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ACADEMIC PAPER

Structural change

The dominant feature in the economic development of the German textile and clothing industries

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Keywords *Germany, Textile industry, Garment industry, Economic trends, Globalization*

Abstract *The textile and clothing industries are good examples to analyse emerging industrial trends in international co-operation and to map the globalisation effects on outward processing, jobs and technology. The research focuses on the development of economic indicators and is based on the results from consulting and research projects, as well from enquiries in the German textile and clothing industries, which are exposed to intensive cost competition and trying to find a new position within the process of globalisation. A reduction of demand, a change in consumption patterns, the modification in the retailing system, the development of personal income and a global shift of production have triggered the decline of the domestic production of textiles and clothing. Emerging producers from eastern, developing and newly industrialising countries are now the main suppliers for the German textiles and clothing market. The German clothing companies defend a rest market and use intensively the outward processing in low-wage countries. As a result of the tremendous differences in production costs, the demand for clothing textiles shifted globally towards low-cost places of clothing production. The outward processing from industrialised countries established a very efficient, well-organised global production network in low-wage countries, enabling new potential for economic development. This research focuses on the view of producers in industrialised countries. The analysis shows that the future of textiles and clothing companies is not in producing but in the management of markets, organising a global supply chain of subcontractors and in retailing. The experiences within the global outward processing network shows very high innovation and learning rates in low-wage countries, enabling a serious potential towards a self-contained economic development. The economic and social liberalisation within the EU region and the out-phasing of the WTO in 2005 will give new power to the globalisation process and will influence the structural change of industry. This paper is written as a rational position sensing of the German textile and clothing industries prior to the out phasing of the WTO regulations and the 2005 liberalisation of the EU textile and clothing sector.*

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Once more, the case of the German textile and clothing industry[1]. The German textile and clothing industry has been mired in cost competition in the international division of labour for more than 15 years. The production costs, which are high in an international comparison, led to declines in both industries. New products and the change in the functions of the enterprises, including a new constellation of companies, are a result of adjustments to a new stage of competition within a new global social and economic framework. The assimilation process had different aspects in the industries in Germany. The textile industry carries out a know-how-based, market-oriented globalisation; the clothing industry has focused on a cost management strategy. Thus, in the textile industry a process towards technical high-tech products and foreign investments can be observed. The clothing industry developed a new type of the service enterprise, to meet the competitive needs of globalisation. Those types of enterprise combine customer requirements with know-how, as well as creative and production potential on the international labour market. Within the framework of globalisation, in the clothing industry, local manufacturing in Germany itself has become unimportant. Shifting production, like outward processing, now stands in the foreground.

Different innovation potentials in the textile and clothing sector

The innovation potential is quite different in the two industries. Within the production chain, more technological improvements can be recognised in the textile sector than in the clothing sector. The impact of mechanical engineering, of computer technology and recently, nano-technology, considerably changed the production methods and the scope of companies' activities and product innovation in the textile sector. The technological framework touched the modernisation process of equipment in the clothing industry only slightly. In the textile industry, the emphasis on modernisation aims at steady technological improvements at the level of the manufacturing industry. In the clothing industry, the implementation of information and communication technology has an emphasis on organisational optimisation and improvements of business administration, with few opportunities for technical modernisation in the assembling. Theoretically the technological innovation enables a sustainable substitution of labour by capital. Therefore, the textile industry should be able to compensate higher wages by capital accumulation. But, different reasons lead to a similar result. Both industries suffer from an economic decline within the international price competition. As an effect of the international division of labour and advancements in global co-operation, global standards of production methods emerged, mostly to assure comparable quality standards and technical productivity levels. Thus, the textile producers in developing countries are partly overcapitalised in respect to local wages if they participate in global co-operation networks or supply chains. Global co-operation established production forms at a traditional technological level in the clothing industries world-wide. Hence, local producers in Germany, as an example of industrialised countries, cannot succeed in price competition by enhancing technological developments. Both industries make an active use of the international division of labour, but by different means, to respond to international price competition. The German textile industry follows a market-oriented deployment of production and uses foreign investments in countries with growing markets. The German clothing producers use the international division of labour to profit from lower wages by means of outward processing.

The economic development of the clothing industry is symptomatic of the situation for mature industries that are exposed to a stagnation of demand and insufficient opportunities

for technical modernisation. Since the 1980s there has been a trend to eliminate traditional production forms, outdated compensation, organisation, training and management procedures through flexible production methods and an efficient mechanisation of working processes. The workflow in the assembly process of sewing changed from piecework, with a high load of stress, to handicraft-like organisation teamwork, as is common in design and development companies. With the increase in outward processing, the clothing industry moved away from competition in the improvement of production techniques and exposed itself to more market competition. Because clothing manufacturing is difficult to automate, a capital-intensive manufacturing cannot be realised. Wages in manufacturing remain the decisive cost factor and at the same time the only changeable cost element that significantly determines competitive capacity. Labour cost competition is mainly achieved by outward processing of assembly work[2].

As in the clothing industry, in the textile industry the significance of the local market is fading. In the 1980s, for example some 12 per cent of private consumption was accounted by textiles and clothing demand. Today, it is about 5 per cent (see Groemling and Matthes 2003, p. 23). Second, the shifting of the global centres of production, together with the intensive price competition of established low cost producers, absorb the local demand for yarn, textiles and cloth. These are incentives for shifting production abroad towards the regions of major demand. The clothing industry has an advantage in the strategy of adopting to international competition. First the production process enables the progressive outward processing to low-wage countries, which is secondly subsidised by tax exemption. Textile production follows the outsourcing strategy with a time lag of some seven to ten years. The impact of the international competition is absorbed by the higher rates of process and product innovation. The textile producers upgrade the products and implement investments in foreign countries.

Uniform reaction to challenging conditions

In clothing production, low-wage providers have an absolute advantage. Foreign competitors in so-called "low-wage countries" have lower labour costs with a similar supply of service and quality. They have a command on comparable production methods and in this respect, they have both absolute and relative economic advantages. In the countries with which the German clothing industry competes, clothing production has a high value. In Germany, the industry is neglected, both in terms of payment for labour and in terms of support by society to increase the standing of the industry. At a time when change was conceivable, pay was relatively poor. The workers were traditionally recruited from the market of the unskilled and semi-skilled, which in turn had a negative effect on productivity, learning competence, job identification and corporate identity which hindered innovation activity. Within this time-span, some 15 years ago, technological and organisational innovations might have a considerable impact on the economic standing of the clothing industry. This chance for restructuring the technological position had been possible for a short window of opportunity in the 1980s when the international division of labour was reshaped. Politics, trade unions and industry associations underestimated the challenge of the international competition and preferred the protection from the Multi Fibre Arrangement (MFA) rather than an active innovation strategy for labour intensive industries. The protection of local producers in industrialised countries through the MFA impeded strategic decisions to save the industry by opportune measures of technical and organisational modernisation. A thorough automation in industrialised countries was additionally prevented by

numerous effective technological innovation barriers. Information technology, the most important innovation, was introduced to a similar extent as in the German manufacturing industry in the field of planning of operations, in the preparation of the workflow, ordering and billing.

Foreign producers have been successful in expanding their price-based market position in Germany. They now account for the largest part of the domestic supply. The importance of domestic manufacturers has decreased continuously, with the exception of supplying special markets. They were only able to safeguard their position through the use of foreign-country production in the form of outward processing, production in own companies and merchandise procurement. Since the fall of the Iron Curtain 15 years ago, it has been basically decided that Germany is indefensible as a production location (not only for apparel, but for most traditional, labour-intensive and less-innovative products). In recent years a new type of clothing enterprise has arisen. The majority of clothing enterprises now see themselves less as producers than as agents between customer needs, know-how possessors including creative designers and the potential of the global production network[3]. As a rule, a residual manufacturing capacity remains at home for the handling of last-minute and special tasks, stock keeping and logistics as well as core manufacturing for the preparation and support of foreign production and for sales (0 series, presentation collections). This development is tantamount to clothing producers acting as dealers and as such they are exposed to the competition from trading companies, which is even harder. However, this change in competition strategy cannot stop the diminishing importance in the consumption of clothing. As mentioned, the share of expenses for clothing in total private consumption[4] amounted to 7.6 per cent in 1980, in 1990 it had fallen to 7 per cent and today is only 5.4 per cent. The traditional need for simple clothing, such as undergarments, shirts, t-shirts, sportswear, clothing accessories, etc. is now met by import products. The market share of individual and high-quality products, such as designer fashions, casual wear, brand products, functional apparel or leisure time clothing, is the market segment served by German manufacturers.

The framework for adjustment is similar for the textile. The demand for home textiles declined. Currently, the share of technological textiles dominates the output of the textile industry. The producers in industrialised countries can only survive in high level and high technology markets, with an emphasis on know how, specialisation and innovation. The tendency towards high level production may be observed in the textile and clothing industry as well. In the textile industry, as a result of the shrinking of the local production, the domestic demand for apparel textiles (cloth, knitwear and soft goods) receded. Ten years ago, apparel textiles comprised about one half of the production value and currently comprises not even one third of the market volume of textile producers. The falling of the private consumption pinches at the demand for home textiles (e.g. curtains, bed-linen and furniture textiles). Nevertheless, home textiles have stood their ground with stable 30 per cent market share. In recent years, technical textiles gained about two-fifths of the production value in the textile sector. Germany is now a place for the production of so-called technical and "intelligent textiles". The development of the German textile and clothing branch is similar to that of other developed countries. Jones and Hayes (2004, p. 3) proved for the UK and Hetzel (2004) demonstrated for France identical experiences. Despite a better development of demand in the UK, for example, and very innovative, but diverging corporate market strategies in the case of France, the adoption process seems to be quite identical to the German case. Jones and Hayes (2004, p. 7), for example, stated for the UK:

Job losses could be attributed to three forces viz a lack of demand; a rise in productivity or a rise in imports . . . (The) 2001 UK domestic production fell in real terms by 36.6 per cent while imports rose by 104.5 per cent. The average level of import penetration rose by 60.7 per cent i.e. from 57.2 per cent to 91.9 per cent.

The change in the importance of the textile and clothing industry

The activities of traditional industries with high labour costs which are exposed to international cost competition – such as shipbuilding, steel construction, the toy industry or the producers of watches and optical devices are the same in the strategic dimension. The tactical activities may differ from industry to industry depending on technology, the vocational needs, technical norms and legislative frames. In the clothing industry the shifting manufacturing by outward processing is easy. The aim of the industry is to hold the high end of value added domestic. Just that part of manufacturing will have a sustainable development, which corresponds to the average industrial levels of equipment standards, compensation and qualification. The part of labour that lies beneath this wage and know-how threshold can only be used if one shifts these tasks to lower labour-cost areas and if companies assure the access to the outward processing part of production by means of entrepreneurial activities. The core functions remain at home, such as organisation of operations, engineering, know-how, the creative potentials, marketing, and residual or core manufacturing. The declining importance of the clothing industry as an example for that process is shown in Table I with the numbers for employees, sales and enterprises. In 1990, the 2,074 enterprises of the clothing industry recorded sales of approximately €14.0 billion and were still an internationally important part of the clothing industry[5]. In the last 12 years some 350,000 industrial jobs have disappeared in east and west Germany. The textile and clothing industry in east Germany[6] (340,000 employees in the textile and clothing industry in 1990) has virtually disappeared despite competitive production techniques, manufacturing know-how and qualified working staff. In 2000 the 6,425 enterprises in clothing manufacturing achieved sales of €14.5 billion (see Table II). In early 2002 the clothing industry still had 56,583 employees in 574 firms with sales of €10.5 billion.

In 2000, some 6,801 textiles manufacturers achieved sales of about €20.8 billion. Most of the companies of the textile and clothing sector are small and medium sized. The small manufactures, mostly sewing shops, tailors, dressmakers or handicraft businesses with an turnover up to €0.5 million account for roughly 74 per cent of companies but attain only 3 per cent of turnover. The large firms with more than €10 million annual turnover have a proportion of 5 per cent of the number companies and 77 per cent of turnover. These figures are indicators for a process of concentration and merging of firms as a precondition for international competitiveness. But German textile companies do not have a high score among the major players in the international business. The most important German textile company ranks 19th in the world list of global players. In the textile industry, the scale of a company is defined by the product technology. Relatively large companies are specialised in the production of non-woven fabric and thread or extrusion of fabric.

The development and the relation of exports to imports is shown in Table III[7]. The figures represent the total exports and imports from and to Germany from all dealers and customers (industry, dealers and trade agents, including outward processing trade and intra company trade). Most of the exports go to the countries of the European Union. Most of the imports come from low price importers. The import penetration

Year	No. of employees	No. of companies	Sales (billion €)	Exports ^c (billion €)
1980 ^a	248,776	3,210	10.60	1.55
1985	118,132	2,456	11.30	2.30
1990 ^b	164,023	2,074	13.70	3.11
1995	105,872	1,252	12.04	2.70
2000	66,199	695	10.74	3.11
2001	60,889	613	10.51	3.12

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Notes: ^athe numbers for 1980 and 1985 refer only to the former federal territory of west Germany; ^bthe values for 1990 and later are for East and West Germany; ^cdelimitation according to WZ 93-statistical frame. These are enterprises with more than 20 employees.

Source: Statistisches Bundesamt (n.d.); und Zeitreihen des Statistisches Bundesamts, 5400077, Produzierendes Gewerbe, Betriebsergebnisse insgesamt, nach Hauptgruppen, Abschnitten, Unterabschnitten, Abteilungen, Gruppen und Klassen der WZ93, Bekleidungsindustrie (18), www-zr.destatis 2002 (German Federal Statistical Office, National Accounts, Manufacturing Industry, Wiesbaden)

Table I.
Companies, employees,
sales and exports in the
German clothing industry

Size of company (€ turnover)	Textile manufacturing		Clothing manufacturing	
	Number of manufactures	Turnover ^a in million €	Number of manufactures	Turnover ^a in million €
16,600-250,000	3,878	336	4,592	325
0.25-2 million	1,839	1,359	1,158	745
2-10 million	715	3,324	426	1,909
10-250 million	394	13,415	242	8,792
250 million and above	5	2,420	7	2,677
Total	6,831	20,854	6,425	14,488

Note: ^awithout value added tax (VAT)

Source: German Federal Statistical Office, Wiesbaden (2002)

Table II.
Number and size of
German textile and
clothing manufactures
(2000) (values according
to the German value
added tax statistics)

Year	Textiles		Clothing	
	Exports billion €	Imports billion €	Exports billion €	Imports billion €
1995	9.9	11.6	5.0	14.6
1996	10.0	12.0	5.3	15.5
1997	11.0	12.6	6.0	16.5
1998	11.6	13.2	6.5	17.1
1999	11.0	12.7	6.5	16.4
2000	12.0	14.0	6.9	17.8
2001	12.1	13.6	7.1	17.6
2002	12.0	12.7	7.5	16.9
2003	11.3	12.2	7.3	16.1

Source: Statistisches Bundesamt (2004)

Table III.
German foreign sales of
textiles and clothing

increased. The supply ratio from domestic production is only residual. The declining trend in domestic sales was not compensated by exports. German suppliers were very successful in the exports, particularly of high-quality products to the EU. German manufacturers had to withdraw to the remaining markets in which the additional outlays in production for technological improvements (textile industry) or quality and fashion (clothing industry) were still rewarded.

Based on the study of Stengg (2001, p. 46) we can assume that the manufacturers in China, Africa, Turkey and the Central and East European (CEE) countries supply more than 70 per cent of simple and medium-level clothing. The industrialised countries of North America and Europe account for more than 50 per cent in the high-quality sector (brand sector, land of origin image, casual wear). Here is also the greatest potential for export success. According to expert estimates, the supplier share with products from domestic production is now below a 10 per cent proportion of the entire market[8].

The change in competition in the international division of labour

The old lectures of David Ricardo are basically confirmed, up to now, that countries in international competition should rely on competencies in which they have comparative advantages. In this sense it is necessary to identify the important core competencies of Germany as an industrial location. Competition for mature industries can no longer be defined by technical modernisation of production facilities. In the foreground now stand competition of ideas, marketing and entrepreneurial decisions, which presupposes the employment of well-paid specialists. The consequences are similar for the strategy of textiles and clothing manufacturers; the detailed activities to achieve this strategy differ.

Clothing industry activities

The extent of foreign production by German clothing enterprises depends on an optimisation process. This process balances the extent of service for the (mostly high quality) demand for domestic production at high labour costs and the demand for the service for foreign production (in the low price segment) that will be produced at low labour costs. Production alternatives in the international division of labour are: own foreign manufacturing, partial subcontracting, outward processing, full-stage foreign manufacturing and merchandise procurement. The comparative calculation of the production costs in site selection, apart from pure wage costs, is based on haulage, import duties, local taxes and social charges, differences in technical productivity and product quality, differences in administrative costs and for experts, and the expenditures for the support of outward processing. The results of appropriate calculations from Kurt Salmon Associates (KSA, 1980; 1999) have remained stable to a large extent for several years. At the end of the 1980s, production costs per manufacturing minute[9] in Germany amounted to about €0.30, while the average for comparable work in low-wage countries was about €0.10. Currently for about €0.40 per production minute in Germany, costs are about €0.25 on average for the industrialised countries in Europe and America, about €0.15 for production in newly industrialised countries and about €0.10 in low wage countries. Accordingly, a stable level for production costs in low-wage countries has been achieved. This is a kind of "commodity price" which is to be applied for comparable services of production of internationally traded goods shifted to low-wage countries in the outward processing[10].

This "international equilibrium price" has stabilised since the fall of the Iron Curtain. Since then, an increasing world demand for clothing can be observed. In the context of the international division of labour in Central and Eastern Europe (but also

in the Mediterranean area, in the Near East, in Latin and Central America, as well as in Asia), new production centres for clothing and textile manufacturing have appeared. Thus the ability to activate low wage labour jobs for the co-operation in the outward processing business is strongly cross-linked with the emerging of new production sites in newly industrialising countries, which are partly subsidised with tax privileges and investment funding in special economic zones[11].

Calculations of Stengg (2001, p. 17) confirm that a high cost-benefit ratio can be achieved with the use of classical equipment and conservative organisation in most of the low wage countries. Classical organisation concepts and medium technology equipment define the international level of standard production methods. According to Stengg (2001, p. 16) in Turkey, India or Egypt the ratio of wages to value-added is three to seven times that of Germany. This difference is partly a result of equipment. The state of the art in production technology in outward processing and in the production for the world market has converged world-wide as an effect of the unification of technical quality standards and leads to a similar technical productivity. Internationally a certain "over-capitalisation for quality management" is to be found in the factories of the partners in outward processing and producers for the world market.

Currently the outward processing is simply limited by the imposition of tax free quotas from the regulations within the World Trade Organisation (WTO), which will be terminated at the end of the year 2004. A precise history of regulations within the WTO is elaborated in this journal by Scheffer and Duineveld (2004, p. 2) and is thoroughly assessed in the report from IFM & Partners (2004). After the reunification of Germany, the shift of production to CEE countries instead of the use of the production potential in east Germany proved to be the more lucrative decision[12]. Production in CEE countries contains price advantages with comparable quality and/or productivity and only insignificantly higher transport costs. Furthermore the CEE countries have a considerable potential of qualified female labour that has not been exhausted. Table IV shows the importance and development of the production alternatives in the international division of labour for sales of the clothing industry based on periodic surveys of the industry by the Ifo Institute. The most important partners for foreign clothing production are enterprises in Poland, Romania and Tunisia. With these countries, approximately 40 per cent of subcontracting and outward processing is executed.

Survey year	In-house		Outward processing			Procurement	
	Domestic	Foreign	Domestic	Foreign	Full-staged job contracting abroad	Domestic	Foreign
1983	62.8	3.1	14.1	9.5	– ^a	2.9	7.6
1987	44.9	7.9	13.5	16.9	– ^a	6.4	10.4
1993	25.6	6.3	5.9	34.5	12.2	–	15.5
1997	28.2	6.3	5.6	46.9	– ^a	1.4	11.6
2002	17.0	14.2	2	49.6	– ^a	0.1	17.1

Notes: ^adata not collected; the surveys of 1983 and 1987 represent the answers of approx. 200 enterprises, that of 1993 approx. 100 enterprises. The surveys of 1997 and 2002 are partial results of surveys on the state of the production shift in all of manufacturing and represent model calculations and extrapolations on the basis of the answers from 48 and 38 enterprises in each case and on the basis of relevant economic sector indicators

Source: Surveys and calculations of IFO Institute, Munich, several years

Table IV.
Importance and
development of the
production and
procurement alternatives
in the production of
clothing (in % of sales)

A further 20 per cent of the outward processing is with the Czech Republic, Slovakia, Croatia and Hungary (Table V). The tactical adjustments to the international competition in production costs have changed. In the 1980s, clothing producers had considerable own production facilities and used local subcontractors[13]. Since the 1980s up and into the 1990s, outward processing increased. From the early 1990s, foreign procurement was intensified in order to adjust the scope of company delivery. Up to the middle of the 1990s the activities focussed on lowering production costs. Since then, a growing proportion of turnover is achieved by the production in own companies in foreign countries. Whether these market-oriented investments, close to new foreign emerging markets in in-house production sites will dominate, is a matter of future observation.

Textiles industry activities

In the textile sector, outward processing is partly limited because of technological restrictions. Nevertheless, textile firms can use four activities to adjust prices and labour costs:

- (1) Upgrading of technology and products using higher levels of capital intensity in order to enforce productivity and quality efficiency; investments in new products, consumer needs and markets.
- (2) Specialisation for markets and for technological functions within the textile process (production of yarn, thread, extrusion, as well as production of woven cloth, fabric and non-woven fabric and finishing).
- (3) Outward processing and investments in foreign countries for consumer oriented placement of productions, procurement of foreign textiles.
- (4) Foreign investments.

Point 1. The textile industry is capital intensive, thus textile firms have been more successful in enhancing effectiveness and productivity to lower unit costs. In terms of labour costs the economic framework for automation activities is similar to those of the

Outward processing ^a		Imports		Exports	
Country	Import	Country	Import	Area	Export
Poland	0.80	China	1.42	EU countries	3.48
Romania	0.78	Turkey	1.28	CEE countries	0.56
Tunisia	0.31	Poland	0.97	Misc. Europe	0.69
Czech Rep.	0.28	Romania	0.91	Africa	0.02
Ukraine	0.20	Italy	0.80	America	0.22
Slovakia	0.19	Hong Kong	0.48	Asia	0.22
Slovenia	0.19	Tunisia	0.46	Australia/Oceania	0.01
Hungary	0.19	Bangladesh	0.45	Remaining countries	0.01
Bulgaria	0.19	India	0.36		
Croatia	0.18	Others (108 countries)	5.34		
Turkey	0.15				
Others (25 countries)	1.03				
Total	4.49	Total	12.53	Total	5.21

Table V.

Main partner countries for outward processing, clothing imports and exports (according to regions) 2001 (billion €)

Note: ^aoutward processing is contained in the imports and exports

Source: BBI (2002); Statistisches Bundesamt Wiesbaden, Tab. 031,211, Bundesamt für Wirtschaft und Ausfuhrkontrolle (Federal administration for economy and export control), calculations of the Ifo Institute, Munich, 2002

clothing industry (Table VI). Germany is one of the top ranking countries with respect to the labour costs in the textile industry. But the substitution of labour by capital is not a smooth way to compensate these costs. Despite higher innovation potentials, there is only a temporary benefit from the adjustment of the equipment. The global innovation race between the textile producers quickly counter-balances a local technical innovation progress. As in the clothing industry, the learning effects of all rivals in business are high. Thus, technological progress is rapidly absorbed by competitors and leads to a similar technological standard within the global production networks, challenging the theoretical benefits of high-tech equipment. As the best competitive strategy in practical terms, product innovation together with appropriate upgrading of equipment seems to have been successful. The traditional product innovation, the production of expensive and high quality cloth for local apparel producers seems to be a second best strategy.

The German textile manufacturers are, in fact, busy increasing the share of high quality cloth. But especially the Italian competitors have had a kind of monopoly position in this market for decades as a result of close co-operation with local high level fashion clothing firms and famous brands (Guercini, 2004). The competitiveness of German textile companies is definitely in the sector of high technology fibres and innovative textiles. The monopoly position of the German textile industry depends on the interdependence with German industry. German industry, especially the automotive, construction and mechanical engineering industries, producers of health care and environmental technology, wrapping and packaging have a need for these technical textiles. Even the clothing industry is examining applications of so called "innovative textiles" in order to reach out for new markets and customers. This product segment

Country	Labour costs (€/hour)	Total labour costs ^a (€/hour)
Denmark	18.8	23.14
Western Germany	11.6	20.01
The Netherlands	11.0	19.52
Belgium	10.4	18.78
Sweden	10.7	18.15
Japan	11.2	18.06
Finland	9.8	17.21
USA	12.7	16.75
Austria	8.7	16.10
France	8.1	14.86
UK	10.6	14.31
Italy	7.1	13.98
Ireland	10.1	13.54
Spain	6.5	11.59
Eastern Germany	7.1	11.12
Greece	5.0	8.35
Portugal	3.3	5.66
Poland	2.0	3.13
Czech Rep.	1.6	2.73
Hungary	1.6	2.57
Slovakia	1.4	2.21

Note: ^aIncluding additional costs for social security

Source: Gesamttextil (2003)

Table VI.
Labour costs in the textile
industry of selected
countries (in €/hour,
direct labour costs and
total labour costs, 2001)

permits prices that match the local level of labour costs. The production of "intelligent textiles" is hard to imitate and saves a technical head position, rather than the production of high quality fashion cloth. The proportion of technical textiles currently amounts, as mentioned, to 40 per cent of turnover. This close co-operation between industry and textile companies as an innovation partnership has been successful with almost all innovative industrial companies, that use technical textiles in all important industrial countries of Europe and North America.

Point 2. The framework of international competition defines new dimensions for the global producers. In the textile industry a tendency towards huge factories and to the merging of firms can be observed in order to achieve economies of scale and reach minimum standards of market shares. The specialisation of functions within the textile supply and production chains is a result of these external effects in Germany.

Point 3. Experts estimate, as mentioned, for the textile industry some 20 per cent of turnover is achieved by outward processing and own production abroad. The textile industry follows the outsourcing situation of the clothing industry with a lag of estimated seven to ten years. The time difference in the adjustment to the globalisation may be attributed to the better innovation potential, which absorbs the impact on jobs and production methods. The co operation with international partners will be similar in the textile industry and in the clothing industry. First, the activities are now market oriented. Second, the partners in the international supply chain are capable of assuring not only cost competitiveness, but also delivering textiles on an acceptable quality level in order to substitute own delivery or to enable the procurement of foreign clothing textiles with the purpose of supplementing the own scope of products.

Point 4. The textile industry follows a close market orientation by means of foreign investments. Recently many emerging markets can be observed, mostly in the CEE countries, Russia, China and the Pacific Region. It is important to participate as a supplier to these markets. Groemling and Matthes (2003, p. 78) assessed that the investments of the clothing and textile industry in foreign countries accumulated assets of about €4 billion. Most of them were done in the EU. The figures include expenses for market preparation, production, and retailing. Especially in the eastern neighbour countries of Poland, the Czech or the Slovak Republic and in Hungary, future investments in new production facilities are supported by qualified workers and by local back-up of regional industrial development and settlement activities. The production of "technical textiles" needs a close link to the industrial consumers in order to establish an efficient innovation partnership. This effect triggers foreign investments.

The impact on companies' concepts and the development of the factors of production in clothing companies[14]

For the domestic production of clothing, the ability to use traditional production know-how has faded into the background. In the foreground are abilities in service, marketing and distribution. Important for competition is a strong profile with regard to recognition of value, fashion, design, price-performance ratio and awareness for target groups. Special importance is assigned to market strategy because the enterprises increasingly behave like retailers because of the growing proportion of procurement of clothing.

Competition has changed accordingly. In the retail business in Germany for garments, clothing manufacturers are confronted with a strong concentration of oligopoly providers. Retailing in Germany is dominated by large chains, mail-order

firms, discounters and department stores accounting for 68 per cent of clothing sales. The big commercial houses have expertise in marketing and distribution and also use world-wide outward processing for the production of their own brands. The outward processing now can be identified as a world-wide, well-organised network of productive facilities which can be used from all kind of business. In particular, internationally active providers of luxury brands, as well as "system suppliers" with a "young" image, have been the winners in national and international clothing markets.

The production methods of clothing manufacturing are mature to a large extent. Technical innovations are faced with effective innovation barriers and are aimed at the application of precision mechanics for the refinement of workplaces and the work flows in the machines as well as the use of information technology for the programming of machines and the improvement of the planning, surveillance and administration of manufacturing. Information technology is particularly suitable for advancing administration, billing, design, distribution and marketing in the industry.

In the textile industry, similar developments may be observed for companies that produce ready-made articles for the home textile sector or for the producers of knit-ware. Competition, innovation, price development and fashion aspects are the same as those of clothing producers. The organisation of companies and the co-operation with other firms, subcontractors, consultants, designers and last not least with the consumers show a similar development. Traditional textile producers react on the continuous decline in demand to cloth from the local apparel producers. Especially the producers of technical textiles are important agents in the innovation process of their customers. Therefore they need to establish factories close to them. Despite those intensive entrepreneurial activities, the economic importance of the textile and clothing firms is declining. The developments of labour productivity, capital productivity and the total productivity[15] are shown in Figure 1 for the textile and clothing industry in relation to the German manufacturing industry.

The development of labour productivity is shown in Figure 1(a). Labour productivity of all industries has been growing since 1980. The textile industry had been able to follow the paths of the average of the manufacturing industry. The labour productivity in the clothing industry shows lower growth rates than the manufacturing industry. The manufacturing industry gained 175 per cent of labour income in the time span from 2000 basic to the year 1980. The clothing industry reached even 120 per cent in this time.

The development of capital productivity is shown in Figure 1(b). The development of capital productivity of the clothing industry seems to be poor in relation to the labour productivity of the textile and manufacturing industries in Germany. The manufacturing industry managed to stabilise its capital productivity over the past 20 years. In the clothing industry, capital investment and capital use is no major topic. The steady decline of capital productivity may be evident. There seems to be a close relation between outward processing and the decline of capital productivity. The textile industry was able to establish a more efficient capital use than the manufacturing industry until the beginning of the 1990s, the time of the German reunification. Since the early 1990s the development of the capital productivity in the clothing industry has a similar shape as the capital productivity of the clothing industry in the 1980s, the time of the beginning intensive outward processing[16].

The development of the total productivity is shown in Figure 1(c). Total productivity is an indicator for the efficiency of the combination of product factors. The

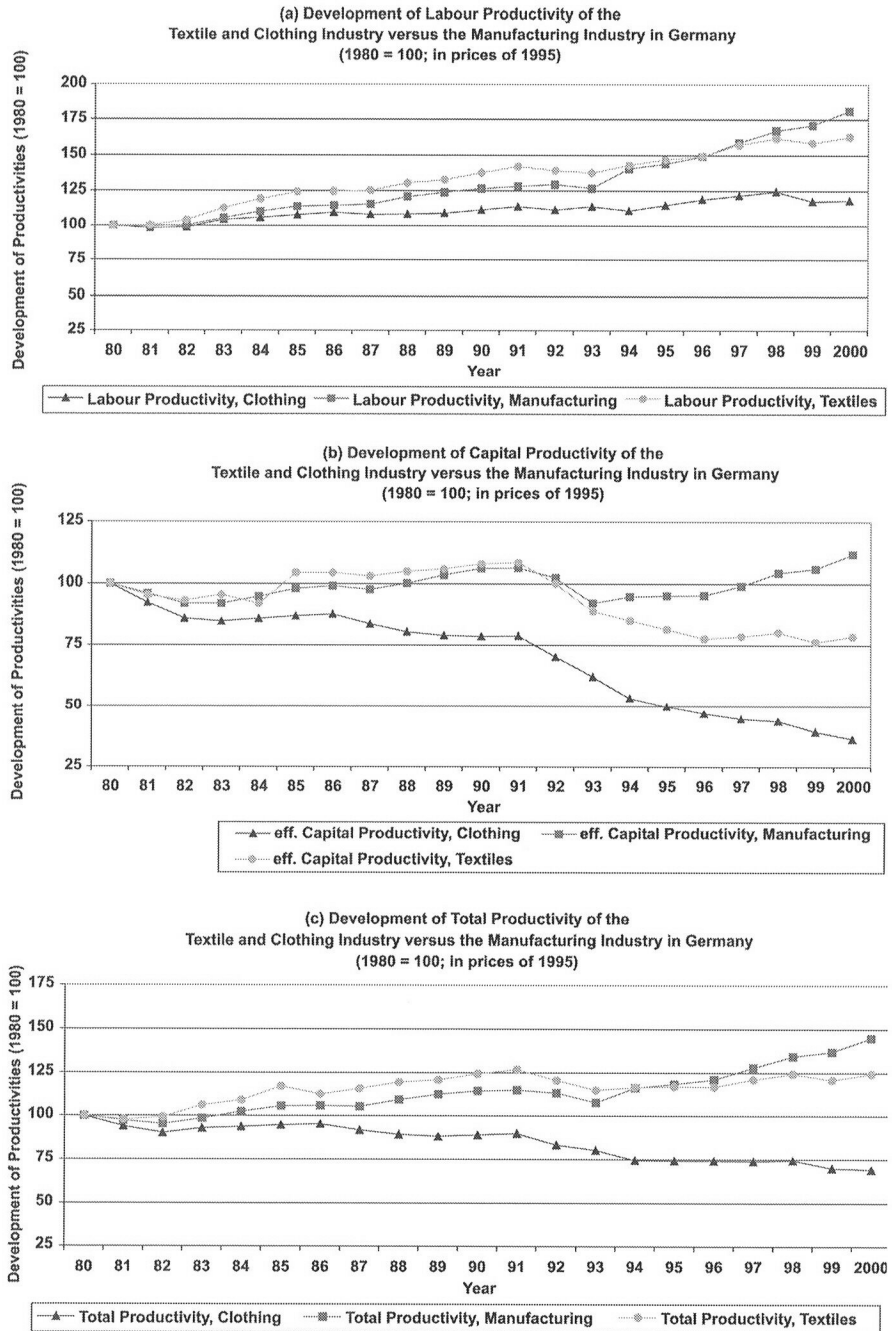


Figure 1. Development of economic indicators in the textile and clothing industry

Source: Goerzig, B., et al, 2001

textile and the manufacturing industry achieved more benefits than the clothing industry. The use of labour and capital in the German manufacturing industry was about 50 per cent more efficient in 2000 than in 1980. The efficiency of labour and capital in the German textile industry improved by 25 per cent from 1980 to 2000. The use of labour and capital in the German clothing industry was about 25 per cent less effective in 2000 than in 1980. This result may be surprising. But it must be recognised that the production methods have changed tremendously in the clothing industry. No conventional industrial organisation may be found in a clothing firm today. Additionally, the total productivity index measures the industrial potential in relation to an average industrial company. Thus it seems to be an indicator for the relation to the average use of labour and capital in the industry.

The change in structures of production, organisation and qualifications

The gradual impact of globalisation on production methods can be observed in all manufacturing industries. Principles of shareholder value, common commitments of accounting (GAP) and uniform management principles like "lean organisation" lead to globally comparable enterprise concepts. Generally speaking, there is a tendency towards service intensive production forms with a growing share of planning, management, administration and control jobs. Therefore, a decline of blue collar workers can be seen. In terms of payment, this downward movement of blue collar work is noticeable in the manufacturing and in the textile industry as well, but it is crucial in the clothing industry (Table VII). The proportion of wages from the sum of wages and salaries was reduced in the manufacturing enterprises from 61 per cent in 1980 to 51 per cent in 2000. The textile industry had a higher labour intensity (25 per cent) in 1980 than an average enterprise in the manufacturing industry and a higher proportion of blue collar workers (67 per cent). The clothing industry was the most labour intensive with 24 per cent of wages from turnover. For the last 20 years both indicators declined in all industries: the share of wages from turnover and the share of wages from the sum of wages and salaries. But, the clothing industry performed best from 1980 to 2000. Now it has one of the lowest shares of wages from turnover.

In the clothing industry the new form of the "service-oriented clothing enterprise" has led to new emphasis in work, organisation, qualifications, co-operation and communication. In this respect the share of creative tasks, marketing functions,

Year	Index investments clothing industry (million €) (nominal)	Share of wages from the expenses for wages and salaries (%)			Share of wages ^b from turnover (%)		
		Textile industry	Clothing industry	Manufacturing industry	Textile industry	Clothing industry	Manufacturing industry
1980	185 ^a	66.9	71.3	60.8	23.7	24.6	21.3
1985	170 ^a	64.0	67.6	57.7	20.2	21.6	19.1
1990	240 ^a	62.1	61.8	56.5	20.2	18.8	20.3
1995	190	58.0	52.8	53.3	21.4	16.9	19.9
2000	150	56.9	41.7	51.4	19.9	14.4	16.8

Notes: ^auntil 1990 west Germany only; 1995 to 2002 East and West Germany; ^bwages and salaries
Source: Calculations of the IFO Institute on the basis of data of the Federal Statistical Office, Fachserie 16, R. 2.1 and 2.2; Goerzig *et al.* (2001); IFO Investment Survey 2001

Table VII.
Modification of the labour
structure in the textile
and clothing industry
development of
investments and the
share of industrial labour
as well as the ratio of
wages from turnover,
1980 to 2002

management and administration tasks, and logistics in relation to manufacturing functions is decisive. Statistically there has also been a decline in industrial blue collar jobs in relation to white collar jobs. Since the clothing industry now employs 60 per cent white collar employees, these investments are mainly in the financial area, administration, management and creative sectors, support for partial subcontracting and logistics, in other words for modern jobs.

The type of remaining blue collar jobs in the industry has changed. The share of warehouse and transport labour has expanded at the expense of pure sewing labour in the assembly. In addition, professional demands have also increased for sewing. Changes in the general conditions have forced companies, for financial reasons, to replace the traditional assembly manufacturing, with its high division of labour, by a flexible administration of production, reducing flexibility costs and expenses for high quality at a reasonable productivity rate. Firms that are successful in international competition no longer employ unskilled or semiskilled labour but require professional craft skills, as are found in studio companies, for example. The professional level of industrial labour and payment resemble, in this respect, those of crafts in production, those of commerce in the administration and those of the services in the creative sectors.

In the clothing industry, over the course of time, an unexpected reduction of the wage ratio has been achieved, which has currently sunk to below 15 per cent of turnover (Table VII). As a result of an indirect rationalisation through the outward processing and other outsourcing measures, the amount of domestic wages is no longer the determining factor in costs.

In the meantime, the clothing industry is regarded as a pioneer in the globalisation of production. In the future, decision makers must realise the changing framework within the international division of labour after the enlargement of the EU and the out-phasing of the restrictions/subventions for/to trade with textiles and clothing within the WTO regulations at 1st January, 2005. An executive from a famous German clothing producer, in an expert interview with this author, was asked the question: "What are your actual activities in outsourcing?". He replied, "We wait for January 1st 2005 and we are now preparing business relations in order to focus on full job contracting with China".

Learning from other experiences

Despite the drastic obstacles for the economic future of the German textile and clothing producers, Germany remained one of the major suppliers for the world market of textiles and clothing (see Guercini, 2004, pp. 7-14). The German industry is effective in using know-how from the co-operation with foreign partners and profits from incorporating related benefits. The co-operation is focussed now on cost management and outsourcing of the assembly within the outward processing. The outsourcing process affects theoretically the pattern of benefits and activities, which are listed in Table VIII. Table VIII represents the results of an enquiry from the Outsourcing Institute in the US economy. The answers show that outsourcing of assembly is not the only activity and cost reduction not the only benefit. Important benefits or reasons besides cost reduction are: enlargement of the scope of company, relieving of company resources and the use of capacities on an international level. The outsourcing of production seems to be of minor importance in an holistic view of areas and reasons of outsourcing activity.

The eight main reasons for outsourcing	Incidence of answers %	The nine main areas for outsourcing	Incidence of answers %
Enlargement of scope of the company	55	Information technology	55
Cost reduction	55	Administration	47
Relieves company resources	38	Logistics/transport	22
Use of capacities on the international level	36	Finance	20
Enhancement of the modernisation process	20	Personal management	19
Enhancement of market development	18	Production	18
Risk management	12	Contact – call centres	15
Use of advantages of foreign locations	12	Sales, marketing	13
		Facilities management	11

315

Table VIII.
Reasons and areas of outsourcing (answers from managers of US companies) (%)

Source: Casale (2003)

The main areas of outsourcing are those with high innovation rates, a commitment to establish work flows at an international level and to assure considerable potentials for specialisation and benefits through economies of scale. These activities reduce the transaction cost. These are the business sub-systems information technology, administration, logistics and finance. These reasons had been obviously the basic kick off for merging various companies in the industry, in the service sector and in the information/media sector, to dimensions of global concern: the automotive and aerospace industry, nutrition and energy companies, banking/finance, or the major consultants, telephone, broadcasting companies and publishers. A small-scale dominated industry has not the standing to accomplish international and economically-sufficient standards which are equivalent to the stage of large companies.

It stands to reason that even small-scaled textile and clothing companies will find ways for co operation in the areas of information, administration, logistics or finance, in order to benefit from the variety of advantages of outsourcing. It seems to be a fact that the co operation within the global outsourcing network will reach out for a new stage of activities using additional areas for outsourcing and producing supplementary benefits. We have to understand that outward processing will come in a new phase, if the liberalisation of textile and clothing trade within the WTO will be accomplished in 2005. And it will change completely if the tax exemptions of outward processing vanish. The benefit of the tax exemptions within the outward processing trade with the CEE countries become obsolete with the joining of these countries to the European Union. The newly published IFM *Study on the implications of the 2005 trade liberalisation in the textile and clothing sector* (IFM & Partners, 2004) sees a severe impact on the industrialised countries in almost every product sector. To stabilise this new shock of adjustment, the outsourcing process cannot be limited to the traditional activities of outward processing. It is likely that the whole pattern of demonstrated outsourcing features will be optimised in order to stabilise the market performance of companies.

Besides these aspects, German producers can learn a lot from other countries:

- The emphasis of German business management is in the sector of competition. The case of Italy illustrates the so called "synergy of local co-operation in the

production chain” in order to enhance the potentials, capabilities and innovative processes. (see Guercini, 2004, p. 14).

- The partners in the outsourcing have very good, partly better conditions of innovation, learning and market penetration. The case of Turkey points up the chances of successful textile and clothing producers and stands for the opportunities of all new climbers from central-east and south-east European countries into the league of developed industrialised societies (see Binnur, 2004). Turkish companies have learned the textile and clothing business within the outsourcing network together with the EU producers, among others, with Germany, getting acquainted with the needs of this market. Indeed, Turkey is now, after China, the main supplier of textiles and clothing for the German consumer. Recently Turkey is underway to reach out into high level markets and aims to the US-American market with own brands. A similar development or success can be certainly observed in Poland, Rumania or in the Czech Republic and will be watched in China in some five to ten years.

German producers must recognise the function and the change in the mode of operation with their co-operation partners. In the future, business will become more effective, if the textile and clothing producers in Germany incorporate the new capabilities of these partners into their production strategy.

The phenomenon of structural change that once proceeded as a step-by-step process, presents daily challenges today. This “permanent structural change” could prove to be a model for other industries. Perhaps, we may learn from this example, how to rethink future production in industrialised countries.

Notes

1. The European currency “€” is used to measure the economic power of the clothing industry. The exchange rate between European currency € and the US\$ was in 2002: 1€ = 1US\$ (at beginning of 2004 about 0.8€/1US\$).
2. The structural change in the clothing industry was analysed by the Ifo Institute with a view to the technological and organisation changes and their impact on organisation, qualification and management. Adler, (1988, 1990, 1997). The results had been based on empirical findings from modernisation projects in clothing firms, funded by the German Federal Ministry for Education, Science and Research.
3. A good explanation of the cross-linked connections and flows of delivery within this global network of outward processing is shown by Guercini (2004, p. 29).
4. Measured as a share of consumption costs for clothing from the spending of private households according to expenditure purpose in respective prices (Statistisches Bundesamt (n.d.), Wiesbaden, Volkswirtschaftliche Gesamtrechnungen, Fachserie 18/Reihe 1.2., national accounts, various years). At constant prices higher shares are attained because price developments of clothing products were below the other expenditure categories of private consumption. In 1970 the share was still a nominal 8.7 per cent. In real terms – 1980: 7.7 per cent; 1990: 6.1 per cent and 2001: 5.6 per cent.
5. These data are based on sales tax statistics. German statistics distinguish between the clothing industry (industrially organised enterprises with more than 20 employees) and clothing manufacturing (which also includes crafts, tailor shops and small enterprises). The majority of the enterprises of the clothing industry (80 per cent) are small and mini businesses with less than €0.5 billion sales, in particular in the crafts. They represent only 4 per cent of industry

sales. At the beginning of 2002 the craft statistics included 5,245 tailors and dressmakers. The ca. 16,000 alteration tailors are not included in the statistics. The concentration of the industry has increased as a result of globalisation. Only 3.1 per cent of the enterprises account for 76 per cent of industry sales. Accordingly, large enterprises are better prepared for global competition.

6. The IFO Institute conducted a study on the state of the textile, clothing and leather industries in east Germany in the 1990s (Breitenacher *et al.*, 1997).
7. The exports and imports in Table III comprise all activities of German companies: industry, crafts, tailors, retailers and other business.
8. The value of 10 per cent is based on estimates from experts (Groemling and Matthes, 2003, p. 23) calculate the import penetration of the clothing and textile sectors at 80 per cent. They proved that the import penetration changed from about 20 per cent in 1970 to 80 per cent in 2000.
9. These calculations for the years 1980 and 1999 are done by the consulting firm Kurt Salmon Associates (KSA) in the framework of production cost comparisons for the clothing sector. The calculations for the 1980s included haulage and insurance (CIF: cost insurance freight). The current values were determined without transport and insurance costs (FOB: free on board). These are average estimates on the basis of a mathematical model that calculates the full costs for subcontracting as standard costs, i.e. the value added per production minute of a standard piece.
10. This involves the calculation of the costs of industrial and/or industry-like production forms. Not considered are the production costs of local "sweatshops", i.e., companies in which labour is compensated with extremely low wages amidst unacceptable working conditions and with clear exploitation of social fringe groups, even child labour. These sweatshops have clearly lower production costs. Cf.: www.sweatshopwatch.org
11. See Groemling and Matthes (2003). The Ifo Institute investigated the importance of outward processing in: Adler and Breitenacher (1995). Also: Aberdeen Group (2003) and Casale (2003) from the Outsourcing Institute. The Soziologische Forschungsinstitut at the University of Göttingen is currently preparing a study on location choice in the German industry.
12. The effective labour cost level in east Germany is clearly under that of west Germany. Nevertheless, in an international comparison, east Germany does not compare well to the CEE countries from the standpoint of wage amounts, productivity and transaction costs.
13. So called "Zwischenmeister" were specialised in subcontracting for distinctive products. These enterprises and traditional home workers had been local sewing shops without brands and distribution-facilities. As a result of the intensive outward processing, those local sweatshops with low paid labour vanished within the last ten years. The employment of ethnic minorities in sweatshops, like Indian and Pakistan people in UK, people from Algeria or Senegal in France or Chinese people in the Prato District in Italy, is not discussed in Germany. There is a considerable employment of alien employees in the clothing industry. A huge proportion of the 16,000 alteration shops is operated by people of Turkish origin, mostly in the large cities, with an estimated employment of some 50,000.
14. The following section focuses on the German clothing industry. Detailed analysis could not be executed for textile firms.
15. The total productivity used here is not the same indicator as it is familiar in the Cobb Douglas function. The indicator represents a combination of capital productivity (gross value added in relation to 1000 € of capital assets) and labour productivity (gross value added in 1,000 € per employee) by means of the ratio of wages and salaries from the gross value added. It is an indicator for the efficiency of factor allocation with respect to the income of labour and capital, without the state income (taxes). The factor indicates the application of production factors in relation to a basic year. All prices are those of 1995. Values over 100

indicate an improvement of factor input in relation to the economic progress. Those below 100 indicate a deterioration of the combination of labour and capital.

16. The future development of capital productivity in the textile industry must be observed. There may be, in the near future, a similar adoption process in the use of capital in the textile industry, as there has been in the clothing industry in the years after 1990.

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