy) 512,000	Lenzing (Austria) 310,000
Hoechst (Germany) 418,000	Aksa (Turkey) 290,000
Akzo (Netherlands) 360,000	Sabancı (Turkey) 255,000
Rhône-Poulenc (France) 342,000	Montefibre/Orlandi (Italy) 245,000
ICI (UK) 230,000	Beaulieu (Belgium) 220,000
Courtaulds (UK) 228,000	Dralon/Fraver (Italy) 190,000
Bayer (Germany) 190,000	Korteks (Turkey) 180,000
Lenzing (Austria) 176,000	Radici (Italy) 145,000
DuPont (US) 120,000	Trevira/Reliance (India) 120,000
Snia (Italy) 118,000	Performance Fibers (US) 93,000

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*Source:* The 1992 figures are taken from Stanley Davies, ‘The man-made fibre industry in Western Europe’, *Textiles Intelligence/Economist Intelligence Unit*, April 1993. The 2008 figures are the author’s estimates based on information from industry sources. Both sets of figures include Turkey but exclude non-European capacity. Sabancı includes Kordsa (nylon industrial filament) and Advansa (polyester textile filament and staple.) Beaulieu is an integrated carpet manufacturer which makes some of its own fibres.

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**Table 8. Exits from fibres 1992-2007**

- 1992 ICI sells nylon business to DuPont
- 1993 Snia/Rhône Poulenc form Nylstar joint venture in nylon textile yarn
- 1994 Hoechst puts Kelheim (viscose and acrylic fibre) into joint venture controlled by Courtaulds
- 1996 Enichem sells Montefibre to Orlandi, Italian textile group
- 1997 Courtaulds acquires full control of Kelheim
- 1998 Rhône-Poulenc demerges fibres and chemicals into Rhodia
- 1998 Hoechst sells US polyester to KoSa, European polyester to Multikarsa (later re-sold to Reliance)
- 1999 Courtaulds/Akzo fibres businesses sold to CVC
- 2000 Bayer sells acrylic fibre (Dralon) to Fraver, Italian textile firm
- 2000 CVC sells Twaron (ex-Akzo Nobel) to Teijin
- 2004 Bayer demerges chemicals and remaining fibres (including Dorlastan) into Lanxess.
- 2004 CVC sells Tencel (ex-Courtaulds) to Lenzing
- 2004 DuPont sells European fibres (nylon, polyester, Lycra) to Koch Industries, retains Kevlar plant in Northern Ireland
- 2006 Lanxess sells Dorlastan to Asahi Kasei
- 2007 Rhodia sells industrial fibres (Nexis) to Butler Capital Partners, private equity firm
- 2007 Snia/Rhodia withdraw from Nylstar

### ***The United Kingdom***

The British financial system went through much the same transition as that of the US during the 1980s: more focus on shareholder value, more hostile takeovers, more deals involving private equity firms. The decade was also marked by a radical shift in industrial policy under Margaret Thatcher's Conservative government. State-owned industries were privatised and deregulated; the apparatus of government intervention was dismantled; and the power of the trade unions was sharply reduced. When big companies ran into trouble, they could no longer expect to be bailed out by the government, as some of them had been in the 1960s and 1970s. There was also less resistance from trade unions to plant closures.

In 1980 the man-made fibres industry was largely in the hands of Courtaulds and ICI — both diversified groups and thus potentially vulnerable to takeover. Like DuPont and Monsanto in the US, they were under increasing pressure in the course of the decade to construct a portfolio of businesses that would make them more attractive to investors. If they failed to do so, they were

vulnerable to attack from one of the corporate predators roaming the business scene.

Of the two, Courtaulds was more heavily committed to fibres. Founded as a silk weaving company in 1816, it acquired the patents to the viscose process in 1904, and through commercial opportunism and technical skill it built up a hugely profitable rayon business on both sides of the Atlantic. Although it was forced to divest its US subsidiary during the Second World War, as part of the Lend-Lease agreement negotiated by the British and US governments, it entered the post-war period as the world's largest manufacturer of cellulosic fibres. During the 1950s it diversified into other sectors, principally paints and packaging, but fibres remained its principal business.

ICI came into the industry later, as a result of the patents and processes agreement, negotiated with DuPont in 1929. Under the terms of this agreement, ICI gained access to DuPont's nylon technology. Since it had no experience in man-made fibres and knew little of the textile industry, it formed a 50-50 joint venture with Courtaulds, known as British Nylon Spinners; this operation began in 1940. Four years later ICI acquired the rights to make polyester fibre, and, much to Courtaulds' irritation, chose to exploit this fibre (branded as Terylene) on its own rather than through British Nylon Spinners.<sup>37</sup>

In 1959 Courtaulds launched its own synthetic fibre - Courtelle, an acrylic fibre – but it was still uncomfortably dependent on the slower-growing rayon business. British Nylon Spinners was profitable, but relations with ICI were fractious – there were frequent disputes about transfer prices for the intermediate chemicals made by ICI - and the two companies had overlapping or competing interests in other areas. In 1960, the chairman of ICI, Sir Paul Chambers, suggested that a merger would remove these sources of friction and create a powerful British man-made fibres company that could compete more effectively with DuPont and other international producers. (The French fibres industry had recently been consolidated in the hands of one company, and Chambers used this as an argument for an ICI/Courtaulds merger.) When Chambers's advances were rebuffed, he launched a hostile takeover bid. An acrimonious battle ensued, ending in defeat for ICI; its offer was accepted by less than half of Courtaulds' shareholders. In the redrawing of boundaries that followed the contest, ICI bought full control of British Nylon Spinners and Courtaulds was free to promote its own brand of nylon.

Following its victory over ICI, Courtaulds embarked on an ambitious expansion in textiles and clothing, partly as a means of securing captive outlets

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<sup>37</sup> Polyester fibre was invented by a British textile company, Calico Printers Association, which did not have the resources to develop it and sold the technology to ICI. David Brunnschweiler and John Hearle (eds), *Polyester, fifty years of achievement*, Textile Institute, Manchester 1993.

for its fibres<sup>38</sup>, but partly also in the belief that an injection of capital and technology could halt the long decline of the British textile industry.<sup>39</sup> The architect of the strategy was Frank Kearton, who believed that through scale and vertical integration British textile mills would be able to compete on cost with imports from low-wage countries; once the modernisation had been completed, Kearton argued, textiles in Britain would become a growth industry again. By the mid-1960s Courtaulds was presenting itself as a “major textile company on a world scale which happens to make some of its own fibres”.<sup>40</sup>

As Courtaulds tightened its grip on the textile industry through a stream of acquisitions, ICI took steps to protect its own fibres business by forming a semi-captive group of textile firms which would keep out of Courtaulds’ clutches. The conflict threatened to destabilise the textile industry, and the government felt obliged to intervene. Among the proposals that it considered was a merger of the two companies’ fibre interests to form a single British Fibres Corporation, but ministers concluded that no public interest would be served by eliminating competition in fibres between ICI and Courtaulds.<sup>41</sup> The merger proposal was not pursued, and the two companies went their separate ways.

Both were badly affected by the over-capacity crisis that hit the European man-made fibres industry in the mid-1970s. ICI stopped making polyester but continued in nylon, where it had a larger market share and stronger brands. Courtaulds withdrew from nylon and polyester but stayed in rayon and acrylic fibre. But it was not clear how long these businesses would remain viable. The European textile industry was contracting fast and the scope for exporting fibres to non-European markets was declining as countries such as Taiwan and South Korea built up their fibre industries. Courtaulds and ICI had to decide what role, if any, fibres should play in their future.

In 1980 Courtaulds’ three main businesses were fibres, textiles and paints. The last of these had been built up by acquisition and was now the company’s most reliable source of profits; the investment in textiles had proved to be a mistake – despite a big investment in new, capital-intensive plants the industry continued to lose ground to low-cost imports – and this part of the group was cut back. The strategy that took shape under the leadership of Sir Christopher Hogg (chief executive from 1979 to 1991) was to build up the paints division, using it as the basis for expansion in speciality chemicals, to exit textiles and to use fibres mainly as a source of cash to support the faster-growing parts of the group. In

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<sup>38</sup> In addition to rayon, nylon and acrylic fibre, Courtaulds was planning to make polyester as soon as the patents expired.

<sup>39</sup> Arthur Knight, *Private enterprise and public intervention: the Courtaulds experience*, George Allen and Unwin 1974.

<sup>40</sup> Monopolies Commission, *Man-made cellulosic fibres*, HMSO March 1968: 31.

<sup>41</sup> Edmund Dell, *Political responsibility and industry*, George Allen & Unwin, 1973: 93.

1990 the textile and clothing side was demerged as a separate company, Courtaulds Textiles. This decision was applauded by investors, who, like their US counterparts, believed that focused companies were more likely than conglomerates to generate shareholder value.<sup>42</sup> (Two years before the demerger there were strong rumours that a predator was planning a break-up bid for Courtaulds.)

Withdrawal from fibres was also considered, but fibres represented a large part of the group, and as a leading European producer of acrylic fibre and one of the biggest and most efficient survivors in rayon Courtaulds believed that these two businesses could still make money. Hogg was also optimistic about a new fibre, later branded as Tencel, which his researchers had developed. Like rayon, it was cellulose-based, but it was a stronger fibre than rayon and had the great advantage of a closed-loop manufacturing process in which most of the chemicals were re-used; the viscose process used several unpleasant chemicals which had to be discharged into nearby lakes and rivers, and this was no longer acceptable in many countries. Two Tencel plants, at Mobile, Alabama, and at Grimsby in the UK were built in the early 1990s.

The initial market reaction to Tencel was favourable, and partly for that reason fibres acquired a greater importance than had been envisaged at the time of the textiles demerger. Courtaulds also added to its stake in rayon and acrylic by buying Hoechst's plant at Kelheim, and by 1995 the fibres side of the company was roughly equal in size to paints. The two businesses were unrelated, and Courtaulds was still stuck with the conglomerate tag. The main attraction now for investors was Tencel. If it was as successful as now seemed possible, it would not only strengthen Courtaulds' position in what was becoming an Asia-dominated industry, but also lift the whole company onto a higher growth path.

Tencel did well in Japan at the start, but it proved hard to repeat that success in other markets. The new fibre was more difficult to process than rayon, and a costly marketing effort was needed to encourage spinners and weavers to make the necessary modifications in their machinery. By 1997, partly because of the Asian economic crisis, the growth in sales was slowing down, and Courtaulds found itself with too much Tencel capacity on its hands. With demand also falling for the older fibres Courtaulds was now heavily dependent on paints. It was clear that this division would be rated more highly in the stock market if it were an independently quoted company; Courtaulds was vulnerable to a break-up bid.

A common response for companies in this situation, in the Anglo-American system, is to break themselves up, and in April 1998 Courtaulds announced plans for splitting itself in two; paints and fibres would become

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<sup>42</sup> Investors did not object to diversification as long as each of the businesses was earning an adequate return, but they needed to be convinced that the parent was adding value to the businesses it owned.

independent companies. The share price shot up after the announcement, but the demerger plan was overtaken a few weeks later by a takeover offer, at an even higher price, from Akzo Nobel of the Netherlands. Like Courtaulds, Akzo Nobel had both a fibres division and a paints division, but fibres was the least profitable part of the portfolio and the company was trying to sell it. The logic of the bid for Courtaulds was that Akzo Nobel would acquire a well-run paints company, while the combination of the two fibres business would create an entity that should be easier to sell or to float. Shortly after the Courtaulds takeover Akzo Nobel found a buyer for fibres in CVC, a private equity firm.

Courtaulds was taken over because it failed to meet the expectations of shareholders. ICI went through a similar experience ten years later. It too was taken over, and by the same acquirer, Akzo Nobel. Like Courtaulds, it had tried to improve the quality of its portfolio through acquisitions and divestments, but not skilfully enough to retain the support of its investors.

Since the end of the Second World War ICI had been one of the world's most diversified chemical groups, competing in almost all branches of the industry from petrochemicals and plastics through to fibres, paints and pharmaceuticals. In fibres it had chosen to concentrate on nylon and polyester and these two products, together with the intermediate chemicals (also made by ICI), were big profit earners in the 1950s and 1960s. When the fibres boom collapsed in the second half of the 1970s ICI was forced to make drastic cutbacks in this division. Then came an exceptionally severe recession in the UK, precipitated by the anti-inflationary policies of the new Conservative government under Margaret Thatcher. In the third quarter of 1980 ICI recorded a loss for the first time in its history. Worst hit were the commodity chemicals at the upstream end of the chain, and over the next few years Sir John Harvey-Jones, chairman from 1982 to 1987, sought to shift the balance of the group towards higher-margin, less cyclical downstream businesses such as paints and agrochemicals. He also tried without success to sell petrochemicals and plastics to BP or Shell. By the end of the 1980s the portfolio had been partially reshaped, but ICI still had a mixed bag of strong and weak businesses and was out of favour with investors.

In 1991 Sir Denys Henderson, Harvey-Jones's successor, announced that ICI would concentrate only on sectors in which it could compete profitably on a global scale. These did not include nylon, which was sold to DuPont. The slimming-down of the portfolio did little to enthruse investors. ICI's best business was pharmaceuticals, but the value of this division was not reflected in the share price, since it was buried within a collection of lower-margin chemical businesses. This was the opportunity spotted by James Hanson, a well-known corporate raider, who began buying shares in ICI, apparently with a view to making a break-up bid; his plan was to separate out pharmaceuticals and either sell it or float it on the stock market. Although in the end Hanson did not go ahead with a bid, the

episode was an alarming experience for ICI, forcing the directors to look harder for ways of satisfying their investors. In 1993 they did what Hanson would probably have done if he had taken control; they broke ICI into two.<sup>43</sup> Pharmaceuticals, agrochemicals and some speciality chemicals were put into a new company, Zeneca, which was demerged. When it was listed on the stock market it was valued in line with other pharmaceutical companies, thus generating a large gain for ICI's shareholders.

After the demerger ICI was still a diversified group, though less so than before; its four main businesses were paints, explosives, materials and industrial chemicals. The strategy was to push further into high-value chemicals through acquisitions, of which the largest by far was the purchase of Unilever's speciality chemical businesses in 1997. This transaction was initially applauded by shareholders, but the price – nearly \$8 billion - was almost certainly too high. ICI financed the purchase by borrowing from the banks, and the debt was to be repaid through the sale of ICI's unwanted commodity businesses. Soon after the Unilever purchase, ICI announced the sale of three large units - titanium dioxide, polyester intermediates, and polyester film - to DuPont for \$3 billion. However, US antitrust authorities blocked the titanium dioxide sale, and several other projected sales fell through. By the end of 1998 ICI still had a large amount of debt to pay off. To make matters worse, some of the companies acquired from Unilever performed less well than expected.

The combination of delayed disposals and poor operating performance strained ICI's finances, and the share price fell sharply. After a change of management in 2003, profits improved and ICI seemed to have a viable future as a medium-sized chemical company, focused mainly on paints and speciality chemicals. However, the paints industry at this time was going through a process of consolidation, and ICI was a possible acquisition target for one of the larger European or American manufacturers looking to expand their share of the world market. It was the Dutch company, Akzo Nobel, which moved first. Having absorbed Courtaulds a few years earlier, it saw the takeover of ICI as a way of reinforcing its position as the world's largest paints manufacturer and strengthening its business in Asia. Although the ICI directors resisted the opening bid, Akzo Nobel raised the offer price to a level at which they had no choice but to recommend the offer to shareholders. As in the Courtaulds case, Akzo Nobel was only interested in ICI's paints division. The other businesses were sold.

That Courtaulds and ICI were both taken over and broken up was due to earlier mistakes which had undermined the confidence of shareholders – in one case, the plunge into textiles and clothing, in the other, the handling of the Unilever transaction in 1997. That the acquirer in both cases was a non-British

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<sup>43</sup> Geoffrey Owen and Trevor Harrison, Why ICI decided to demerge, *Harvard Business Review*, March-April 1995:133-142.

company reflects another feature of the British business environment: its openness to inward investment. The Labour governments of the 1960s and 1970s had sought to create British-owned national champions in so-called strategic industries, but that policy was firmly rejected by Margaret Thatcher, and since the 1980s no obstacles have been put in the way of foreign acquirers. Following the conversion of the Labour Party in the early 1990s to market-based economic policies, the general view across the political spectrum has been that inward investment, whether in the form of acquisition or the construction of new factories, brings capital, technology and management into the UK, and strengthens the British economy. In the case of the chemical industry, in addition to Courtaulds and ICI, several of the other leading British companies have been taken over.<sup>44</sup> The few ex-ICI and ex-Courtaulds fibres plants that continue to operate in the UK are owned by non-British companies.<sup>45</sup>

Acquisitions by foreign companies are made easier by the fact that, in contrast to Germany and some other European countries, most British companies are owned by a wide spread of investors, mostly financial institutions, which have no long-term commitment to the business; if a bidder offers a high enough price for their shares, they are generally willing to sell out. This is one of the institutional factors which underlies the restructuring that has taken place in the British chemical industry over the last thirty years.

### ***Germany***

In Germany “firms are social institutions, not just networks of private contracts or the property of their shareholders”.<sup>46</sup> In the so-called Rhineland model of capitalism<sup>47</sup> companies pursue growth rather than profitability, invest steadily in the development of new products and processes, provide stable employment for their workforce, and have strong obligations to the communities where their plants are located. The system has been modified in recent years as a result of the growing presence of foreign shareholders but Germany has moved only part of the way towards the Anglo-American model. The challenge for managers has been to meet the expectations of international investors while at the same time preserving the essential features of the Rhineland model. As this section will

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<sup>44</sup> These included Albright & Wilson, bought by Rhodia of France in 1999, Allied Colloids, bought by Ciba of Switzerland in 1998, and Laporte, bought by Degussa of Germany in 2001.

<sup>45</sup> These include Lenzing’s Tencel plant in Grimsby and Invista’s small nylon plant at Gloucester, built by ICI and later sold to DuPont. Invista also owns the ex-DuPont Lycra plant in Northern Ireland; DuPont makes aramid fibre on the same site.

<sup>46</sup> Wolfgang Streeck, German capitalism: does it exist? Can it survive? In Colin Crouch and Wolfgang Streeck (eds), *Political economy of modern capitalism: mapping convergence and diversity*, Sage 1997.

<sup>47</sup> Michel Albert, *Capitalism against capitalism*, English language edition, Whurr Publishers 1993.

show, the two leading fibre manufacturers responded to this challenge in different ways.

The structure of the German chemical industry was established in 1950, when I G Farben, the pre-war colossus of the industry, was broken up by the occupying powers. Its three principal constituents, Hoechst, Bayer and BASF, became independent companies. I G Farben's fibre-making plants were taken over by Hoechst and Bayer. (BASF did not enter the fibre business directly, but supplied intermediate chemicals to the fibre manufacturers.<sup>48</sup>) By 1970 Hoechst and Bayer had a broad range of man-made fibres and were active in international markets; Hoechst built a polyester plant in the US in 1968.

Both companies participated in the European rationalisation scheme that took effect in the early 1980s, but there was no thought at that time of withdrawing from fibres. Indeed, Hoechst, which had become Europe's largest polyester fibre manufacturer, increased its stake in the industry in 1987 when it acquired Celanese in the US. Although, as described earlier, Hoechst was required by the US antitrust authorities to divest part of Celanese's polyester business, the German company remained a big producer of polyester in the US and in Europe; it also had a plant at Kelheim in Bavaria making acrylic fibre and rayon. Bayer's main strength was in acrylic fibre – it had acquired additional capacity as part of the European rationalisation scheme – but it also produced Dorlastan elastane fibre, a competitor to DuPont's Lycra, as well as nylon on a smaller scale.

Both companies were horizontally diversified and vertically integrated, and the virtues of this structure were not seriously questioned until the 1990s. By that time Anglo-American investors were becoming significant shareholders in large German companies, and although the threat of hostile takeover was largely absent shareholder interests had to be taken more seriously.<sup>49</sup> Companies such as Hoechst and Bayer were also becoming active as buyers of non-German firms; a high share price was necessary to finance share-based acquisitions.

The first to break the mould was Hoechst. Jürgen Dormann, who became chief executive in 1994, was the first non-chemist in the company's history to hold the post. His appointment came at a time of concern, inside and outside the

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<sup>48</sup> BASF did later enter the industry in Germany and the US, initially in partnership with Dow, but it was never a leading producer. Its last remaining US fibre business was sold in 2005.

<sup>49</sup> The takeover of Mannesmann by the British company, Vodafone, in 2000, far from marking the end of Rhineland capitalism, as some commentators suggested, was an exceptional event, and did not lead to a more active takeover market in Germany. For an account of the evolution of German share ownership, see Caroline Fohlin, *The history of corporate ownership and control in Germany*, in Randall Morck (ed), *Corporate governance around the world: family business groups to professional managers*, Chicago 2005.



company, that Hoechst had become too bureaucratic and slow-moving.<sup>50</sup> Dormann had handled the take-over of Celanese in 1987 and was more attuned than most German managers to American ideas about how companies should be run; several ex-Celanese executives were closely involved in the transformation of Hoechst that took place under his leadership.<sup>51</sup>

Like his counterparts at DuPont and Monsanto, Dormann saw the life sciences as offering the best opportunity. Hoechst already had a pharmaceutical arm, but it needed to get bigger, and this would require large investments both in research and in acquisitions. Hoechst's low share price ruled out recourse to the capital markets, and Dormann's plan was to finance expansion in pharmaceuticals by divesting the company's chemical businesses.

In 1995 he bought a US pharmaceutical company, Marion Merrell Dow, for \$7 billion. At first he intended to float the enlarged pharmaceutical business on the stock market as a separate company (as ICI had done with Zeneca), but that idea was dropped in favour of focusing Hoechst itself on the life sciences. Even after the Marion acquisition Hoechst was smaller than the industry leaders, and Dormann believed that another acquisition or partnership was necessary. The result was "a merger of equals" with Rhône-Poulenc in France. The merged company, Aventis, ranked briefly as one of the world's largest pharmaceutical firms but in 2004 it was taken over by another French company, Sanofi-Synthélabo; the new group was renamed Sanofi-Aventis.

The consequence of these events was that Hoechst, one of the most illustrious names in German industry, ceased to exist as an independent entity. Many employees were bitter about what Dormann had done and he was fiercely attacked in the German press. Yet most of the businesses that he divested prospered outside the Hoechst umbrella. The break-up was based on an unsentimental appraisal of how each of Hoechst's businesses was positioned and under what sort of ownership it was likely to prosper. The European polyester fibre business, known as Trevira, was sold to an Indonesian group and later re-sold to Reliance of India.<sup>52</sup>

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<sup>50</sup> Ansgar Richter, *Corporate restructuring in the United Kingdom and West Germany: recent developments in large non-financial companies*, Unpublished PhD thesis, London School of Economics, 1998.

<sup>51</sup> Ariane Berthoin Antal, *The transformation of Hoechst into Aventis*, WZB and Henley Management College 2001. For a comparison of Hoechst's strategy with that of Bayer and BASF see Sigurt Vitols, *Shareholder value, management culture and production regimes in the transformation of the German chemical-pharmaceutical industry*, WZB Discussion paper, August 2002.

<sup>52</sup> Reliance, which is the world's largest polyester fibre manufacturer, put Trevira into receivership in 2009, but the business continued to operate and in 2011 it was bought by a consortium made up of Indorama, a Thailand-based group, and Sinterama, an Italian fibre producer.

What Dormann had done was extraordinary in the German context, and there was no rush to follow his example. Bayer made several changes in its portfolio during the 1990s, including, at the end of the decade, the sale of acrylic fibres to Fraver, an Italian textile company; Bayer described Dralon as a cyclical commodity business, which was no longer part of the company's core activities. But it retained other fibre businesses including Dorlastan, which was manufactured in the US as well as in Germany, and there was no thought of restructuring the company as drastically as Dormann had done at Hoechst. An academic commentator wrote that Bayer's chief executive, Manfred Schneider, in contrast to Dormann, "has maintained a public commitment to the 'Rhineland capitalism' model of corporate management, including major decisions made in consensus with stakeholders and an incremental approach to change".<sup>53</sup> Schneider refused to bow to pressure from investment analysts for a break-up, and continued to pursue a "four-pillar" strategy, based on polymers, chemicals, health care, and agrochemicals.

The pressure from shareholders proved impossible to resist when Bayer ran into a financial crisis in 2001. One of its best-selling medicines, an anti-cholesterol drug called Baycol, had to be withdrawn because of dangerous side-effects. The share price fell by some 40 per cent after the announcement. This precipitated a reconstruction of the group, leading in 2004 to a demerger, which was similar in some respects to the ICI/Zeneca demerger of 1993. Bayer retained pharmaceuticals, agrochemicals and advanced materials, while a new company, Lanxess, was set up to take on the other chemical businesses; these included Dorlastan, which was sold two years later to Asahi Kasei. Some analysts suggested that Bayer should have gone further by divesting advanced materials and becoming a pure life sciences company, but at the time this article was written the three-division structure remained in place.

The third member of the German "Big Three" chemical companies, BASF, was even more determined not to follow the Anglo-American path. It stuck to the policy of "Verbundproduktion", whereby intermediate products generated at one stage in the production process are fed into later stages; its Ludwigshafen plant is the world's largest integrated chemical complex under a single management. Jürgen Hambrecht, chief executive, claimed that BASF, unlike other chemical companies, had "succeeded in extending its position and creating value along almost the entire chemical value chain." In an apparent reference to Hoechst and ICI, he said that BASF had "never pursued a course of complex split-ups or questionable mega-mergers."<sup>54</sup>

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<sup>53</sup> Vitols, Shareholder value, management culture and production regimes.

<sup>54</sup> Dr Jürgen Hambrecht, BASF press conference, 10 December 2003. This stance has not prevented BASF from making major portfolio changes, including several large acquisitions and divestments.

Thus the Rhineland model was by no means dead. Moreover, although the Hoechst break-up and the Bayer demerger were unwelcome to employees and trade unions, both companies tried hard to ensure that their divested businesses were in good shape when they were sold and that the new owners would continue to invest in them. A notable difference between Germany and the UK is that while most of the ex-ICI and ex-Courtaulds fibre plants have been closed down, a substantial fibres industry continues in Germany, including the ex-Hoechst factories at Bobingen and Kelheim, the ex-Bayer plant at Dormagen and the ex-Akzo industrial fibre plants at Obernburg. Germany remains the largest European man-made fibre producer, accounting for about 30 per cent of production. While this partly reflects the strength of German fibre-using industries, especially the car and truck manufacturers, the restructuring of the German industry has been less drastic, and less painful in terms of job losses, than in the UK. Stability of employment ranks more highly in the minds of German managers when they are divesting a business than is the case in the UK.

### ***Austria***

More than any other European country, Austria has clung to the corporatist model based on partnership between capital, labour and government. Austria is unusual, too, in the extent of government influence on the structure and ownership of industry. For much of the post-war period the leading banks have been partially state-controlled, and even after the privatisations of the 1990s the government has remained a key shareholder in several of the privatised companies. The few private-sector companies listed on the Vienna stock exchange generally have dominant owners who have a long-term commitment to the business. Many of them are controlled by families or foundations, with only a small proportion of the shares traded on the stock exchange. The market for corporate control is practically non-existent.<sup>55</sup> Despite some inroads by Anglo-American investors in recent years, the obstacles to the spread of a shareholder value orientation are probably greater in Austria than in any of the other countries discussed in this article.

Out of this environment has emerged Europe's most successful manufacturer of man-made fibres. Lenzing is not only the leading producer of fibres in Europe, but it also has a large and profitable business in Asia. While it would be wrong to say that Lenzing has succeeded *because* of the Austrian

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<sup>55</sup> Renate E. Meyer and Markus A. Höllerer, Meaning structures in a contested issue field: a topographic map of shareholder value in Austria, *Academy of Management Journal*, 53 (6) 2010:1241-1262. On ownership concentration in Austria, see K. Gugler, S. Kalss, A. Stomper and J. Zechner, The separation of ownership and control in Austria, in Fabrizio Barca and Marco Becht (eds), *The control of corporate Europe*, Oxford 2001.

business system – good management must take a large share of the credit – the Lenzing story provides the clearest illustration of the link between corporate strategy and national environment.

Lenzing is a town in Upper Austria between Linz and Salzburg. In 1939, after the Anschluss, it was chosen by the German authorities as the site for a new rayon mill; it was one of several rayon plants established at that time to reduce Germany's dependence on imported cotton.<sup>56</sup> After the war the company was controlled by two partially state-owned banks, Landerbank and Creditanstalt. Subsequent mergers in the banking industry led to the creation of Bank Austria, which became the principal shareholder. Lenzing was listed on the Vienna Stock Exchange in 1985 but only about 10 per cent of the shares were offered to outside investors. As a public company Lenzing was expected to make profits and to pay dividends but it was not a shareholder-driven company. As the principal employer in its region, it had a social responsibility which influenced its strategic decisions, not least its determination to make the best possible use of the site.

Unlike Courtaulds, which imported its woodpulp mainly from South Africa, the Lenzing factory was situated close to an existing pulp mill which was taken over in 1969; woodpulp and rayon production were linked in an integrated operation. Lenzing generated power from the by-products of the pulping process and produced a variety of chemicals that were converted, mostly through joint ventures with other companies, into high-value products. A drawback of the site was the lack of water and Lenzing had to invest in costly techniques to reduce its water consumption while also meeting the environmental rules laid down by the provincial government. The result was a cleaner manufacturing process, giving the company the confidence to continue investing in viscose at a time when other producers were cutting back. Lenzing also developed new cellulosic fibres, notably Modal, which was more resistant to fading and shrinking than viscose.

Lenzing took a cautious approach to synthetic fibres. It made a brief foray into acrylic fibre, and it had a joint venture with Hoechst in polyester, but it was never a major producer of either fibre. Because of its limited involvement in synthetics, Lenzing was not greatly affected by the European fibres crisis of the 1970s. At the end of that decade it made what turned out to be an important decision to participate in an Indonesian viscose plant with the Indian Ashok Birla group. The Indians had asked for technical assistance and in exchange Lenzing secured a minority interest in the new company. This plant, which started production in 1982, gave Lenzing a foothold in a region where demand for man-made fibres was growing fast, and paved the way for subsequent investments in Asia.

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<sup>56</sup> Jonas Scherner, The beginnings of Nazi autarky policy: the “National Pulp Programme” and the origin of regional staple fibre plants, *Economic History Review*, 61(4) 2008: 867-895.

Another overseas venture was less successful. In 1992 Lenzing acquired a rayon plant in the US, but over the next few years demand for rayon in the US fell sharply, and this contributed to a drop in Lenzing's profits. Bank Austria, which had been acquired by a German bank, Hypo-Vereinsbank, considered selling the company and several Asian groups were rumoured to be interested but no deal was done. Bank Austria's shares in Lenzing were later transferred to an Austrian foundation, B & C Holding, whose mission was to act as a long-term core investor in Lenzing, with a commitment to maintain the company's role in the Austrian economy.

In 2004 Lenzing acquired the ex-Courtaulds Tencel business from CVC, the private equity firm which, as noted above, had bought Acordis, the fibres company set up by Akzo Nobel after the Courtaulds takeover. This was a risky decision for the Austrian company. It was already producing a rival fibre to Tencel at Heiligenkreuz in Austria, and it was not clear whether demand would be sufficient to keep all three plants – Grimsby, Mobile and Heiligenkreuz – fully employed. But Thomas Fahnemann, who had joined Lenzing as chief executive in 2003, believed that Tencel would become, if not a mainstream fibre, a valuable addition to Lenzing's range of cellulosic fibres. By buying the ex-Courtaulds plants Lenzing would establish a dominant position in a promising sector of the market.

Fahnemann, a German who had spent most of his earlier career with Hoechst, brought an international perspective to the Austrian company.<sup>57</sup> He believed that Lenzing could be more than a medium-sized European player in the man-made fibres industry. In addition to the Tencel purchase, he oversaw an expansion of Lenzing's interests in Asia. The shareholding in the Indonesian joint venture was increased to 86 per cent and Lenzing built a viscose staple plant at Nanjing in China, which came on stream in 2005. Two years later Fahnemann announced plans to build a third Asian plant in India.

By 2010 Lenzing was the world's largest producer of cellulosic fibres, a position held by Courtaulds some forty years earlier. The Tencel acquisition had been a success; plans for a new plant on the Lenzing site were announced early in 2011, and Lenzing was continuing to invest in the ex-Courtaulds plants at Grimsby and in Alabama. At a time of growing environmental awareness among consumers, Tencel had the great advantage of "greenness" - it was made from renewable materials by a non-polluting process – and hence was attractive to clothing retailers such as Marks and Spencer and H & M which were keen to

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<sup>57</sup> Fahnemann had also spent two years in the US with Celanese after the Hoechst takeover in 1987. He later became chief operating officer of KoSa, the Mexican-American consortium that bought Hoechst's US polyester business.

establish their credentials as environmentally conscious companies.<sup>58</sup> More generally, cellulosic fibres, including viscose, were staging something of a comeback, partly for environmental reasons, partly because of a shift in consumer tastes away from fabrics based on synthetic fibres. The surge in cotton prices that began in 2010 also stimulated demand for a man-made substitute.

While other fibre companies diversified, Lenzing stuck to what it knew best, and did everything in its power to maintain the viability of its main Austrian site. Its success was based on patient investment in new products and in new manufacturing methods. Although cellulose represent less than 10 per cent of world man-made fibre production, compared to some 70 per cent for polyester (Table 2), the market is big enough to provide Lenzing with a profitable living. Despite growing competition from Asian producers the Austrian company looks likely to maintain its leading position.

### *The Netherlands*

“The corporatist model of centralised, consensual decision-making, known as the *poldermodel*, was very successful in the reconstruction of the Dutch economy after World War II”.<sup>59</sup> At the national level trade unions were expected to show restraint in their wage demands, and in return were given a voice in decisions affecting job security and employment. Firms came to be seen as “independent entities oriented towards continuity, stability and the interests of multiple stakeholders”. Shareholders were just one of the constituencies to which companies were responsible, and they had little influence over the management of the firms in which they invested. Until the end of the 1990s most Dutch companies had impregnable defences against takeover. Although some of these defences have now been dismantled, and Anglo-American investors play a much larger role in the Dutch economy, the continuity of the enterprise and of employment remains a more important consideration for Dutch managers than for their counterparts in the UK. This institutional background provides part of the explanation, but only part, of why Akzo Nobel continues to exist and ICI and Courtaulds do not.

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<sup>58</sup> Like other man-made fibres, Tencel is used in non-woven applications as well as in textiles. When Costco, a large US wholesaling company, introduced a new range of Tencel-based baby wipes in 2009, it put considerable stress on the fibre’s biodegradability as well as its ultra-softness and absorbency. “More than ever”, according to Costco, “parents want products that are naturally made from raw materials but are also safe for the environment. That is why Tencel is the ideal New Age material.”

<sup>59</sup> Abe de Jong and Ailsa Röell, Financing and Control in The Netherlands, in Randall K. Morck (ed), *A history of corporate governance around the world: family business groups to professional managers*, University of Chicago Press 2005.

The origins of Akzo Nobel go back to 1911, when the first Dutch rayon factory was built at Arnhem. The company, Enka, was one of the leading European rayon producers in the inter-war years, along with Courtaulds in Britain, Glanzstoff in Germany, and Snia Viscosa in Italy. It became even stronger in 1929 when it merged with Glanzstoff to form AKU. After the war this Dutch-German group extended its range from rayon to include the three main synthetic fibres, and built up a network of overseas subsidiaries. Until 1969 AKU was almost wholly devoted to fibres, but in that year it merged with KZO, a Dutch conglomerate which had a range of businesses including paints, chemicals and pharmaceuticals; the enlarged group was called Akzo. There was little industrial logic in the merger, but KZO's profitable pharmaceutical business was a vital source of stability in the 1970s, offsetting losses in fibres.

Aarnout Loudon took over as chief executive in 1981, and like Christopher Hogg at Courtaulds, his task was to give Akzo a new sense of direction after a period of poor performance. Of the four main businesses – pharmaceuticals, paints, chemicals and fibres – pharmaceuticals was a logical candidate for expansion, but Akzo's low share price ruled out share-based takeovers of other pharmaceutical companies. Loudon's strategy was to build up paints and chemicals by acquisition and to shift fibres away from textile to industrial end-uses where the European customer base was stronger. Like Courtaulds, Akzo looked to technology as a means of strengthening the fibres business. Whereas Courtaulds was pinning its hopes on Tencel, Akzo took the bold decision to launch an aramid fibre, branded as Twaron, a direct competitor to DuPont's Kevlar.

Akzo was less vulnerable to the takeover threat than Courtaulds; like many Dutch companies, it had special provisions in its articles of association that virtually ruled out a hostile bid. Thus it was under no pressure to "de-diversify", although fibres, the least profitable of the four divisions, played a diminishing role as acquisitions were made elsewhere. The most important of these deals, the merger with Nobel of Sweden in 1994, made Akzo, renamed Akzo Nobel, one of the largest European paints manufacturers, and it was after this transaction that the top managers decided to withdraw completely from fibres. After abortive talks with several potential buyers Akzo Nobel saw the weakness of Courtaulds as an opportunity both to exit fibres and to strengthen its position in coatings. Courtaulds' fibres side was put together with the Dutch company's own fibres subsidiary, renamed Acordis and sold to a private equity firm, CVC.

The expectation when this sale took place was that Acordis, in which Akzo Nobel retained a 21 per cent stake, would be kept in one piece as a dedicated fibres manufacturer, and later sold or floated on the stock market. The trade unions, which were suspicious of private equity, were assured that CVC would run Acordis with due regard to employee interests, in line with established

Dutch practice. However, not long after the sale to CVC, the new owners received an offer from Teijin of Japan to buy the Twaron aramid fibre business at a price that CVC regarded as too high to refuse. Following this transaction, CVC saw that more money could be made by selling Acordis piecemeal than by keeping it as an integrated enterprise. The works council was uneasy, fearing that the new approach would be detrimental to the interests of employees, but Akzo Nobel promised to use its influence as a substantial minority shareholder in Acordis to ensure that, wherever possible, the various fibres businesses went into the hands of acquirers who would continue to invest in them. Some closures were unavoidable, but the two best parts of Acordis, Twaron and Tencel, both went to owners -Teijin and Lenzing - who were fully committed to the business.

Having disposed of fibres, Akzo Nobel had to decide whether it should go forward with the three remaining divisions – paints, chemicals and pharmaceuticals – or narrow its portfolio further, in line with the prevailing trend towards focus. As in Germany, Anglo-American investors were becoming more important as shareholders in Dutch companies, most of which did not have a dominant or controlling investor. There had also been changes in Dutch corporate governance rules, which removed or weakened anti-takeover devices. Those defences remaining in place were designed to allow management to negotiate a higher price for shareholders and to protect the interests of other stakeholders, including employees, rather than as a means of obstructing the bid. US-based hedge funds and private equity firms were increasingly active in targeting poorly managed Dutch companies.

In 2006 Akzo Nobel announced that the pharmaceutical business would be separated from the rest of the group, and either sold or floated on the stock market. Hans Wijers, the chief executive said the break-up would “enhance shareholder value through increased management and strategic focus and greater transparency”, the same argument used by ICI when it demerged Zeneca in 1993.<sup>60</sup> Investors welcomed the decision As the *Financial Times* commented, “Akzo’s attempt to straddle the businesses of drugs and chemicals has won it few friends in the markets in recent years.”<sup>61</sup> In 2007 Akzo Nobel sold the pharmaceutical business to Schering-Plough of the US, and used the proceeds to buy ICI in Britain. As in the Courtaulds case, Akzo Nobel was only interested in ICI’s paints division; the other businesses were sold.

Thus by 2008 Akzo Nobel had done what Anglo-American investors wanted. It had narrowed down the portfolio to its best businesses and withdrawn from those in which it no longer had a competitive advantage or which would be valued more highly by different owners. The process had taken longer than would have been acceptable in the UK or the US, and this was partly due to the relative

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<sup>60</sup> Akzo Nobel press statement, 7 February 2006.

<sup>61</sup> *Financial Times*, 15 August 2006.



freedom from shareholder pressure that Akzo enjoyed. The fact that, unlike ICI, Akzo was not forced by shareholders to demerge or sell pharmaceuticals in the 1990s gave the Dutch company a bargaining chip which it was able to use at a time of its own choosing. To that extent Akzo Nobel had greater freedom of manoeuvre than Courtaulds or ICI. But it was also constrained, to a greater extent than the British companies, by the need to secure the assent of employees to major disposals or closures. This did not prevent the divestment of fibres, or the sale of Organon, but in both cases the works council had the power to block or at least delay the deal.<sup>62</sup>

Akzo Nobel is an international company; most of its employees (and its shareholders) are located outside the Netherlands. But the fact that it ranks as one of the biggest Dutch industrial companies (alongside Philips and the two Anglo-Dutch groups, Royal Dutch Shell and Unilever), just as it did in the 1970s, demonstrates a degree of continuity in the country's industrial structure which is in marked contrast to British experience. The survival of Akzo Nobel is partly a matter of good management - it avoided serious strategic errors comparable to Courtaulds' foray into textiles and clothing - but cannot be entirely divorced from the national environment in which it was based.

### ***France***

For much of the post-war period French capitalism has been statist rather than corporatist. The government played a large role in influencing the structure and ownership of industry; the trade unions were weak; and there was little interest in consensual decision-making between capital and labour. The stock exchange played only a modest role as a source of capital, and there was no active market for corporate control; many listed companies had a dominant investor, often a member of the founding family. Since the 1990s, however, the French system has gone through important changes, bringing it nearer to the Anglo-American model. Although relations between the state and large industrial companies are closer than in other European countries, and the government continues to regard some industries as "strategic" and hence off limits for foreign acquirers, the trend has been towards greater openness and fuller integration into the world market.<sup>63</sup> Share ownership in large companies is more widely dispersed, making them

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<sup>62</sup> Schering-Plough, which bought Organon, Akzo Nobel's pharmaceutical division, in 2007, was later acquired by another US company, Merck, and the new owners decided to close down Organon's R & D facility in the Netherlands. This was strongly resisted by the Organon works council, leading to court proceedings which were still in progress when this article was written.

<sup>63</sup> Vivien A. Schmidt, *From state to market? The transformation of French business and government*, Cambridge 1996. See also Bob Hancké, *Large firms and institutional change, industrial renewal and economic restructuring in France*, Oxford 2002.

potentially vulnerable to takeover. When Mittal announced its bid for Arcelor, the steel company, in 2006, the government made clear its displeasure, but did not seek to frustrate the deal; the outcome was decided by shareholders. There has been a partial revival of interventionism under President Sarkozy, but, as Jonah Levy has remarked, “globalisation has greatly complicated the task of pursuing *dirigiste* strategies...*Dirigisme* was far better suited to the hothouse environment of post-war protected markets than to an increasingly globalising economy”.<sup>64</sup> Outside a few sectors, principally those linked to defence or infrastructure, industrial companies are now generally free to pursue their strategies without interference from the state.

The shift towards greater reliance on markets is reflected in the evolution of the French chemical industry, and of Rhône-Poulenc in particular, over the last fifty years. The fact that Rhône-Poulenc was broken up in 1998, as ICI had been five years earlier, can be seen as an example of this shift, although in the French case, in contrast to the UK, the government took a close interest in how the deal was handled, ensuring that French national interests were protected.

The first significant government intervention in the chemical industry took place in the early 1960s. At that time the industry was made up of a group of private-sector firms, all of which were smaller than international competitors such as ICI in Britain, together with two state-owned oil companies which had some petrochemical plants. The largest of the non-state firms was Rhône-Poulenc; at that time it derived about half its sales from man-made fibres, with the rest coming from pharmaceuticals, fine chemicals and other products. Its fibres business included a large stake in cellulosic fibres (rayon and acetate), but nylon was its biggest profit earner; it had acquired a nylon licence from DuPont in 1938 and had a virtual monopoly of the French nylon market until the patents expired in 1963. Rhône-Poulenc also obtained a polyester licence from ICI, and this, too, was a profitable business.

By the mid-1960s, following the expiry of the key patents, the reduction of tariff barriers within the Common Market and the entry of US producers such as DuPont and Monsanto, the European fibres market had become far more competitive, and Rhône-Poulenc was slow to react. Other French chemical companies were also performing poorly during this period, prompting the government to look for ways of reorganising the industry.<sup>65</sup> The hope was that by creating larger groups and reshuffling assets among them France could create one or more national champions capable of holding their own against their powerful

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<sup>64</sup> Jonah D. Levy, The return of the state? French economic policy under Nicolas Sarkozy, Paper presented to the 106<sup>th</sup> Annual meeting of the American Political Science Association, Washington DC, 2-5 September 2010.

<sup>65</sup> Elie Cohen and Michel Bauer, *Les grandes manoeuvres industrielles*, Belford 1985.

competitors on the other side of the Rhine. Rhône-Poulenc was to be one of the poles on which the restructured industry would be based.

Some mergers and asset swaps took place – Rhône-Poulenc acquired additional assets at the upstream end of the chemical chain – but they did little to prepare the industry for the much more difficult trading conditions that followed the oil price increase in 1973/74. Rhône-Poulenc's fibres division made heavy losses in the second half of the 1970s. With other chemical companies also in bad shape, it was clear that further government intervention was necessary if a viable industry was to be preserved; the alternative for several of the companies was bankruptcy, or perhaps a takeover by a non-French firm.

The intervention took the form of nationalisation. Francois Mitterrand's Socialist government, elected in 1981 on a platform that promised decisive action to strengthen French industry, set in train a sweeping nationalisation programme that brought most of the country's largest industrial companies into public ownership. Although the motivation was largely political, nationalisation also had an economic rationale: the industries affected urgently needed recapitalisation. Between 1982 and 1984 the five largest firms – CGE, Pêchiney, Saint-Gobain, Thomson and Rhône-Poulenc - received ten times more in capital than private shareholders had provided in the eight years between 1974 and 1981.<sup>66</sup> In the case of chemicals the government was also able to restructure the industry more effectively than had been possible in the 1960s and 1970s. Rhône-Poulenc divested most of its heavy chemical interests while acquiring additional assets in pharmaceuticals, agrochemicals and fine chemicals; it continued to be a major producer of man-made fibres, although by the mid-1980s this division accounted for less than 20 per cent of its sales.

An economic crisis in 1983 forced the Socialist government to rein back its industrial ambitions, and three years later it was replaced by a centre-right government determined to reverse the nationalisation programme. Some sixty-five enterprises were scheduled to be sold over a five year-period and by mid-1987 nearly half of them (not including Rhône-Poulenc) had been floated. The programme was then halted, first by the worldwide stock market crash in October 1987, and then by the return of a Socialist government in 1988.

During what was called the *ni-ni* period (neither nationalisation nor privatisation) which lasted until 1993; Rhône-Poulenc remained in the public sector. However, during the decade in which it was owned by the government, Rhône-Poulenc went through a remarkable transformation. Jean-René Fourtou, who was appointed chief executive after the change of government in 1986, set out to internationalise the group, to shift the portfolio towards pharmaceuticals and agrochemicals, and to raise Rhône-Poulenc into the front rank of the world

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<sup>66</sup> Schmidt, *From state to market?* 125.

chemical industry. This involved numerous acquisitions in Europe and the US, culminating in 1990 in the purchase of a majority stake in Rorer, a US pharmaceutical company, for \$2 billion. By then pharmaceuticals and agrochemicals accounted for more than 60 per cent of Rhône-Poulenc's operating profits, with the rest coming from chemicals and fibres. According to the *Financial Times*, Fourtou had converted Rhône-Poulenc "from a rag-bag of chemicals businesses into the envy of the industry".<sup>67</sup>

Following the return of a centre-right government to power in 1993, Rhône-Poulenc was an early candidate for privatisation. It was successfully floated in the summer of that year, with Fourtou continuing as chief executive. In common with other privatised companies, the government arranged for some 20 per cent of the shares to be held by a hard core or *noyau dur* of stable shareholders, principally French banks and insurance companies; this was to give the companies a degree of stability after the flotation, and to deter any unwelcome takeover.

The privatised Rhône-Poulenc had four main businesses: pharmaceuticals; agrochemicals, speciality chemicals; and fibres and polymers. In fibres, its main strength was in nylon. It was one of the largest European nylon producers, and, like DuPont in the US (with which it had close technical links<sup>68</sup>), it was fully integrated, making intermediate chemicals and polymers as well as nylon engineering plastics and fibres. Its market position in nylon was strengthened by a series of joint ventures with Snia in Italy, of which the most important was Nylstar, focused on textile fibre. Rhône-Poulenc also still had a substantial stake in polyester and acetate.

Whether these four businesses fit logically under the same ownership was an issue which came to the fore in the years after privatisation, especially in the light of moves by ICI and other chemical groups to separate out their pharmaceutical divisions as independent companies. Fourtou continued to argue that the four-division structure was a source of strength, and he ruled out an ICI-style demerger, a decision that was described as "antediluvian" by the *Financial Times*. The newspaper pointed out that several of its rivals "had either announced or carried out such a split and unlocked huge value for their shareholders".<sup>69</sup>

In 1996, with some members of the *noyau dur* selling their shares and an increasing presence of foreign investors on the share register, there was speculation that Rhône-Poulenc could be the target of a hostile take-over. The separately quoted Rhône-Poulenc Rorer, in which the French parent had a 68 per

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<sup>67</sup> *Financial Times*, November 26, 1992.

<sup>68</sup> DuPont had developed unique technology for making adiponitrile, the key intermediate chemical for nylon, and had formed a joint venture with Rhône-Poulenc to make this chemical in France.

<sup>69</sup> *Financial Times*, 5 November 5, 1996.

cent interest, was valued more highly in the stock market than Rhône-Poulenc itself.<sup>70</sup> A break-up bid was a possibility, and it was not completely certain that either French shareholders or the French government could prevent it.

In 1997 Fourtou did what analysts had been urging, announcing that fibres and chemicals would be put into a separate company, to be called Rhodia, and demerged. “With one bound”, said the *Financial Times*, “Rhône-Poulenc has transformed itself from a dull old chemicals producer to a vibrant life sciences company.”<sup>71</sup> The case for the split was much the same as it had been for ICI: the life sciences side was more likely to flourish as a stand-alone company than as part of a conglomerate, and the split would enhance shareholder value. But Fourtou also recognised that Rhône-Poulenc was a small player in a pharmaceutical industry that was rapidly consolidating into the hands of larger groups. There had been suggestions that Rhône-Poulenc might merge with Sanofi, the second largest French pharmaceutical company, but Fourtou chose instead to negotiate a deal with the German company, Hoechst. As noted earlier, the Franco-German group, Aventis, was established in 1999.

The French government was not the architect of the Hoechst/Rhône Poulenc merger, but it supported the deal, and took steps to ensure that the balance of power in the new company was oriented towards France rather than Germany.<sup>72</sup> Under the terms of the merger Hoechst shareholders would acquire 53 per cent of the shares in the new company, but the majority of the employees were in France – 25,000 out of a total workforce of 95,000, compared to 12,000 in Germany – and Aventis was to be a French incorporated company, with its headquarters in Strasbourg. It was in effect France’s national champion in pharmaceuticals, and, as subsequent events were to show, the government was determined that the company should remain under French control.

The other big French-owned pharmaceutical firm was Sanofi, which in 1999 acquired the industry’s third largest player, Synthelabo. In 2004 Sanofi made a surprise takeover offer for Aventis. The Anglo-German group resisted the bid, and Novartis, the big Swiss pharmaceutical group, indicated that it was willing to pay a higher price. The French government made it clear that it was opposed to the Novartis proposal because it might lead to a reduction in pharmaceutical research in France. Sanofi then increased its offer price; Novartis withdrew from the fray; and an even bigger French-controlled pharmaceutical giant, Sanofi-Aventis, was born. The head office was moved from Strasbourg to Paris.

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<sup>70</sup> *L’Expansion*, June 13-26, 1996

<sup>71</sup> *Financial Times*, 27 June 1997.

<sup>72</sup> According to a statement made by Fourtou to a parliamentary committee on March 2<sup>nd</sup>, 1999, the government had been helpful in facilitating tax arrangements (*dispositifs fiscaux*) which were advantageous to the French side in the merger negotiations.

The future of Rhodia, spun off from Rhône-Poulenc in 1998, was of much less interest to the government. The demerged company was left to make what it could of the disparate portfolio bequeathed to it by its former parent. For the first few years after the demerger Rhodia performed poorly, partly because of unwise acquisitions. Investors complained that Rhône-Poulenc had used Rhodia as a “dumping ground” for its least attractive businesses.<sup>73</sup> After a change of management in 2003, the company divested the loss-makers and concentrated on a few strong businesses. Two of these were nylon and acetate tow, both of which derived from Rhône-Poulenc’s old métier as a man-made fibres producer. (Rhône-Poulenc had withdrawn from polyester before the spin-off.) Rhodia’s focus in nylon was on the upstream end of the chain and on engineering plastics, rather than textile fibre.<sup>74</sup> The joint ventures with Snia in Italy were dismantled, and some of the French textile fibre operations were sold to private entrepreneurs or private equity firms.<sup>75</sup> Several of these businesses closed down during the economic crisis of 2008-09.<sup>76</sup> By 2010 Rhodia had established itself as one of the stronger, medium-sized companies in the world chemical industry.<sup>77</sup>

Like Akzo Nobel in the Netherlands, from the late 1990s onwards Rhône-Poulenc pursued a focused strategy in line with the preferences of Anglo-American investors.<sup>78</sup> That it was free to do so reflects the extent to which French capitalism had moved away from the statist model – not completely or wholeheartedly, as shown by the role played by the government in the Aventis/Sanofi affair, but far enough to enable companies such as Rhône-Poulenc

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<sup>73</sup> *Business Week*, 9 May 2005

<sup>74</sup> Rhodia is one of the world’s two biggest nylon producers, the other being Invista, the ex-DuPont business bought by Koch Industries in 2004. It is also the third largest producer of acetate tow, after Celanese and Eastman in the US.

<sup>75</sup> Rhodia has a successful nylon business in Brazil, supplying apparel markets and other end-uses.

<sup>76</sup> The record of private equity firms in the European man-made fibres industry has been mixed. CVC made money out of the Acordis acquisition, although the disposal process took longer than expected. Some other private equity buyers have successfully restructured the businesses they bought, but others paid too high a price for the assets and were forced to close down or find another buyer.

<sup>77</sup> In April, 2011, as this article was in press, Rhodia agreed to a friendly takeover offer from a larger chemical company, Solvay of Belgium. The deal was justified on the grounds that the enlarged group would be less cyclical than the two merging companies and would be better able to develop its business in emerging markets. The French government was not expected to object to the deal.

<sup>78</sup> Between 1985 and 1997 foreign owners increased their share of stock exchange capitalisation from 10 per cent to 35 per cent; by 2000 more than 50 per cent of the shares in several of the largest companies were held by foreign investors. François Morin, A transformation of the French model of shareholding and management, *Economy and Society*, 29 (1) 36-53. See also Ben Clift, Debating the restructuring of French capitalism and Anglo-Saxon institutional investors: Trojan horses or sleeping partners? *French Politics* 2002, 2: 333-346.

and later Rhodia to adapt to international competition, and to the demands of international investors, without interference from the state. This meant, among other things, abandoning sectors, such as man-made fibres, which offered little prospect of profitable growth. Some fibre plants continue to operate in France – one of the largest survivors is Performance Fibers’ polyester industrial fibre plant at Longlaville<sup>79</sup> – but the contraction of the industry has been almost as drastic as in the UK.

### ***Italy***

Italian capitalism has been variously described as familial<sup>80</sup> and political.<sup>81</sup> The first refers to the dominant role played by family-owned or family-controlled firms in Italian industry; fewer companies are listed on the stock market than in France or Germany, and those that have gone public are generally controlled by a dominant investor. The system is also political in the sense that the state or state-owned entities have had a direct involvement in industry for most of the post-war period, and the borderline between private and public sectors has been blurred. The post-war history of the Italian man-made fibres industry illustrates these two characteristics of the Italian economy

In the 1950s the leading Italian producer was Snia Viscosa. It had been one of the biggest European rayon manufacturers in the inter-war years, and it extended its range into synthetics after the war; at that time it ranked as the fifth largest Italian company by market capitalisation, not far behind Montecatini, the principal Italian chemical company. In the mid-1960s Montecatini merged with Edison to form Montedison, and the various fibre-making plants of these two companies were brought together in a separate subsidiary, Montefibre. By 1970 virtually the whole of the Italian man-made fibres industry was in the hands of Montefibre and Snia Viscosa.

On paper Montedison was one of the strongest European chemical companies – it was about the same size as ICI – but “the new corporation was a conglomerate pursuing a range of different activities, with hundreds of scattered plants and firms each with different legal statuses, corporate cultures and organisational structures”.<sup>82</sup> Rationalisation was impeded by feuding between the

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<sup>79</sup> This was one of the plants bought by the US private equity firm, Sun Capital Partners, from Honeywell in 2004; it had been built by Allied Chemical (later part of Honeywell) in the 1970s.

<sup>80</sup> Alexander Aganin and Paolo Volpin, History of corporate governance in Italy, in Randall Morck (ed), *Corporate governance around the world*.

<sup>81</sup> Franco Amatori, Big and small business in Italy’s industrial history, *Rivista di Storia Economica* 24 (2) August 2008: 205-223.

<sup>82</sup> Wyn Grant and Alberto Martinelli, Political turbulence, enterprise crisis and industrial recovery: ICI and Montedison, in Alberto Martinelli (ed), *International markets and global firms*, Sage 1991.

two rival managements, and, to make matters worse, Montedison was soon caught up in what came to be known as the “chemical wars”, a struggle for control of the chemical industry between state agencies on one side and family groups on the other.<sup>83</sup>

Before the Montedison merger ENI, the state oil company, through its Anic subsidiary, had been building up its chemical interests in opposition to Montecatini. After the merger had gone through ENI sought to strengthen its position by acquiring a block of Montedison’s shares. Since IRI, the other state holding company, already had a stake in the new group, the combined government shareholding rose to just under 20 per cent. This marked the start of “a tortuous period in which the government tried without the slightest success to put the chemical industry on some reasonable track.”<sup>84</sup>

In the 1970s Montedison became almost a ward of the state, relying on government subsidy to keep its plants in operation. Montefibre, in particular, made heavy losses. At the end of the decade the government tried to persuade Montedison and Snia to put their fibres businesses into a separate, jointly owned company. Agreement was almost reached but negotiations broke down at the last moment, apparently because of disagreements about how the new company would be managed.

The two state holding companies sold their shares in Montedison in the early 1980s and some degree of stability was restored. A new chief executive, Mario Schimberni, sought to establish Montedison as a normal public company, free from the control of government or families and run by salaried managers. However, another battle for control broke out in 1987, and Montedison acquired a new dominant shareholder in the form of a large agro-industrial group, Ferruzzi, run by Raul Gardini. In 1989 Gardini put Montefibre, together with some of Montedison’s other chemical businesses, into a new company, Enimont, in which Montedison and ENI each held a 40 per cent stake. This was to have been Italy’s national champion in chemicals but “conflicts between the two shareholders and managements rapidly led to a paralysis of the company”.<sup>85</sup> Gardini tried to seize control of Enimont by buying shares from the outside investors, and, having failed in this endeavour, he sold his 40 per cent stake to ENI. Enichem, ENI’s chemical subsidiary, was primarily a petrochemical business with no interest in fibres, hence the sale of Montefibre to Orlandi, an Italian textile group.

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<sup>83</sup> Francesca Fauri, The “economic miracle” and Italy’s chemical industry: 1950-1965: a missed opportunity, *Enterprise and Society*, June 2000 279-313.

<sup>84</sup> Vera Zamagni, The rise and fall of the Italian chemical industry, 1950s-1990s, in Louis Galambos, Takashi Hikino and Vera Zamagni (eds), *The global chemical industry in the age of the petrochemical revolution*, Cambridge 2007.

<sup>85</sup> Luciano Segreto, Italian capitalism between the private and public sectors, 1933-1994, *Business and Economic History*, 27 (2) Winter 1998:455-468.



Snia Viscosa had been on the edge of the chemical wars, and it, too, was badly affected by government intervention. Like AKU in the Netherlands, it had reduced its dependence on fibres in 1969 by merging with another Italian group, Bombrini-Parodi-Deflini, which was mainly a supplier of defence equipment but also had a stake in fibres and chemicals. Fibres represented some 40 per cent of the merged group, and in common with the rest of the European industry this division suffered badly during the over-capacity crisis of the 1970s. It made heavy losses and would not have survived without financial assistance from the state.

At the end of the decade Snia was reorganised as a holding company, with Snia Fibre as one of several semi-autonomous units, and financial performance gradually improved. By 1983 Snia was sufficiently attractive for Fiat, then in the process of diversifying away from the motor industry, to acquire a controlling stake. The most valuable component of the group was Sorin, a biomedical business, but Snia Fibre, accounting for about a third of sales, made satisfactory profits for most of the 1980s. Its main strength was in nylon, and in 1990 this side of the company was enlarged by an agreement with Montefibre, whereby Snia sold its polyester and acrylic plants to Montefibre in exchange for the latter's nylon and cellulose businesses. Three years later Snia strengthened its position in nylon by setting up joint ventures with Rhône-Poulenc, principally in textile fibre.

By the mid-1990s Fiat, the controlling shareholder, had changed its strategy and was seeking to dispose of its non-automotive interests. In 1998, after a failed attempt to sell Snia to another industrial group, it floated the shares on the Milan stock exchange. Snia now had three main divisions - fibres, bioengineering and speciality chemicals – and the chairman, Umberto Rosa, planned to develop the group on these three legs. Sorin, the bioengineering firm, was the most profitable of the three, and would be more highly valued if it was an independent quoted company; it was demerged in 2003. Meanwhile, with the continuing decline of the European textile industry the fibres business was starting to lose money. The Nylstar joint venture had not been well managed, partly because disagreements between the two partners slowed down the rationalisation that was needed. Snia tried to sell its half-share to Rhône-Poulenc, but the French company had no wish to increase its investment in textile fibres. Finally, in 2007, Nylstar was put into administration. This left Snia with a speciality chemicals business and some property interests. In 2010 Snia went into bankruptcy.

Virtually nothing was left of what had been two of the largest European man-made fibre producers. Most of the ex-Snia plants were closed down. As for Montefibre, the acquisition by Orlandi did not work out well. The big acrylic fibre plant at Porto Marghera was closed down in 2009, and the Acerra polyester plant was also operating far below capacity. Yet in Italy – and here there is a notable contrast with the UK – the decline of the two former leaders was partially offset

by the rise of a new group of fibre manufacturers, some of them closely linked to the textile industry. More tightly managed and more flexible than the former incumbents, these family-owned companies were better equipped to withstand the competitive conditions now prevailing in the market. Led by Radici and Aquafil, they belonged to a group of medium-sized, privately owned companies that formed part of what has been called Italy's "fourth capitalism", separate from giant groups like Fiat, state-owned enterprises like ENI, and the very small firms for which Italy is famous.<sup>86</sup> They kept well away from the state, and from the stock market.

If the decline of Montedison and Snia can be ascribed to a combination of poor management and distinctively Italian institutional weaknesses, the survival of a relatively healthy man-made fibres industry, the second largest in Western Europe after Germany, was made possible by a different sort of company, one that seems better fitted for the Italian environment.

## 7. Conclusion

Of the fifteen companies listed in Table 3, eight continued to exist in 2010 in a form recognisably similar to what they were at the end of the 1970s, albeit in most cases with a different mix of businesses (Table 9). Five had ceased to exist, although some of their businesses were still functioning under different owners. Monsanto, Solutia and Rhodia were in an intermediate category, since they were spin-offs from their former parents.

These different outcomes can be looked at in terms of corporate strategy: how companies responded to the decline of one of their core businesses, how they handled acquisitions and divestments, how well or badly they reshaped their portfolios. Some firms made bad mistakes and suffered as a result. It is also clear from the events described in this article that a company's fortunes can be influenced decisively by the actions of individual executives. Hoechst would probably not have been broken up, at least not at that time or in that form, had not Jürgen Dormann become chief executive in 1994. Lenzing might not have become the world leader in cellulosic fibres without the leadership at a critical period of Thomas Fahnemann. But national policies and institutions are also relevant to an understanding of why some companies survived and others did not.

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<sup>86</sup> Amatori, Big and small business in Italy's industrial history.

**Table 9. Survivors, non-survivors and spin-offs**

Survivors	Non-survivors	Spin-offs
Lenzing	Hoechst	Monsanto, Solutia*
Toray	ICI	Rhodia+
Teijin	Courtaulds	
Asahi Kasei	Montedison	
DuPont	Snia Viscosa	
Celanese		
Bayer		
Akzo Nobel		

*\*Solutia is a speciality chemical company no longer involved in fibres; it withdrew from acrylic fibres in 2005 and sold its nylon business in 2009*

*+In 2011 Rhodia merged with Solvay of Belgium*

The main differentiating factor among the countries discussed in this article has been the extent to which they relied on markets, especially financial markets, as the principal driver of industrial and corporate change. The clearest contrast is between Japan, where the reorganisation of the industry was largely carried out within the existing fibre manufacturers, and the US and the UK, where the adjustment process involved numerous divestments, break-ups and changes of ownership. Some of the Continental countries have moved towards the Anglo-American model in recent years while others remain wedded to a system closer to that of Japan.

Which system is best? Should countries that have partially embraced the Anglo-American model go further in that direction, and how likely is it that they will do so?

Two American academics have argued that the shift in the character of US financial markets that began in the 1980s – more shareholder activism, more hostile takeovers, more use of share-based remuneration – has been hugely beneficial for the US economy. “The potential for improved corporate performance paired with empowered investors gave birth to takeovers, junk bonds and LBOs. In some cases the capital markets reversed ill-advised diversification; in others, the capital markets helped to eliminate excess capacity; in others, the capital markets disciplined managers who had ignored shareholders to benefit

other stakeholders.”<sup>87</sup> According to this view, markets are more effective than corporations in moving capital from declining to growing industries. Established companies are difficult to rely upon as the mechanisms for economic restructuring, since managers will always seek to protect their own interests (and those of their employees) rather than those of shareholders. This results in “costly delays, distorted investment decisions and misguided efforts to save jobs.”<sup>88</sup>

The opposing argument is that the preoccupation with shareholder value as the sole measure of performance, and the existence of an active market for corporate control, can lead to the loss of assets and capabilities which, given greater patience on the part of owners, can have long-term value for the country’s economy. Projects which fail to meet short-term profit targets are abandoned too quickly; sound companies which run into temporary crises are gobbled up by predators instead of being nursed back to health.

Advocates of the “long-termist” approach might point to carbon fibre to support their argument. This high-strength material – hailed when it was introduced in the 1960s as “stronger than steel, lighter than aluminium” - was taken up by several companies in Japan, Europe and the US; they were mostly manufacturers of acrylic fibre, which was the preferred precursor for the carbon fibre manufacturing process. Courtaulds was one of the early leaders, alongside several Japanese companies led by Toray, and US firms such as Celanese and Union Carbide.

The market for carbon fibre was harder to develop than the manufacturers had expected and few of them made much money in the early years, but by the 1980s the US defence industry had become an important customer, and several companies built new capacity in the expectation that demand from this source would continue to grow. Then came the fall of the Berlin Wall and the end of the Cold War, leading to a sharp cutback in orders from the US Defense Department. Virtually all the European and American companies, including Courtaulds, pulled out. The Japanese firms, by contrast, continued to invest in carbon fibre and to search for new applications, even when profits were low. Thus when the market recovered towards the end of the 1990s, they were well placed to dominate the industry and they have continued to do so. As volumes have increased and the price has come down, carbon fibre is finding applications in a wide range of products, including cars.

If shareholder pressure had been as strong in Japan in the early 1990s as it was in the US and the UK, the carbon fibre story might have had a different outcome. As one Japanese executive has remarked, “The major Western

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<sup>87</sup> Bengt Holmstrom and Steven N. Kaplan, Corporate governance and merger activity in the US: making sense of the 1980s and 1990s, National Bureau of Economic Research, Working Paper 8220, April 2001.

<sup>88</sup> Holmstrom and Kaplan, Corporate governance and merger activity in the US.

companies do not mind a bold attempt when starting a new business, and at the same time they pull out of the market when it does not go well. Carbon fibre requires a long time in developing the technology and the market. Its market is not huge, and demand is not consistent. Therefore, Western-style management might not be suitable for this product development.”<sup>89</sup>

For Courtaulds, withdrawal from carbon fibre was especially disappointing because it had been seen as one of the company’s few high-growth businesses. There is some similarity with Courtaulds’ experience with Tencel. This was the new cellulosic fibre which seemed in the mid-1990s as if it might enable Courtaulds to re-establish a position of leadership in man-made fibres. But it took longer for Tencel to generate profits than the company had expected, and this was one of the reasons why Courtaulds became vulnerable to takeover. It was a “long-termist”, stakeholder-oriented company, Lenzing, which later took control of the Tencel operation and made a success of it.

Courtaulds had made mistakes in the 1960s and 1970s – most obviously its plunge into textiles and clothing - and some of those mistakes were difficult to recover from. In the British system shareholders punish mistakes of this kind, and the punishment may take the form of takeover and break-up. Whether this is good or bad for the economy depends in part on what happens to the assets after the takeover. In the Courtaulds case the best part of the company was the paints division, and that now belongs to Akzo Nobel, which has continued to invest in the ex-Courtaulds plants. In fibres, Tencel was the British company’s most valuable asset, and the Grimsby plant continues to operate under Lenzing’s ownership, although the development activity has been transferred to Austria. The takeover in 1998 may be said to have unblocked a dysfunctional corporate structure, divided as it was between fibres and paints, and ensured that the good assets passed into the hands of appropriate owners.

ICI is a different story because its strongest division, pharmaceuticals, was hived off into Zeneca in 1993, and that company, now AstraZeneca, has continued to flourish as one of the world’s leading pharmaceutical firms. (If Zeneca had been given the ICI name, as might have happened at the time of the demerger, the “ICI story” would look rather different.) However, the hope at the time of the demerger was that the new ICI, without pharmaceuticals, would hold its position as a major international chemical company. That it failed to do so was

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<sup>89</sup> In 1997 Keizo Kanegae, president of Toho Rayon from 1983 to 1990, wrote a ‘Study of the historical development of PAN-based carbon fibres’, from which this quotation is taken. This was an internal document made available to the author by Toho Rayon. For an account of the evolution of the carbon fibre industry see Graham Spinardi, *Industrial exploitation of carbon fibre in the UK, USA and Japan, Technology Analysis and Strategic Management* 14 (2) 2002:381-398; Celia A. Russell, *International competition in the advanced materials sector: the case of carbon fibre*, Unpublished PhD thesis, Manchester University 1996.

due to mistakes made over the subsequent decade. But here, too, the consequence of the takeover by Akzo Nobel was that ICI's best business, paints, passed into the hands of an appropriate owner who would continue to invest in it

The demise of Courtaulds and ICI was the cause of much hand-wringing in the British press. A common view is that the UK has too few companies that are world leaders in their industries; these two takeovers seemed to provide further evidence of British industrial decline. It is true that if ICI or Courtaulds had played their cards differently one of them might have ended up as the world's leading paints manufacturer. Instead that accolade went to Akzo Nobel. But how much does this matter? Has the British economy been damaged because ICI and Courtaulds no longer exist?

Of the European countries discussed in this article the UK has had the most open policy towards inward investment, whether in the form of new factories or takeovers of British companies. Foreign companies now own large parts of the British chemical industry, including man-made fibres, and the same applies to other industries such as engineering and electronics. Whether this transfer of ownership is good or bad for the British economy has become a political issue in the UK; some commentators believe that the British financial system allows viable companies to be taken over too easily.<sup>90</sup>

ICI is important in this debate since for most of the post-war period it ranked among the world's six leading chemical groups, alongside Dow and DuPont in the US and the three big German companies. The only British chemical company in the top ten in 2010 was the privately owned INEOS, which had been put together over the previous decade by a British entrepreneur, Jim Ratcliffe, through the purchase of unwanted businesses from the established chemical groups. In 2000, for example, he acquired ICI's chlor-alkali business in the north west of England; five years later, in a much bigger deal, he bought BP's petrochemical interests for \$9 billion. INEOS is mainly a commodity chemical producer; it makes no claim to be a research-based company. Like Charles Koch in the US, who bought Invista from DuPont, Ratcliffe believed that he could make money out of commodity chemicals as long as they were managed with a relentless focus on low costs, and that they were more likely to prosper under private ownership than as part of a listed company. INEOS was a product of the Anglo-American financial system; it could not have happened in Germany or Japan.

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<sup>90</sup> When Cadbury was taken over by Kraft (of the US) in 2010, there was widespread concern in the UK about the apparent ease with which major British companies could be bought by foreign acquirers. Ministers in the new Conservative/Liberal Democrat government commissioned an inquiry into whether excessive "short-termism" on the part of investors was damaging the British economy. One of the issues was whether the rules governing takeovers were too heavily weighted in favour of the bidder.

The market-based system has its drawbacks. Managers and investors may be over-influenced by short-term movements in the share price and neglect investments that will only pay off in the long term. Companies may sell or close poorly performing businesses too quickly, when with greater patience they could be nursed back to health. They may be tempted to make dramatic moves – for example, a large acquisition – in an attempt to impress their shareholders. Many takeovers end in disappointment for the acquiring company; the only gainers tend to be the shareholders in the company being taken over.

Moreover it is hard to deny that something is lost when companies such as ICI and Courtaulds disappear; continuity does have some value. In the case of ICI, even though the larger part of its research and development activity passed to Zeneca, there was a sizeable research effort on the non-pharmaceutical side of the company (and those resources were dissipated). Courtaulds was not a research-based company like ICI, and not as important as an employer and exporter, but it had long been in the front rank of British industry and had some notable achievements to its credit, from the commercialisation of rayon in the early years of the twentieth century to the development of a world-class paints business in the 1970s and 1980s.

On the other hand, the financial system that prevails in the US and the UK gives these two economies a flexibility that is lacking in countries where the stock market plays a smaller role. The clear line of accountability between managers and shareholders ensures that companies do not cling to businesses which have little economic value or which would do better under different owners. Well-organised financial markets make funds available for entrepreneurs such as Charles Koch and Jim Ratcliffe, and for private equity firms. If one of the consequences of the system is that potentially valuable projects are abandoned too early, and that potentially viable companies are broken up too easily, that is seen as a price worth paying. To protect long-established companies, either by making takeovers more difficult or by protecting them in other ways, is a recipe for slowing down industrial change. This is now recognised by countries such as Germany and Japan, which have traditionally been suspicious of the Anglo-American system. Their companies are now more responsive to shareholder demands. But they still have a different view of what companies are for, and this will continue to affect the way they respond to industrial change.

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