

12.1 Introduction

Over the last 40 years the textile and apparel industries have witnessed an unprecedented period of change, affecting the nature of their products, processes, markets and competition. Whole new applications and industry sectors to service them have emerged, while others have slipped into decline and a few have even disappeared. The wool textile industry has not been immune to this dynamic, and some changes have not been favourable to the industry. In particular, competition from new fibres and textile products, combined with shifting consumer preferences has, overall, negatively impacted demand for the products of the wool textile industry. This has particularly been the case during the 1990s, when wool textile production and capacity suffered an unprecedented world-wide decline. Nevertheless, wool textile manufacturing remains a significant element of world textile activity. Despite the problems of recent years, it is likely to see a return to growth over the coming decade underpinned by product innovation and more favourable shifts in consumer needs.

This chapter provides an overview of the pattern of change in the wool textile industry, world-wide, and outlines the economic forces shaping demand for and supply of wool textiles. As a starting point, it is appropriate to consider the overall dynamics of the international textile and apparel industries in order to establish a context for the patterns of change in the wool textile industry.

12.2 Overview of trends in world textiles

Textile manufacturing represents a relatively mature and therefore, low growth activity compared with manufacturing as a whole. Whereas the value of world manufacturing output as a whole grew at an annual average rate of 4.2%, in real terms, between 1960 and 1998, textile manufacturing grew at just 2.1% per annum.¹

Table 12.1 Growth of world mill fibre consumption 1960–2000 [Source: ICAC]

	Million kg		Annual growth (%)
1960	15 153	1960s	3.7
1970	21 741	1970s	3.1
1980	29 580	1980s	2.5
1990	37 882	1990s	2.1
2000	46 612	1960–2000	2.8

A more frequently used proxy for textile activity is mill fibre consumption. Overall, world consumption of fibre by the textile industry grew from around 15.2 billion kilograms in 1960 to approximately 46.6 billion in 2000, representing an annual growth rate of 2.8% over the whole period. However, growth has progressively slowed during each decade, a trend also reflected in the value of industry output. From a rate of 3.1% per annum in the 1960s, growth of mill fibre consumption fell to 2.1% per annum during the 1990s (see Table 12.1).

Within the overall global growth trend of the textile industry, and of the apparel industry also, there has been a slow shift in the geographic distribution of production. As basic pillars of industrial development, the textile and apparel industries have been close to the forefront of the internationalisation process that has seen a move from the discrete national industries of 50 years ago towards a globally integrated industry.² During this time, international trade in textiles and apparel has grown at a rate approximately twice that of global output. In the process, the dominant position of the industrialised nations in manufacturing has been eroded by developing countries, mainly in Asia. A number of developing nations have become major net exporters of apparel, though some are large net importers of textiles. By contrast, most of the industrialised nations have become large net importers of both textiles and apparel.³

The extent of relocation has varied between products. The most striking shift has been in the production of apparel and of cotton textile manufacturing. Diffusion has been slower in the higher value, and more capital and skill intensive sectors of textile production. This has included wool textiles. As a result of these changes, there has been a shift in the emphasis of textile and apparel manufacturing in the industrialised nations towards man-made fibre based products, home furnishings and technical textiles.²

Although production has been migrating to lower cost centres in developing countries, final consumption of textiles and apparel has remained heavily concentrated in the industrialised nations. In 2000, these were esti-

mated to account for over 40% of final fibre consumption, although they contained less than 15% of the global population.⁴ This skewed consumption position reflects the global economic imbalance between rich and poor nations. Around three-quarters of global GDP was generated by the industrialised nations in 2000.⁵ Nevertheless, there has been a gradual shift in final consumption towards developing countries.

An important characteristic of globalisation in textiles and apparel has been the more rapid integration within geographic regions of the globe, as expressed by intra-regional trade flows. This regionalisation process has progressed furthest within Western Europe. However, during the 1990s, it proceeded most rapidly within Asia, within the Americas and between Eastern Europe, North Africa and Western Europe.³ This trend is associated with the creation of regional trading blocs (such as the EU, NAFTA in North America, MERCOSUR in South America and ASEAN in South East Asia) that promote freer trade and investment within their affiliations than with external trading partners. To some extent it also reflects a desire by manufacturers and retailers to develop production sources in adjacent low-cost countries that can offer shorter manufacturing lead times than more distant suppliers.²

Another key feature of international trade in textiles and apparel is the extent to which it is concentrated. Although there has been a steady stream of nations establishing export-oriented textile and apparel industries since the 1950s, trade is still dominated by a relatively small number of large exporting and importing nations.³

12.3 Factors shaping global integration in textiles

The principal factors that have shaped and continue to reshape the global textile (and apparel) industries include government policies, changing consumer requirements, technological change; and the competitive strategies of textile manufacturers and companies in related sectors.

Governments have played a key role in globalisation through their support for trade and economic liberalisation. The progressive reduction of tariffs on fibres, textiles and apparel over the last 50 years has provided the key catalyst for the global integration of the textile and apparel industries. However, markets in developing countries have remained difficult to reach, and international tensions resulting from the speed of change and the uneven distribution of benefits have resulted in a burgeoning array of trade barriers. These have been a factor in a slowing of trade growth in the 1990s.²

Government policies have also been important with respect to industrial targeting and protection. On the one hand, governments in developing countries have encouraged the growth of new capacity. In the industrialised

nations, on the other hand, government support programs and trade protection has slowed the shake-out of less-competitive operations. Also important has been the role of international institutions, such as the World Bank and the United Nations. These have provided assistance for the establishment of textile and apparel export industries in the least developed countries.²

Liberalised trade and improved international communications in the form of multi-national media (especially films, television and the Internet), and low travel and communications costs are another force driving globalisation. These are accelerating the diffusion of new ideas and tastes between nations. The result has been a convergence of lifestyles towards an industrialised, urban, consumer and casual lifestyle model, and the creation of international market segments.² The ability to identify and exploit these trends have been behind the success of global brands such as Benetton, Polo Ralph Lauren, Nike and Burberry, and of global products, such as jeans, suits and certain sportswear items.

On the supply side, new information technologies (IT) and management systems such as ISO 9000 have enabled improved long-distance supply capabilities. Equally important, through standardisation, they have provided a more transparent marketplace by creating new benchmark capabilities that suppliers and customers can adopt to guarantee performance.²

Companies in adjacent sectors have also played an important role in promoting globalisation in textiles. In pursuit of global positions in their own markets, chemicals and equipment manufacturers, who develop many of the new fibre, finishing and process technologies for the textile and apparel industries, have ensured that new products or technologies have diffused rapidly. Similarly, large apparel companies, trading houses and retailers have actively sought-out new sources of supply and lowered entry barriers into international markets by sub-contracting the manufacture of their own merchandise. In many cases, they have provided technical assistance to help new suppliers bring their manufacturing capabilities up to international standards.²

Finally, textile manufacturers themselves have responded to internationalisation of their markets and migration of their apparel customer base by expanding their business abroad. Similarly, faced with pressures to cut costs in order to remain competitive, many companies have internationalised their supply chains through a combination of foreign direct investment, sub-contracting and out-sourcing.²

12.4 Overview of trends in wool textile production and trade

12.4.1 Introduction

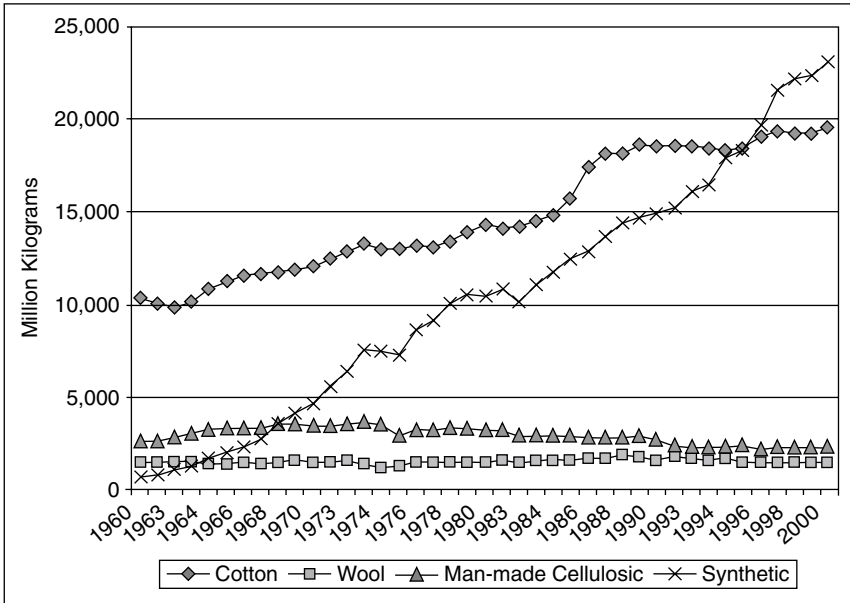
Data on the wool textile industry is poor relative to other sectors of the industry. Information on wool textile production for many producing nations is either not available or is incomplete. There are also significant variations between nations on definitions and the design of the industry sample from which data is drawn. The data that is presented here has been compiled by the International Wool Textile Organisation (IWTO). It is the most authoritative source available and provides an overview of the global dynamics in the industry. However, particular care should be taken in using this data.

12.4.2 Mill fibre consumption

Against the background of expanding fibre consumption by the textile industry between 1960 and 2000, consumption of wool stagnated. Between the 1960s and early 80s, wool consumption by the textile industry fluctuated around 1500 million kilograms. Subsequently, wool consumption experienced a strong upswing, reaching a peak of 1904 million kilograms in 1988. With the recession in the early 1990s, however, consumption fell sharply and has since stabilised again around 1500 million kilograms. By contrast, synthetic fibres experienced spectacular growth, increasing from 702 million kilograms in 1960 to 23160 million in 2000. Over the same period, consumption of cotton advanced steadily from 10356 million kilograms to 19604 million, in the process retaining its place as the single most important fibre (see Fig. 12.1). As a result of these trends, the share of wool in total fibre consumption fell, in volume terms, from 9.9% in 1960 to 3.2% in 2000. In this respect, it has become little more than a marginal fibre. However, this does not fully reflect the fortunes of the wool textile industry as, in parallel with other sectors of the industry, there has been a significant shift towards man-made fibres. An IWTO estimate from a sample of leading producer nations suggests that man-made fibres accounted for around two-thirds of fibre consumption by the wool textile industry in 1999, compared with less than 50% in 1974. In the early 1960s, the figure was less than 20%.

12.4.3 Trends in output of the wool textile industry

Production data provides a direct indication of how the 1990s were a traumatic decade for the wool textile industry. The data available for top, yarn



12.1 World mill fibre consumption of the principle fibre types: 1960–2000. [From ICAC.]

and fabric production suggests that world output fell significantly between 1989 and 1999, although there are no reliable aggregate figures available (see Tables 12.2–12.4). Within this overall picture, there was a shift of production from traditional centres in Europe, the US and Japan to developing nations and, to a lesser extent, towards wool producing countries such as Australia and Argentina. In common with other areas of textile and apparel activity, Eastern Europe and the former Soviet Union experienced a collapse in wool textile production during the 1990s. Within Western Europe, the traditional locus of wool textile manufacturing, there was a shift to newer centres of production, notably Turkey, Spain and Portugal, although these have also been adversely impacted by competition from Asia. Also, in contrast to the French, German and British wool textile industries, all of which experienced a steady decline over many years, the Italian wool textile industry showed remarkable resilience up until the late 1990s, when it too encountered a sharp downturn. In Asia, the principal growth centres have been China and India. However, Chinese production also showed a sharp contraction after 1994.

Despite problems in the data noted above, differences are evident between the top, yarn and fabric production sectors of the industry. Top production, as a highly capital and skill intensive business, has remained more

Table 12.2 World production of wool/hair tops (including carded sliver) in million kg [Source: IWTO Wool Statistics, various years]

		1989	1995	1999
Americas	Argentina	8.6	NA	19.7
	Brazil	9.5	6.5	4.9
	USA (b)	32.0	30.9	14.3
	Uruguay	NA	46.8	36.3
Asia & Australasia	Australia (b, c)	23.4	44.9	53.6
	China	93.3	223.0	163.0
	India	13.5	18.0	24.8
	Israel	3.3	2.6	NA
	Japan	78.0	34.9	16.9
	Korea (South)	15.9	13.6	NA
	New Zealand (a)	NA	1.7	1.8
	Taiwan	12.5	21.3	24.2
	Thailand (a)	0.0	4.0	NA
	Europe	Belgium	20.1	1.5
France		72.0	61.2	36.8
Germany		41.4	42.3	17.1
Hungary		1.6	NA	1.6
Italy (b)		59.8	56.5	57.3
Poland		9.5	3.8	1.7
Portugal		5.6	3.1	3.0
Spain		15.3	13.6	11.0
Switzerland		0.9	0.1	0.0
Turkey		23.8	23.5	10.6
Africa	UK	38.7	32.9	15.3
	Egypt (c)	2.5	2.0	1.6
	South Africa	19.2	21.8	13.7

a) Exports.

b) Includes small quantities of tops of man-made fibres (Australia and USA) or of non-wool natural fibres (Italy viz 226 in 1995; 160 in 1996; 135 in 1997; 155 in 1998).

c) Seasonal year ending year shown. (Australia 30 June)

NA = not available.

concentrated in fewer nations. Yarn production has shown the most rapid shift away from industrialised nations to developing countries, while fabric production has migrated more slowly, owing to the high level of skill required in fabric finishing.

Table 12.3 Total yarn production (woollen and worsted) by the wool textile industry in million kg, 1989–1999 [Source: IWTO Wool Statistics, various years]

		1989	1995	1999
Western Europe	Austria	5.4	4.1	NA
	Belgium	97.6	54.3	41.0
	Denmark	3.5	1.0	0.4
	Finland	1.0	1.1	NA
	France	70.1	43.1	30.8
	Germany	46.0	39.6	25.4
	Greece (d)	9.3	7.6	NA
	Irish Republic	NA	10.9	NA
	Italy	534.3	540.5	454.5
	Netherlands	3.1	NA	NA
	Norway	2.3	3.4	2.5 (a)
	Portugal	31.5	NA	NA
	Spain	84.2	69.1	71.0
	Switzerland	NA	3.7	2.5
Turkey	161.5	208.0	153.6	
UK	140.0	108.3	87.4	
Eastern Europe	Bulgaria	NA	13.5	6.2
	Croatia	NA	3.3	0.4
	Czech Republic	NA	16.7	9.8
	Hungary (e)	NA	0.6	0.6
	Poland	77.2	34.4	18.2
	Romania	NA	31.6	14.5
	Yugoslavia	NA	6.8	4.7
Asia & Australasia	Russian Federation	NA	42.7	28.6
	Australia (c)	20.1	23.1	17.7
	China (b)	250.0	513.8	368.4
	Hong Kong	6.9	NA	NA
	India	63.4	81.0	95.0
	Israel	NA	1.0	NA
	Japan	219.5	123.0	78.4
	New Zealand	20.6	20.6	24.9
	Pakistan (c)	NA	5.5 (g)	5.3 (h)
	South Korea	227.6	120.4	111.0
	Syria	NA	1.6	NA
Africa	Taiwan	16.9	14.0	NA
	Algeria	NA	NA	1.8
	Egypt (c)	19.0	NA	2.1
Americas	South Africa	41.7	28.8	23.8
	USA	612.9	532.9	443.2

a) 1998 data.

b) Knitting (hand & machine) yarns only; of which worsted types 153.4 million kilograms and woollen 129.1 million kilograms in 1991.

c) Seasonal year ended year shown (Australia 30 June).

d) New, official series; previously a trade estimate.

e) Wool predominant only.

f) 1996 data.

g) 1998 data.

NA = not available.

Table 12.4 Total fabric production (woollen and worsted) by the wool textile industry in million square metres, 1989–1999 [Source: IWTO Wool Statistics, various years]

		1989	1994	1999
Western Europe	Austria (a)	NA	5.1	10.5 (i)
	Belgium	NA	6.2	NA
	Denmark (f)	NA	0.8	0.9
	France (a)	112.3	73.8	84.2
	Germany (e)	128.1	90.1	86.1
	Italy	573.4	611.4	474.8
	Netherlands	4.4	NA	NA
	Rep. of Ireland (a)	NA	1.2	NA
	Spain	69.7	72.7	99.4
	Turkey	91.2	103.3	136.7
Eastern Europe	UK (d)	93.1	81.4	55.9
	Bulgaria	NA	20.1	7.0
	Czech Republic	87.7	39.3	20.1
	Hungary	29.0	3.3	0.1 (i)
	Poland	143.1	49.1	34.7
	Romania (h)	141.0	41.5	12.5
	Slovak Republic	NA	9.6	4.4
	Yugoslavia	100.4	14.6	6.9
Asia	Former USSR	715.0	111.0	73.5
	Australia (b)	9.4	8.2	6.3
	China (j)	279.6	653.9	278.5
	India (j,k)	96.8	102.8	111.9
	Japan (c)	510.3	408.5	277.5
	South Korea	101.2	95.4	NA
	Taiwan	14.9	6.9	NA
Africa	Egypt (b,a)	23.5	NA	3.4
	South Africa	33.8	26.2	17.2
North America	Canada	NA	10.6	10.4
	Cuba	NA	NA	120.0
	USA (e,g)	143.6	149.3	64.7
South America	Uruguay	7.8	9.5	NA

a) Apparel only.

b) Year ended 30 September of year shown (Egypt), 30 June (Australia).

c) Estimated from the statistics of the dyeing and finishing sector which reflect more accurately production of fabrics of wool and other fibres by the wool-textile industry. Previous series covered national production of wool predominant grey fabrics – viz.; 249.3 in 1995; 248.6 in 1996; 247.9 in 1997; 212.9 in 1998; 199.0 in 1999.

d) Deliveries/shipments.

e) Comprises only fabrics containing by weight 50% or more of virgin or reprocessed wool (Germany) 36% (United States).

f) Excluding blankets.

g) Excluding woven felts.

h) Including some carpets.

i) New series.

j) Million linear metres.

k) Includes approximately 12 million linear metres of shoddy fabrics in 1994 and 1999.

12.4.4 Trends in wool textile trade

Overall, trade in wool textiles mirrored the decline in global production during the 1990s, with some recovery becoming evident at the end of the decade (see Tables 12.5 and 12.6). Within the aggregate picture, traditional centres in Europe, the US and Japan have continued to be major exporters, though in most cases their export surplus shrank considerably during the 1990s. East European nations and developing countries in Asia, Latin America and North Africa figure prominently as large net importers of wool type fabrics. This reflects the growth of apparel manufacturing which has migrated from nearby industrialised nations. A few early movers among these nations, notably Turkey, have moved to a position of self-sufficiency in wool textiles, towards which many of the others are striving. Strikingly, India has played only a relatively minor role in trade. This partly reflects restrictions on imports and, on the export side, the limited international competitiveness of Indian mills in terms of quality and service.

12.5 Factors behind the declining importance of wool and wool textiles

12.5.1 Overview

The principal problems affecting demand for the industry's products have related to increased inter-fibre competition with the rise of synthetics; competition from alternative yarn and fabric forming technologies; the shift in consumer expenditures in favour of lighter weight and casual products; and constraints on fibre supply.

12.5.2 Inter-fibre competition

In the 1960s, the market penetration of synthetic fibres was assisted by a combination of factors. These included the novelty of the new fibres, which made them fashionable; their superior properties in terms of strength, wear resistance and ease of care; the relative stability of their prices, which removed many of the uncertainties traditionally facing textile firms owing to price fluctuations in natural fibres; the possibility they offered textile firms for lowering production costs; and the intensive promotional efforts of man-made fibre producers to create consumer awareness and preference for their products. Subsequent expansion was encouraged, in part, by technical advances that both broadened the range of fibres and widened the application of individual fibre types by modifying their characteristics to suit specific end-uses. It was also stimulated by falling fibre prices, arising from cost reductions through learning, process innovations, increasing scale

Table 12.5 Aggregate trade in yarns (woollen and worsted) by the wool textile industry in thousand kg, 1996 and 1999 [Source: IWTO Wool Statistics, various years]

	Exports			Imports			Balance	
	1996	1999	1996	1999	1996	1999	1996	1999
N America								
Canada	923	1 155	1 481	1 239	-558	-84		
Mexico	9	74	99	39	-90	35		
USA (b)	501	296	5 297	7 278	-4 796	-6 982		
S America								
Argentina (d)	27	20	121	289	-94	-269		
Brazil	281	55	81	339	200	-284		
Chile (d)	1	14	174	41	-173	-27		
Colombia (d)	0	0	20	58	-20	-58		
Peru (d)	1 995	1 195	9	30	1 986	1 165		
W Europe								
Austria	1 558	1 876	3 043	2 783	-1 485	-907		
Belgium	7 577	6 662	6 091	12 259	1 486	-5 597		
Cyprus (d)	0	0	66	47	-66	-47		
Denmark	1 698	2 008	3 401	3 801	-1 703	-1 793		
Finland	767	684	479	355	288	329		
France	8 838	6 049	8 246	6 774	592	-725		
Germany	23 208	22 510	20 099	19 446	3 109	3 064		
Greece	1 383	1 027	1 061	3 977	322	-2 950		
Iceland	211	334	64	43	147	291		
Irish Republic (c)	4 424	2 213	3 490	3 242	934	-1 029		

Table 12.5 (cont.)

	Exports		Imports		Balance	
	1996	1999	1996	1999	1996	1999
Italy	33694	34473	15943	16064	17751	18409
Netherlands	916	588	4762	5077	-3846	-4489
Norway	878	855	1116	1032	-238	-177
Portugal	3861	3928	3430	5132	431	-1204
Spain	2227	1977	2726	2815	-499	-838
Sweden	79	85	986	1111	-907	-1026
Switzerland	4481	1218	2364	1837	2117	-619
Turkey	522	2180	5311	9616	-4789	-7436
UK	19440	17381	18357	12758	1083	4623
Bulgaria (d)	71	45	336	474	-265	-429
Czech Republic	1989	3129	738	887	1251	2242
Hungary	181	437	888	922	-707	-485
Poland (d)	2630	5765	963	1031	1667	4734
Romania (d)	46	66	1481	1031	-1435	-965
Former Soviet Union (d)	1316	824	388	1501	928	-677
Former Yugoslavia (d)	712	1104	1003	890	-291	214
Australia (a)	470	762	4451	6893	-3981	-6131
Bangladesh (d)	NA	59	NA	791	NA	-732
China	42298	47413	54626	36046	-12328	11367
Hong Kong (b)	36176	32776	42574	39162	-6398	-6386
E Europe						
Asia & Pacific						

India (a,d)	4 464	63 18	324	578	4 140	5 740
Israel (d)	42	112	748	814	-706	-702
Jordan (d)	19	0	851	536	-832	-536
Japan	1 397	909	13 380	12 109	-11 983	-11 200
South Korea	3 013	3 957	2 809	14 341	204	-10 384
Macao (d)	5 193	4 900	5 010	6 614	183	-1 714
Malaysia	6 672	4 831	637	398	6 035	4 433
New Zealand (a)	6 069	9 575	677	673	5 392	8 902
Pakistan (d)	29	0	145	39	-116	-39
Philippines (d)	NA	129	421	867	NA	-738
Saudi Arabia (d)	0	1	26	60	-26	-59
Syria (d)	1	24	748	294	-747	-270
Thailand (d)	NA	1 671	NA	2 269	NA	-598
Taiwan	9 831	4 937	195	266	9 636	4 671
Algeria (d)	0	0	285	36	-285	-36
Egypt (d)	65	1	311	400	-246	-399
Mauritius	648	805	1 251	1 457	-603	-652
Morocco (d)	45	255	413	815	-368	NA
Tunisia (d)	155	20	1 015	1 399	-860	NA

a) Year ending 30 June of year shown (Australia and New Zealand); 31 March (India).

b) Exports include re-exports.

c) Includes small quantities of yarn classified as neither woollen nor worsted.

d) Estimated from the trade returns of trading partners and possibly incomplete.

Table 12.6 Aggregate trade in woven fabrics (woollen and worsted) by the wool textile industry in thousand square metres (a) and thousand kg, 1996 and 1999 [Source: WTO Wool Statistics, various years]

	Exports		Imports		Balance	
	1996	1999	1996	1999	1996	1999
	<i>(000s square metres)</i>					
USA (d)	25585	31181	9595	16127	15990	15054
China	33631	35842	61664	65930	-28033	-30088
India (c,e)	1700	3035	471	567	1229	2468
<i>(000s kilograms)</i>						
N America	1326	1599	5304	5010	-3978	-3411
Mexico (c)	709	2655	454	1920	255	735
Argentina	7	0	360	310	-353	-310
Brazil	504	245	456	563	48	-318
Chile	3383	3292	5082	5012	-1699	-1720
Colombia (c)	58	77	244	622	-186	-545
Guatemala (c)	0	1	317	668	-317	-667
Uruguay	2123	1902	11	215	2112	1687
Austria	1329	1143	3032	1589	-1703	-446
Belgium	2044	1926	2030	1506	14	420
Denmark	733	1244	1207	1062	-474	182
France	7660	8032	8417	8378	-757	-346
Germany	27003	22397	20325	16860	6678	5537
Greece	770	1119	1910	2841	-1140	-1722
Italy	72948	68713	5196	4654	67752	64059
Netherlands	5478	5407	3562	3736	1916	1671
W Europe						

Portugal	1592	2552	3921	3830	-2 329	-1 278
Spain	3122	3826	3 104	4 632	18	-806
Switzerland	1019	995	1 420	1 307	-401	-312
Turkey	2573	4 619	4 719	4 768	-2 146	-149
United Kingdom	13253	9 480	7 898	8 229	5 355	1 251
Bulgaria (c)	482	510	971	2 286	-489	-1 776
Czech Republic	2 549	2 495	2 458	2 444	91	51
Hungary	82	270	3 195	3 352	-3 113	-3 082
Poland (b)	2 130	1 374	7 843	6 686	-5 713	-5 312
Romania	476	197	5 568	8 455	-5 092	-8 258
Slovakia	63	147	1 538	1 759	-1 475	-1 612
Former Yugoslavia (c)	519	270	5 879	5 087	-5 360	-4 817
Former Soviet Union	911	1 611	5 316	8 182	-4 405	-6 571
Bangladesh (c)	4	2	66	531	-62	-529
Indonesia (c)	1	43	360	1 071	-359	-1 028
Israel (c)	617	927	541	445	76	482
Japan	11 202	11 839	5 545	3 406	5 657	8 433
South Korea	4 240	5 943	3 707	2 123	533	3 820
Syria (b)	46	0	1 182	302	-1 136	-302
Thailand (c)	4 (e)	56	1 777	1 140	-1 773	-1 084
Taiwan	583	483	2 290	820	-1 707	-337
Morocco (b)	110	289	3	3 585	107	-3 296
Tunisia	8	9	3 098	3 088	-3 090	-3 079

a) Data for India, China and the US is available only on the basis of area.

b) Excluding blankets.

c) Partly estimated.

d) Including the following quantities of pile fabrics (in tonnes): imports 451 in 1996; 504 in 1997; 682 in 1998; 655 in 1999; exports 197 in 1996; 347 in 1997; - in 1998; 2236 in 1999.

e) Year ending 31 March of year shown.

economies in production, and intensifying price competition between producers.⁶

In the 1970s and 80s the process of rapid market penetration achieved by synthetics in consumer textile applications subsided. This partly reflected the high penetration already achieved and the greater difficulty of further displacing natural fibres. However, there was also a shift in consumer preferences in favour of natural fibres. This was largely based on their greater aesthetic appeal in terms of handle and appearance, but it was also encouraged by the more concerted efforts of natural fibre marketing and research organisations, such as the International Wool Secretariat (IWS) and Cotton Incorporated, to develop easy-care finishes and to promote their products. In the case of cotton, an additional factor was a substantial fall in fibre prices relative to man-made fibres as a result of expanding production and improved agricultural productivity.⁶⁻⁹

In the 1990s, however, expanding production of low cost man-made fibres in Asia, and the development of a new generation of man-made fibres with sophisticated technical and aesthetic properties, has again negatively impacted consumption of natural fibres, particularly wool, as noted previously.⁷⁻⁹

12.5.3 Competition from alternative yarns and fabrics

Although the wool textile industry readily adapted its products to include man-made fibres in pure form or in blends, the growing availability of synthetic fibres in the 1950s stimulated the development of alternative low-cost fibre to fabric production routes, such as warp and circular knitting, carpet tufting and non-wovens. These new sectors and sub-sectors of production competed, in part, with traditional wool woven textile products in woven upholstery, carpets and blankets, and in woven and knitted outerwear. This substitution was often on the basis of lower costs but also on their technical or aesthetic suitability for a specific purpose. In knitwear, worsted spun yarns were displaced, in part, by texturised polyester filament yarns. In carpets, traditional wool woven carpets were displaced by tufted carpets, often using nylon filament yarns. In blankets, woven products faced competition from non-woven fabrics.⁶

12.5.4 Market changes

Demand for wool textile products has benefited from the increasing importance that consumers have attached to the aesthetic and comfort properties of their clothing and surroundings. However, shifting consumer tastes and lifestyles have negatively impacted upon demand for wool textiles. Improved home heating, increased use of private transport, a shift in atti-

tudes within society to greater informality and an increasing amount of time devoted to active sport and leisure has tended to favour lighter-weight casual attire at the expense of stiffer, heavier and more formal apparel.^{6,10} Although wool textile manufacturers have responded by introducing finer yarns and lighter-weight fabrics, this trend has benefited short staple and filament fabrics at the expense of long staple products. In home textiles, there has been a shift to the use of quilts and duvets at the expense of blankets. Demand for hand-knitting yarns has been hit by busy lifestyles, growing consumer affluence and the falling real cost of knitwear in the shops. In recent years, there has been a shift in discretionary expenditures to non-apparel items, such as mobile telephones.⁴ Compounding this situation, wool has had problems stemming from its mature image and its association with winter and heavy outerwear products. Due to neglect by wool producers, textile manufacturers and fashion companies, the younger generation are largely ignorant of wool's qualities.¹¹⁻¹⁴

12.5.5 Constraints on fibre supply

Other factors impacting demand for wool have been production-side constraints.¹⁵⁻¹⁸ Wool fibre production has been constrained by competition for pasture from other crops, and by environmental issues regarding sheep grazing and wool processing. However, it has also been impacted by a relatively complacent growing industry – which has not matched the productivity growth and innovation shown by the man-made fibre industry and by many other branches of agriculture, including cotton. This underachievement is often ascribed to the guaranteed price system that was maintained by governments in producing nations, notably the Australian Wool Commission. This ensured that farmers obtained a minimum return. In 1990, during the downswing of an international recession, demand for wool collapsed causing the guaranteed price system to be abandoned and resulting in a sharp drop in wool prices that rippled through the textile industry in the form of stock write-downs. Many wool farmers were ruined and pasture was diversified into other, more lucrative products. The sharp fall in fibre prices also undermined confidence among wool textile manufacturers.

12.6 Patterns of industry development and adjustment

12.6.1 Introduction

In combination, the long-term globalisation of the wool textile industry together with its declining fortunes during the 1990s, has resulted in

significant upheavals across the industry. This section considers the dynamics of change in the wool textile industries both of the industrialised and of developing nations, with specific reference to the leading producer/consumer countries.

12.6.2 Adjustment in the industrialised nations

Although the international diffusion of wool textile production has proceeded more slowly than in other sectors of the industry, since the mid 1980s the expansion of production in developing nations has placed an increasing squeeze on traditional manufacturing centres in Europe, the US and Japan.¹⁹⁻²¹ Strong capacity expansion in Asia up to 1997 resulted in over-production, with product coming into international markets at weak prices, undermining existing pricing structures. The ensuing economic crises in Asia, Russia and Latin America compounded these problems by temporarily removing export demand. This particularly hit the European industries. At the same time, companies were struggling to cope with volatile raw materials costs; with increasing investment requirements as a result of the growing costs of new technology, and of environmental, health and safety regulations; and with a reluctance on the part of apparel and retail customers to accept price increases. The poor conditions seriously hurt industry profitability, particularly that of companies which focused on volume markets.^{4,22-27}

The pattern of adaptation to international competition across the industrialised nations has been similar.^{4,6,10,14,22-27} As imports from developing countries have grown, commodity products and businesses have been abandoned. There has been a shift up-market with products that are more innovative and sophisticated in terms of fashion and technical properties. This has included an emphasis on differentiating the product offer from those of competitors through branding, quality of service and close relationships with customers. While most downsizing has occurred in apparel-related areas of production, there has been an increased emphasis on contract furnishing applications. These markets have been less exposed to the full force of international competition, due to the more technical nature of the purchase decision and the importance of technical innovation.

The internationalisation of marketing and production activities has been another important theme. As competition has intensified in their domestic markets, companies have expanded their international presence. The internationalisation of manufacturing operations has been spurred by the need to improve cost competitiveness. An increasing number of companies have abandoned domestic production in favour of manufacturing in developing countries, sub-contracting or sourcing. Another important factor influenc-

ing this migration, however, has been the tendency for production to be drawn closer either to the fibre source, in the case of early stage processing, or to apparel manufacturing in the developing countries. This migration pattern has been influenced by the need to satisfy cost and speed requirements, and also by local government incentives.^{4,6,10,14,22-27}

These strategic shifts have been accompanied by extensive rationalisation of the traditional industries in Europe, Japan and the USA. This has involved cost reduction and downsizing measures and a wave of consolidation. Many mills, especially those concentrating on volume markets, have been closed. In wool combing, and in dyeing and finishing, increased investment requirements have favoured larger operations and caused many smaller businesses to close. Often, specific markets have become dominated by a handful of domestic players. Generally, however, many of the large, diversified groups have given way, through downsizing and de-integration, to small and medium-sized businesses that are more tightly focused around a specific product market or process technology. Typically, these employ flexible operations that serve specialist, often high quality, niches. Many are engaged in the focused marketing of innovative yarns or fabrics. A feature of these businesses is close co-operation with customers and suppliers, rapid product development and, in some cases, co-branding with leading apparel and retail brands.^{4,6,10,14,22-27}

In Western Europe, there has been extensive consolidation, especially in top making, where production has become concentrated in the hands of a few major companies. Asian companies have entered the market through acquisitions, as some indigenous players have downsized or left the industry. In Eastern Europe and the former Soviet Union weak domestic demand, inefficient work practices, old equipment and low capacity utilisation caused considerable upheavals during the 1990s. Increasingly, however, Eastern Europe has benefited from the migration of wool textile production out of Western Europe.^{28,29}

Of all the major European wool textile industries, the Italian industry has proven the most resilient.^{19,20,23,30,31} Although the woollen sector of Prato has proved more sensitive to international pressures than the worsted sector in Biella, Italy retains a vertically integrated wool textile industry. This contrasts with most other European nations where some activities have virtually disappeared as companies have opted for offshore sourcing. The Italian industry has benefited from the sophistication of the Italian market and their close association with innovative Italian fashion designers that have gained world recognition. Many Italian mills come under family control and focus on a single activity in the production chain with a narrow product range. These companies are highly flexible and innovative. They collaborate closely with suppliers and customers to develop new styles and improve quality. Faced with shrinking demand in the late 1990s, the industry has

focused on generating improvements to quality and service, and on lowering breakeven points to permit even smaller batch sizes.

Historically, the German textile complex, from machinery and chemicals through to finished products, has been extremely strong.^{24,26,32} However, the industry has unravelled during the 1990s under the burden of high production costs and the loss of offshore processing advantages for German textiles as former East European countries have gained free trade status with the EU. Besides the high wage labour and strong currency, Germany's extremely strict environmental constraints have especially hurt wool textile processing in that country. As elsewhere, the combined result of cost and competitive pressures has been widespread unprofitability, causing extensive rationalisation and downsizing, and many company failures. This has prompted a search for more cost-effective manufacturing locations resulting in a migration of capacity to Portugal, Eastern Europe, Asia and South Africa. German design, manufacturing and marketing skills have remained undiminished, and the ability of German firms to orchestrate international supply chains is well established. This advantage is reinforced by the central location of Germany in Europe. At home, the response of German fibre, textile and clothing companies has been to drive production to ever-higher levels of efficiency and to emphasise new technology and product innovation. German manufacturing has become increasingly confined to specialist, high value/high technology products, and there has been increasing emphasis on technical textile markets as a growth opportunity.

During the 1990s, much of the French wool textile industry, including many of the larger groups, was in severe financial difficulties as a result of shrinking markets and growing competition. Under-investment in modernisation, due to an inability to raise investment capital, eroded the industry's longer-term competitiveness. Subsequent assistance from the French government helped to rectify this situation but not before extensive loss of capacity. The more competitive industry that has emerged comprises mainly small specialist business but retains a few major vertical groups. The output mix of the industry has shifted towards higher quality, luxury products associated with the French fashion industry and technical fabrics. Larger companies have been active in relocating production abroad and some have made selective acquisitions of European rivals to build dominant market positions in the EU.^{33,34}

The traditional leading position of the UK in wool textiles receded rapidly from the 1960s. The industry proved too conservative and too production oriented in responding to international competition and market changes in terms of fashion and segmentation. UK companies were unable to compete with the greater creativity and flexibility of their Italian counterparts, both in lower cost and in more fashionable cloths. The growth of low cost imports from Turkey and Asia compounded this situation. Only at

the very top end, and in certain specialist niches, has the UK retained a leading position. The outcome has been a long steady attrition, in which many of the larger companies have been broken-up, closed or changed ownership (in some cases several times). Much production has migrated offshore.^{6,27,35}

Turkey emerged rapidly as a major producer of wool textiles and related apparel during the 1980s. Much of this production was for the West European market. Since 1995, the industry has been disrupted significantly by two major earthquakes, by exposure to the Russian financial crisis and by low cost imports from the Far East.³⁶

The Japanese wool textile industry long held a dominant position in Asia but, since the mid 1980s, production has dropped precipitously.^{22,25,37} This followed an escalation in the value of the Yen and the rapid growth of manufacturing capacity and exports from developing Asia. The initial development of wool textile production in South East Asia was largely associated with Japanese foreign investments that date back to the 1960s. These were motivated predominantly by the need to preserve established markets, as local governments erected trade barriers to Japanese exports. They were also, in part, motivated by the opportunities, afforded through lower labour costs, to export to third countries. Much of this investment was tied closely to the strategies of the major trading houses, with their financial strength and their extensive international sourcing, marketing and distribution capabilities. Some investments extended to Latin America and Europe. As basic textile production migrated offshore, at home, Japanese companies invested heavily in upgrading products and process technologies. During the 1990s, however, investment in mainland Asia accelerated, particularly in China. A feature of this new expansion was increased involvement of trading companies in wool textile manufacturing. The domestic industry was further undermined by the weak Japanese economy and by escalating competition in Asia, culminating in the Asian economic crisis starting in 1997. Extensive rationalisation and loss of capacity has followed. Increasingly, Japanese production is focused on luxury and higher technology synthetic products.

Up to the mid-1990s, the US wool textile industry continued to grow, assisted by a higher level of tariff protection than was afforded to its counterparts within the industrialised nations. Following the creation of NAFTA, however, Mexico expanded rapidly as a major supplier of wool apparel to the US. Although this benefited US wool fabric exports, it quickly led to the growth of Mexican production. The US industry was further affected by a loophole in the NAFTA agreement that permitted Canadian men's and boys tailored garments to be made from non-NAFTA fabric. Growing imports and falling prices squeezed industry profitability, encouraging a number of larger US companies to invest in Mexican operations. The situation was compounded by a slow-down in apparel demand after

1998 and by an acceleration of apparel imports from Asia at the expense of Mexican and Caribbean suppliers. The outcome was a sharp drop in output, resulting in bankruptcies and mill closures. Smaller, more flexible operations manufacturing high quality products and servicing specialist niches have fared best in this environment.^{4,10,38-42}

12.6.3 Patterns of evolution in developing countries

In the developing nations, the rapid expansion of apparel production has encouraged the growth of textile and man-made fibre industries, including wool textiles. The creation of large export apparel industries has brought about a need for large quantities of fabric to service their requirements. In the early stages of industry development, limitations in the textile capacity and technical skills of developing nations obliged them to import much of their fabric needs for export apparel, typically from the industrialised nations. However, local capacity has often expanded quickly to substitute for these imports, encouraged by low manufacturing costs, local government policy and the need for faster response in the supply chain. As noted already, it has usually been assisted by equipment suppliers and international consultants, and by inward investments of established manufacturers in the industrialised nations. Yarn production has usually expanded more quickly due to the greater technical skills required in wool weaving and finishing. As domestic industries have expanded, they have often diversified and upgraded their product range. In the process, they have changed from an import substitution role to an export industry. Finally, some of the more sophisticated companies have begun to develop strong marketing and design capabilities, and to embark on foreign direct investments of their own. In other developing nations this has typically taken the form of green-field investments, but in industrialised nations it has typically been pursued through acquisitions.^{4,43}

China witnessed a rapid build-up of wool textile capacity and output up to the mid 1990s. However, much of this focused on basic heavy-weight fabrics and darker colours, with little emphasis on high-quality products. Poor management, especially in state-owned companies, lacked an understanding of market requirements, resulting in over production, slow adaptation to market changes, falling prices and high stock levels. In addition, the industry suffered from low productivity and poor quality due to obsolete equipment, over-manning and inadequate technical skills. Subsequently, the industry has been subject to severe rationalisation and upgrading with the encouragement of the Chinese government. Obsolete equipment has been scrapped and large numbers of workers have been made redundant. Heavy investments have been made in new technology and in technical, design and marketing skills, as Chinese companies

have sought to shift into higher quality segments with more fashionable merchandise.⁴⁴⁻⁴⁸ In Sections 1.14–1.16, wool promotion strategies of the principal wool grower countries are briefly described, notably the New Zealand *Fernleaf* brand as distinct from various programmes under the *Woolmark* umbrella.

Although India has a long established tradition in wool textiles, the Indian wool textile industry has made only a modest impact on international markets. This is partly a legacy of the policy of ‘swadeshi’, or self-reliance, under which India largely sealed itself off from the world economy through a series of import and export controls. In this cocoon it fell behind as other Asian countries achieved economic take-off by exposing themselves to the dynamics of international competition. Despite extensive reform during the 1990s, an array of bureaucratic controls continue to constrain production and international trade. Government policy has been preoccupied with protecting employment in the rural handloom industry and not with encouraging a competitive manufacturing industry capable of taking its place in international markets. Despite these obstacles, modernisation of the wool textile industry has accelerated, assisted by an inflow of foreign investment. A vibrant industry comprising a multitude of small businesses and larger export-oriented firms has begun to emerge.⁴⁹

12.7 Outlook for the wool textile industry

12.7.1 The outlook for consumption

Today, the emphasis of wool fibre and textile marketing has switched from quantity to quality. Product and process innovation has extended the appeal and applications of wool. The development of softer, lighter-weight fabrics, based on finer yarns and fibres, innovative blends with other natural and man-made fibres, and new finishing techniques, has improved the technical performance range and trans-seasonal appeal of wool textiles. New developments have extended the application of wool textiles to include a wider range of casual and sportswear items. Another area of technical development has been so-called single-stage processing, involving the production of fabric directly from scoured, dyed fibre in the form of felts or non-woven products. This has seen applications in blankets, building insulation, agro-textiles, industrial felts and performance sportswear, among others.⁵⁰⁻⁵³

In parallel, new efforts have been made to promote consumer awareness of wool and to position it as a quality item for formalwear and smart casualwear through new sub-brands of the *Woolmark*. However, there is an uphill struggle to achieve consumer recognition on a par with cotton and branded man-made fibres, especially among younger consumers. Furthermore, wool promotion and development has lost additional ground

as a result of reduced support from wool growers and the fragmentation of the former technical development and marketing body that represented the leading grower nations, the IWS, into nationally organised institutions.^{54–57}

In future, market trends may favour a shift back to the products of the wool textile industry. This includes the prospect of a general fashion swing back towards smarter, more tailored apparel at work. Also, the ageing of populations and increasing consumer affluence in the industrialised nations is expected to support positive demand for wool, both in apparel and furnishings. In addition, apparel and furnishings markets are expanding quickly in developing nations, due to their higher economic and population growth rates. The growing middle class consumers in these nations, especially in China, are looking for higher grade products.^{4,47,48,58}

12.7.2 The outlook for production

The pace of globalisation in the wool textile industry is likely to accelerate, despite difficulties in implementing trade agreements made under the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). This is exemplified by China's acceptance for entry into the new World Trade Organisation (WTO) by the US and EU and by the extensions of free trade agreements between the European Union and Mexico and between the US and sub-Saharan Africa.⁴

Trade liberalisation and improving international communications will underpin a continued intensification of competition and migration to low cost production locations close to large apparel manufacturing centres. The pace of upgrading in developing nations will accelerate as partnerships between local textile manufacturers, and their raw materials and equipment suppliers, will enable them to better exploit new technologies. Competition will also escalate in the upper market segments, as leading companies in the developing nations upgrade their creative design and marketing capabilities to close the gap with those in Europe, Japan and the US. The result will be a further shake-out of companies and capacity, both in industrialised nations and in the less competitive developing countries.

China is expected to be the biggest winner after quotas expire. Overall, China's accession to the WTO should see its wool textile and apparel exports expand more rapidly, though anti-surge provisions in bilaterals agreed with WTO trading partners will act as a constraint.⁴ Also, as noted previously, the emphasis in the Chinese textile and apparel industries in recent years has been on upgrading quality rather than expanding volume.

In the traditional centres of production in industrialised nations, an increasingly specialist industry will survive, focusing on market niches with luxury or highly sophisticated products.

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