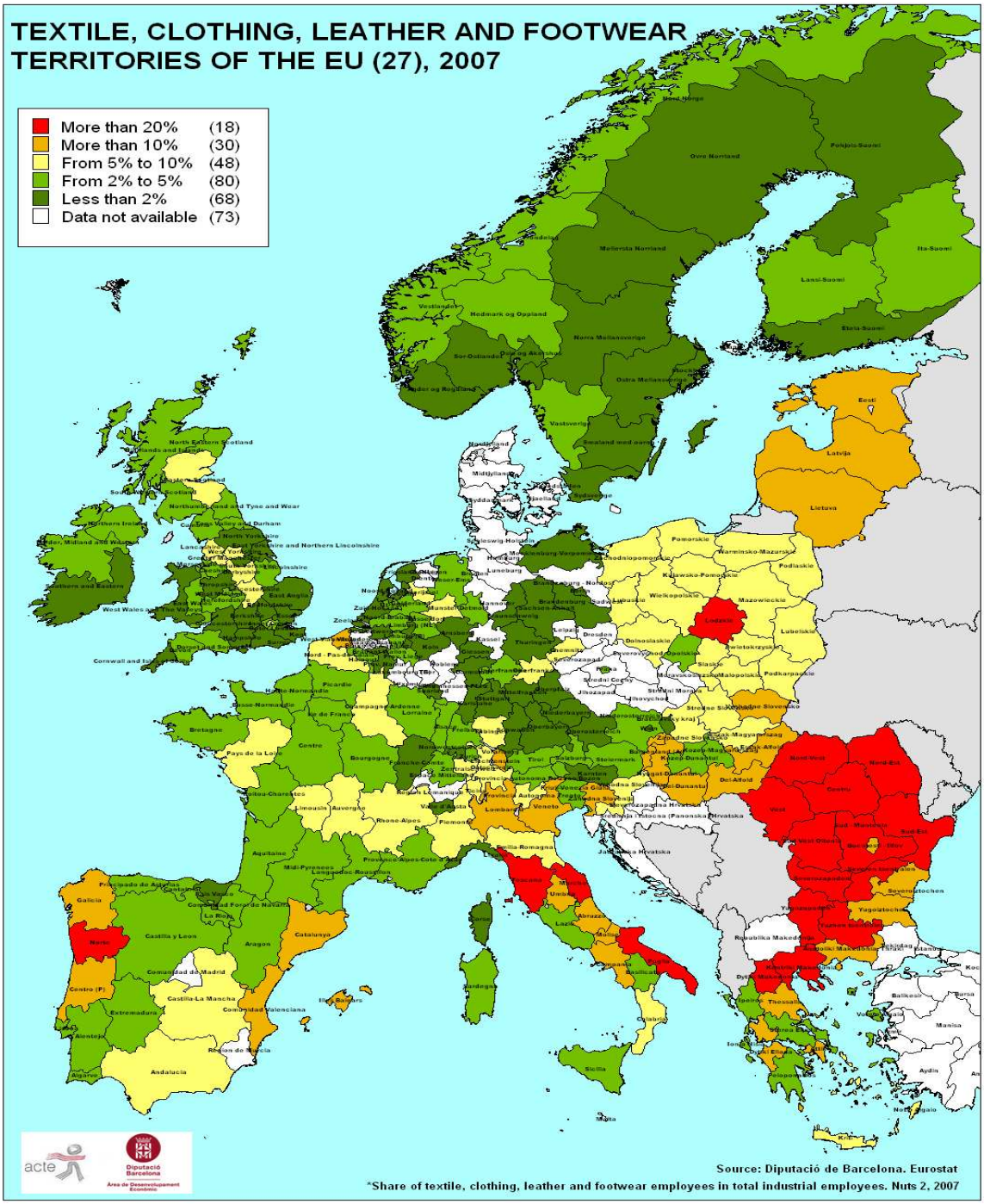


THE TEXTILE AND CLOTHING SECTOR IN EUROPE

CONTENTS

1. General findings

European TCL industries have passed through stormy weather over the past decades[1]: attacked by competitors from Asia and faced with heavy price competition on consumer markets, the industry was driven by globalisation – and used it as a sheet anchor at the same time. Big retailers emerged and organised global supply chains.
Producers, in parallel, relocated parts of their production to low-cost countries in order to remain competitive.

This was boosted by huge wage differentials on global labour markets and high profits from trade. Production could only sustain in low-cost areas of the European Union and in specialised high-quality market segments. Significant restructuring was needed to transform the industry into competitive producer networks, as was the case in Italy and France.

The industry, nevertheless, lost one third of both production volume and jobs within a ten year period from 1996. It had to accept continuously rising import shares from low-cost countries – China in particular. The phasing out of the Agreement on Textiles and Clothing in 2005, gave these trends a further push. Mass production largely disappeared from high-wage areas in the EU while low-cost areas – the New Member States, Portugal and Greece – could keep at least parts of TCL production.

In 2006 the TCL industry employed 3 million workers. In spite of slowly growing demand, low productivity and strong international competition, those firms which remained on the markets achieved profit rates comparable to other small-sized sectors. Also with the help of low wages, firms were able to survive and to perform economically well. This must also be attributed to the entry of the New Member States (NMS), Romania and Bulgaria in particular.

The industry developed three main strategies to meet competitive pressure:

- A cost-oriented approach which used relocation to low-cost countries, including the NMS, as its major instrument
- An innovation-oriented approach diversifying the spectrum towards high-quality and specialty textiles products
- A productivity-oriented approach based on automation and IT-based supply chain management, which helped to increase flexibility and create global sourcing systems.

The three strategies contributed to the dichotomic change of skills structures in the EU: a

[1] 1 TCL is the acronym for the NACE sectors 17 to 19: manufacture of textiles, wearing apparel, leather, leather products and footwear.

sharp decline in the number of textiles and clothing trades' workers and machine operating functions in high-cost areas, and the increase of such jobs in low-cost areas, the NMS in particular. The restructuring activities towards supply chain management and sales required more technical and business professionals in high-cost areas, while these functions declined in low-cost areas. This process indicates the expansion of management and marketing activities in one part of the EU and rising economic dependency in the other. As cost-oriented strategies were not sufficient to stop the downward trend of TCL industries, the innovation-oriented approach seems to have become more and more important.

Latest data from innovation surveys and other sources indicate that the TCL sector strengthened research and development broadly and now ranks at least at an average level of European manufacturing. Major efforts were undertaken in the area of technical (or functional) textiles, quality improvements, product and market diversification, production flexibility, and cost reduction. The textiles industry in particular developed new textile appliances which are used in construction, medicine, or engineering. These specialty textiles are equipped with electronic components, coated with new materials, and used for packaging, filtration, or for construction and mechanical engineering purposes.

The use of these textile appliances is seen as the best escape from apparently tight consumer markets.

Table 1- NACE sectors and sub-sectors

NACE rev. 1.1	NACE Description	Identifiers used in this study
17, 18, 19	**Manufacture of textiles, wearing apparel and leather products**	**TCL Industries**
17	**Manufacture of textiles**	**Textile Industries**
17.1 17.2 17.3 17.4 17.5 17.6 17.7	Preparation and spinning of textile fibres Textile weaving Finishing of textiles Manufacture of made-up textile articles, except apparel Manufacture of other textiles Manufacture of knitted and crocheted fabrics Manufacture of knitted and crocheted articles	
18	**Manufacture of wearing apparel; dressing and dyeing of fur**	**Clothing Industries**
18.1 18.2 18.3	Manufacture of leather clothes Manufacture of other wearing apparel and accessories Dressing and dyeing of fur; manufacture of articles of fur	
19	**Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear**	
19.1 19.2 19.3	Tanning and dressing of leather Manufacture of luggage, handbags and the like, saddlery and harness Manufacture of footwear	**Leather/footwear Industries**

Source: Eurostat

2. Main characteristics of TCL industries

2.1 Type of products and production process

2.1.1 Product spectrum of TCL industry

The TCL sector produces a great variety of products. Among textiles, the production of "Other textiles" is the biggest product area including a great number of specialty textiles. This is followed by weaving and made-up textile articles. The European clothing industry mainly produces outerwear. The leather/footwear industry is concentrated on footwear.

Typically, this is a combination of sectors allocated in the same value chain. Not only textiles and clothing are part of the sector, but also the whole production line of textiles (spinning, weaving, manufacture of textiles, finishing), and of leather (tanning, dressing and manufacture of leather products). In contrast to other sectors this is certainly like mechanical engineering, where large parts of the upstream sectors are allocated in other parts of the classification.

Some of the sectors operate in similar consumer markets (e.g. clothing and leather clothes), and thus have a competitive relationship. Others are complementary, like clothes, footwear and accessories. Moreover, it is a combination of capital and labour intensive production. The heterogeneity of the sector recommends subdividing the analysis into the three sectors 17, 18 and 19.

Table 2 -Product Spectrum of TCL Industry –EU 27

Product area	% share of TCL value added
Textiles	47.5
Other textiles	11.9
Weaving	9.2
Made-up textile articles except apparel	7.5
Finishing	6.0
Preparation and spinning of textile fibres	5.4
Knitted and crocheted articles	5.3
Knitted and crocheted fabrics	2.2
Wearing apparel	34.9
Outerwear	21.6
Other wearing apparel, accessories	5.9
Underwear	4.9
Workwear	1.6
Dressing and dyeing of fur	0.4
Leather clothes	0.4
Leather and footwear	17.5
Footwear	10.,7
Luggage, handbags, saddlery etc.	3.8
Tanning and dressing of leather	3.9
TOTAL	100.00

Source: Eurostat (2007)

2.1.2 Economic performance

Measured by added value, the majority of the industry comes from textiles manufacturing which contributed to 47% in 2008. Clothing had a share of 35%, leather and footwear produced 18%. Regarding employment, the structure is reversed: the clothing sector provides 46% of jobs, textiles 36%, leather and footwear 18%. This indicates strong productivity differentials between the sub-sectors.

Italy is the principal manufacturer of textiles, clothes and leather products in Europe. It contributed to one third of the EU27 value added in 2006, followed by Germany and France, both with a share of 11%, and Spain and the United Kingdom both with a share of 9%. Among the countries specialised in TCL production, Malta, Bulgaria, Portugal, Romania, Lithuania, Estonia and Italy all had shares of 10% and above in total manufacturing employment. The EU27 average was 3.6%.TCL industries experienced a rapid decline of output and prices for ten years since 1996.

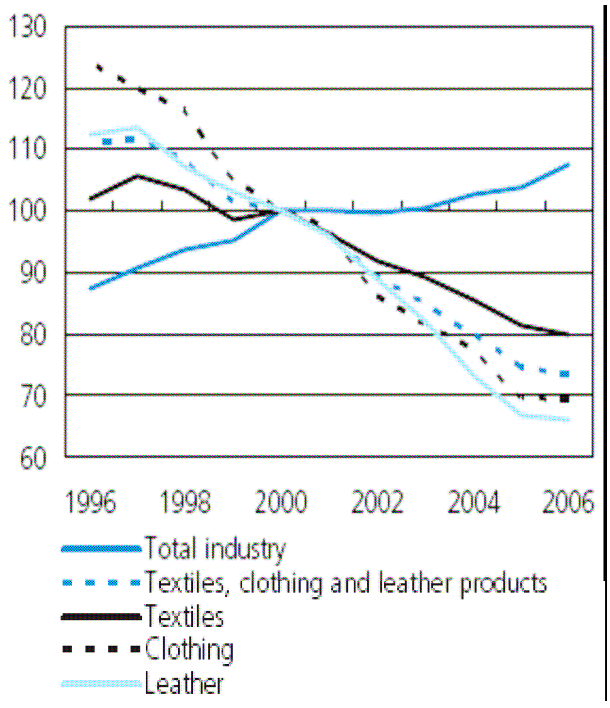
Overall production shrunk at a rate of 4% annually, which meant a loss of one third of the production volume during this period. The textiles industry performed much better than the other two sub-sectors. Production volumes declined by 22% from 1996 to 2006, while clothing lost 45% and leather 32%.

Private consumption has increased by 3.2% annually since 2000, mainly in the New Member States. The share of clothes in total EU consumption, however, decreased from 5.2% in 2000 to 4.7% in 2006.

Prices also increased much slower than manufacturing prices in total. While domestic output prices of manufacturing products increased by 25% between 1996 and 2006, textiles, clothes and leather products saw an increase of 8%. This means a relative decline of output prices of 13% during that period.

Extra EU trade of the European TCL industry is characterised by high deficits. In 2007, the trade deficit was around 52.2 billion euros. Deficits appear in most of the sub sectors (except leather production), but are particularly big in clothing. China, meanwhile, has a share of 33% of EU27 textiles and clothing imports, and – most importantly – its share in footwear rose to 40% in 2006.

EU 27 employment index, 2000 = 100



Source: Eurostat (2007)

In physical terms, meaning the number of shoe pairs, it increased even stronger to 65%. Import prices for clothes declined by 23% and by 6% for textiles in the period from 2000 to 2006.

Nevertheless, intra-EU trade still dominates the trade flows of the EU27 Member States: almost three quarters (71.9%) of the total intra and extra EU-exports are intra trade flows. This share is higher than for intra EU trade of industrial goods.

Several Member States achieved a trade surplus in 2006. Italy is the strongest among them with a positive export import balance for textiles, clothing and leather products of 16 billion euros. This, however, has been progressively narrowing in recent years due to the decline of exports to non-EU countries.

2.1.3 Consumption trends

In principle, consumer orientation appears to be related to cultural attitudes. Clothing styles are determined by social status, business conventions and historical traditions. The observation, therefore, is that consumers differ quite strongly among Member States regarding their fashion orientation, quality preferences or price sensitivity. In parallel, fashion trends are spreading world-wide with the help of press media and the internet. The use of "fashion scouts" indicates that these trends are created on the streets rather than in design studios and confirms that the control of TCL producers and retailers regarding fashion trends remains limited.

Consumer research points to substantial changes of consumer orientation in clothing markets (Perotti-Reille 2008):

- Consumers are individualising; consumption detaches from basic needs, becomes more hedonistic and has a strong emotional component.
- Consumers are professionalizing; they are better informed about products and markets and develop their optimal purchasing strategies on this basis.
- Consumers want to be participatory; they want to interact with producers, retailers and service providers on the type of products offered, quality, and design. They want to be co-inventors.
- Consumers claim for social and ecological responsibility; the use of child-labour, poor environmental conditions or bad product quality rapidly lead to a boycott of certain brands or producers. This may even be extended to certain regions or nations.

This leads to an increasing fragmentation of markets which calls for a change in production regimes (overcoming mass production principles) and differentiated distribution channels. The immaterial value of products is becoming important.

Real consumer behaviour, however, seems to be different: consumer prices for wearing apparel are declining continuously, imports of mass-products from low-cost countries are rising, and

the big retail chains who offer low-price products are the winners in clothing markets. Approaches to mass-customisation have more or less failed in the past and individualised production only survived in high-price niches. Consumers are obviously very price-sensitive and easily abandon their aspirations if they are not free. As UK research reveals, a clear move in consumer behaviour is heading towards "a culture of cheap, disposable fashion" (Allwood 2006).

This does not indicate a fundamental change of consumer behaviour in the near future. Consumer preferences appear to be stable as far as the principle orientation of consumer behaviour is concerned, but they are variable regarding fashion styles. While colours, cuts and fabrics are changing unpredictably, the principle consumer orientation and behaviour will not change fundamentally.

This is also reflected in the continuous decline of the share of TCL consumption in total consumer expenditures. Between 2000 and 2005 the share of clothing consumption in total consumer expenditures declined from 5.2% to 4.7%.

The reason for the broad decline of clothing consumption is seen in the fact that consumers move up the Maslow pyramid of needs from basic physical needs to socially and individually oriented consumption. The fact that the share of clothing consumption is declining thus confirms the view that consumers in total are not becoming more sophisticated or demanding.

Their demands are targeted at other parts of consumption like IT-related appliances, communication and services.

Table 3 Private consumption and prices –EU 27

Country	Retail Sales textile, clothing, leather/footwear	Clothing			
		Share of total consumption		Domestic prices	Import prices
	Average annual Change in % (current prices)	2000 %	2005 %	2000-06 Average annual change in %	2000-06 Average annual change in %
EU27	3.2	5.2	4.7	-0.3	-4.2
Austria	1.5	5.9	5.6	-0.4	-10.5
Belgium	1.8	4.5	4.1	0.3	-3.6
Bulgaria	14.1			0.2	
Cyprus	4.5	5.2	4.8	-2.8	-38.7
Czech Republic	6.4	3.9	3.7	-3.6	-14.9
Denmark	6.0	4.1	4.2	-0.5	-10.7
Estonia	24.8	5.1	5.3	2.6	-7.3
Finland	4.1	3.9	4.0	-0.4	-3.3
France	5.5	4.4	4.0	0.1	-1.3
Germany	-0.2	5.1	4.5	-0.6	-3.9
Greece	4.9	8.9	8.3	3.1	-0.8
Hungary	8.4	3.4	2.7	1.6	14.2

Ireland	7.0	5.8	4.1	-3.1	-6.2
Italy	0.2	7.0	6.1	1.5	-2.2
Latvia	29.3	5.4	4.8	1.2	-6.4
Lithuania	26.1	4.0	4.2	-2.0	20.5
Luxembourg (Grand-Duché)	1.4	3.7	2.8	1.0	-12.3
Netherlands	1.4	5.1	4.5	-0.8	-3.3
Poland	14.2	3.3	2.9	-2.3	-7.0
Portugal	1.2	6.3	6.0	0.1	-3.0
Romania	28.8			7.2	
Slovakia	-5.7	3.6	2.4	0.8	-5.4
Spain	4.7	4.9	4.2	1.9	-4.2
Sweden	5.2	4.5	4.5	0.5	-3.1
United Kingdom	4.6	5.2	4.2	-5.7	-4.5

Source: Eurostat

2.2 International competition and relocation of production

2.2.1 China's strength

China is the great winner of restructuring in TCL industries. It became the number one producer of wearing apparel with a share of one quarter of world exports (Perotti-Reille 2008). With labour costs less than one third of the competitors in Europe and the United States, Chinese producers were able to attract rising market shares. The country established regional clusters of textile and clothing production with thousands of firms and millions of employees. These clusters are strongly export oriented. Production chains have been optimised to provide all functions from fibres to garments, confection, and finishing.

Rail and sea transport systems have been developed. Hong Kong and Shanghai are functioning as the main trading platforms. Logistic chains were established by companies like Li & Fung (Hong Kong) which organises – through a virtual approach – production and marketing for Western markets.

China's products were at the lower end of the price spectrum for some time. This changed in recent years as China's exports in both textiles and clothing were moving up. Regarding product values, the structure of Chinese textiles exports to Germany has come closer to that of Italy or Poland. Exports of clothing products became similar to those of Belgium, Italy or the Netherlands (OECD 2007). This means that China is on the way to approaching high price markets where European producers – until now – felt to be sheltered. China is moving into more capital intensive and technology intensive product segments and is improving the quality of exported goods. Export strategies are becoming more broadly based and lead to

a declining degree of specialisation. Countries like India or Mexico also adjusted their export structures and have taken efforts to improve their competitiveness.

2.2.2 European answers

European producers reacted to the Asian challenge in two ways:

- By vertical product differentiation, which means they escaped to high value products.

Italy in particular followed such a strategy. Vertical specialisation, however, is a weapon with limited power, as it only works in markets where consumers tend to differentiate across qualities. In mass production markets this does not really work. The remaining market volume therefore declines.

- The second choice was to relocate production to low-cost countries. This was applied by more and more companies, particularly in high-cost countries. Econometric estimates show that outward investments have a strong negative effect on domestic employment, particularly in branches with strong ties to non-OECD countries. Textiles, clothing and leather/footwear belong to these industries. Increasing relocation also raises the wage elasticity for the long-run and the speed of adjustment of domestic employment. The effects are the contrary in the service sectors. They profit from overseas investments and reduce the speed of adjustment (Molnar et al. 2007).

2.3 Innovation and organisation of the value chain

European TCL enterprises of today seem to be as "innovative" and "R&D-engaged" as manufacturing enterprises in general. This is surprising considering the usual ranking of innovative sectors, and means that the transition of the European TCL industries towards a knowledge-based industry is already underway. Around 35%-50% of TCL enterprises are engaged in product and process innovation.

The transition of occupational structures is fostered by the emergence of big retail distributors – like H&M, Zara or Cortefiel – and the development of global brands – like Luis Vuitton and Armani. Based on global sourcing, these companies took advantage of the international labour division and wage differentials while distribution was concentrated under a single brand. The control over the value chain remained with the global retailers, as did the design, quality control, and marketing. Production activities, however, were developed in low-cost countries. This was accompanied by the use of "trend scouts" to detect the most recent preferences of consumers, the shortening of the "time to market" with frequent changes of fashion patterns, and the establishment of real-time IT networks to observe both sales and production.

Global retailers have a strong impact on value chains as they keep control of all strategic

functions while sub-contracting production. Even high-value brands are produced in low wage countries under the strict control of the leading companies. Products are developed in these companies and pre-collections are produced, materials are ordered and transferred to producers. Production in the sub-contracting firms is controlled by engineers and production specialists in order to guarantee quality standards. Finally, marketing strategies are designed in the headquarters and products are sold in company-related sales
chains. The change of occupational structures clearly reflects this organisation of value chains.

A series of TCL producers transformed into brand-based companies, engaged in trading rather than production. The process can be explained by price structures on textiles and clothing markets which are characterised by a dominant share for wholesale and retail trade and minor shares for production. Trade appears to be the profitable activity compared to internationally competitive production.

2.4 Employment

In terms of employment, TCL industries have been declining industries for a long time. Since 1996, TCL lost one third of its jobs within ten years. Compared to overall manufacturing, the decline was at a significantly higher speed and seems to be continuing indefensibly. The biggest employers were Italy with 620,000 TCL jobs, Romania with 440,000 jobs, and Poland, Portugal, Spain and Bulgaria were all between 200,000 and 300,000 jobs. Apart from Bulgaria, none of the EU countries were able to increase the number of jobs during the period 2000- 2006. Ireland, UK, Cyprus and Denmark were among the countries with the most severe reductions.

Traditionally, textiles, clothing and leather are industries with high shares of females, not only in services and administration but also in production activities. This did not change between 2000 and 2006: 59.2% of all persons employed in TCL in the EU15 region in 2006 were female– slightly less than in the year 2000 (61.3%). The share of females in NM10 was even higher, and increased from 77.7% to 80.4%. Compared to the manufacturing sector, the shares of females were more than double in both regions.

In EU15 countries, TCL is an ageing sector. A clear shift from the 15-39 age groups to older workers occurred during 2000-2006. Younger workers lost 9.4 percentage points while the 40-49 and 50+ groups won 4 to 5 percentage points. In the NM10 countries, the middle age group (40-49) lost around 4 percentage points while the younger and the older attained about 2 percentage points.

2.5 Occupations and formal education

The change of occupational structures in the TCL industries reveals clear trends in the

period 2000-2006: the share of managers and professionals increased in the EU15 countries, while production related occupations decreased together with service and administrative work. Skilled production work was reduced in particular. In contrast, the New Member States extended the number of jobs for skilled production workers and assemblers, while the share of managers, other professionals, and service and administrative workers was cut.

This is the continuation of a long-lasting pattern of occupational change which is caused by the specialisation of high-wage countries on know-how-intensive activities, while standardised production is shifted to low-wage countries. The dominance of this pattern is shown by the fact that all three sub-sectors follow the same type of occupational change.

It is most expressed in the clothing industry, where management and professional occupations in the EU15 gained even more than in the other two industries, while the share of unskilled production work increased strongly in the NMS.

A high share of TCL workers in EU15 countries (57.6%) only have a basic formal education (ISCED 1, 2), one third have a medium level (ISCED 3, 4), and 9.3% have a higher education (ISCED 5, 6). In contrast to the NM10 countries, the majority of workers have a medium level of education (81.1%), and only 13.1% have a low level. 5.8% attained a high level. These profiles reflect the different structures of education and training systems in the EU countries, with a strong training orientation in the former socialist countries. Moreover, the workforce in the NMS is younger and well educated in comparison to the Old Member States.

3. Main drivers of change

Starting with a long list of potential drivers we can talk about four areas which can be expected to have strong impacts on the development of European TCL industries:

- *Global competition*

Strongly rising competitiveness of Asian countries (China in particular) is a major threat to the European TCL sector. As Asian countries are developing the sector efficiently, the NMS are in more of a defensive than a leading position.

- *Knowledge base*

New textiles for application in construction, Medical technologies and other areas are currently being developed. "Technical" and "intelligent" textiles are the growth markets with a strong potential to substitute other materials. The sector, however, is characterised by wide-spread skills shortages due to its weak position on labour markets

- *Markets*

Consumer markets are strongly price sensitive, a driver which enforces global competition and increases the importance of global distribution chains. "Time to market" is becoming a key competitive factor.
International brands emerge fostering the disappearance of regional fashion.

- *Environmental costs*

Energy prices and the costs of climate change are going to affect the world economy in a way which is not fully visible yet. Textiles and leather production have to re-assess the chemicals used for production (REACH), clothing and footwear are reorganising their logistic systems due to rising energy prices, and all industries meet consumers who are increasingly aware of the environmental and social effects of production.

4. Strengths and weaknesses of European TCL industries

Due to the different position of companies in high-cost and low-cost areas of the EU, the analysis of strengths and weaknesses results in scattered picture:

table 4 -Strengths and weaknesses – opportunities and threats

	Strengths	**Weaknesses**
High-cost areas (1)	✔ Leading in fashion design and branding ✔ Strong position in top market segments ✔ Good position in specialty textiles ✔ Value chain management ✔ Efficient production networks ✔ Innovative machinery industries ✔ Experienced labour force ✔ Functioning training institutions	✔ Weak cost position ✔ Weak position in mass markets ✔ Weak attractiveness for young people ✔ Declining training participation ✔ Experience in manufacturing processes is weakening
Low-cost areas (2)	✔ Competitive wages ✔ Experienced labour force ✔ Proximity to large consumer markets ✔ (partly) new capital stock	✔ Large-scale production ✔ Weak market position ✔ Weak innovative culture and few brands ✔ Lack of highly skilled professionals (designers, engineers) ✔ Few training institutions ✔ High transport cost
	Opportunities	**Threats**
High-cost areas (1)	✔ Increasing demand for specialty textiles products and specialty textiles ✔ Rising worldwide demand for high-level products ✔ Preferences for European fashion style ✔ Strong attendance to environmental issues	✔ Closing-up of emerging countries in high value ✔ Rising productivity in emerging countries ✔ High price sensitivity of consumers ✔ Disappearance of textiles and clothing machinery producers ✔ Closure of training institutions
Low-cost areas (2)	✔ Europeanisation of demand ✔ Short-distance transportation ✔ Cost advantages compared to high-cost areas	✔ Rising cost advantages of emerging countries ✔ Skills shortages due to low attractiveness of the sector ✔ Relocation of production
(1) AT, BE, DK, ES, FI, FR, GE, IE, IT, LU, NL, SE, UK (2) BG, CZ, CY, EE, GR, LT, HU, MT, PO, PT, RO, SL, SV		

Source: Economix

- High-cost countries have achieved a leading position in fashion design and branding, produce high-level qualities, and are innovative. They are managing value chains and dispose of efficient production networks, machinery producers and a skilled labour force. However, they have a weak cost position – on mass markets in particular – and the skills basis is eroding.

They can profit from their strong market position in specialty textiles and high-quality products. Moreover, their attendance to environmental aspects appears as an opportunity. However, these markets only provide limited volumes and their position will not remain unchallenged by the (Asian) competitors.

- Low-cost countries have competitive wages and an experienced labour force, and they profit from the proximity to large consumer markets. These advantages are reduced by the weak market position of producers and the weak innovative culture, the lack of skilled professionals and high transport costs.
The opportunities for producers in these countries lie in short-distance transportation which may be fostered by the Europeanisation of demand and cost advantages. However, their cost position is attacked by the emerging countries. Without a clear strategy how to develop TCL industries in these countries, relocation of production might further erode the industrial basis.

5. Emerging competences

Competence profiles in the European Union are determined by a series of interfering trends, and they appear to be different between high-cost and low-cost areas. Skills developments in TCL industries are dominated by

- Technology and application oriented engineering in specialty textiles
- The rising importance of marketing and sales
- Value chain management on global TCL markets
- ¸ Relocation of machine operating and assembling functions
- ¸ Rising importance of environmental aspects

Table 5- Emerging competences

		Textiles	**Clothing**
High cost area(1)	**Marketing, sales**	Technology-oriented International High-standard client services	Brand oriented Individualised Rapid change
	Engineering, production, logistics	Small batches Flexible production Strong customer orientation Sound understanding of processes and quality requirements	Organisation of value chain Supervision and control International Small batches High quality production
	R&D, Design	Interdisciplinary research Application oriented Cross-border thinking	Rapid fashion Customisation of garments High quality fashion
	Management	Change management Technological leadership Quality oriented	Sales oriented Brand oriented Value chain management
Low cost area(2)	**Marketing, sales**	Rapid delivery Price oriented	Value chain oriented Price oriented domestic markets important
	Engineering, production, logistics	Efficiency oriented Large scale production Standardiised production	Efficiency oriented Large scale production Standardiised production
	R&D, Design	Process innovation	Process innovation
	Management	Efficiency and price oriented	Efficiency and price oriented
1) AT, BE, DK, ES, FI, FR, GE, IE, IT, LU, NL, SE, 2) BG, CZ, CY, EE, GR, LT, HU, MT, PO, PT, RO, SL, SV			

Source: Economix

6. Three scenarios up to 2020

The future of European TCL industries is far from being decided. The three scenarios show considerable scope for variation and various policy options:

Scenario 1 called **"Globalisation limited"** sees considerable effects from climate change. Rising environmental costs will change the system of global trade and set new priorities for consumers, governments and producers. TCL industries will become more European or even regional under these conditions. Relocated production facilities will once again be relocated back to Europe. Even with continuing technical advances, skill needs will shift towards production and craft-related competences rather than to professionals.

Scenario 2 called **"Asian dominance – European excellence"** assumes present trends to be reinforced. While environmental problems will be actively addressed, emerging countries will improve their specialisation in industrial manufacturing and the EU will strengthen its technological lead. Production activities will largely disappear from European TCL industries but a great need for technical specialists and natural scientists will emerge.

Scenario 3 called **"Advanced New Member States"** describes how the European Union and low-cost countries among the Member States are going to defend the industrial basis in Europe. Facing the strongly negative effects of globalisation on manufacturing employment (not only TCL employment), a comprehensive policy programme aims to revive industrial jobs, which will reinforce the segmentation of skills needs in Europe: strong demand for production-related skills in low-cost countries and professionals in high-cost countries.

Table 6- Main characteristics of scenarios

Driver	Scenario 1 **Globalisation limited**	Scenario 2 **Asian dominance – European excellence**	Scenario 3 **Advanced New Member States**
Environmental costs	Rising significantly; Climate risks are strongly visible; Environmental policies with limited efficiency;	Rising; Environmental policies are effective; Climate risks remain manageable;	Rising; Environmental policies are effective; Climate risks remain manageable;
Markets	Consumers strongly concerned about climate risks; Global economy disintegrates due to environmental conflicts; Slow macro-growth;	Consumers appreciate environmental politics; Global market for top qualities; Global labour division is developed further; Strong macro-growth;	Consumers prefer job creation and remain pricesensitive; Medium macro-growth;
Knowledge-base	Innovation concentrated on ecological technologies; Revival of traditional crafts; Switch from labour productivity to energy productivity	Strong product innovation for specialty textiles; Design, marketing and sales very important; Management of the value chain;	Mainly process innovation provided by machinery and organisational changes; Strong increase of labour productivity;
Competitivness	Declining competitiveness of emerging countries due to high environmental costs; Ecological and social criteria have strong impact on competitiveness	Strong position of emerging countries in low and medium quality segments; Strong position of European producers on high value markets and specialty textiles	Strong position of low-cost areas in Europe in medium quality segments; Strong position of high-cost areas on high value markets and specialty textiles;
Branch structures	Locally concentrated value chains due to high transport costs; Small-sized production networks; Rising share of craft business;	Closure of mass production; Small-sized innovative companies; Global networks of producers; Highly specialised crafts businesses;	Mass production remains in European low-cost areas; Switch from sub-contractors to independent suppliers: Top quality and international brands in high-cost areas;
Foreign Trade	Low growth of world trade;	Strong growth of world trade;	Medium growth of world trade;

6.1 Global impact on employment

The scenarios result in different employment trends. According to the "Asian dominance – European excellence" scenario, a job loss of 50% is to be expected by 2020 due to the rising competitive strength of emerging countries and increasing specialisation in Europe.

The "Globalisation limited" scenario and the "Advanced New Member States" scenario are less pessimistic in terms of job reduction, assuming that 20%-25% of jobs will be lost. The "Globalisation limited" scenario profits from the return of production to Europe, but suffers from low growth of the world economy.

The "Advanced New Member States" scenario is based on a successful development strategy in the New Member States and other low cost areas which shows returns by the end of the scenario horizon.

6.2 Implications for competences and occupational profiles

The change of occupational structures shows diverse patterns. The "Globalisation limited" scenario brings a considerable shift towards production-related activities due to the strengthening of local and regional clusters in Europe. The "Asian dominance – European

excellence" scenario reinforces the need for technical and commercial professionals but reduces the demand for production-related work – except highly specialised craftsmen.
The "Advanced New Member States" scenario raises the demand for specialists due to the dynamics in the New Member States.
Competence profiles are different for all scenarios. The "Globalisation limited" scenario will ask for ecological competences in all occupations but will also foster demand for technical competences. Traditional crafts techniques will be revitalised.
The "Asian dominance – European excellence" scenario will mainly ask for professionals employed by trading sectors and the application of advanced textiles technologies.
The demand for production-related intermediary skills will decline rapidly, except for some specialists in top quality products.
The "Advanced New Member States" scenario will require the expansion of business -related competences in these countries in order to build independently operating companies and develop marketing and sales.

Generally, crossing the borders of traditional occupations will become even more important than in the past. The integration of material science, chemistry or physics will help innovation in the area of specialty textiles. Environmental technologies will be applied in all parts of the industries, and finally management and commercial aspects will be important for all professions.

6.3 Critical competences

Due to their principal orientation and strategic choices, the scenarios demand for different types of workers with specific competences:

- The "**Globalisation limited**" scenario will have to achieve the transformation into a self-sustaining European TCL sector which is less dependent on international trade and complies with rising environmental standards. This asks for strong change management towards efficient and highly specialised company networks. Marketing channels will have to be established, apart from the existing retail business, and new brands will have to be created. Marketing specialists will, therefore, have a strong consumer-orientation with social and environmental responsibility. In parallel, administrative departments will be able to imply the new environmental standards efficiently.
R&D experts will need to know about sustainable products and will have a good knowledge of traditional production technologies. Process engineering will focus on energy efficiency and emission control, and quality control will concentrate on environmental standards. This will include logistics, which will have to improve energy efficiency rather than shortening

delivery times. Production will be small-scale and specialised and will reuse traditional crafts.

- In the "**Asian dominance – European excellence**" scenario, a strategic, visionary, and intercultural management will be needed which is able to establish a high-tech TCL sector in Europe. This will require interdisciplinary, multi-skilled and creative R&D staff, including engineers and designers. A strong client-orientation will be needed not only among marketing and sales workers but among production workers as well.
Small batches of customised high-value products will be produced which require a sound knowledge of clients' businesses, markets and technologies. Process engineering will mainly supervise global production chains with diversified standards and short delivery times.

- The "Advanced New Member States" scenario will be based on a market and quality oriented management which is able to establish an independent TCL industry in the low-cost areas of Europe. This will require strong cost control, high efficiency of production processes and tight control of quality standards. Improvements of intermediary production skills will be particularly needed.
In parallel, this strategy will rely on innovative and creative capacities of designers, engineers and business professionals, both in product development and marketing.
The task is to establish an efficient and flexible type of mass-production at low costs, something which is indeed ambitious.
Administrators will have to support the strategy with sound knowledge of international business and markets. Delivery time will also be important for logistic services.

7. Strategic impacts from the scenarios

The adjustment strategies which could be followed by TCL companies are completely different for each of the three scenarios:

In the "Globalisation limited" scenario, production networks will be established in high-cost areas in order to use a broad range of competences for upgrading products and advance environmental innovation.
With lower competition from Asian mass production, producer networks will be the answer to differentiated consumer needs. In parallel, however, subcontracting will remain important for mass-products which will mainly be produced in low cost areas.

The "Asian dominance – European excellence" scenario is a technological leadership scenario where European producers will only serve the upper end of markets and will abandon not only mass production but large parts of medium quality production to Asian and Mediterranean

competitors. It is a brand and design strategy where marketing will be at the centre of activities. In this sense, it will also be an industry-retail strategy as large producers will transform into traders. Production networks will not survive in face of Asian competition.

The "Advanced New Member States" scenario assumes the transformation of TCL industries in low-cost areas to competitive production networks which will develop their own brands. Companies will be able to escape from the prevailing subcontracting system and achieve a much higher degree of independence.

7.1 Strategic choices for sector organisations, training institutions and governments

In Scenario 1 sector organisations will present the TCL sector as a sustainable industry which complies with environmental norms. Career guidance will emphasise traditional production and business principles which will help to strengthen production networks and sustainability. Regional labour markets will be very important.
Environmental policies will be mainstreamed in all sub-policies, including emission-based restrictions for foreign trade, promotion of environmental technologies through innovation and the creation of energy-efficient clusters which will reduce transportation distances.

Public campaigns for Scenario 2 will underline the high-tech image of the sector which needs strong specialists in engineering, science, design and value chain management.
R&D policies will promote non-company based institutions in order to receive the maximum input from independent research.
The scenario describes a world of liberalised markets where full advantage is taken from specialisation and the changing allocation of production. Europe, therefore, will concentrate on using professionals in science and engineering with wide interdisciplinary knowledge. Research centres and R&D cooperation will be more important than defending existing TCL clusters. The sector will be on the way to a high-tech industry, which has little in common with the present type of products and technologies. Large parts of consumer markets will be in the hands of big retailers. Industrial policy will be reluctant to interfere with the restructuring process.
In Scenario 3, TCL industries will appear as a European industry which is not only able to compete with the strong Asian countries but re-attracts some parts of the production to Europe. A strong business development orientation will prevail with the focus on management, marketing and design. The networking approach will lead to a considerable change of work organisation in small and technology intensive firms. Regional labour markets will be very important.
It is the alternative with the strongest demand on industrial policies which explicitly support

business foundations, strengthen regional clusters and promote process innovation, design and marketing. Governments also protect the sector by enforcing narrow antidumping rules and a stronger protection of intellectual property.

7.2 Human resource policies to meet skill needs

The common challenge in all scenarios is the further decline of employment. Company restructuring appears to be difficult in such a situation. While markets demand a high speed of restructuring in all areas – products, technologies, and organisation – the human resource policy in companies is determined by low labour turnover, the great importance of internal labour markets, and an ageing workforce. Particular skills shortages appear among emerging skills which are scarce due to low labour supply and strong competition among employers.

In parallel, wages are limited by strong cost pressure from abroad. This restricts wage offers to highly skilled workers who would be needed to increase innovation and improve economic performance. Specialty textiles are particularly affected by this phenomenon as this sector requires highly innovative engineering staff. Restructuring in the New Member States is also restricted as highly qualified workers search for jobs in high-wage areas rather than their home countries.

Finally, training is at risk in highly specialised but declining industries. Decreasing training participation puts training courses at risk or even leads to the closure of training centres. Students and workers also have little incentive to invest in training if they face limited labour demand and high unemployment risks. Market forces alone, therefore, lead to a downward spiral of extending skills shortages in face of declining employment. Governments are, therefore, under particular pressure to compensate such market failures and provide training facilities for the sector in those regions where TCL can be expected to survive.

7.3 Implications for education and training

The accumulation of human capital remains a pivotal task in all three scenarios as the strategic reorientation of businesses can only be achieved on the basis of a well educated staff with the training required to create an efficient workforce.

In Scenario 1, vocational training will promote the reorientation through knowledge transfer in the areas of environmental protection and crafts-related skills. Training will be strongly company-based in order to achieve the transfer of practical knowledge. Training institutions will have to gradually adjust to the new types of work, different from industrial standards in the past. Vocational training, however, will not only focus on environmental issues but will also entail the full spectrum of vocational training in order to develop intermediate

skill levels in particular.

Training in Scenario 2 will be strongly opposed to the first scenario: It will focus on tertiary education in engineering, design, business management, and marketing. Large parts of production related training at the intermediary level, however, will be abandoned. A new material science based on fabrics will be created in close cooperation with interdisciplinary research centres. Parts of training will be professionalised and internationalised. The other part will concentrate on sales competences at low and medium skill levels.
For Scenario 3, institutional vocational training will be more important than company based training as rapid upgrading of knowledge is required in many areas, particularly in business and management practices. The scenario will also strongly rely on human capital investments, in low-cost areas in particular, in order to achieve economic independence. This requires knowledge transfer, especially from high-cost areas, but also improvements of career structures and image campaigns. Recruitment from abroad will be important as well as retraining the labour force. Training policies try to fill the skills gaps by promoting studies in business administration, engineering and intermediary skills. This seems to come from public investment as companies in the low-cost area can hardly fund additional training.

8. Conclusions and recommendations

With these expectations the European Union faces the principal choice between the transition into a de-industrialised economy and defending manufacturing production capacities by means of intelligent adjustments in industrial branches.

The way to a de-industrialised economy is certainly what present transition trends indicate. As the production of manufactured goods – TCL products in particular – is less profitable than the production of services, the growth potentials lie in services. The transition to a service economy, which has been underway for a long time, follows the economic rationale of the international labour division. Liberal global markets are seen as the basis for achieving the economic optima.

This, however, appears as constrictive logic which, on the one hand does not fully account for the external ecological costs of a global economy, or the imbalances on European labour markets on the other hand. These two arguments are the basis for the alternatives to the "Asian dominance – European excellence" scenario.

Climate change can be expected to cause enormous costs, which will become evident from increased expenditure on environmental protection or various climate catastrophes. The appearance of environmental costs will transform economic incentives and weaken the advantages of global labour division. Moreover, environmental disasters may rapidly change public opinion and policy action. They can be expected to change normative reference systems of societies substantially and thus lead to a conversion of economic regimes.

As far as jobs are concerned, rapid industrial change can avoid imbalances on labour markets only if the job potentials of growing sectors are strong enough to absorb human resources from declining industries. The experience from European countries (and the US), however, reveals that this was not the case over the last decades. Facing this experience, the option of defending industrial jobs in Europe is not that far away.

Of course, this cannot be done with a conservative approach. Preserving existing jobs appears to be the guarantee for disappearance. However, using the potentials of European economies – existing wage differentials in particular – and creating competitive firms in promising regional clusters is an alternative to the pretended advantages of the global labour division.

None of the scenarios come without a price. While the price of carrying the present regime forward ("Asian dominance – European excellence" scenario) lies in neglecting environmental risks and job destruction, the alternative scenarios will curb overall growth. The "Globalisation limited" scenario will see slower growth due to the disintegration of the world economy. The "Advanced New Member States" scenario intends to invest in lowproductivity sectors and thus depends on low wages.

These negative impacts reveal that the scenarios are real alternatives: Europe has the choice between the continuation of its growth strategy, an ecological economy or a "jobs first" strategy. All three scenarios can hardly be achieved in parallel. At least at EU level the scenarios are exclusive. This, however, does not mean that Member States might not follow different approaches. In contrast, the diversity of approaches reduces the risk of wrong expectations and helps identifying promising strategies. A uniform industrial policy at EU level, therefore, is not intended with this appraisal.

The study does not prefer any of the scenarios in the sense of a clear recommendation for one of the pathways. This is attributed to the ambiguity of the scenarios. It will be a political decision to evaluate the different strategies, and to develop new ones. Nevertheless, there are some common recommendations resulting from all scenarios:

- . Developing the knowledge base: facing the situation of an eroding training system, it is recommended to apply a strongly selective HR policy concentrated on the regional centres of TCL production in Europe, particularly in France, Italy, Portugal, Belgium, Germany and some of the New Member States. Public investments in training structures need to be concentrated in order to modernise training. Universities could be at the centre of regional clusters in close cooperation with firms and intermediary training facilities. Strong links are necessary between employers, training institutions and workers (trade unions).

The New Member States need particular attention as training structures are not fully developed. Beyond engineering and design, companies require strong inputs from professional business specialists who are able to organise the value chain efficiently, undertake convincing marketing initiatives, and optimise human resource management.
This should create the basis for a greater independence of TCL companies. National and local governments are particularly stipulated in this respect. Highly qualified engineers, designers, and business professionals are required for this. The critical competences which appeared in the scenarios should be developed.

- . Innovation strategies: Innovation will be a precondition for the survival of European TCL industries. Private investments in the development of specialty textiles should be supported by promoting the cooperation between textiles and other branches like chemistry, construction, and medical science. Machinery producers should contribute to the development of new methods of garment production. Logistic systems should be improved to lower transportation costs. An interdisciplinary approach should be fostered rather than segmented specialisation.

The European Technology Platform suggested a "niche-strategy" exploiting the technological leadership of European producers in many ways. There is little doubt that highly specialised products are better protected from international competition, usually address clients' needs better than mass products, provide higher shares of value added and above average profit rates, and are located in growing rather than declining markets. However, this can hardly be a strategy for the three million jobs in European TCL industries.

- . Regional policies: TCL industries in Europe need a strategy to defend the share in mass consumption markets. The New Member States are those which would be best positioned to compete with the Asian competitors. As this competition is not only driven by labour costs, the game is not single tracked: flexibility and speed of production, marketing channels and logistics, high productivity of labour, organisation and machinery are all important ingredients of competitiveness and should be developed. The development of regional TCL clusters – as was undertaken by China – might, therefore, help to improve the competitiveness of European mass producers. This requires a low-cost strategy supported by trade unions and workers, a human-capital strategy developing regional labour markets, an efficient organisation of the business environment, and a marketing strategy expanding the sales networks worldwide. Past experience has shown that the escape from the S-efficiency model is the only way to achieve economic sustainability. As competition among pure subcontractors is price driven rather than quality driven, competence building in design, branding and marketing is pivotal for an escape. The French Val de Loire is a good example of this strategy. This example also points to the fact that individual companies are hardly capable of achieving a more independent market position. Cooperation and networking are therefore required among regional producers, and public support is needed to implement regional strategies. A selective regional development strategy should be developed, which evaluates the economic potential of TCL suppliers, identifies its strengths and weaknesses, implements development programmes and – most importantly creates the links between actors.

Bibliography

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