

Study on the Competitiveness of the EU fashion industries

Draft final Report

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1 INTRODUCTION

1.1 Background and objectives of the study

1.1.1 Context

The fashion industries are situated at the crossroad between creative industries, well-established manufacturing industries and services industries. It is one of the industries where the promotion of interdisciplinary collaboration between creative industries and other industries/activities can contribute to further economic growth and a strengthening of the competitive position of the EU economy as a whole.

On the basis of the Communication on an Integrated Policy for the Globalisation Era Putting Competitiveness and Sustainability at Centre Stage¹ and following the Green Paper on Unlocking the potential of the cultural and creative industries (2010)², the European Commission plans to publish a Communication on the key aspects of the competitiveness of the EU fashion industries. The Communication will also propose strategic initiatives to refine the current industrial policy approach towards the fashion industries in light of the Green Paper. However, up to date the Commission has not approached the fashion industries as such.

1.1.2 Objectives of the study

The main objective of the study is to clearly delineate the fashion industries and make a quantitative analysis of the EU fashion industries' economic performance and competitiveness.

As part of this overall objective, the study will focus on the following activities (in order of importance):

- Study the concept of "fashion industries" and propose a relevant and workable definition;
- Make a quantitative analysis of the EU fashion industries' structure, input factors, outcomes and competitive position vis-à-vis the rest of the world;
- Analyse the key drivers of competitiveness of the fashion industries;
- Assess the competitive position and make preliminary suggestions for further policy follow-up.

1.2 Analysing sectoral competitiveness: methodological approach

To assess the competitiveness of the EU fashion industries, this study will make use of the competitiveness model that has been developed within the context of the Framework Contract for Sectoral Competitiveness Studies (ENTR/06/54) for DG Enterprise & Industry of the European Commission. This approach is founded upon a distinction between two different dimensions of competitiveness:

- The first dimension, which is referred to as the vertical dimension, relates to the situation and **internal dynamics within the industry** being

¹ COM(2010) 614

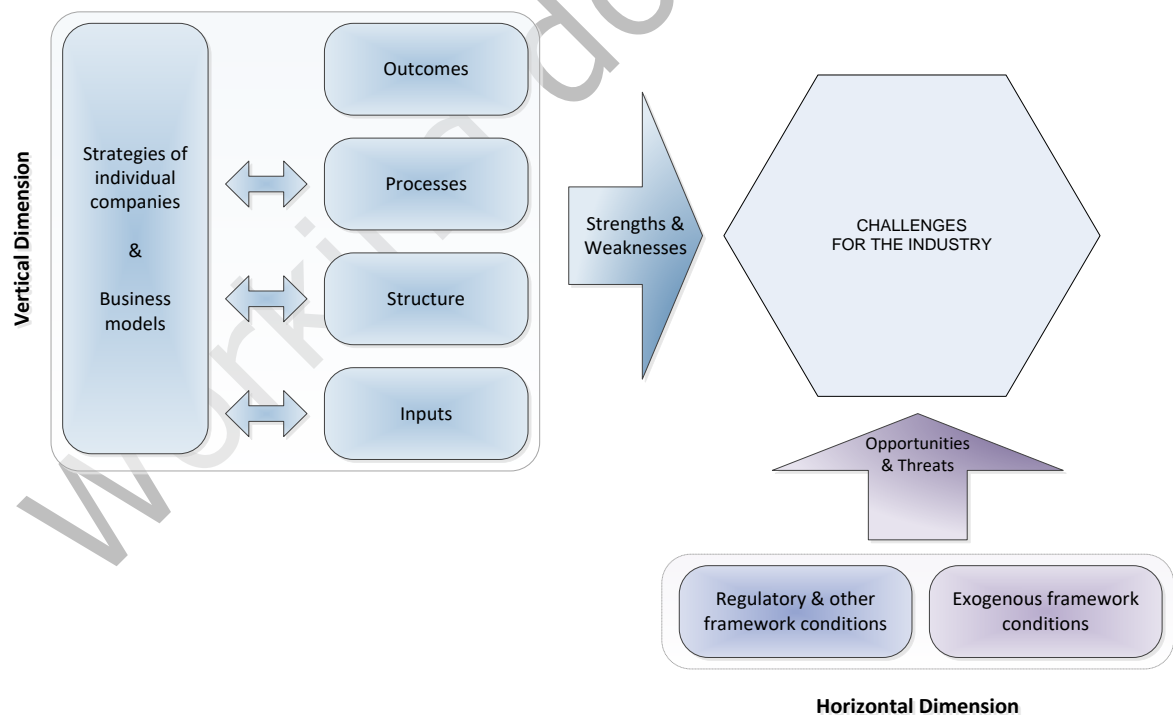
² COM(2010) 183

analysed. It covers the structure of the industry (business demography), outcomes of an industry's competitiveness (such as production and value added, employment, capital, profitability, export performance), processes, inputs as well as integrating company-level strategies and business models observed within the industry.

- The second dimension, which is referred to as the horizontal dimension, relates to those aspects of the **business environment** that can be considered as external to the individual and collective business operations of companies within the industry. This dimension is concerned with the so-called 'framework conditions' that shape the general context in which companies within an industry operate. These can be regulatory aspects, but also availability of raw materials, labour force and skills, technological developments and consumer preferences.

Through the systematic analysis of these different vertical and horizontal aspects of the EU fashion industries' competitiveness, the '**internal drivers**' of competitiveness (defining the competitive strengths and weaknesses of the industry) and the '**external drivers**' of competitiveness (defining the major opportunities and threats confronting the industry) can be identified. By bringing together the vertical and horizontal dimensions for the industry, an overall assessment of the competitive situation of the EU fashion industries can be made. Figure 1 summarizes the approach. We do remark that despite the distinction that we make between internal and external drivers, many cross-linkages exist. E.g. business models and strategies in the industry are often a reaction to external drivers.

Figure 1: Assessing the EU fashion industries' competitiveness: analytical framework



Source: Ecorys et al., methodology developed within Framework Contract for Sectoral Competitiveness Studies (ENTR/06/54)

In the EU fashion industries different internal and external drivers influence the competitive position and co-determine the future challenges of the industry.

An example of an internal driver is the labour intensive character of the manufacturing of apparel (cfr. 'inputs' in Figure 1). The high cost of labour in Europe vis-à-vis other parts of the world has been one of the driving forces behind the use of globally dispersed production chains by numerous EU fashion companies (as well as by fashion companies in other developed countries), with design, marketing and retail remaining in Europe (so-called "head-tail companies") and manufacturing being relocated to low cost countries. Long term falling prices in markets for fashion goods exacerbate this situation.

An example of an external driver is technological developments in ICT and engineering or technical textiles. E-commerce e.g. allows producers to use consumer feedback to adopt their products within a very short time, leading to potentially mass customisation of fashion products. Web blogs, user reviews and social networks are new sources for consumer feedback, that allow for short term reactions at the producer size. Also developments in technical textiles provide new opportunities for the fashion industries to respond to new consumer trends, such as a growing awareness for health-related aspects (see also Box 1 on p. 24). These new technological developments imply a growing demand for highly skilled workers in the fashion industries. A lack of sufficiently qualified personnel in the EU might have a negative impact on the competitive position of the EU fashion industries.

The above framework to assess an industry's competitiveness allows us to analyse the current competitive position of the EU fashion industries and the key drivers that have an influence on the competitiveness of the fashion industries in a systematic way.

1.3 Structure of the report

Following this introduction, chapter two of the report focuses on the definition of the fashion industries. The aim is to come to a workable definition of fashion industries in light of the competitiveness analysis. Chapter three describes the economic structure of the EU fashion industries and makes a quantitative analysis of the current competitive position. Chapter four discusses the most important internal drivers that influence the competitiveness of the EU fashion industries, based on literature review. Chapter 5 provides an overview of the main external drivers of competitiveness and reflects on the (potential) impact of these drivers on the fashion industries and different types of actors.

2 DEFINITION OF FASHION INDUSTRIES AND SCOPE OF STUDY

2.1 Introduction

The analysis of an industry's economic performance and competitive position starts from a clear definition of what exactly comprises the industry. This is also the case for the fashion industries. However, a number of elements contribute to making the definition phase for the fashion industries more complex:

- 'fashion industries' is not a term that is used in internationally recognized industry classifications and existing literature does not provide us with a single definition;
- The concept of 'fashion' is vague in itself. The intangible characteristics of 'fashion' contribute to a subjective appreciation of the concept. As a consequence, also the concept of 'fashion goods' is subject to discussion in existing literature.

At EU level, a number of recent policy documents do refer to the importance of fashion and fashion design in Europe's competitiveness (e.g. COM(2010)183³, SEC(2009)501⁴). But a clear delineation of the industry is lacking at the moment, which prevents further economic analysis and industrial policy development.

A key aspect of this study is to evaluate possible definitions of the fashion industries and suggest a workable definition, based on literature and an analysis of the different activities that should be included. Based on a review of the literature, first we will look at some of the general definitions of fashion and fashion industries that can be found. Subsequently we turn to the activities that these fashion industries are seen to comprise and elaborate on the fashion industries' production chain, as a conceptual framework for analysing the complex interactions between different business activities and different industries.

Having thus set the stage we will propose a definition for the fashion industries, distinguishing between fashion goods industries and connected industries. The purpose of this exercise is to finally come up with a workable definition of fashion industries. The derived working definition and scope will provide the basis for further analysis of the fashion industries' structure, business models, competitive position and key drivers of competitiveness.

2.2 Defining fashion and fashion industries

2.2.1 *Fashion and fashion goods*

According to the online encyclopaedia Wikipedia, the definition of fashion is:

"... a general term for a currently popular style or practice, especially in clothing, footwear or accessories. Fashion references to anything that is the current trend in look and dress up of a person."

³ EC (2010), "Unlocking the potential of cultural and creative industries", Green Paper, COM(2010)183.

⁴ EC (2009), "Design as a driver of user-centred innovation", Commission Staff Working Document, SEC(2009)501.

The online dictionary Dictionary.com⁵ defines fashion as:

- *"The prevailing style or custom, as in dress or behavior: out of fashion.*
- *Something, such as a garment, that is in the current mode: a swimsuit that is the latest fashion.*
- *The style characteristic of the social elite: a man of fashion."*

In many ways the concept of fashion carries within it different intangible qualities related to image, identity, social values, meaning or cultural expression. Fashion products therefore tend to have a **symbolic value** next to their strictly utilitarian value.

Despite the fact that there is no exact definition in the (scientific) literature on fashion and fashion goods, the majority of the consulted sources point to a number of **key characteristics**:

- Fashion goods are **consumer goods**;
- Fashion is about **personal dress** and relates to personal image building. This last characteristic is not unique for fashion goods, but can also be found in e.g. luxury goods;
- Central to fashion is the **combination of functionality with 'symbolic value'**, a characteristic where we see links with cultural and creative goods and design goods;
- Critical factors in the creation of 'symbolic value' are **creativity** (in first instance translated in the **design** of fashion goods), **branding and marketing**, often reinforced by **artisan work** in manufacturing;
- Fashion goods are **highly trend sensitive**.

Based on these characteristics the **following categories of products can be considered 'fashion goods'**:

- Apparel
- Footwear
- Accessories that are part of a person's personal dress (e.g. hats, scarves, belts, handbags, jewellery)

2.2.2 Fashion industries

Just as it is difficult to capture the concept of fashion in one single definition, defining fashion industries is very hard and the literature consulted does not provide one clear and exclusive definition. We will therefore consider first what these industries are seen to comprise in terms of companies, products and characteristics, after which we will take a closer look at the various activities related to fashion industries and how they are (inter-)linked in production chains (section 2.3).

Quite often the term fashion industry is used without a clear definition of what it does or does not comprise. However, in almost all instances, it is closely linked to

⁵ <http://dictionary.reference.com/browse/fashion>

the clothing industry (also referred to as garment or apparel industry). As Hauge (2004)⁶ argues:

"The fashion industry is closely related to the clothing industry, but (the two) are not synonymous. In the clothing industry it is the actual garment that is the end product, but in the fashion industry this is only, though vital, one of many inputs that will lead to a symbolically and aesthetically charged product of end consumers. One can say that image is the form and fashion is the function. An analysis of the fashion industry would nevertheless be ridden with major shortcomings, without a thorough understanding of how the clothing industry works." (Hauge, 2004, p. 3)

As fashion products are seen to accentuate personal image or meaning, they are clearly not strictly confined to garments. For instance a fashion brand presenting its new collection will often do so using a number of different fashion products, including shoes, hand bags, belts or scarves.

Imagine..Creative Industries Research (2005)⁷ applies a broad definition, considering fashion industries to include "producers of bags, shoes, jewellery and accessories in general" but also "companies performing supportive activities such as PR agencies, model agencies, stylists and photographers [and] (w)holesalers and retailers".

Two aspects of fashion industries that clearly stand out in the literature as definitive are the important **role of design and branding** in these industries. It is through design and branding that companies try to create fashion goods that reflect an identity or image conveying e.g. prestige, exclusivity, quality, attitude, lifestyle, etc. recognised by (a specific group of) consumers, willing to pay a premium based on this identity.

The process of producing garments and any other fashion products for that matter usually begins with design. Designers may work for retailers, for producers or as independents / for specialised design houses. It is probably useful to distinguish between three types of design(er)s: (1) original or trend-setting designs, by designers who anticipate and to a certain extent shape trends, (2) trend following designs, for which designers may pick up information from fashion fairs, catwalk shows, local street fashion, films, music videos and other media or trend analysts and (3) basic design, which could be provided by e.g. manufacturers' designers, who may tailor such designs more specifically according to the collection of specific retailers (often in collaboration with designers from the retailers).

As design and branding have become increasingly important features of competitiveness for fashion industries in developed regions in particular (such as the EU), many fashion companies in the EU have increasingly built up competencies towards the creative processes and activities such as design, marketing and sales. This strategy seems to have been applied by both EU producers, who increasingly integrated activities such as marketing, distribution and retailing into the business and by EU retailers, who have conversely increasingly integrated into, or strengthened their control over design processes (see e.g. Imagine..Creative Industries Research, 2005).

As has been pointed out by several authors (e.g. Hauge, 2004; Imagine..Creative Industries Research, 2005; Aspers, 2010) fashion industries are knowledge based

⁶ Hauge, A. (2004), "The Learning Dynamics and Competitiveness of Swedish Fashion: a theoretical framework", Uppsala University, November 2004

⁷ Imagine.. Creative Industries Research (2005), "A Mapping of Danish Fashion Industry", Copenhagen Business School, March 2005

industries, with knowledge relating to design, high quality production, marketing and sales providing the competitive asset of many EU fashion companies.

As Aspers (2010)⁸ explains, a key to successful branding of fashion goods is understanding 'what sells' in a specific market, implying not just having design and high quality production capabilities, but also understanding how this is interpreted in specific cultures, i.e. what kind of meaning is attached to it, so fashion companies may carve out niches in the market. In other words, successful brands combine aspects of design with corresponding production quality and marketing to create their identities. However, they may have to adjust their product and marketing mixes in different markets.

From the (scientific) literature, the following elements can be extracted as key characteristics of the fashion industries:

- It is a set of companies who are directly active **in the B-to-C production chain of fashion goods**, starting with the design of fashion goods and ending with retail to the final customer.
- **Design, high quality production, branding and marketing** are differentiating business functions.
- Business activities are organised to respond to the strong **"trend sensitivity"** of fashion goods, resulting in a fast succession of new collections.

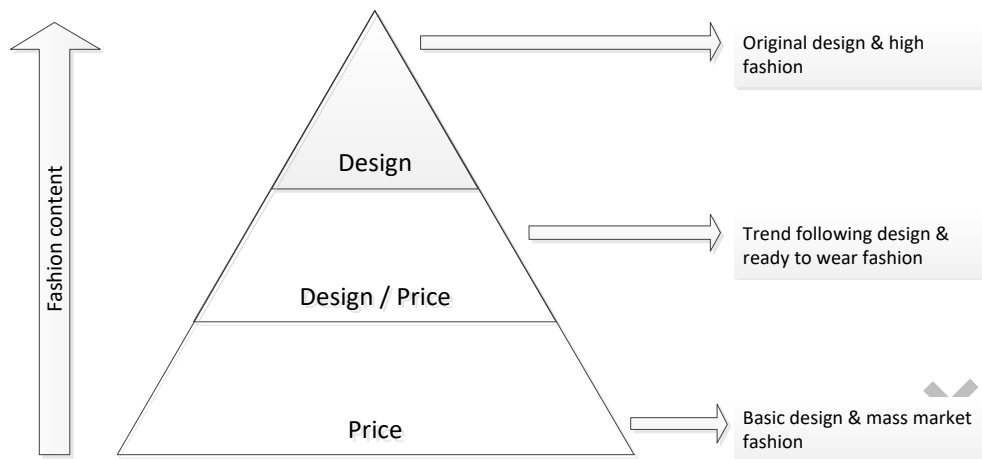
Companies that have their core business in these types of activities, can be seen as fashion companies, whatever their role in the production chain.

2.2.3 Fashion content, creativity and design

While nowadays even mass-retailers (such as Wal-Mart) and grocers refer to themselves as 'fashion retailers' (Hines & McGowan, 2005), it is clear that substantial differences exist between the market orientation of fashion companies. In essence three main market segments can be distinguished: (1) design oriented; (2) price / design oriented; and (3) price oriented. This is illustrated in the figure below.

⁸ Aspers, P. (2010), "Using design for upgrading in the fashion industry", *Journal of Economic Geography* 10 (2010) pp.189-207.

Figure 2: Market segments in fashion industries



Source: Tran (2008)

There are obviously many more variations to this very basic segmentation of the market and it should be seen as a sliding scale rather than a clear three-way divide. As a general trend among EU fashion companies (producers and retailers alike), fashion content has gained importance. As prices have shown a continuous downward trend and competition from non-EU low cost suppliers has increased, fashion companies have focused more on customers expecting higher fashion content, thus trying to move up the pyramid. By **increasing fashion content** (and thus focusing more on symbolic value), EU fashion companies try to move away from the 'red ocean' and create their own 'blue ocean', where competition is less fierce⁹. As a consequence, linkages with cultural and creative industries, and especially the design industry, have been strengthened over time.

2.2.3.1 Link with cultural and creative industries

The cultural and creative industries (CCI) cover a diverse group of disciplines such as e.g. visual arts, music, literature, film. One characteristic that unites this group, is the fact that their core 'business' is the **creation of symbolic value** through the provision of creative experiences (performing arts, visual arts), creative content (audiovisual industry, music, film, books, games, fashion design) or creative services (design, architecture, advertising, new media) (HKU, 2010)¹⁰. As the importance of symbolic value has increased in the EU fashion industries, the interaction with the CCI has increased as well. An important trend over the last few years to increase fashion content in specific medium to lower-end segments, is to use the strengths of creative industries and attract high-end fashion designers to design special collections for lower-end brands (e.g. Karl Lagerfeld designing a collection for H&M). With these collaborations lower-end brands gain publicity, target new clients and try to obtain a competitive advantage vis-à-vis others.

⁹ Kim, W.C. and Mauborgne, R. (2005), "The blue ocean strategy", Harvard Business School Press, p. 256 – Whereas in a "red ocean strategy" companies compete head-to-head with other suppliers for known customers in an existing industry, the "blue ocean strategy" tries to align innovation with utility, price and cost positions to create uncontested market space by reconstructing market boundaries and reaching beyond existing demand.

¹⁰ HKU (2010), "The entrepreneurial dimension of the cultural and creative industries", Hogeschool voor de Kunsten Utrecht, Utrecht.

Despite the close link with the CCI, Tran (2008) does remark that fashion goods are different from most CCI goods in the sense that fashion is a blend between a cultural and a functional product. Unlike most other CCI products (such as music, motion pictures, publishing, etc.), fashion goods offer a basic functional service to customers (clothing for keeping us warm, hats for protecting us from sun and rain, etc). However, the link with the CCI has become indispensable for the EU fashion industries to create economic value.

The growing potential of cultural and creative industries to contribute to the competitiveness of EU industries (such as fashion) and the EU's overall competitiveness has clearly been highlighted in the 2010 Green Paper on Cultural and Creative Industries (CCI)¹¹.

2.2.3.2 *Link with design industries*

Design is a very broad concept that involves not only aesthetic design but also includes functional design, e.g. to incorporate environmental (eco-design) or safety considerations. Design activities are widely used, both in high tech industries (e.g. aerospace industry) and in medium to lower tech industries such as the furniture industry or fashion industries. Whereas parts of the design industry clearly belong to the CCI and/or fashion industries, other parts have less obvious links to both other industries.

Especially in more developed markets, design has become an important driver in creating a unique competitive advantage that helps to move away from pure price competition. This is not different in the fashion industries. Whereas design always has been at the centre of the production process of high-end and especially avant-garde fashion (where fashion content is central, see Figure 2), design gains significant importance across all fashion led market segments in the nowadays 'experience economy'¹².

2.2.4 *Beyond traditional industry boundaries*

The previous discussion implies that the **fashion industries** (i.e. the whole set of companies involved in the design, production and/or distribution of fashion goods) are **"transversal" or "hybrid"**, cross-cutting different traditionally (i.e. in existing official industry classifications such as NACE) defined industries. Both manufacturing and services sub-industries are part of the fashion industries. Within the services industries not only wholesale and retail industries are involved, but also part of the design industry (fashion design).

Next to the 'traditional' (i.e. as defined in official industry classifications) sub-industries that are directly - and as a whole¹³ - active in the design, production

¹¹ COM(2010) 183

¹² Cfr. Pine, J. and Gilmore, J. (1999) '*The Experience Economy*', Harvard Business School Press, Boston, 1999. - The term 'experience economy' has been introduced by Pine and Gilmore to refer to an economy where the willingness to pay of customers (partly) depends on the experience that customers link to a product or service. Companies create added value by charging for the feeling that customers get by engaging it, not so much for the tangible good. Examples of companies that strongly focus on creating experiences are e.g. Starbucks or Apple. Both companies successfully manage to charge a premium for the experience that consumers link to drinking a Starbucks coffee or working with a Mac.

¹³ i.e. the large majority of companies in those sub-industries are active in the design, production and/or distribution of fashion goods. We remark that each of these sub-industries also contain a (minor) set of companies that cannot be directly associated with 'fashion goods'. E.g. manufacturers of industrial clothing

and/or distribution of fashion goods (we call them hereafter “**fashion goods industries**” and include manufacturers and distributors of fashion goods), a number of other sub-industries have (strong) connections with the above set of fashion goods industries. We distinguish three types of such “**connected industries**”¹⁴ to the fashion goods industries: supplying industries, supporting industries and related industries. In each of these connected industries we find companies that directly interact with fashion goods companies (we call this part of these industries to be “**fashion led**”) and other companies that do not interact with fashion goods companies. In most of the connected industries however, the set of fashion led companies (i.e. those interacting with fashion goods companies) represents only a minority (although in many – especially related - industries growing (cfr. the “experience economy”). Exceptions to this are the textiles, leather and fur industry (see further).

2.2.4.1 *Supplying industries*

Supplying industries are those industries that supply intermediate goods and services directly to the fashion goods manufacturers. The most important supplying industries are the textiles, leather and fur industries and the design industry¹⁵. The value added of these industries in the entire fashion business process is much higher than the value added of supplying industries in many other industries’ production chains. This is linked to the importance of the symbolic value, the aesthetics and the image of fashion goods. While all production activities start from raw materials and intermediate goods to produce the final good, supplying industries in the fashion value chain also put a substantial mark on the symbolic value of the final fashion goods. This is especially the case for the design, textiles, leather and fur industry, with whom the fashion goods industries have a strong two-way interaction to define fashion collections in terms of design, colours, material use and quality.

2.2.4.2 *Supporting industries*

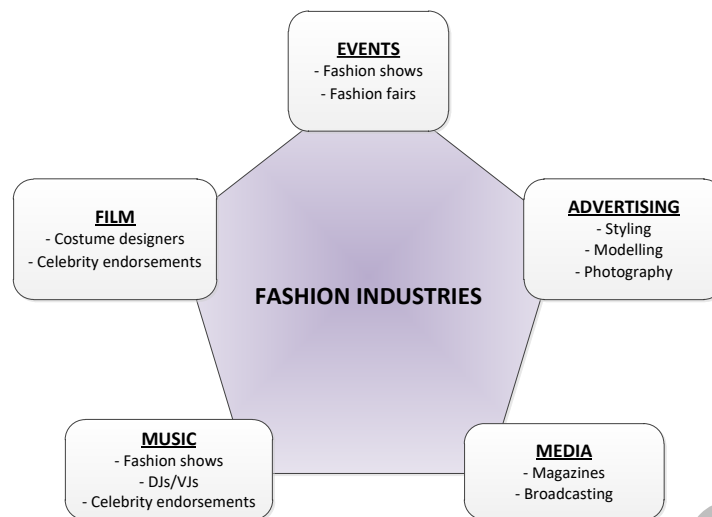
Supporting industries interact with the fashion goods industries in the production chain, supplying no intermediate goods or services directly into the production process but rather providing supporting tools and services that help fashion goods companies to bring their products to the market. Often these supporting industries strengthen the symbolic or social value of fashion goods by helping fashion goods companies to enhance and communicate the symbolic value (brand image, identity) to the end-consumer. One example is the event organizers industry that interacts with the core fashion industries via the organization of fashion events.

Figure 3 illustrates how the fashion industries interact with a diverse set of supporting industries.

¹⁴ Again ‘as defined in official industry classifications’

¹⁵ In the meaning of ‘the group of companies whose core activity is designing goods or services’. The design industry consists of fashion designers, interior designers, graphic designers, industrial designers and other specialised designers. Part of the design industry (namely fashion designers) provides services to the fashion industries. Do remark that in the fashion industries ‘fashion design’ in the meaning of the fashion design activity is not only provided by the design industry, but is incorporated in many companies throughout the fashion value chain.

Figure 3: Fashion and supporting industries



Source: IDEA Consult, based on Tran (2008)¹⁶

Many of the supporting industries belong to the cultural and creative industries. Their interaction with the fashion goods industries specifically focuses on emphasizing the symbolic value that fashion companies want to create. Although cultural and creative industries have always interacted with fashion goods industries, the interaction has been intensified lately as the fashion content (and thus the importance of symbolic value) has increased in general (see 2.2.3).

2.2.4.3 Related industries

Related industries are not directly or indirectly involved in the production and sales of fashion goods, but also bring goods to the market that consumers might buy to shape their image. Examples are the perfumes and beauty industry, car industry or wine industry. In all these industries we find companies that target specific segments (often the higher end segments) and appeal to customers in similar ways as the fashion goods industries. These fashion led parts of those related industries often market goods that can be grouped under the umbrella of 'luxury goods'.

A luxury good may be defined as a high quality product, sold at a high price and marketed under a prestigious brand name. Luxury goods are characterized by a high sensitivity to economic fluctuations, high profit margins and very tightly controlled brands. Although part of the fashion industries focuses on luxury goods (e.g. Dior, Delvaux), the fashion industries as a whole produce a much broader offer than only luxury goods. Conversely, the group of luxury goods is much broader than only fashion.

The global luxury goods industry is largely concentrated in Europe. Among the first 25 world-wide brands, 18 are European. To a large extent, they create, develop, design and manufacture their products in the EU¹⁷, and retail them all over the world. 70% of the production is exported. Of the worldwide luxury goods

¹⁶ Tran, Y. (2008), "Fashion in the Danish experience economy. Challenges for growth", Samfundslitteratur, Denmark

¹⁷ Swatch (Switzerland) and Valentino (Italy) manufacture nearly all of their products in their respective countries, in-house. Hermes, LVMH produce the vast majority of the products in house (70%+) (Source: Wikinvest)

market, Bain & Company¹⁸ estimate that over 50% of total sales (or around 90 billion €) come from apparel, footwear and accessories, thus making the EU fashion industries a driving force of the luxury goods market.

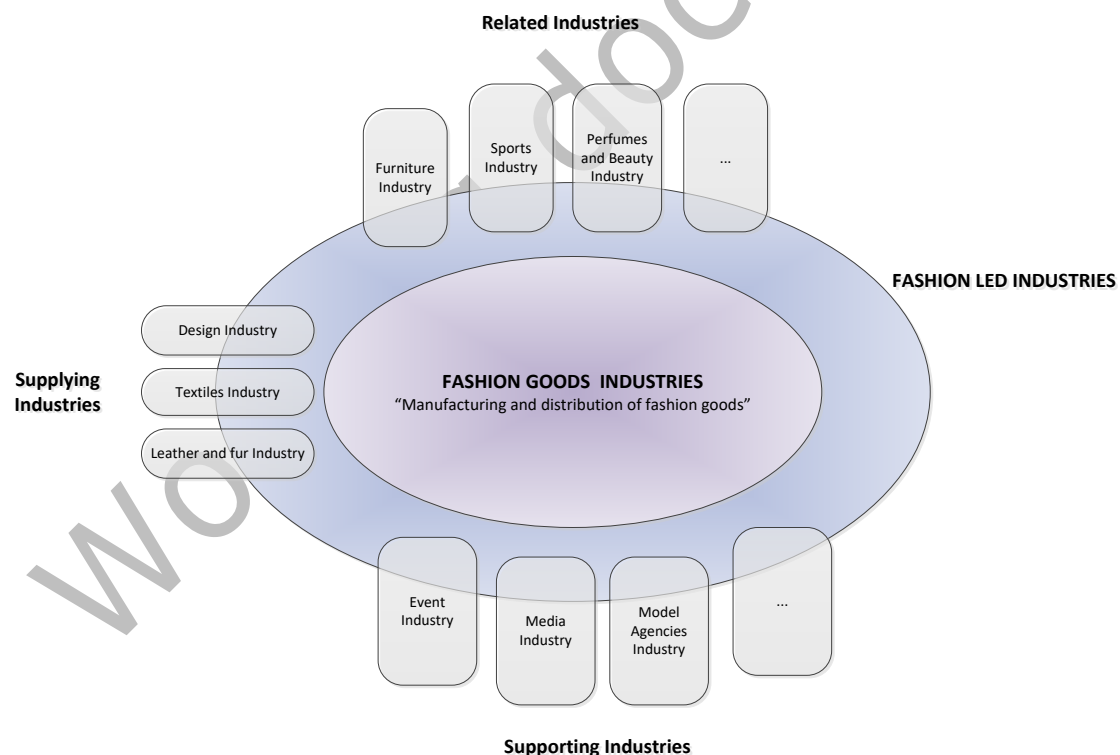
2.2.4.4 Fashion goods industries and fashion led industries

As a concept, the term “fashion led” is not commonly used in the literature. However, in the context of the delineation exercise on the fashion industries it is a useful concept to frame a number of issues when defining a hybrid industry and to come to the workable definition (see further).

Fashion led industries are industries of which at least part of the industry is connected to the fashion goods industries (as supplying, supporting or related industry), but where fashion does not necessarily take a central position in all companies that operate in the different sub-industries. Of all connected industries, only that group of companies directly supplying, supporting or relating to the fashion goods industries is part of the fashion led industries. It is an aggregate that clearly surpasses traditional industry boundaries.

The relation between the concepts ‘fashion goods industries’, ‘connected industries’ and ‘fashion led industries’ is illustrated in the following figure. We will refer to this framework when we will delineate the concept “fashion industries” and set the scope of the further analysis (see section 2.4).

Figure 4: Fashion goods industries, connected industries and fashion led industries



Source: IDEA Consult

¹⁸ Bain & Company (2011), “Worldwide Luxury Markets Monitor – Spring 2011 Update”, report on behalf of Fondazione Altagamma

2.3 Fashion industries: business organisation and value chain

Based on a literature review and in compliance with the discussion in the previous section, this section presents our interpretation of the **fashion industries' value chain**. Starting our analysis from a 'value chain'-approach allows us to clearly identify the various business activities involved in the design, production and distribution of fashion goods, and to highlight the interlinkages between activities in the fashion goods industries, fashion led industries and non-fashion led industries. It also provides a framework to analyse **different business models** that companies in the EU fashion industries adopt to remain competitive and to identify the internal drivers of competitiveness (such as e.g. horizontal and vertical integration of activities, see chapter 3.4.1). Before presenting the fashion industries' value chain, we discuss a number of important related issues and evolutions that have an impact on the organization of the value chain: the internationally fragmented nature of the chain, the role of upgrading and the increased vertical integration of fashion activities.

2.3.1 *From idea to final consumer and back: an internationally fragmented value chain*

The value chain of the fashion industries – the clothing and footwear industries in particular – were among the earliest industries to be organized on a truly global basis. This was driven by ongoing processes of the division of all steps in the production and distribution process, each with its own specific requirements. This has been described as the **de-verticalisation** of the production or value chain. As transport and communication costs came down, the various business activities in the value chain were increasingly performed in different locations across the world, to fit best the special requirements of the specific process or step involved (see e.g. Smakman, 2004)¹⁹. While manufacturing activities in the clothing and footwear industries have been subject to relocation to low cost developing countries since the 1960s, design and marketing activities were much less subject to relocation and are still mainly being managed by fashion companies that are concentrated in developed countries, often in global cities where fashion trends are set. Consumption and production are thus often separated by (substantial) physical distance.

Thus emerged, since the 1960s, increasingly **global value chains** (GVCs) in the fashion industries, which sometimes span tens of countries from the raw material sourcing to the final consumer. While they involve a network of different (often small and medium) companies, the chains remain largely driven by lead firms. Traditionally, these lead firms were the manufacturers, but over time, and especially since the 1970s, the role and power of branded companies such as ADIDAS and retailers like C&A has grown significantly, to where it can be said that they have been the main driver in organising the industry over the last years. Recently, different trends that influence the fashion industries (e.g. changing consumer behaviour pushing fashion companies towards the production of more collections and higher flexibility) push for a renewed relationship between manufacturing firms and retailers. It is clear that this renewed relationship influences the EU fashion industries' structure and competitive position. Also

¹⁹ Smakman, F. (2004) "Local Industry in Global Networks. Competitive Adjustment, Corporate Strategies and Pathways of Development in Singapore and Malaysia's Garment Industry." PhD Thesis, Utrecht University, The Netherlands. Rozenberg: Amsterdam (<http://igitur-archive.library.uu.nl/dissertations/2004-0616-130904/inhoud.htm>)

verticalisation and **re-verticalisation** are features of European fashion industries.

2.3.2 *'Contextual knowledge' as the key to upgrading through design*

To enhance the relative competitive position, fashion companies – manufacturers and retailers of fashion goods alike – have always tried (and will continue) to find ways to 'upgrade' their business and engage in activities with a higher value added. In the fashion business, it means getting closer to brand manufacturing and/or moving into market niches with high entry barriers, away from those fashion segments where competition is fierce.

Aspers (2010) distinguishes four types of upgrading in the fashion business:

- upgrading of the work process
- upgrading of the product
- knowledge transfer from other industries and functional upgrading
- move into the more value-adding (and often the more profitable) activities such as design and marketing

For some manufacturers in the fashion industries, upgrading means to shift from assembly production to full package production, which includes the interpretation of designs, the making of samples, the sourcing of required inputs, the monitoring of product quality and so on. For others, who are already at this level, upgrading means the shift to the development of own brands.

The importance of upgrading is clearly illustrated in Gereffi and Memedovic (2003)²⁰ where they investigated the prospects for upgrading by developing countries. They pointed out that the key to East Asia's success was the shift from mere assembly of imported inputs to a more domestically integrated and higher value-added form of exporting (the full-package supply or original equipment manufacturing, or OEM in short). In a next step, Japanese companies and some firms in the East Asian newly industrialized economies (NIEs) even moved on to the original brand name manufacturing (OBM), incorporating new value-adding activities like design and the sales of their own brands, both on their local market as well as for exporting abroad.

Up till now, the distinguishing activities for EU fashion companies lie in design, high quality (often small scale) production and branding. However, there is increasing Asian competition to move up the value chain through design as well. For the first time, a diverse group of designers originating from different Asian countries recently have attracted broad international attention in the fashion industries (e.g. Jason Wu, Thakoon Panichgul). Further, a study of Grail Research²¹ shows the growing importance of other new emerging fashion markets worldwide, including South Africa, the United Arab Emirates, Singapore, India, Russia and Brazil. Important drivers of the fashion industry in these emerging countries are additional government support, an increased recognition of local designers, better awareness of international fashion brands and an increased demand for fashion apparel in these countries. As a consequence, the number of large fashion events has significantly increased in these countries over the last ten years. On the other hand, even though competition in these value-adding activities increases on a global scale, they are still highly concentrated in space, even localized within a specific region, city or even at the level of a city area (an area of a few 'fashion' blocks in New York and Tokyo) (Aspers, 2010).

²⁰ Gereffi G. And Memedovic O. (2003) "The Global Apparel Value Chain: What Prospects for Upgrading by Developing Countries", UNIDO Sectoral Studies Series

²¹ Grail Research, LCC (2009), "The Global Fashion Industry – Growth in Emerging Markets"

Aspers (2010) does point out that the most difficult type of upgrading is upgrading through design. Important in the upgrading process through design is the role of what Aspers calls 'contextual knowledge'. Contextual knowledge consists of two elements: 1.) the consumers' life-world, referring to what people take for granted (e.g. basic values, facts, culture,...) and 2.) the 'province of meaning' made up by the fashion community. Contextual knowledge stems from the interaction between the global nature of the fashion production market and the access to global fashion trends, creating a global set of provinces of meaning on the one hand, and the local nature of the consumer market and consumers' life-world on the other hand. It refers to the translation and interpretation by designers of these global fashion trends to own ideas based on their (and their consumers') life-world, so that global fashion trends get a local interpretation. According to Aspers (2010) it is very difficult for designers to design fashion for consumer markets of which they lack the contextual knowledge. The necessary requirement of contextual knowledge impedes Asian manufacturers to completely take over the design from fashion companies in western economies (such as the EU). The specific type of upgrading through design is very difficult to realize if a designer is not familiar with the cultural and social values of the targeted market. And it is exactly this knowledge of what will succeed in the market that the offshore 'factory' designers generally lack.

2.3.3 Flexibility through new power balances and partnerships: the rise of fast fashion and mass-customisation

Hines & McGowan (2005) explored the nature of supply-chain strategies of UK high street multiple fashion retailers and their contracted suppliers. They examined implications for sourcing strategies applied to fashion goods, looked at what each of the involved parties want from each other, and identified a number of important implications for fashion retailers and their suppliers, clustered under four core themes: power, process, partnership, and people.

They pointed out two contrasting evolutions in the relationship between fashion suppliers (manufacturing industries) and the retailers:

- On the one hand, fashion retailers are **sourcing more and more offshore**, as a consequence of lower input costs. This intensifies the coordination of their supply chains, in order to ensure sufficient supply and to minimize the risks of losing sales through non-availability of the imported raw materials.
- On the other hand, the coordination towards the final consumers becomes more complex, since consumers have higher expectations with respect to the fashionable character of the products that they buy than historically has been the case. Therefore also the responsiveness towards the consumers, or the **time to market**, is a crucial element in optimizing their supply chain and sourcing operations.

Consequently, sourcing from two different types of fashion good manufacturers is recommended:

1. Those who can meet the low-cost requirement and are able to supply in large volume, which are mainly offshore suppliers.
2. Those who can quickly supply a selection of pieces, with a higher fashion-standard, in smaller volumes and as a quick response to the changes in fashion trends and consumers' demand. These are often local/domestic suppliers, who can quickly deliver smaller volumes at low transport costs.

The increasing importance of quick responsiveness in the fashion industries is stressed in several studies (Swoboda et al., 2010²²; Faust, 2005²³ and Christopher, Lowson & Peck, 2004²⁴). Fifteen years ago, Richardson (1996)²⁵ already pointed out that competition in the fashion industries is increasingly driven by timing and know-how, where vertically integrated firms have gained the lead, with even full vertical integration of the value chain including design, manufacturing and retailing.

How fashion goods are subsequently distributed and sold also varies and is rapidly changing, with companies increasingly using various channels next to the traditional retail store. This has been enabled by developments in ICT. These developments have not just encouraged innovative new ways of shopping and marketing (online and e-commerce), it also incorporates the potential to bring back some traditional practices, such as tailor made fashion goods, and make them available for larger scale production (sometimes referred to as mass-customization).

While further market segmentation and shortening of fashion cycles can be seen as demand / consumer driven (i.e. as a reaction to changing consumer preferences), it should be noted that it has in part also been a process driven by deliberate company strategies. As markets became saturated, prices were lower and competition from global competitors became fiercer, EU fashion companies have tried to tap into or to create new markets that were less price-sensitive. Through targeted product differentiation strategies EU fashion companies have tried to carve out niches, and to an extent to shorten fashion cycles, thus stimulating consumers to buy fashion goods more frequently and fragmenting markets further. By designing the appropriate marketing mix for each segment, fashion companies try to clearly position themselves in the market. We refer to section 4.1 for further discussion.

2.3.4 The fashion industries' value chain

In section 2.2, we presented a definition of fashion goods industries and fashion led industries from a traditional industrial point of view. In addition, we highlighted some recent developments related to the entire fashion process in the previous paragraphs, influencing the business dynamics of the value chain. The final step is to conceptualize the fashion industries in a value chain framework (looking at the different business activities that are involved), taking into account the information from the previous sections.

An industry value chain is a physical representation of the various business activities or processes that are involved in producing goods and services, starting with raw materials and ending with the deliverance of the final product to the end-users. Screening the existing literature on fashion industries (e.g. Faust (2005), Swoboda e.a. (2010), Hauge (2004), Gereffi and Memedovic (2003), Maskell P. (2005)²⁶), we found no unambiguous representation of the fashion industries' value chain. Therefore, Figure 5 illustrates our vision on the **fashion**

²² Swoboda B., Pop N. A. & Dabija D.C. (2010), "Vertical Alliances between Retail and Manufacturer Companies in the Fashion Industry", Amfiteatru Economic

²³ Faust M. (2005), "Reorganisation and relocation in the German Fashion Industry: Organisational Configurations and Locational Choices of Firms: Responses to Globalisation in Different Industry and Institutional Environments", University of Cambridge

²⁴ Christopher M., Lowson R. & Peck H. (2004), "Creating Agile Supply Chains in the Fashion Industry"

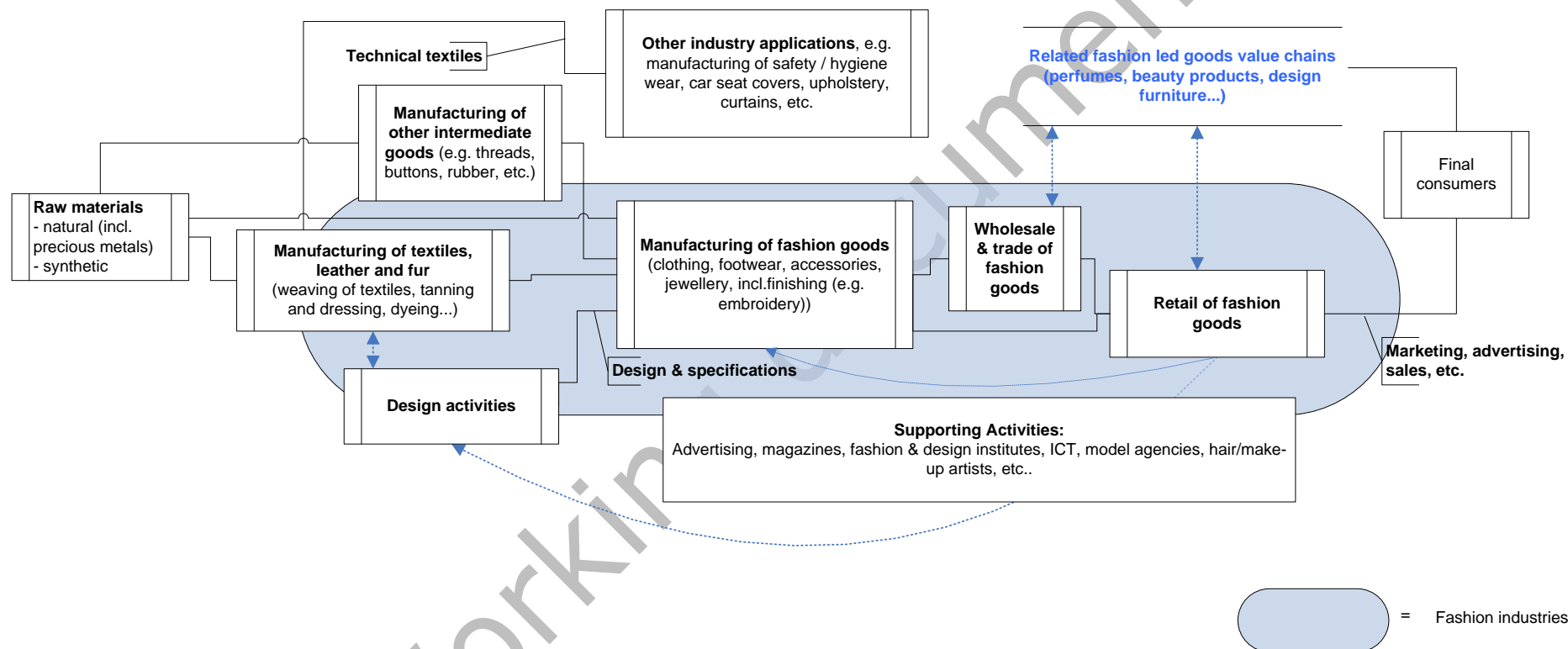
²⁵ Richardson J. (1996), "Vertical Integration and Rapid Response in Fashion Apparel", Organization Science, New York: Free Press

²⁶ Maskell P. (2005), "A Mapping of Danish Fashion Industry", published by IMAGINE. Creative Industries Research at Copenhagen Business School, CBS

industries' value chain, based on our broader concept of fashion goods industries and fashion led industries (see paragraph 2.2.3). As we indicated in paragraph 2.3.1, the various processes and activities described in this value chain can take place within the same company or be performed by different companies; they can take place in close proximity or be dispersed over several countries within the EU or globally. This will depend on the business strategies of fashion companies and the importance of elements such as time-to-market, cost sensitivity, availability of (skilled) labour etc. Different business models and strategies apply accordingly (cfr. section 4.1).

Although Figure 5 illustrates the fashion industries' value chain as a rather linear process, it is clear that strong feedback loops exist between different activities. Especially information about trends and changes in consumer behaviour has gained importance over the years and feeds back into the retail business (e.g. influencing purchasing strategies), fashion design activities and even the manufacturing of intermediate goods.

Figure 5: A value chain approach to analysing the fashion industry



Source: Ecorys and IDEA Consult

2.4 Setting the scope for the further analysis

A clear and workable definition of the EU fashion industries is instrumental for a successful execution of the further analysis. As illustrated in sections 2.2 and 2.3, the fashion industries are a hybrid industry covering a complex cluster of activities that can be viewed at from very different angles.

2.4.1 *Towards a workable definition of fashion industries*

In this section we present our approach to delineate the fashion industries. To this end we refer to Figure 4 and Figure 5, where we distinguish the following clusters of industries that are linked in the fashion value chain:

- fashion goods industries (see paragraph 2.2.3);
- fashion led connected industries (supplying, supporting, related) to the fashion goods industries (see paragraph 2.2.3);
- Other industries, i.e. those industries providing necessary input factors (such as energy) and support (such as IT-support) in the value chain, but where none of the activities are fashion led.

When we **delineate the fashion industries**, it is clear that the first group of sub-industries is part of it whereas the third group is not. As for the second group of sub-industries, the answer is not so clear-cut. Two arguments were at the basis of the hereafter proposed delineation:

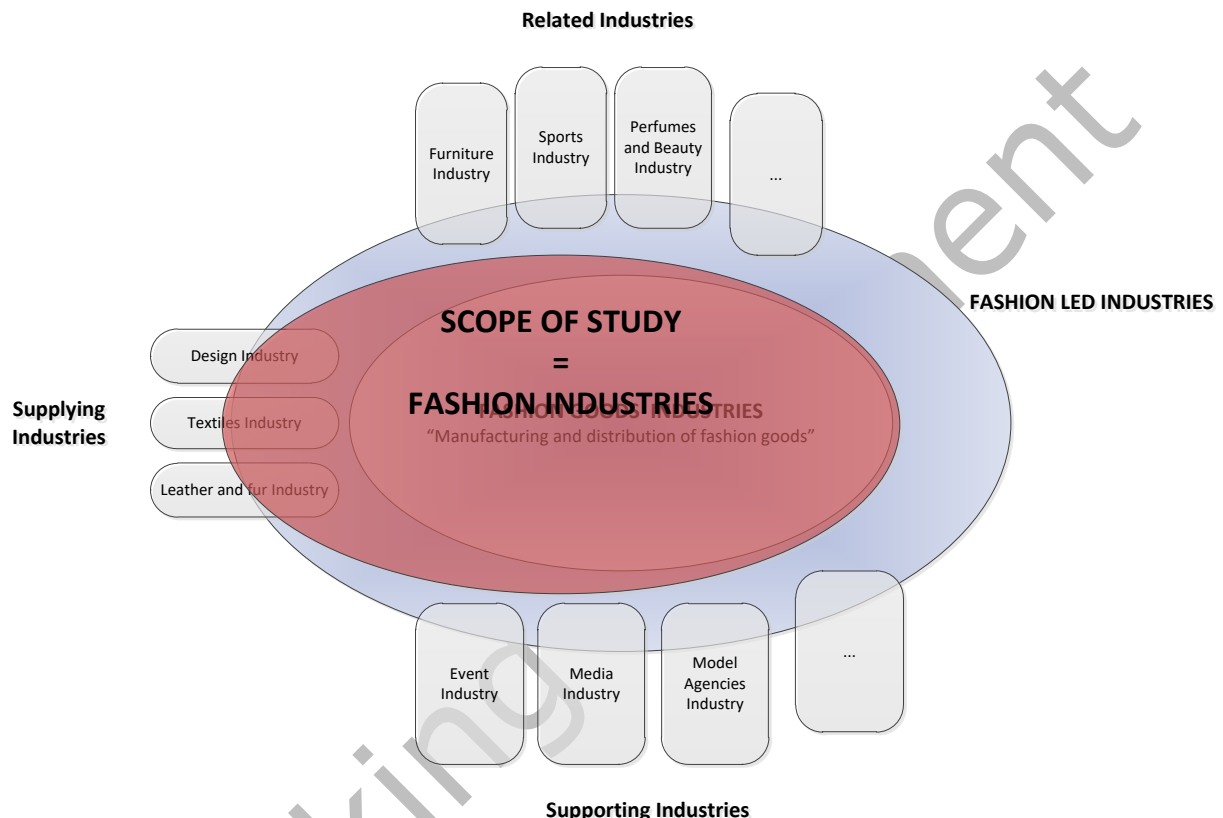
1. Although specific parts of the **related industries** (e.g. fashion led electronic devices industry) show similarities with the core fashion industries in terms of market approach, one could rather argue that companies within these industries have learned from the fashion industries (and visa versa) in terms of business strategies, while fashion companies can make use of goods from these related industries to complement their own collection of fashion goods and as such to strengthen their brand image. However, this interaction does not make these related industries fashion industries. We consider them to be **no part of the fashion industries**.
2. For the different supplying and supporting industries, ideally one could identify the set of firms that are fashion led and consider those as being part of the fashion industries. However, such approach is not workable. A more pragmatic approach is to consider only those supplying and supporting industries where more than half of the industry can be considered as fashion led and/or have a very strong direct impact on the final fashion good. To our knowledge, only the design, textiles, leather and fur industry meet this argument. For the textiles industry, it is estimated that in the EU around 2/3rd of the textiles industry is fashion led (Euratex). Moreover, the textiles industry directly impacts and shapes the design of many fashion goods. Only the segment of technical textiles is considered to be largely non-fashion-led at the moment, although interesting spillover effects exist between the technical textiles segment and the homewear and clothing textiles segments when it comes to fashion (see Box 1). For the leather and fur industry, it is estimated that over 85% is fashion led (Cotance, IFTF, EFBA). Similar to textiles, also leather and fur influence the design of fashion goods. As for the design industry, we refer to paragraph 2.2.3.2 and previous discussions in this report to illustrate its strong link with the fashion goods industries.

To conclude, apart from the fashion led part of the design, textiles, leather and fur industry none of the other fashion led supplying and supporting industries will be included in the remainder of the analysis on the EU fashion industries. They will only

be discussed to the extent that they have an influence on the competitive position of the EU fashion industries.

Based on this delineation and from this point onwards, when we talk about the **EU fashion industries** we refer to the fashion goods industries and the fashion led part of the design, textiles, leather and fur industry in the EU (as defined in paragraph 2.2.4.4). Figure 6 illustrates the delineation. This definition provides a clear angle for the analysis of competitiveness.

Figure 6: defining the fashion industries - scope of the study



Source: IDEA Consult

Box 1: Technical textiles and fashion

Initially the technical textiles segment was considered a small niche related to specific technical (military and protective textiles), industrial (aerospace, automotive), medical and sport-related applications (performance materials). In fact, technical textiles used to account for a relatively small fraction of total output in the textiles industry. However, as a result of the rapid expansion of possible applications, the technical textiles industry has turned into a segment with extraordinary growth potential.

In this box, we give some examples of fashion-related applications of technical textiles and explain why technical textiles are expected to gain in importance in the fashion

industries.

Out of the 12 main application areas of technical textiles (as in Horrocks– Anand, 2000²⁷) at least 4 are fashion related: 'Clothtech' (footwear and clothing); 'Sporttech'; 'Hometech' (interior design, furniture, household textiles and floor coverings) and to some extent also 'Mobiltech' (automobiles).

The potential spillover effects of technical textiles for fashion are explained by the fact that there is a lot of potential for crossovers between designers and innovative technical textile firms. In fact, in the 21st century smart scientific fabrics constitute one of the key trends potentially shaping the evolution of fashion industries. New material properties allow designers flexibility in product implementation or enhance the uniqueness of the garment (e.g. photochromatic dyes). The development of the physic-chemical and aesthetic properties of materials extends the known boundaries of material behaviour – a key factor that fashion designers can rely on. Technical textiles permit that designers' traditional activities be augmented by results of interdisciplinary experimentation with in-built (added) technologies (wearable electronics, wearable sensors, solar or electroluminescent panels, actuators, logic circuits, micro-encapsulation etc.) and technologies that generate advanced intrinsic material properties (e.g. nanofabrics) like touch, handling, flexibility, texture, appearance etc.

Beyond luxury garment and outdoor (sports and leisure) clothing, other fashion related industries also contribute to a rapid commercialisation of research in technical textiles such as traditional fashion related ones like furniture, leather goods, etc.

Finally, another aspect that enhances the relevance of technical textiles for the fashion industries is sustainability. Environmental considerations represent a major challenge for the textiles industry and at the same time a major opportunity for technical textiles in general and for its crossovers with fashion in particular. The fact that research in technical textiles has taken up and incorporated these sustainability aspects (durable, super washable products, solar panels, energy-efficiency etc.) will transfer this constituent of fashion to the mass market.

27 Horrocks, A. – Anand, S. [2000]: Handbook of Technical Textiles. Manchester: Textile Institute

3 ANALYSIS OF THE EU FASHION INDUSTRIES' ECONOMIC STRUCTURE AND COMPETITIVE POSITION

3.1 Translating the framework for scoping the 'fashion industries' into quantitative analysis

The assessment of the EU fashion industries' competitiveness will be based on both quantitative and qualitative data. Although the previous chapter presented a structured framework for a qualitative assessment of the EU fashion industries' competitiveness, the quantitative sector analysis requires a more explicit selection of sub-industries that is linked to existing industry classifications. As data preferably come from sources providing harmonized and comparable statistics - such as Eurostat or OECD, the definition should be aligned to the classifications that official data providers use, namely the NACE rev.2 classification.

However, the hybrid EU fashion industries as we have defined above, does not correspond to any official sector classification. Moreover, the fashion industries also include sub-industries for which official data sources do not provide data of sufficient detail (fashion design industry, see further).

Annex 1 provides an overview of the different categories in the NACE rev.2 classification (and corresponding NACE rev. 1 code) that cover sub-industries that largely belong to the fashion industries. They relate to both manufacturing of intermediate goods, fashion goods and wholesale & retail activities.

The activity in the fashion value chain that is least well covered in the NACE rev.2 classification, relates to the intersection of fashion industries and creative industries, namely fashion design. Although fashion designers will be partly included in the figures on manufacturing and retail for those that work as employee in larger fashion companies, many more fashion designers work independently and will be categorized in the NACE classification under the NACE 74.1 category '*specialised design activities*'. However, the current NACE rev.2 classification does not allow us to capture the group of fashion designers, as the NACE 74.1 category '*specialised design activities*' covers all design disciplines, not only fashion design.

The quantitative data presented in this report therefore underestimate the contribution of design in the employment creation and economic performance of the EU fashion industries. Conversely, a number of other categories will be overestimated in this report. Although the majority of production in the textiles and leather industry is geared towards the fashion goods industries, some parts of these industries do not directly produce for the fashion goods industries. Nevertheless, they have been incorporated in the data for the total.

Despite these shortcomings, the data do provide a good basis for a quantitative analysis of the economic importance and performance of the EU fashion industries and evolution over time.

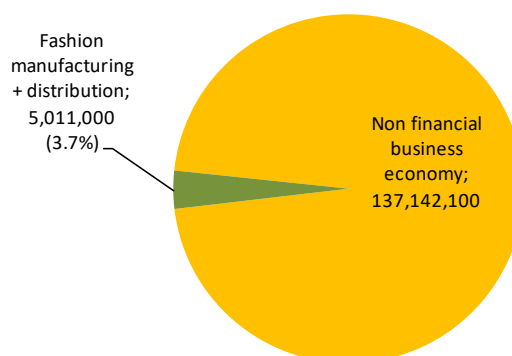
3.2 Size and structure of the EU fashion industries

This section analyzes the structure of the EU fashion industries in terms of employment, geographic concentration and size distribution. The analysis is based on Eurostat data. To the extent possible, we examined the data by sub-industry and over a timeframe of 5 years (2004-2009).

3.2.1 *Total EU fashion industries*

In 2009 a total of 837,618 enterprises were active in the EU fashion industries employing over 5 million persons. This is equivalent to around 3.7% of the total non-financial business economy in 2009 (Figure 7). Within the EU fashion industries, fashion distributors represented nearly 75% of all enterprises and accounted for almost 63% of employment in 2009 (Figure 8 and Figure 9).

Figure 7: Share of persons employed in fashion manufacturing and distribution in total non-financial business economy, 2009

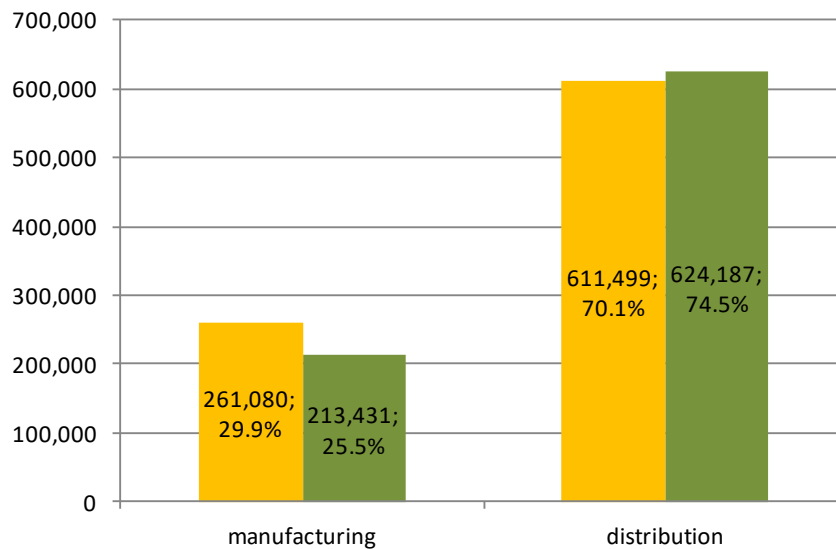


Source: Eurostat, Structural Business Statistics

Since 2004 the total number of enterprises declined by 4%. The downward trend in number of enterprises is also reflected in employment. Whereas in 2004 the total number of persons employed amounted to 5,511,667, the number dropped to 5,011,000 in 2009 or a decline of 9.1% in a time span of 5 years.

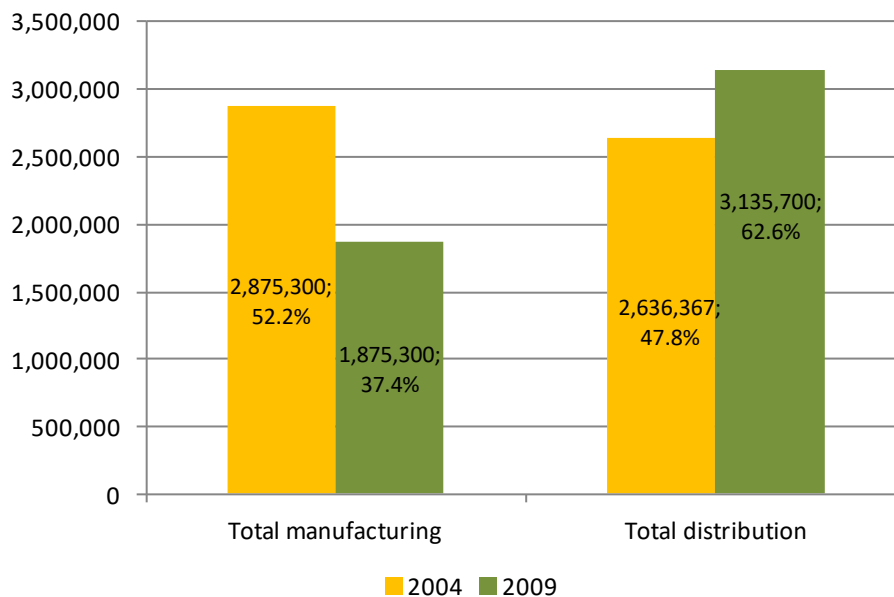
The negative evolution of the industry is driven by a strong decrease in manufacturing activities in Europe, where almost 50,000 enterprises and 1 million jobs disappeared between 2004 and 2009. On the other hand, over that same period around 15,000 enterprises and 500,000 jobs were created in distribution activities. However, the growth in fashion distribution was not sufficient to compensate for the major losses in fashion manufacturing.

Figure 8: Number of enterprises in Fashion, EU27, in 2004 and 2009



Source: Eurostat, Structural Business Statistics

Figure 9: Number of persons employed in fashion, in 2004 and 2009, EU27



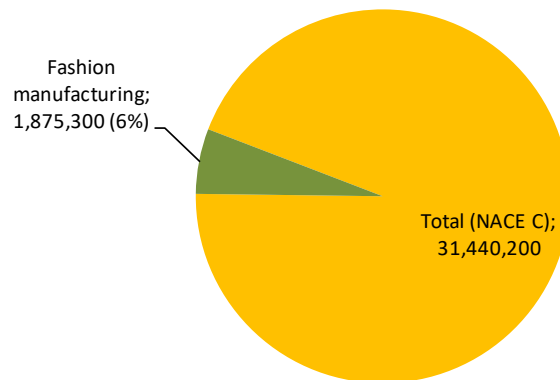
Source: Eurostat, Structural Business Statistics

3.2.2 Fashion manufacturing

3.2.2.1 Number of enterprises and employment

Focusing on the manufacturing activities in the EU fashion industries (manufacturing of both intermediate goods and finished fashion goods, cfr. annex 1), we find that in 2009 nearly 1.9 million persons were employed in fashion manufacturing, representing approx. 6% of total manufacturing employment.

Figure 10: Share of persons employed in fashion manufacturing in total manufacturing, 2009



Source: Eurostat, Structural Business Statistics

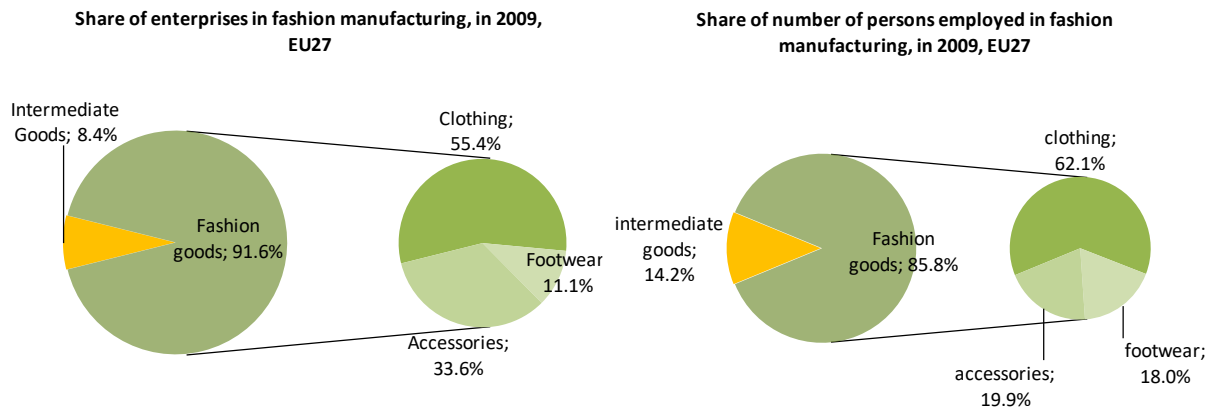
Within the fashion manufacturing activities, we distinguish between the following categories of sub-industries (see also Annex 1):

- Manufacturing of intermediate goods
- Manufacturing of clothing
- Manufacturing of footwear
- Manufacturing of accessories

In 2009, 91.6% of the fashion manufacturing enterprises were active in the production of finished fashion goods (clothing, footwear or accessories), while the remaining 8.4% were active in intermediate goods manufacturing. In terms of employment, the share of persons employed in the latter was slightly higher (14.2%), pointing to a larger than average scale of operations in the manufacturing of intermediate goods.

Within the group of finished fashion goods producers, 55.4% of the enterprises were active in the production of clothing, followed by 33.6% producing accessories and 11% producing footwear. In terms of employment, the share of persons employed in clothing was even higher (62.1%) while the share of persons employed in accessories is much lower (only 19.9%), pointing to the fact that fashion accessories are on average produced in much smaller enterprises (i.e. with on average a lower number of employees per enterprise) than clothing and footwear. This is also confirmed by the data on size distribution in the next paragraph.

Figure 11: Share of enterprises and number of persons employed in fashion manufacturing, in 2009, EU27



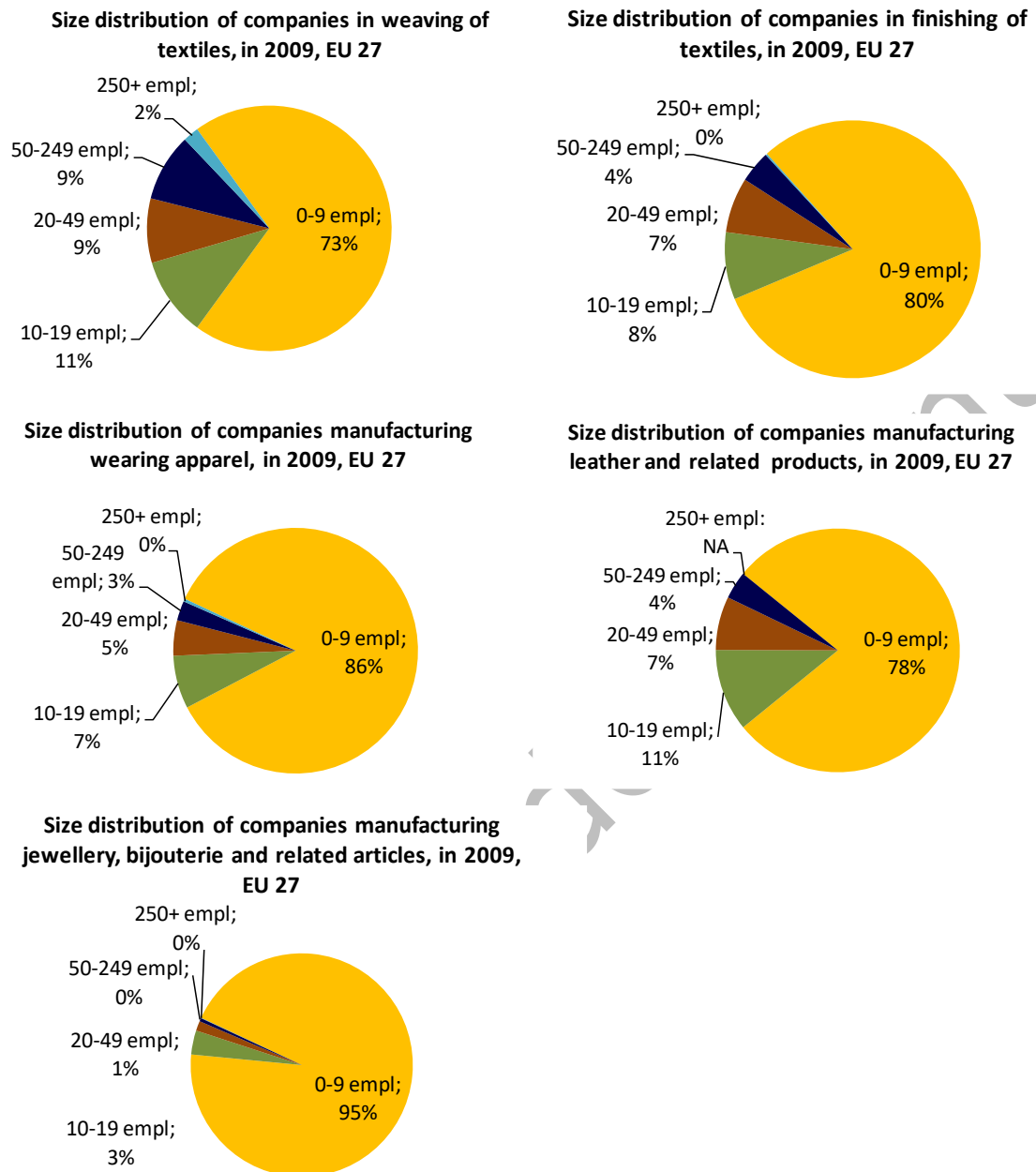
Source: Eurostat, Structural Business Statistics

3.2.2.2 Size distribution

Looking at size distribution in the EU fashion manufacturing industries, we observe that in all sub-industries micro enterprises (<10 empl) are by far most dominantly present, with a share of at least 73%. Their share is highest in the group of companies manufacturing fashion accessories (jewellery, bijouterie and related articles), where micro enterprises represent even 95% of the total number of enterprises.

Only in the weaving of textiles industries, large companies are present, and this only for 2% of the total. This sub-industry also has the highest share of medium-sized (50-249) companies (9% compared to 4% or less in the other sub-industries).

Figure 12: Size distribution of companies in weaving of textiles and companies in finishing of textiles, in 2009, EU 27

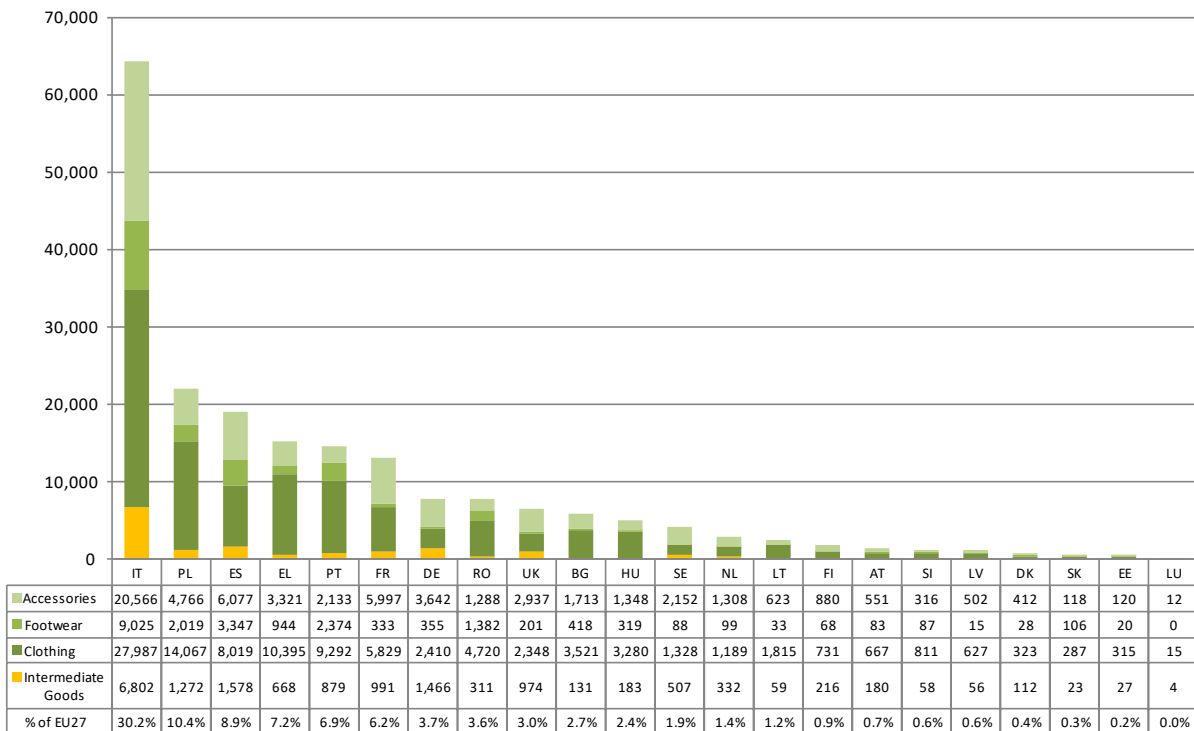


Source: Eurostat, Structural Business Statistics

3.2.2.3 Geographic concentration

Within the EU27, by far the highest concentration of fashion manufacturing activities (in all sub-industries) can be found in Italy. In 2009, over 30% of all fashion manufacturing enterprises in Europe were located in Italy employing over 26% of total employment in fashion manufacturing (see Figure 13 and Figure 14). Other EU27 countries where fashion manufacturing enterprises are relatively strongly represented are the other Southern European countries (Spain, Greece and Portugal), the large Eastern European countries (Poland, Romania, Bulgaria and Hungary), UK and France.

Figure 13: Number of enterprises in EU fashion manufacturing, by sub-industry, by country, 2009 (a, b)

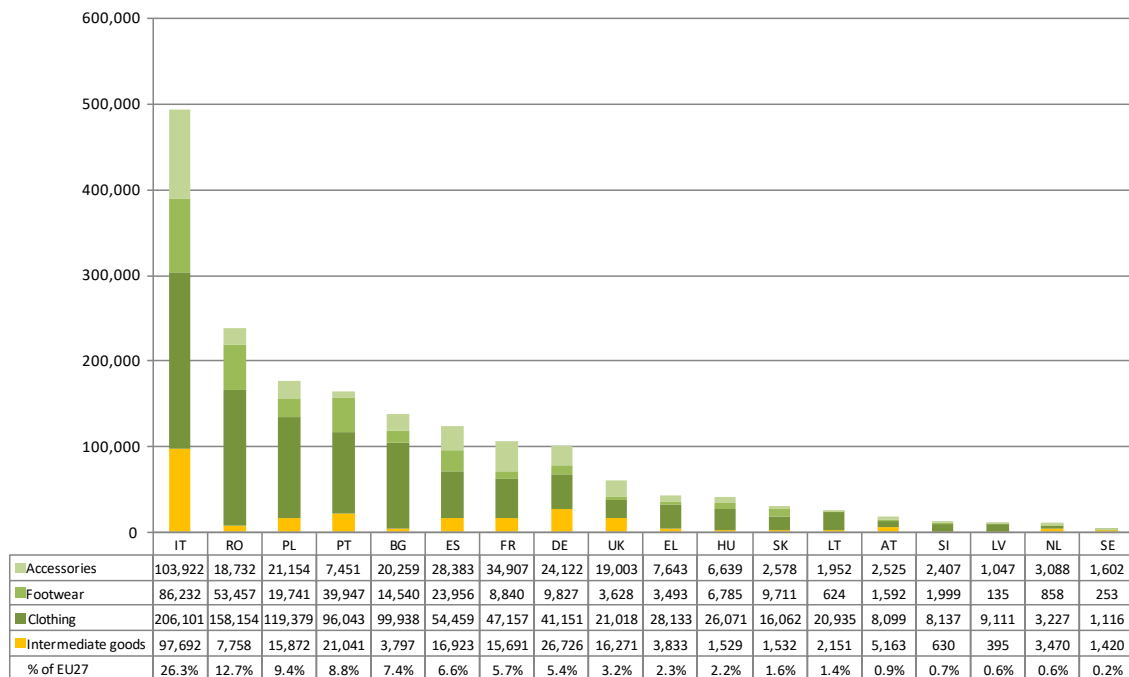


(a) Data was not available for all EU MS

(b) Data for manufacture of jewellery for SK and UK includes also NACE 32.11 (striking of coins)

Source: Eurostat, Structural Business Statistics

Figure 14: Number of persons employed in fashion manufacturing, by sub-industry, by country, 2009 (a,b)



(a) Data was not available for all EU Ms

(b) Data for manufacture of jewellery for LT, NL, AT, SK and SE includes also NACE 32.11 (striking of coins)

Source: Eurostat, Structural Business Statistics

Analyzing the geographic concentration of enterprises by sub-industry, we find that in the Baltic States, the smaller European countries (Greece and Portugal) and in all observed Eastern European countries, the share of clothing in the total is 50% or more, with the highest share in Lithuania (72%) and Greece (68%). Looking at employment, the share of clothing is even higher in the observed Eastern and Southern European countries, with a share above 80% in Latvia and Lithuania. These countries are also characterized by lower than average wage costs.

In all observed Western and Northern European countries, including Italy and Spain, the share of clothing is below 50% with the lowest shares in Germany (31%) and Sweden (33%), to the benefit of accessories and intermediate goods. If we do not consider intermediate goods, we see that the share of accessories in the observed Western and Scandinavian countries even strongly exceeds the share of clothing with for example a 60% share of accessories and only 37% share of clothing in Germany.

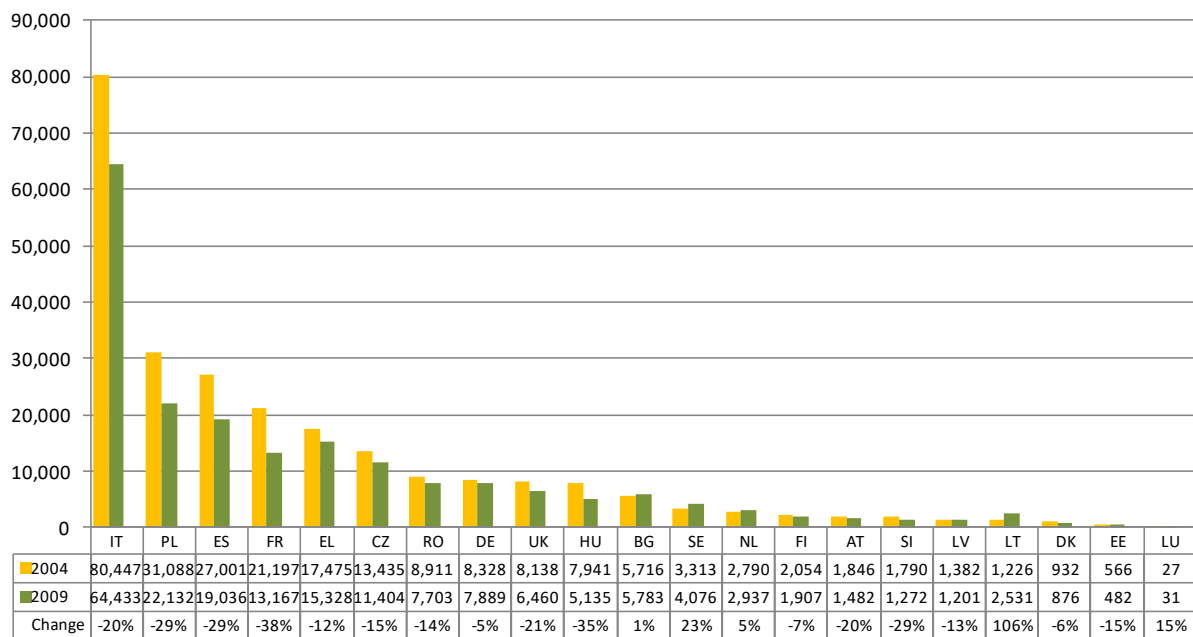
The share of footwear is highest in Slovakia (20%), Romania (18%) and Southern Europe (18% in Spain, 16% in Portugal, 14% in Italy), while in the other observed countries, the share of footwear is (mostly far) below 10%.

Evolution over time

The decline in EU fashion manufacturing activities between 2004 and 2009 (cfr. Figure 9) is most pronounced in those countries with the highest concentration of fashion enterprises (Figure 15 and Figure 16). The four countries with the highest number of enterprises (Italy, Poland, Spain France) all suffered from a decline of at least 20% in the number of enterprises between 2004 and 2009. Also some countries with a small number of enterprises, such as Slovenia, Austria and Estonia suffered from significant losses in the number of enterprises (with a decline of 29%, 20% and 15% respectively). Yet, in most countries with a relatively small number of enterprises, the situation has remained more or less stable over time. In some countries, like Lithuania, Sweden and Luxemburg, the number of enterprises even has increased.

In line with the results of Figure 9, in all Member States the decline in fashion manufacturing is even more pronounced in the employment figures than in the number of enterprises (Figure 16). Contrary to Figure 15, the decline in employment is noticeable in all countries (both with a high and low number of persons employed in fashion manufacturing), with a drop of at least 25% in all observed countries. The decrease is most pronounced in Lithuania, Hungary, Greece and Romania, with at least 50% of jobs lost between 2004 and 2009. Combining both trends, we can conclude that contrary to a concentration trend in many other manufacturing industries, the EU fashion industries has evolved to even smaller average company sizes between 2004 and 2009.

Figure 15: Number of enterprises in fashion manufacturing, in 2004 and 2009, by country (a,b,c)



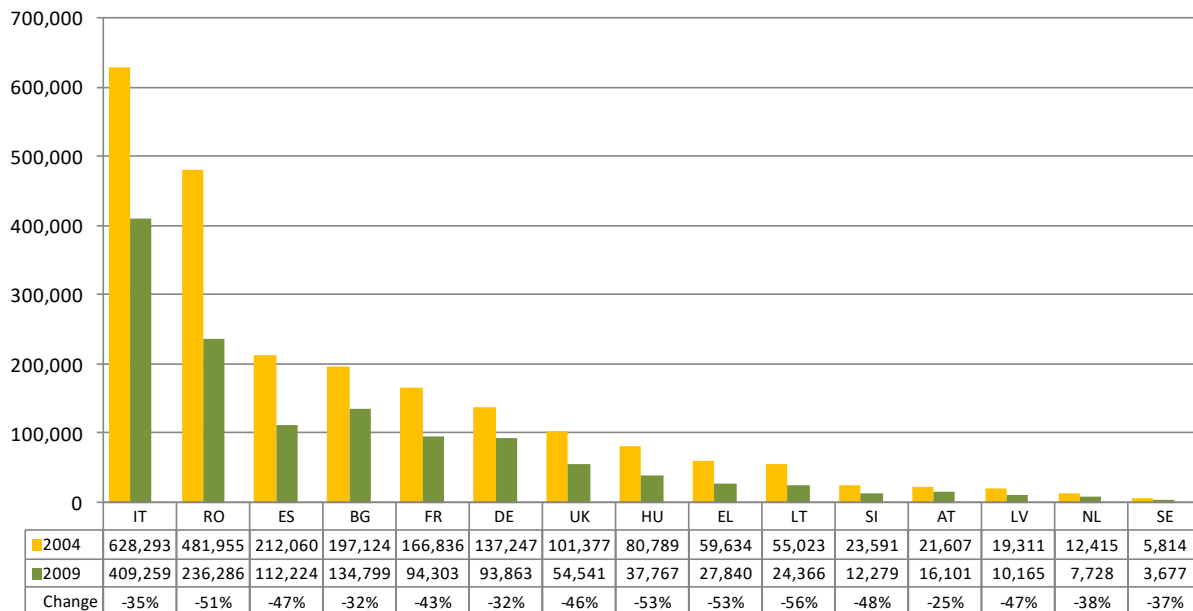
(a) Data was not available for all EU Ms

(b) Data for EU27, BG, CZ, EL and RO includes data from 2005 for certain NACE codes

(c) Data for BG, LT and UK includes NACE Rev. 1.1 36.2 instead of 36.22

Source: Eurostat, Structural Business Statistics

Figure 16: Number of persons employed in fashion manufacturing, in 2004 and 2009, by country (a, b, c, d, e, f)



(a) Data was not available for all EU Ms

(b) 2004 Data for EU27, BG, EL, RO, SI includes data for 2005

(c) 2004 Data for BG, LT, NL, RO, SE, UK includes NACE Rev. 1.1 code 36.2 instead of 36.22

(d) 2009 Data for manufacturing of jewellery for LT, NL, AT, SK, SE includes also NACE 32.11 (striking of coins)

(e) 2009 Data for UK includes data from 2008

(f) 2009 Data for FR: only data for # of employees available; we computed the # persons employed by means of the EU27 proportion of # employees/# persons employed for each of the different fashion manufacturing industries

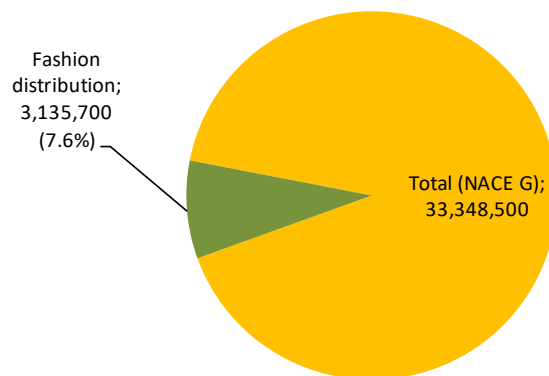
Source: Eurostat, Structural Business Statistics

3.2.3 Fashion distribution

3.2.3.1 Number of enterprises and employment

In 2009, over 3.1 million persons were employed in the EU fashion distribution. In terms of persons employed, fashion distribution represented around 7.6% of the total wholesale and retail trade in 2009.

Figure 17: Share of persons employed in fashion distribution in total wholesale and retail trade, 2009



Source: Eurostat, Structural Business Statistics

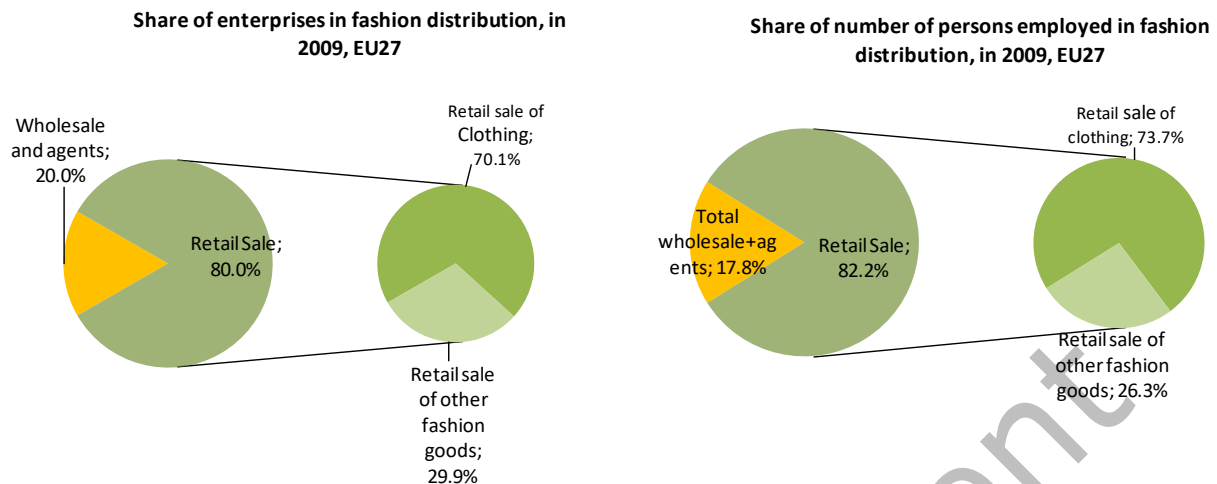
Within the fashion distribution activities, we distinguish between the following categories of sub-industries (see also Annex 1):

- Wholesale and agents
- Retail sale of clothing
- Retail sale of other fashion goods

In 2009, 80% of the fashion distributors were active in retail sale, while the remaining 20% were active in wholesale (i.e. 'wholesale and agents') (Figure 18). In terms of employment, the shares are more or less comparable, with 82.2% of the persons working in retail sales and 17.8% in wholesale (and agents).

Within the group of retailers, 70.1% are retailers of clothing while 29.9% are retailers of other fashion goods. In terms of employment, the distribution is rather similar with 73.7% of the persons employed working for clothing retailers and 26.3% for retailers of other fashion goods.

Figure 18: Share of enterprises and number of persons employed in fashion distribution, in 2009, EU27

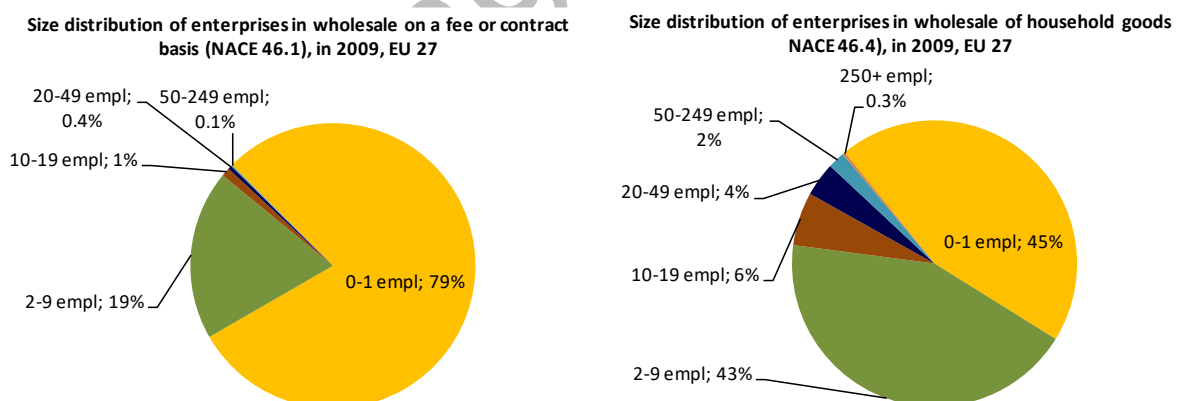


Source: Eurostat, Structural Business Statistics

3.2.3.2 Size distribution²⁸

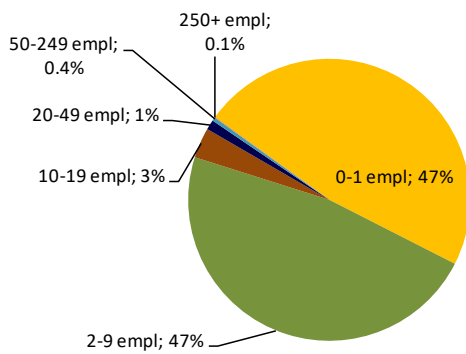
In EU fashion distribution, the large share of micro enterprises (<10 empl) is even more pronounced than in fashion manufacturing. In wholesale of household goods and in retail sale of other goods in specialized stores, respectively 45% and 47% are sole proprietors. In wholesale on a fee or on contractual basis, sole proprietors even represent 79% of all enterprises.

Figure 19: Size distribution of enterprises in wholesale on a fee or contract basis (NACE 46.1), wholesale of household goods (NACE 46.4) and retail sale of other goods in specialized stores (NACE 47.7), in 2009, EU 27



²⁸ Analysis of size distribution in EU fashion distribution is based on size distribution data at 3-digit NACE level due to lack of data at the more detailed 4-digit level.

Size distribution of enterprises in retail sale of other goods in specialized stores (NACE 47.7), in 2009, EU 27

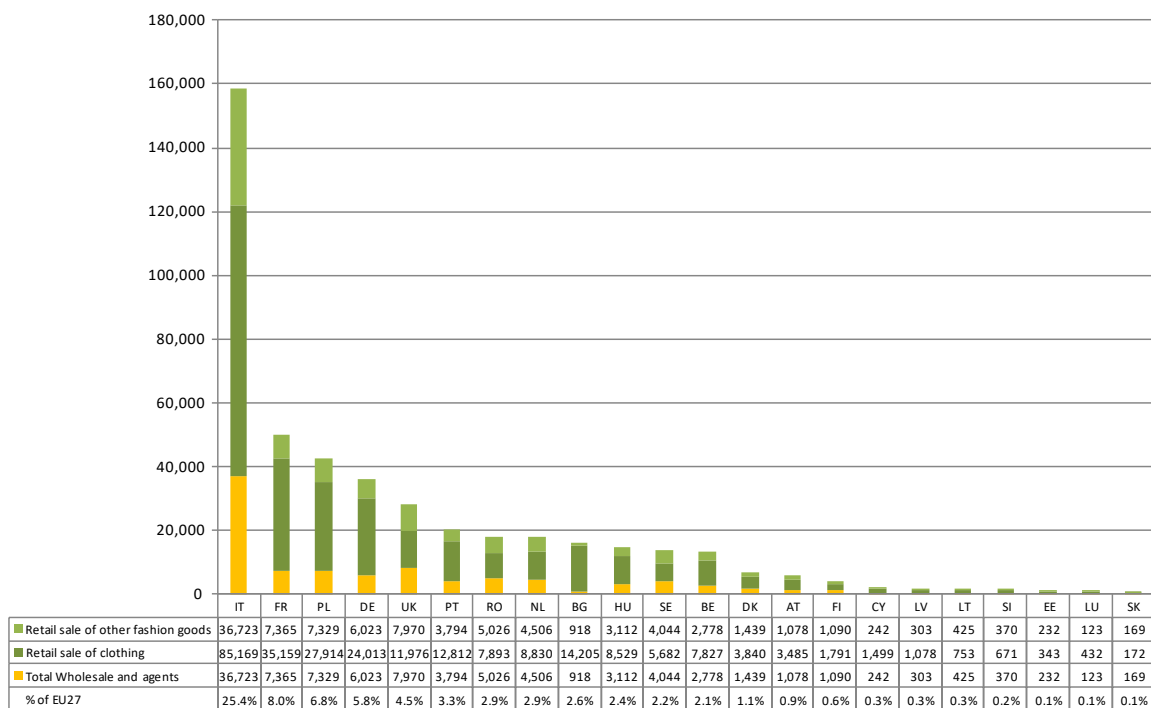


Source: Eurostat, Structural Business Statistics

3.2.3.3 Geographic concentration

Similar to the situation for fashion manufacturing, Italy²⁹ is – of the observed Member States – by far the country with the largest number of enterprises in fashion distribution, in all sub-industries (see Figure 20). Other important fashion distribution countries in terms of number of enterprises are France, Poland, Germany and the UK.

Figure 20: Number of enterprises in fashion distribution, 2009 (a, b)



(a) Data was not available for all EU Ms

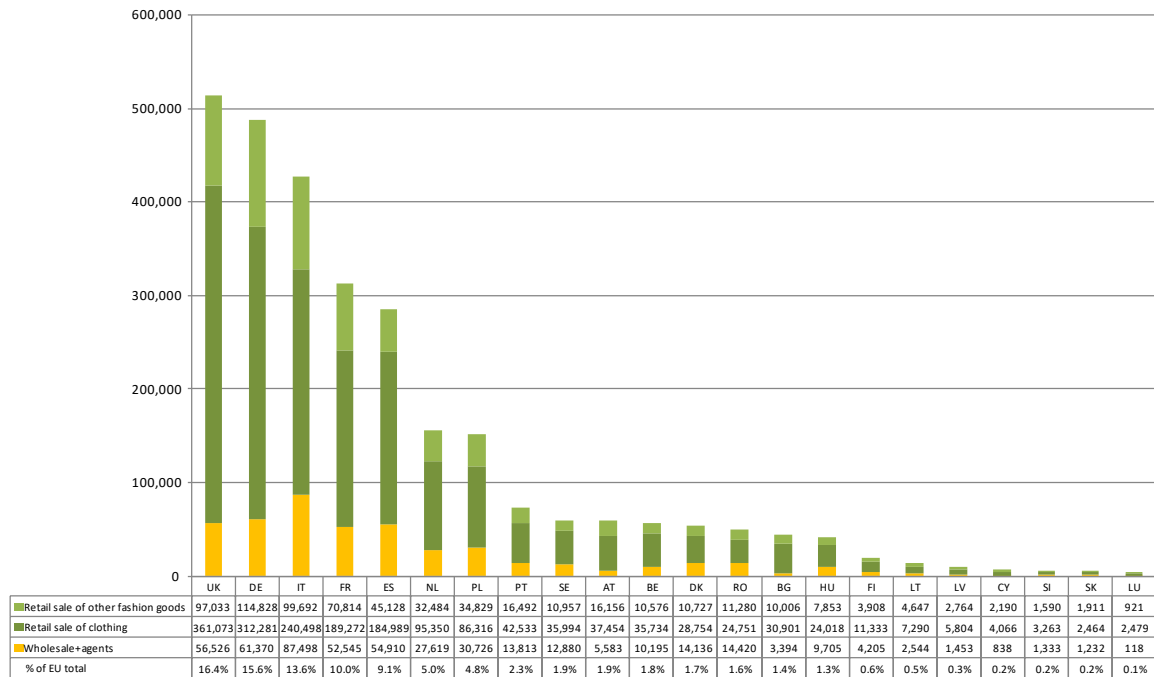
(b) Data for DE and DK includes data from 2008

Source: Eurostat, Structural Business Statistics

²⁹ No observations for Spain and Greece, so we cannot draw conclusions about the situation in whole Southern Europe.

Unlike for all previous indicators on geographic concentration (of manufacturing and distribution), Italy is not ranked number 1 in terms of persons employed in fashion distribution, but ranked at position 3, after UK and Germany. Other important countries in terms of employment in fashion distribution are Spain, France, the Netherlands and Poland. Except for Poland, employment in fashion distribution is limited in Eastern Europe. This clearly differs from the situation in fashion manufacturing. While fashion manufacturing is largely relocated to low labour cost countries, this is less the case in distribution. The element of 'being closely located to the customer' plays a much more important role in the location decision of enterprises.

Figure 21: Number of persons employed in fashion distribution, 2009 (a, b)



(a) Data was not available for all EU Ms

(b) Data for DE and DK includes data from 2008

Source: Eurostat, Structural Business Statistics

Focusing on the geographic concentration by sub-industry at country level, retail sale of clothing has the highest share in the number of fashion distribution enterprises in all observed countries, with the highest share in Bulgaria (89%), Cyprus (76%) and France (70%) and the lowest share in Sweden (41%) and Slovakia (34%). The share of employment in retail sale of clothing is around 60% or more in nearly all observed countries.

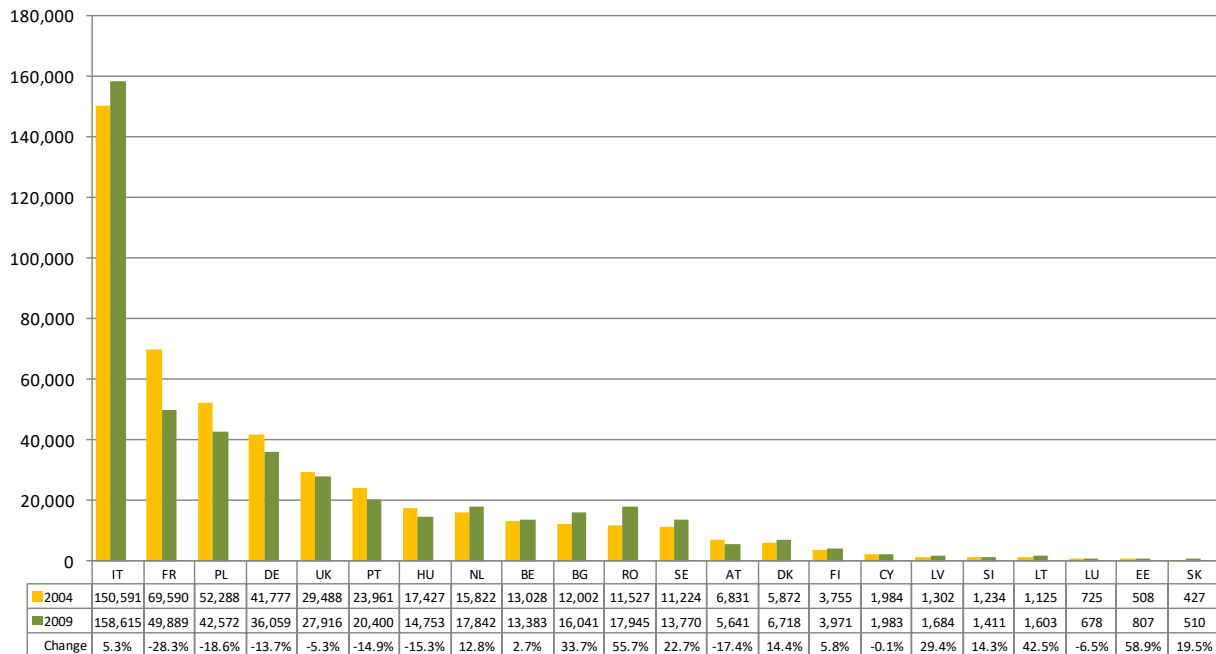
The geographic analysis does not reveal a specific pattern. In all parts of Europe there are countries with a high share of retail of clothing versus a lower share. Neither the size of the country seems to make a difference. Contrary to manufacturing, wage costs seem to have a lower impact on the geographical distribution of EU fashion distribution. Market size is a more important driver in the location decision of distributors. This is clearly illustrated in Figure 21.

Evolution over time

Contrary to fashion manufacturing, and in line with our results under 3.2.1, the number of enterprises in fashion distribution has increased over time in most of the observed countries (see Figure 22). Except for Italy, this increase mainly occurred in the countries

with a limited number of fashion distributors. The increase was highest in Estonia (59%) and Romania (56%). Some large fashion distributing countries, like France, Poland and Germany, did face a decline of fashion distributors over time, with a drop of 28%, 18% and 14% respectively.

Figure 22: Number of enterprises in fashion distribution, in 2004 and 2009, by country (a, b)



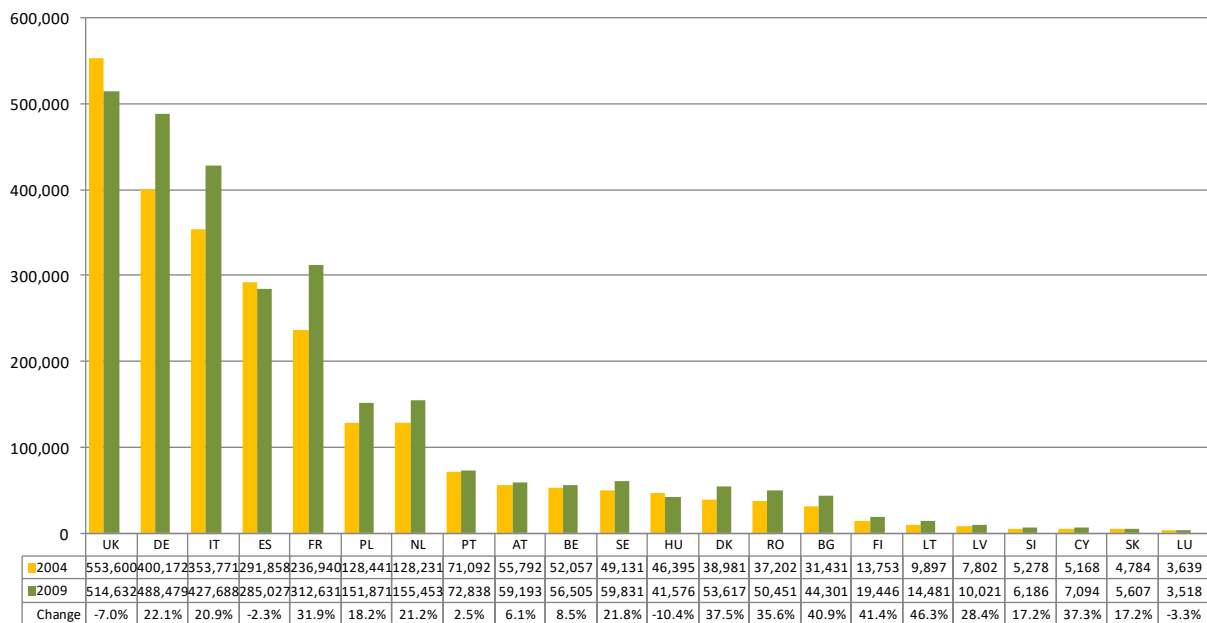
(a) Data was not available for all EU MS

(b) 2009 data for DE and DK includes data for 2008

Source: Eurostat, Structural Business Statistics

The decline in number of enterprises in some important fashion distribution countries was not so much reflected in employment (see Figure 23). In nearly all observed countries, the number of persons employed in fashion distribution has increased. The increase is highest in Lithuania (46%), Finland and Bulgaria (41%). But also in the countries with a high concentration of employment in fashion distribution, we see a rise of about 20% (Germany and Italy) to even more than 30% (in France). In the UK and Spain, the number of persons employed dropped with 7% and 2% respectively.

Figure 23: Number of persons employed in fashion distribution, in 2004 and 2009, by country



(a) Data was not available for all EU MS

Source: Eurostat, Structural Business Statistics

3.2.4 Indirect economic impact of the EU fashion industries

Whereas the previous paragraphs focused on the direct employment within the EU fashion industries, the discussion in section 2.2 has made clear that the fashion industries are strongly linked to several other industries such as the event industry, advertising industry, beauty & cosmetics industry etc. (see also Figure 4). The development of activities in the EU fashion industries therefore also creates spillover effects to several other industries.

A first type of indirect impact is generated through the expenses of fashion companies themselves. To present fashion collections fashion companies make use of models, photographers, cosmetic products, transportation services, travel agencies, hotel services etc. for photo shoots or fashion shows. They make use of advertising companies for marketing and communication purposes. All these expenses generate turnover and employment in other industries.

A second type of indirect economic effect comes from the 'consumers' of goods and services of the fashion industries. The organization of international fashion weeks (e.g. in Paris, London, New York) attracts many buyers and media to the event. As these fashion events normally take several days, organizers, participants and attendants spend money in the local economy - mainly in the HoReCa business, thus creating additional jobs. More general, final consumers often combine the buying of fashion goods with other activities such as a visit to a café or restaurant, visiting an attraction or even extending it to a shopping trip with overnight stay(s). Again, fashion generates indirect economic effects in other industries.

Thirdly, fashion also generates so-called catalytic effects, i.e. effects in the economy that cannot 100% be attributed to the fashion industries, but in which fashion industries at least partly play a role. One catalytic effect is the spillover effects of the strong international reputation of EU fashion industries in terms of creativity and quality on related EU industries, where design and creativity play an important role as well (e.g. luxury industries).

It goes beyond the scope of this study to estimate the indirect economic effects of the EU fashion industries on the rest of the economy. However, the above discussion provides some arguments to believe that this indirect economic impact of fashion is considerable. This is also confirmed by a study on the economic impact of the fashion industry in the UK³⁰, where it was found that every job in the fashion industry created an additional 0.6 jobs in other industries. As the above mentioned multiplier in the UK study only relates to the first type of indirect impact and the definition of fashion industries is broader than in this study, we can assume that the multiplier is an underestimate of the real total indirect economic impact of the EU fashion industries.

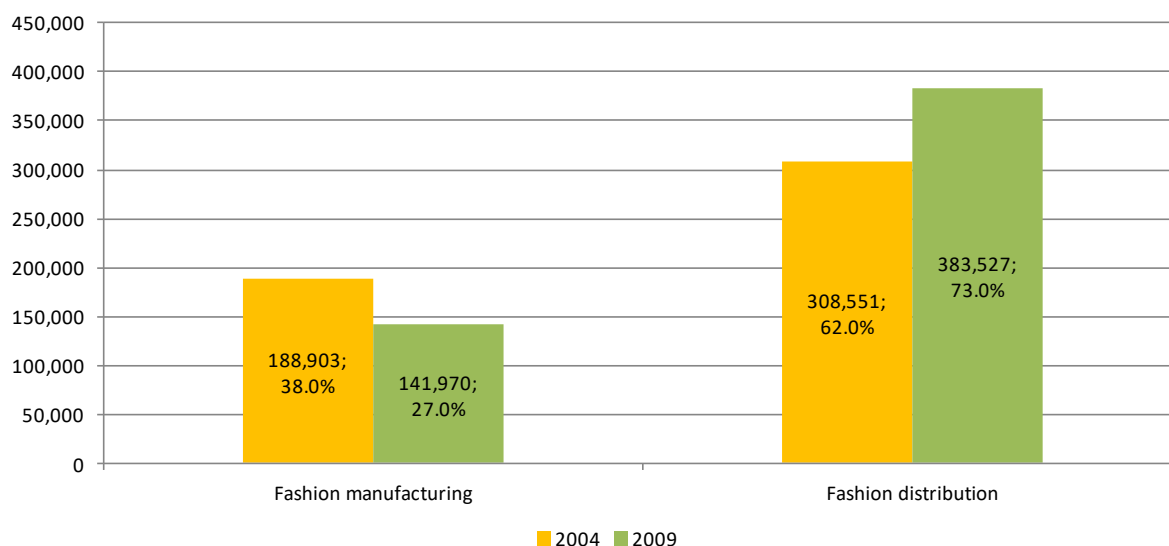
3.3 Economic performance

To evaluate the economic performance of the EU fashion industries, the following industry indicators have been analyzed: turnover, value added, productivity and profitability. In addition to the industry performance indicators, the analysis also looked into evolutions in consumer prices and expenditure. To the extent possible, data were analyzed by country and sub-industry.

3.3.1 Turnover

In 2009 the total turnover of the EU fashion industries amounted to 525.5 billion €, implying an increase of 5.6% since 2004 (Figure 24). The turnover share of fashion distribution amounted to 73% (383.5 billion €), an increase of 24.3% compared to the situation in 2004. On the other hand, turnover in fashion manufacturing decreased with nearly 25% in the same time span. This evolution strongly reflects the evolution in the industries' structure (cfr. section 3.2).

Figure 24: Turnover in fashion, 2004 and 2009, in mio €, EU27



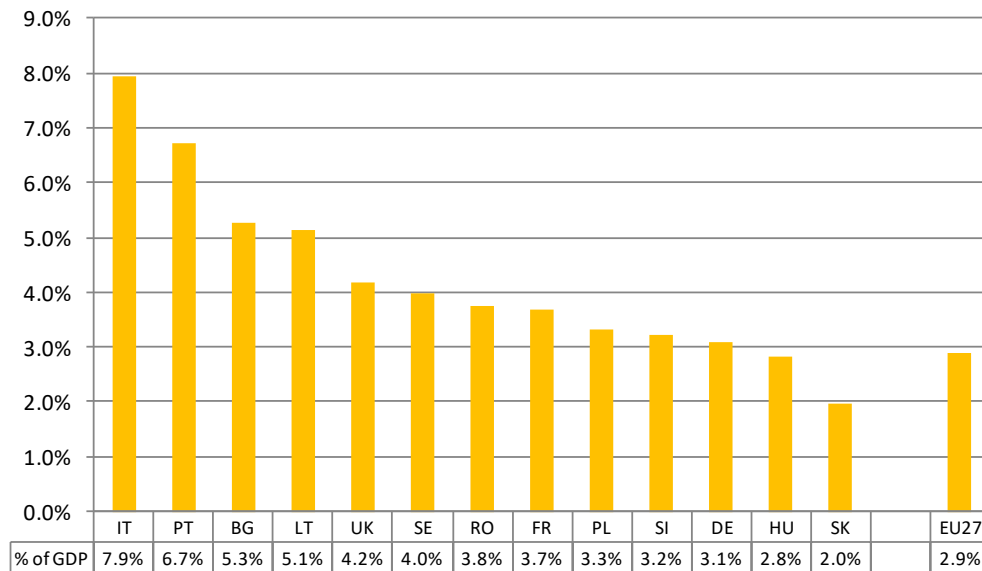
(a) Data for retail sale of watches and jewellery is 2003 data for EU25

Source: Eurostat, Structural Business Statistics

³⁰ Oxford Economics (2011), "The value of the UK fashion industry", report on behalf of the British Fashion Council, London, 108 pp.

Looking at the turnover share in total GDP, the EU fashion industries represented nearly 3% of total GDP in the EU27 in 2009 (Figure 25). The share of fashion industries in GDP is highest in Italy, where turnover of fashion manufacturing and distribution represents 7.9% of the GDP, far above the EU27 average. Other countries with a share of fashion turnover above 5% of GDP are Portugal, Bulgaria and Lithuania. Since a large number of EU27 countries are missing in this table, it is difficult to draw conclusions with respect to geographic patterns.

Figure 25: Turnover of fashion manufacturing and distribution as % of GDP, 2009



Source: Eurostat, Structural Business Statistics

3.3.2 Value added and productivity

More interesting indicators to evaluate the economic performance of an industry than turnover are value added and productivity. Value added refers to the additional or incremental value that has been created by an activity or venture. Productivity (apparent labour productivity) relates the total amount of value added to employment and measures the amount of value added that has been produced per person employed.

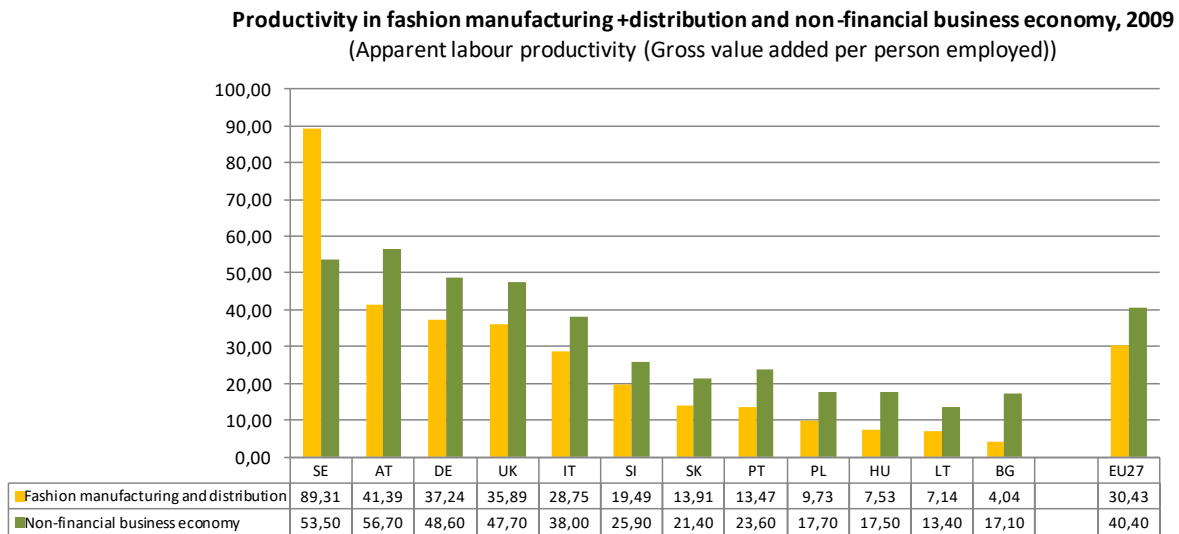
3.3.2.1 Total fashion industries

In 2009 the EU fashion industries generated value added for a total of 30.2 billion € or approx. 2.3% of total value added in the non-financial business economy. Compared to the share of the EU fashion industries in total employment in the non-financial business economy (3.7%, see Figure 7) the share in total value added is relatively low, pointing to a lower than average level of productivity in the fashion industries. This is confirmed in Figure 26.

In most countries, except for Sweden³¹, productivity in the fashion industries is below the productivity of the non-financial business economy. On average, productivity in the EU non-financial business economy amounts to 40,400 € whereas productivity in the EU fashion industries only amounts to 30,400 €.

³¹ see section on distribution for further details

Figure 26: Productivity in fashion manufacturing +distribution compared to non-financial business economy, 2009, by country (Apparent labour productivity (Gross value added per person employed)) (a, b)



(a) Data was not available for all EU MS

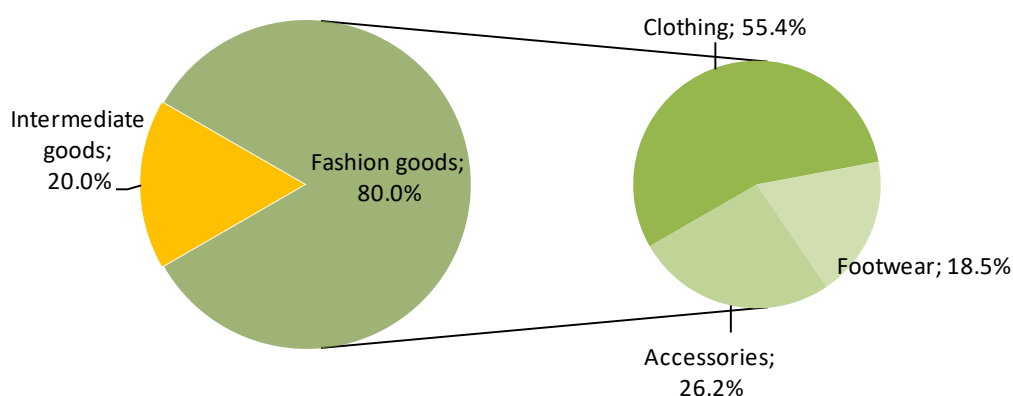
(b) Data for EU 27 non-financial business economy: own computations (excludes NACE E)

Source: Eurostat, Structural Business Statistics

3.3.2.2 Fashion manufacturing

Focusing on the fashion manufacturing activities, 80% of the value added is created by manufacturers of fashion goods (Figure 27). Within this group, more than half of the value added is produced by clothing manufacturers, a quarter by manufacturers of accessories, and the remaining part (18.5%) by footwear manufacturers. Relating the distribution of value added over the different sub-industries to the distribution of employment (cfr. Figure 11), manufacturing of intermediate goods and manufacturing of accessories both have a relatively higher share in value added than in employment, pointing to a higher level of productivity compared to the other sub-industries. Conversely, the share of clothing in the total value added is low compared to its share in employment, pointing to a low level of productivity.

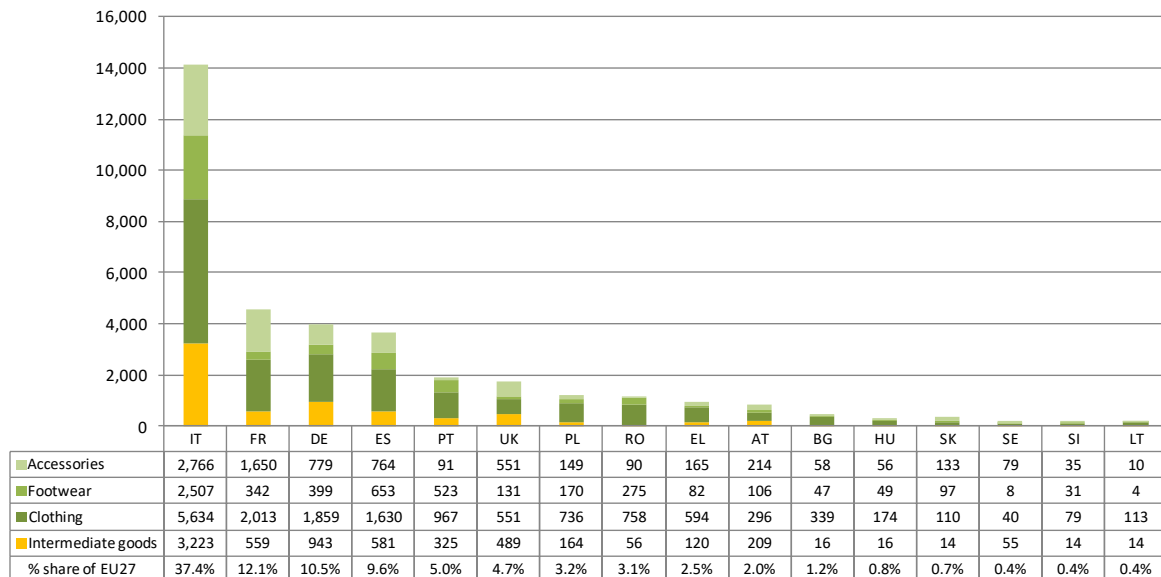
Figure 27: Share of value added in fashion manufacturing, in 2009, EU27



Source: Eurostat, Structural Business Statistics

Looking at the geographic distribution of value added in the EU fashion manufacturing industries, the four highest ranked countries are Italy, France, Germany and Spain. They represent approximately 70% of the total value added of the EU27, with a clear dominance of Italy (accounting for over 37% of total value added).

Figure 28: Value added in fashion manufacturing, in mio €, 2009, by country (a, b)



(a) Data was not available for all EU MS

(b) Data for PL, RO, SK: includes data for 2008

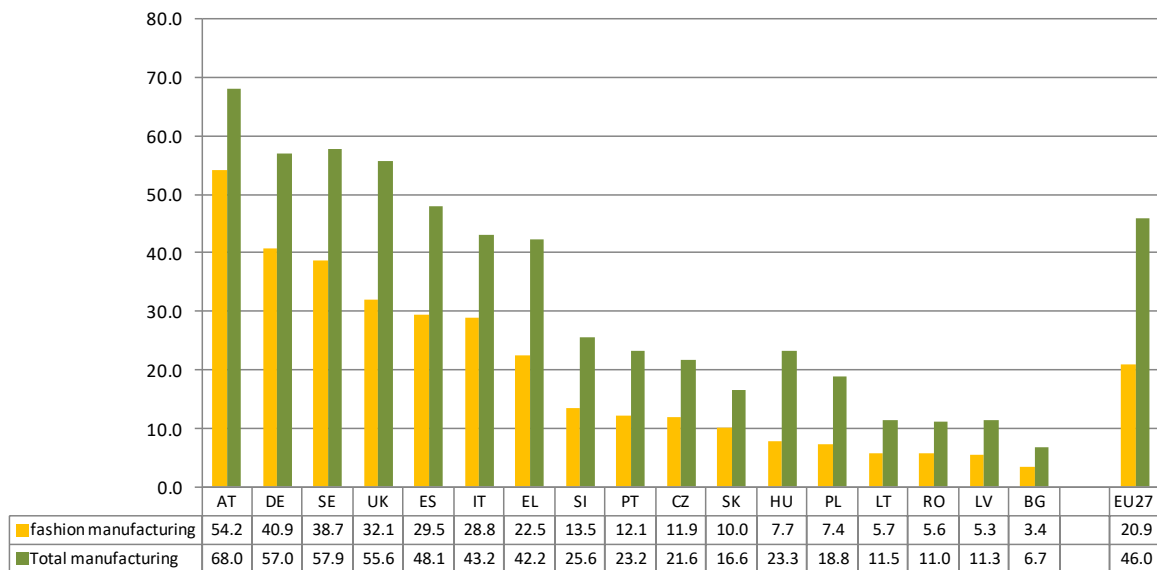
Source: Eurostat, Structural Business Statistics

When we compare the data in Figure 28 with the geographic spread of employment in fashion manufacturing (cfr. Figure 14), we notice that the distribution across Member States radically different. Many Eastern European countries (Romania, Poland, Bulgaria, Hungary) with high shares of employment in the EU fashion manufacturing, only account for a small share of the value added. Other countries such as Italy, France or Germany create a relatively high share of value added compared to their share in employment. The difference in productivity levels across Member States is illustrated in Figure 29.

Countries with the highest productivity in fashion manufacturing are Austria, Germany and Sweden (with respectively 54,200 €, 40,900 € and 38,700 € far above the EU27 average of 20,900 €). Most Eastern European countries are far below the EU27 average, with productivity levels equal to only half the EU level (or even below).

Comparing productivity levels across industries, we find that in all countries the productivity level in fashion manufacturing is remarkably lower than productivity levels in total manufacturing (in some countries even only half of the productivity level of total manufacturing).

Figure 29: Productivity in fashion manufacturing and total manufacturing, 2009, by country (Apparent labour productivity (Gross value added per person employed) (a, b))



(a) Data was not available for all EU MS

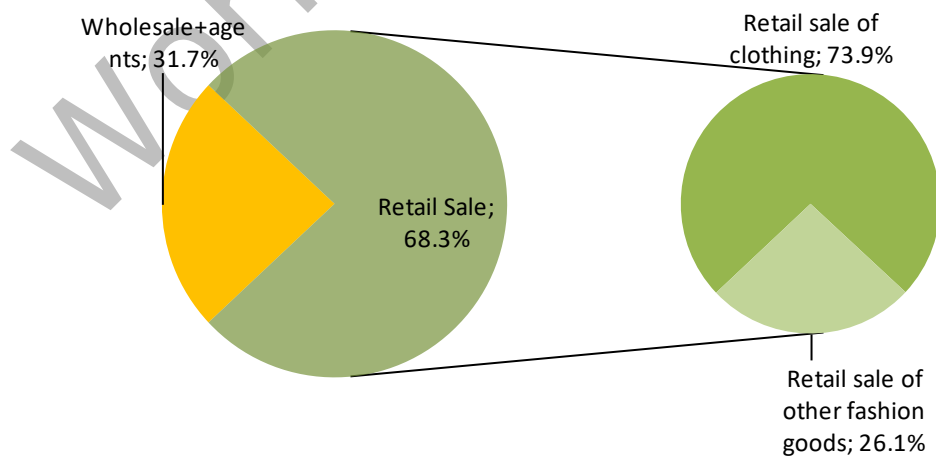
(b) Data for RO from 2008

Source: Eurostat, Structural Business Statistics

3.3.2.3 Fashion distribution

Looking at the distribution of value added over the different sub-industries, retail accounts for approx. 68% of value added in fashion distribution, whereas wholesale and agencies account for almost 32%. The share of the latter sub-industry is remarkably high compared to its share in employment (less than 18% - cfr. Figure 18), thus indicating a significantly higher level of productivity in whole sale and agencies compared to retail.

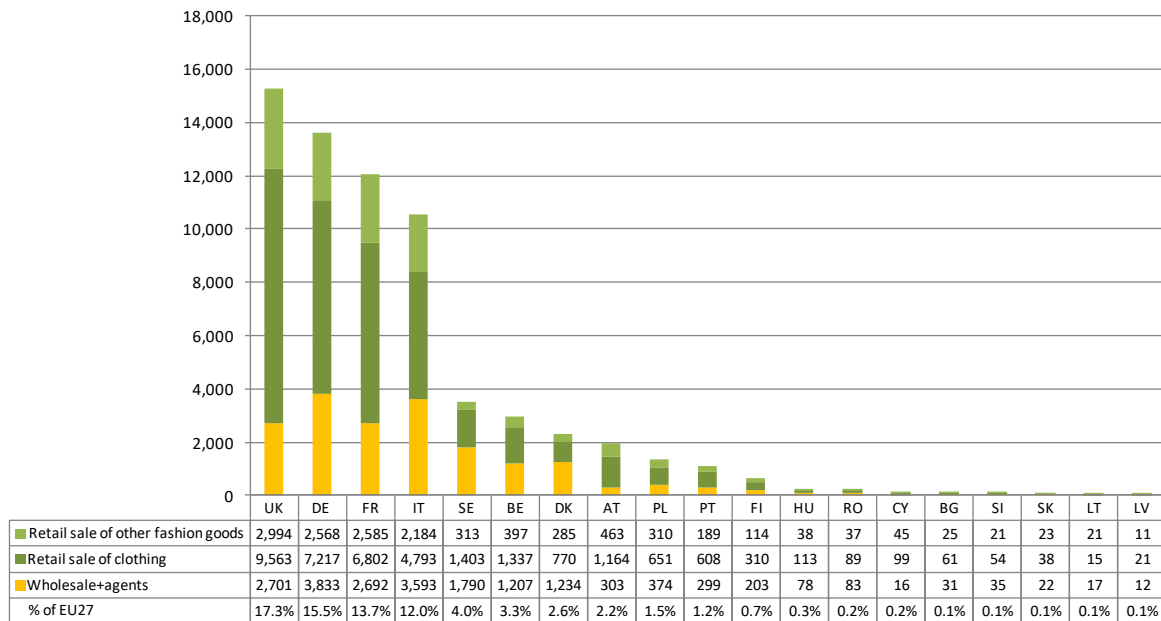
Figure 30: Value Added in fashion distribution, in 2009, EU27



Source: Eurostat, Structural Business Statistics

Contrary to the situation in fashion manufacturing, in fashion distribution the geographic concentration of value added shows less radical differences with the geographic concentration of employment (cfr. Figure 21). For both indicators the top 4 countries are the UK, Germany, France and Italy (although with a slightly different order).

Figure 31: Value added in fashion distribution, in mio €, 2009



(a) Data was not available for all EU MS

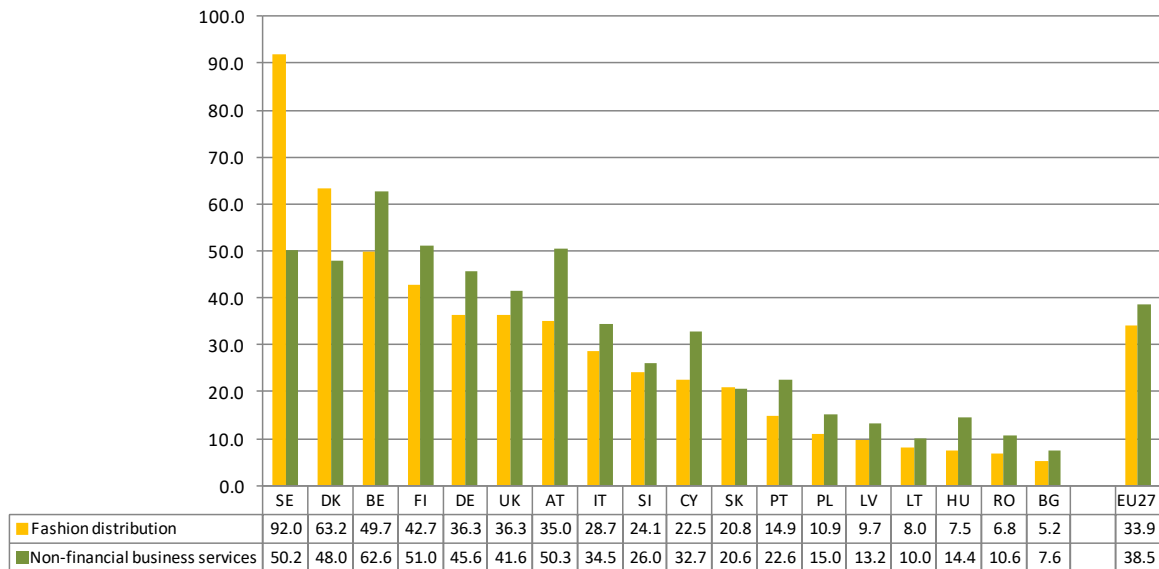
(b) Data for DE and DK includes data for 2008

Source: Eurostat, Structural Business Statistics

Nevertheless, also in fashion distribution productivity levels show significant differences across Member States (Figure 32). Countries with the highest productivity in fashion distribution are the Northern and Western European Countries, with Sweden on top, followed by Denmark and Belgium, with productivity levels around 50,000 € per person or above (in the case of Sweden even 92,000 €). All three countries have a strong presence of wholesale and agency activities (an activity a much higher level of productivity than retail, cfr. above). Again, most Eastern European countries, including Poland, are far below the EU27 average of 33,900 €, with a productivity level of 15,000 € per person employed or less.

If we compare productivity levels of fashion distribution with productivity levels of the non-financial business services, we find that in all countries, except for Sweden and Denmark, productivity level is lower, but the differences are less pronounced than for manufacturing.

Figure 32: Productivity in fashion distribution and non-financial business services, 2009, by country (Apparent labour productivity (Gross value added per person employed)) (a, b)



(a) Data was not available for all EU MS

(b) Data for non-financial business services: own computations

Source: Eurostat, Structural Business Statistics

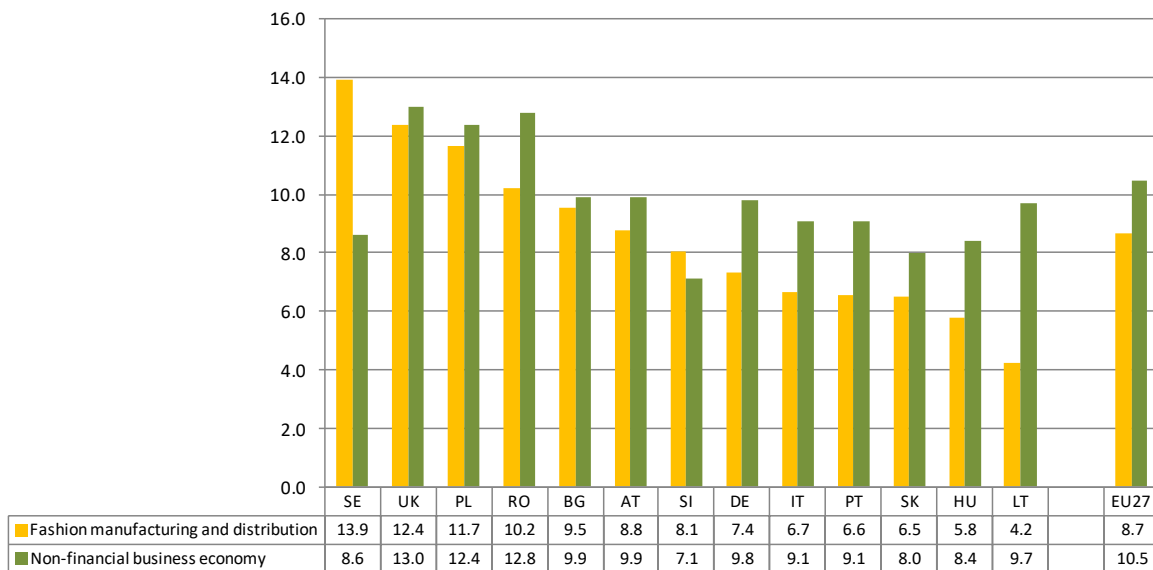
3.3.3 Profitability

Next to productivity also profitability is an important indicator of the economic performance of an industry. Whereas productivity is an indicator for the efficiency of business organization, profitability also takes into account the costs of input factors and production. The analysis shows that both indicators show different results across Member States.

3.3.3.1 Total fashion industries

Profitability of the EU fashion industries equaled 8.7% in 2009 (Figure 33), almost 2 percentage points below the EU average profitability rate of the non-financial business economy. Similar to productivity, the profitability in the Swedish fashion industries is larger than the profitability of the non-financial business economy, while for all other countries the opposite holds true. Differences are, however, less pronounced.

Figure 33: Profitability in EU fashion industries and non-financial business economy, 2009, by country (Gross operating surplus/turnover (gross operating rate) (%))



(a) Data was not available for all EU MS

(b) Data for EU 27 non-financial business economy: own computations (excludes NACE E)

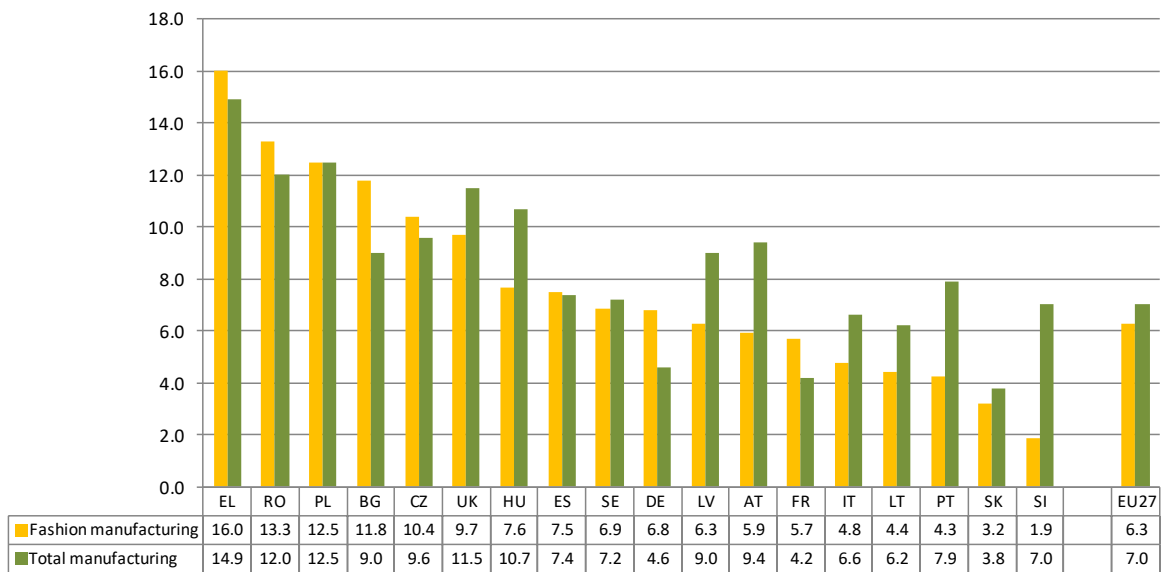
Source: Eurostat, Structural Business Statistics

3.3.3.2 Fashion manufacturing

Focusing on fashion manufacturing, profitability rates are highest in (most) Eastern and Southern European countries, with the highest average profitability rate in Greece, followed by Romania and Poland, all far above the EU27 average profitability rate of 6.2% (Figure 34). Exceptions are Portugal, Slovakia and Slovenia.

Comparing the country analysis on profitability with that on productivity, we find that they are very different. Whereas different Eastern European countries (Poland, Romania, Bulgaria, Czech Republic) showed levels of productivity far below the EU average, they do generate profitability rates significantly above the EU average. Conversely, several countries with high levels of productivity do not manage to translate this into high profitability rates. Examples in the latter group are Austria, Germany and especially Italy. One important explaining factor for this (though not the only one) is the significant difference in labour cost across Member States (see Figure 35). Very low wage levels in Eastern European countries more than compensate for the low levels of productivity, whereas the reverse does not seem to hold in the Western European countries.

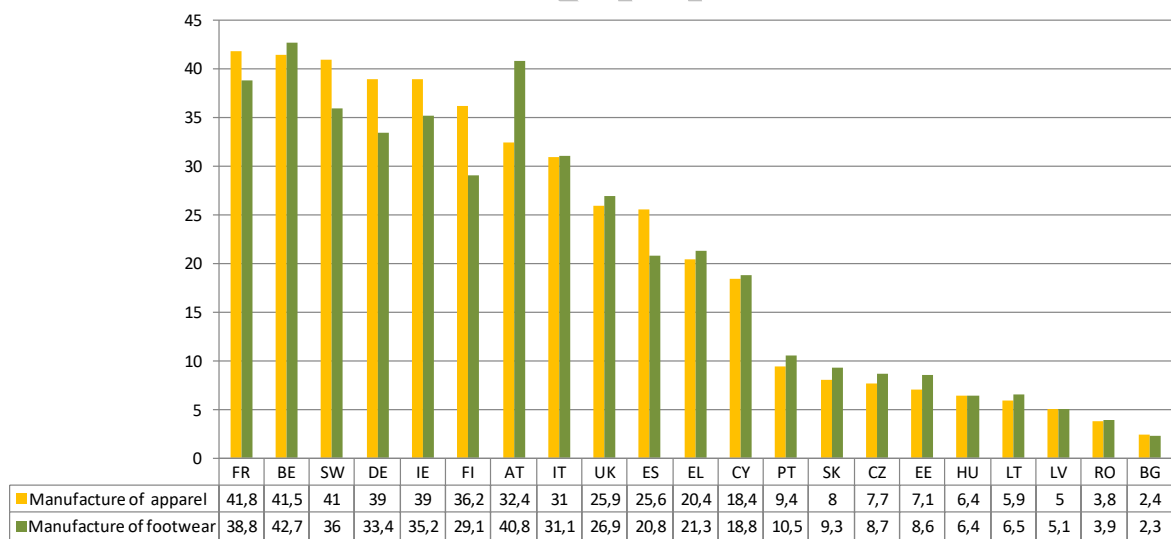
Figure 34: Profitability in fashion manufacturing and total manufacturing, 2009; by country (Gross operating surplus/turnover (gross operating rate) (%)) (a)



(a) Data was not available for all EU MS

Source: Eurostat, Structural Business Statistics

Figure 35: Labour cost per employee FTE, in thousand €, 2009; by country (a,b)



(a) Data was not available for all EU MS

(b) 2009 data for UK and RO includes data for 2008

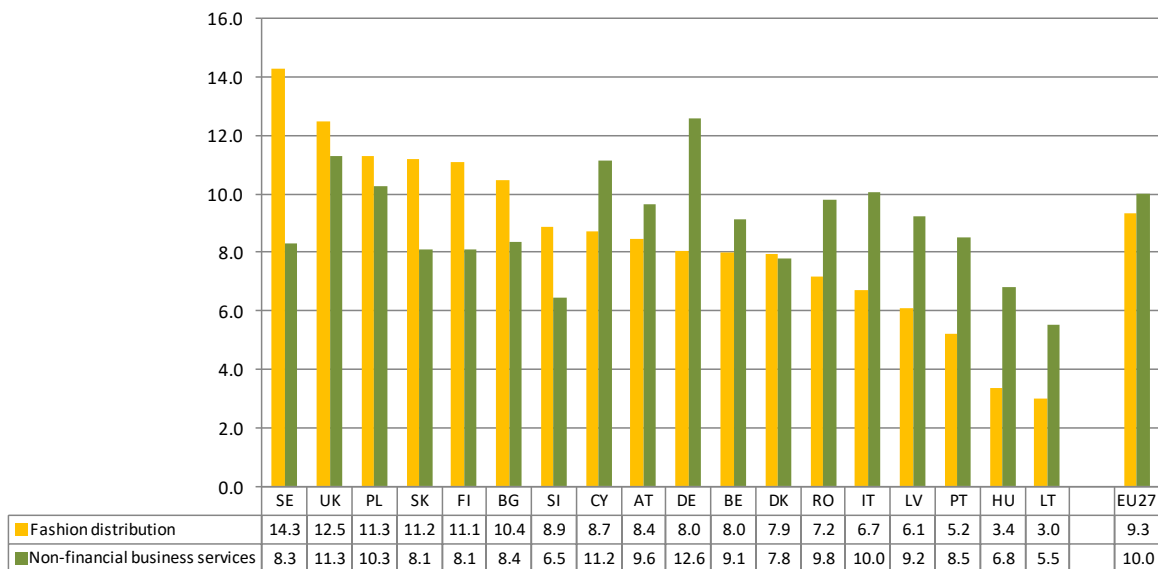
Source: Eurostat, Structural Business Statistics

3.3.3.3 Fashion distribution

Compared to fashion manufacturing profitability rates in the EU fashion distribution are significantly higher (9.3% versus 6.3% for fashion manufacturing) (Figure 36). This is similar to the trends in productivity (and in line with the rest of the economy where services on average show a higher profitability rate than manufacturing).

Whereas the top 5 countries in terms of profitability in manufacturing were largely dominated by Eastern European countries, for fashion distribution the picture is rather different with a mix of both higher wage cost countries and lower wage cost countries in the top 5. Wage costs seem to have less influence on the profitability rate in distribution than they have in manufacturing.

Figure 36: Profitability in fashion distribution and non-financial business services, 2009, by country (Gross operating surplus/turnover (gross operating rate) (%)) (a, b)



(a) Data was not available for all EU MS

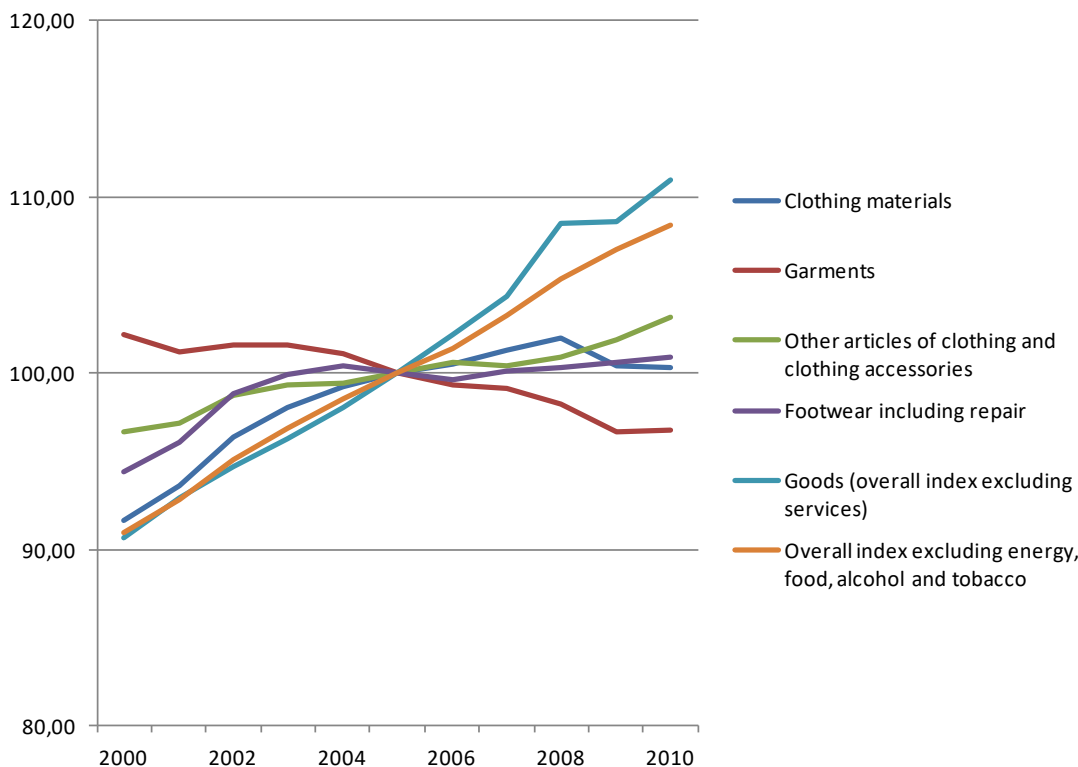
(b) Data for non-financial business services: own computations

Source: Eurostat, Structural Business Statistics

3.3.4 Consumer market evolution

Profit margins can be influenced either by lowering costs of production per unit or by increasing prices to consumers. However, analysis of the evolution of consumer prices over the period 2000–2010 highlights that price increases for fashion products were much lower than price increases for goods and services in general. Whereas the overall price index (excluding energy, food, alcohol and tobacco) increased by 10.2% since 2005, prices of clothing material increased by only 2.5%, footwear by 1% and other clothing articles and accessories by 4.3%. Prices of garments even declined by 2.5% between 2005 and 2010. Assuming that input prices for fashion companies have evolved more or less in line with the overall price index, profit margins in the EU fashion industries have been under pressure due to the inability to translate these higher input prices into higher consumer prices.

Figure 37: Annual average price index, 2000-2010, EU27 (2005=100)



Source: Eurostat, Structural Business Statistics

Apart from the fact that consumer prices for fashion goods in the EU27 have not increased in the same manner as overall prices (and even showed a decline for garments), total consumer spending on fashion goods in the EU27 has not increased either. Whereas private consumption increased by 26.4% over the period 2000-2010, expenditure on clothing and footwear showed a 0% growth over the same period. While expenditure on clothing and footwear made up 6.1% of total private consumption in 2000, it made up only 5.4% of total consumption in 2010.

Both evolutions (relative decline in fashion goods prices and relative decline in spending) point to a consumer market where competition is fierce and growth is limited.

3.3.5 Conclusion

The analysis of the economic structure and performance of the EU fashion industries has highlighted a number of important trends with respect to the competitiveness of the industry:

1. In the period 2004-2009 the overall EU fashion industry still is an industry in decline, characterized by significant job losses. Despite the clear difference in dynamics between the manufacturing sub-industries and distribution sub-industries, the positive trend in distribution has been insufficient to compensate for the important losses in manufacturing.
2. The evolutions in the structure of both types of activities (manufacturing versus distribution) point to significantly different drivers of industrial organization underlying these evolutions. Whereas the geographical spread of manufacturing activities is primarily driven by cost considerations, the location of distribution activities is mainly driven by consumer market developments.
3. For both manufacturing and distribution the competitive position is currently under pressure and fashion companies are faced with several challenges:

- a. On average, labour productivity is higher in other industries than in the fashion industries. Higher labour productivity normally is also reflected in higher wages. This puts pressure on fashion industries to increase labour productivity as well to be able to compete with other industries for the available skills in the labour market. Therefore, investing in increasing labour productivity is important for the industry to attract the necessary skills to remain competitive. This is especially important in those Member States with low but growing productivity levels in general and those Member States where the differences in labour productivity between fashion industries and the rest of the economy is significant. As the EU fashion industries increasingly are on the outlook for (the more scarcely available) higher skilled labour (see section 4.2), competition for human capital with other industries will only increase.
- b. In fashion manufacturing, many higher cost countries seem to have reached the boundaries of remaining competitive through productivity gains. Despite their above average level of productivity, they are not able to translate this sufficiently into profitable business. New models of competitiveness that are based on entrepreneurship, innovation and creativity are needed for the EU fashion manufacturing to remain competitive. In such growth model SMEs play a key role, as they often are engines for renewal and innovation.
- c. Despite a growing fashion distribution sub-industry in the EU, consumer market trends show that the European market for fashion is under pressure, with prices for fashion goods in relative decline and consumers spending relatively less on fashion. This pushes EU fashion companies to further internationalize and explore new markets. The next section will analyze to what extent the EU fashion industries have been able to compete internationally.

3.4 Global competitive position

3.4.1 Data description

The analysis of the EU fashion industries trade position is based on the BACI dataset provided by CEPII (see Box 2). The analysis covers a period of approx. 15 years, which allows us to highlight main trends as regards the EU trade balance and share in global trade, by specific product categories.

Box 2: BACI database on trade

BACI is a world trade database which covers all bilateral trade flows at a very high level of product disaggregation. The original data comes from files that are sent by the customs services of each declaring country --exporter or importer-- to the United Nations Statistical Division (COMTRADE database). The CEPII has developed an original procedure to reconcile the declarations of the exporters and the importers. By taking advantage of mirror trade flows³², after adjusting all CIF declarations by their FOB equivalent and all unit measures by their tons' equivalent, BACI extends considerably the number of pair of countries for which trade data are available, as compared to the UN dataset. BACI provides trade values and physical traded quantities (in tons) at the HS 6-digit product disaggregation (over 5,000 products), for pair of countries, involving more than 200 countries over the period 1995- 2009.

For the purpose of this report, an extraction of the lines of products that are directly linked to fashion has been made from BACI. The products have been then ranged into four sub-categories: Fashion-related Intermediary Products³³, Clothing, Footwear and finally, a mixed category of Accessories and Jewellery³⁴. These product categories more or less correspond to the goods produced by the four clusters of manufacturing sub-industries that have been used in the previous analysis (cfr. sections 3.2 and 3.3). Annex A1 provides some examples of those goods for which trade data are available. A look at the data enables us to count around 600 product lines involved under these aggregates.

Besides enabling to relate each of the products to a particular fashion sub-category, BACI also allows to compute unit values (i.e. prices per each shipped ton) from US dollar values and physical volumes (in tons) that are observed. Unit values serve usually as a measure of quality in the literature³⁵. This information allows ranging each of the fashion goods exported from one country to another into one of the 3 following market segments: a High unit value segment, a Medium one and finally, a Low unit value segment. To do so, we compare for each market (defined by a couple "destination-HS6 product line"), the price (unit value) associated with a particular exporting country with the whole distribution of prices. Where the price falls below the first quartile of the distribution, the observed flow is ranged in the Low segment of the market. If on the contrary, if the price lies above the 3rd quartile, the corresponding flow is ranged in the High segment of the market. When the price lies in between, the flow is ranged in the Medium-unit value segment.

3.4.2 EU27 trade in Fashion industries: Facts and Figures

Figure 38 reports the evolution of EU27 exports and imports with the rest of the world (called 'RoW' hereafter), along with that of the trade balance. From 1995 to 2008, keeping the post year crisis 2009 aside, EU exports in Fashion products have been multiplied by almost 2, thus increasing at an average rate of 5.4% per year, a rate nearly four times higher than that of their collective GDP over the period (1.4% per year). ³⁶

³² Mirror flows are double declarations of bilateral flows, made available to the UN by both sides of the transaction, the exporter and the importer.

³³ Examples of intermediary inputs can be products like Sheep or lamb skin leather, Chamois, Chenille cotton fabric, etc.

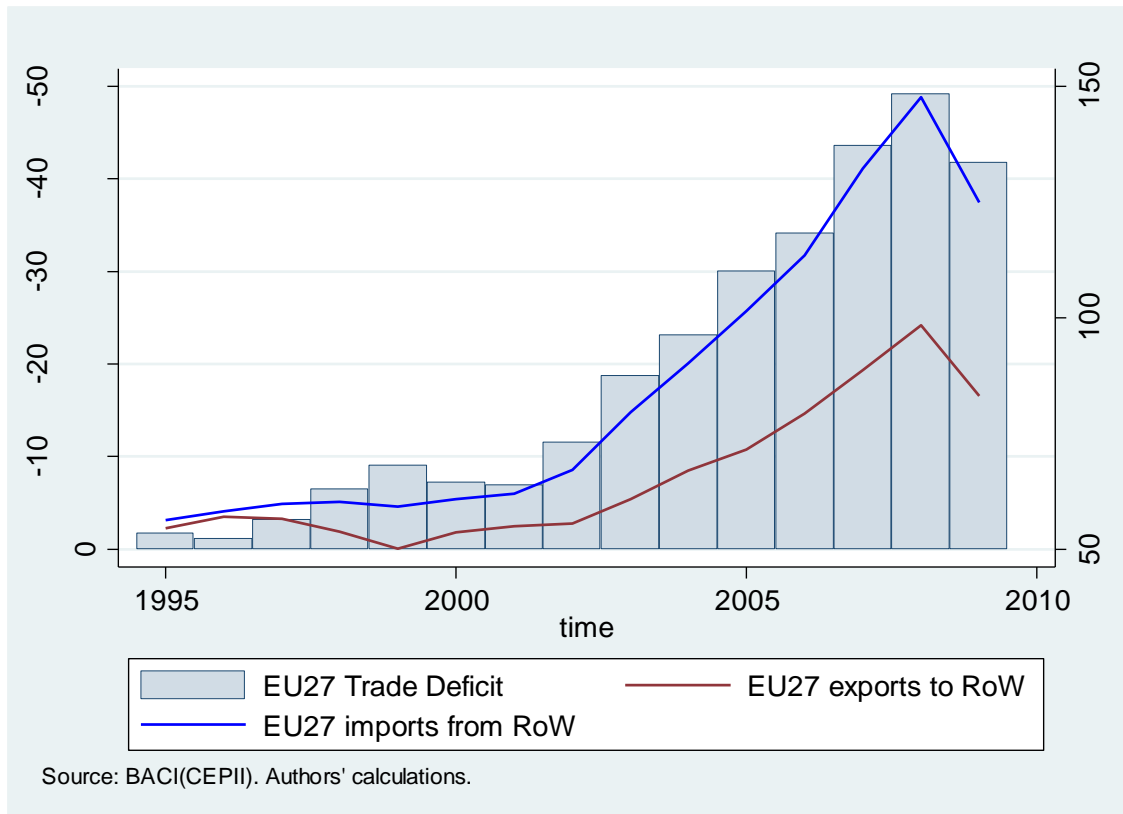
³⁴ Examples of accessories can be handbags, gloves, etc.

³⁵ Actually, within a particular HS6 and a destination market, differences in unit values inform about differences in quality but also differences in production and shipping costs. We follow most of the literature to assume however that if a product from one origin country can still be sold in some destination country despite its high unit value, this product should be of a quality high enough to compensate the disadvantage it would have from a possible high cost of production and shipment.

³⁶ GDP growth rate figures are taken from the online worldbank database.

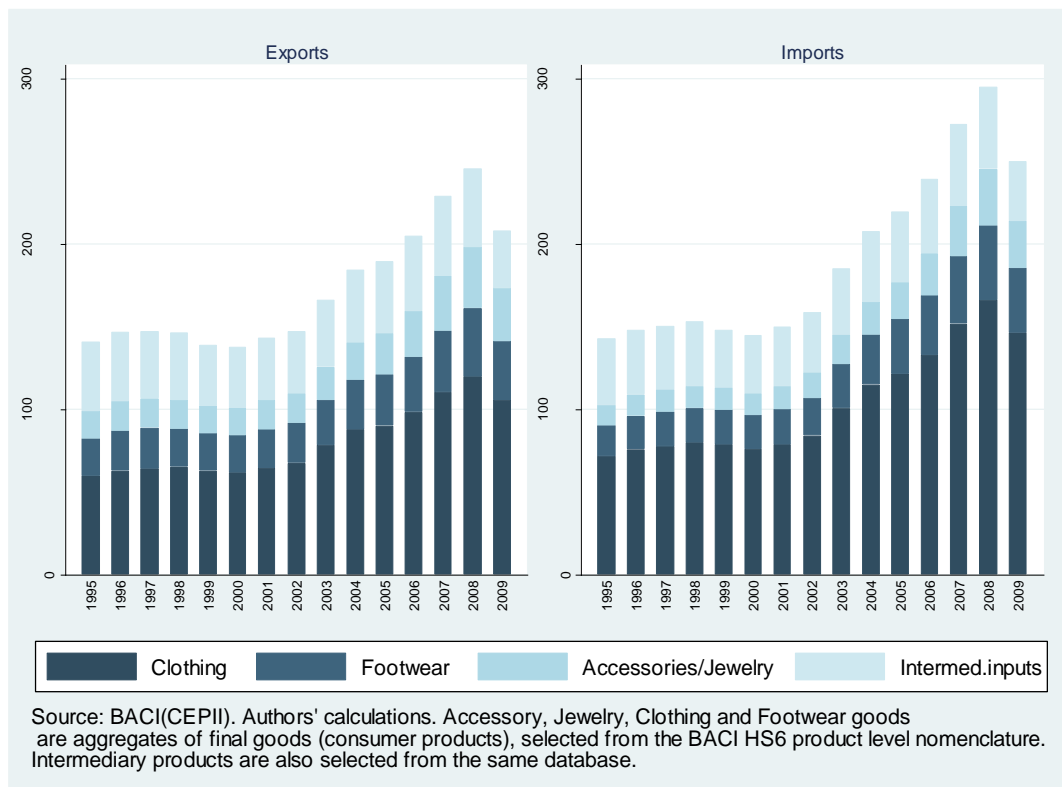
Nevertheless, EU imports of fashion products from the RoW have increased even more, with a rate higher than 8% per year making them almost triple over the same period. From a trade balance in fashion goods almost at equilibrium in 1995, the deficit reached about 48 Billion US Dollars in 2008. Looking more into the data, one can identify a break in the series of both flows starting from 2002 suggesting that the bulk of the deficit took place in the latest years.

Figure 38: Evolution of EU27 Exports, Imports and their Trade deficit in Fashion Industries, in Billions US\$



Which sub-sectors and/or partners contributed mostly to the dramatic deterioration of the EU's trade balance? Figure 39 breaks-down the aggregate flows into the 4 sub-sectors.

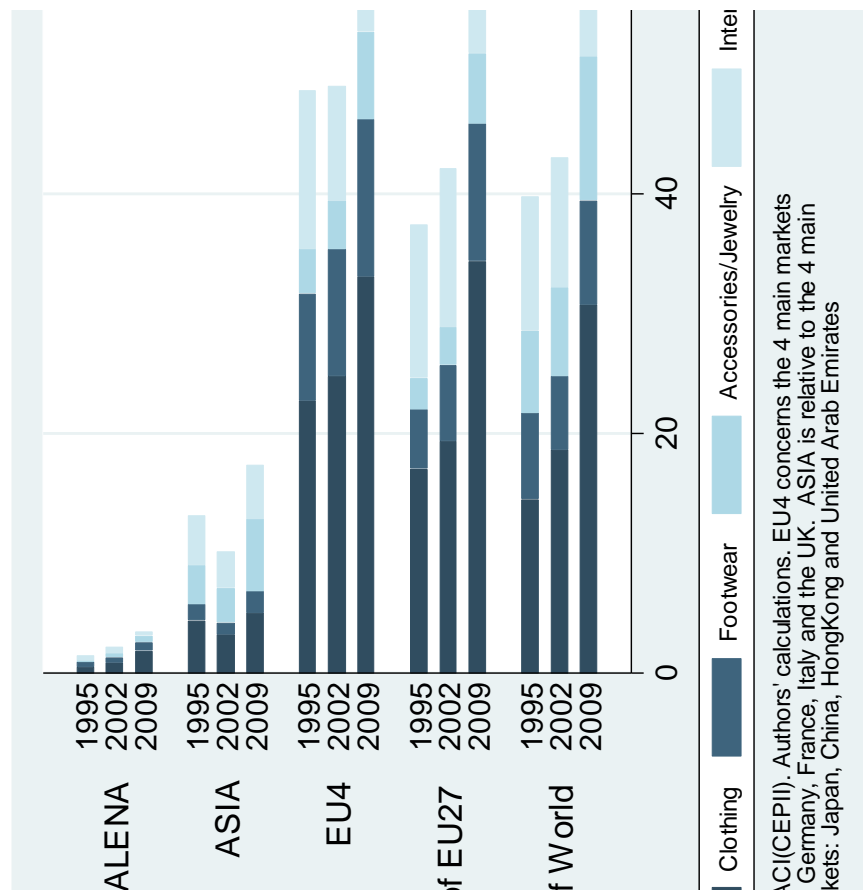
Figure 39: Evolution of EU27 total Exports and Imports, across Fashion Subsectors (figures in Billions of US\$)



It is remarkable to see how much the structure of both flows (imports and exports) was stable across these sectors between 1995 and 2002 where within each category, the net trade was nearly balanced. From 2003, however, the weight of Clothing and Footwear in total imports --and to a lesser extent in total exports-- began to rise. In 2008, Clothing and Footwear imports were about 2 times higher than those observed in the nineties and their exports about 1.5 times higher. Thus, the huge rise in the total deficit of the fashion trade balance observed above seems to be mainly due to the more than proportional increase in imports compared to exports, in Clothing and Footwear.

Has this significant increase in the two above categories of the fashion industry been homogenous across trading partners? To respond to this question, Figure 40 shows first the structure of exports across three dimensions (time, categories and 5 markets/regions in the world).

Figure 40: EU27 Exports, across destination markets and fashion subsectors

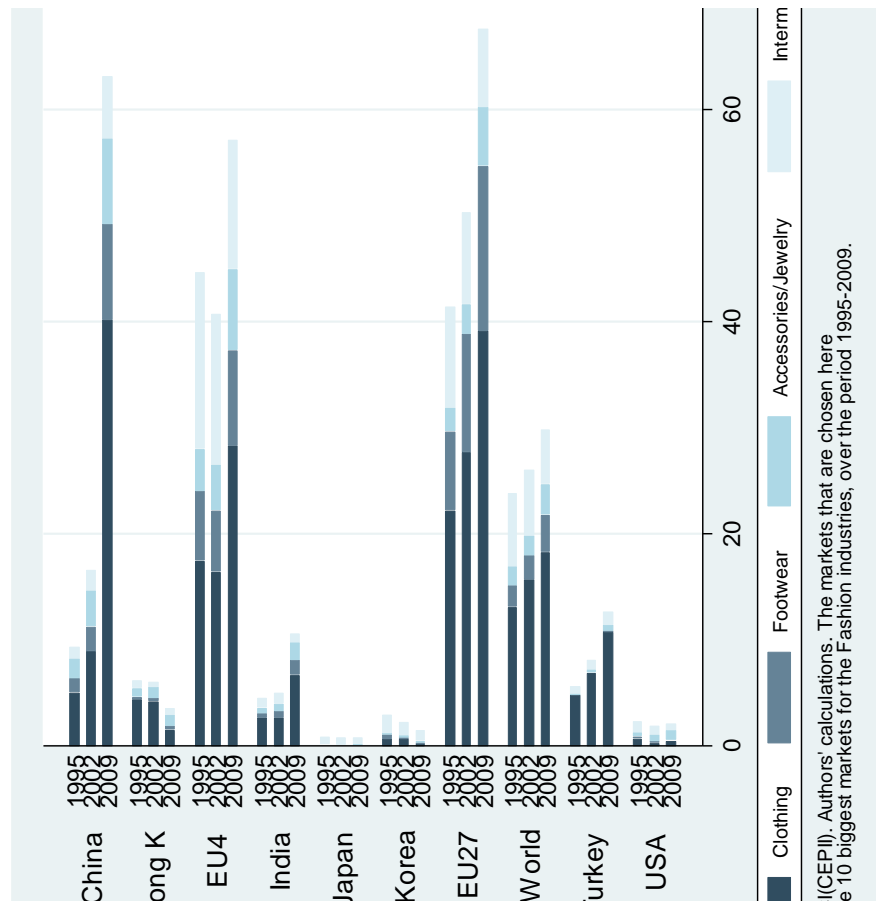


Three out of these five markets represent the main markets for fashion in the world. To these, the 'Rest of EU27' and 'RoW' markets are being added. What the authors mean by 'main' markets are those regions formed by countries which imports of fashion products were found to be among the highest in the world over the considered period. As mentioned, three can be then identified: the NAFTA market (United States, Canada and Mexico), the EU4 market (including Germany, France, Italy and the UK) and 4 Asian countries' market (China, Japan, Hong Kong and United Arab Emirates). From Figure 40 several facts can be highlighted:

- The biggest fashion market to EU27 exporters is the EU region itself (split here into EU4 and 'Rest of EU27'). More than 55% of EU27 exports go to the EU region in 2009, with half of the flows in value being addressed to the 4 main EU country markets.
- Although still small in total EU27 exports, the flows of the latter heading to the NAFTA region have been multiplied by 2 over the period (an average of 5.5% export rate growth per year), when at the same pace the GDP of NAFTA region grew by around 3% only.
- EU exports to the 4 main Asian countries were rather disappointing, however. As it can be seen from Figure 40 in 2009, export values exceeded those of 1995 by around 3 Billion US dollars (+20% over the whole period, +1% in yearly average). Of course, the Japanese market hardly grew during these years (around 1% GDP growth per year). Nevertheless, over the same period China's annual growth reached around 10%, that of the Emirates and Hong Kong nearly 5% each.
- More interestingly though, by looking at the structure of EU exports across subsectors and destinations, one can find that most of the export gains acquired in Clothing and Footwear between 1995 and 2009 are being concentrated on the European market itself, and especially in the Rest of EU market.

Figure 49 shows how EU27 imports have evolved across sectors and exporting partners. Here, the 10 largest fashion exporters (or groups of exporters) are being considered over the period.

Figure 41: EU27 Imports, from the 10 Biggest exporters and across fashion subsectors



Again, a couple of important facts need to be highlighted:

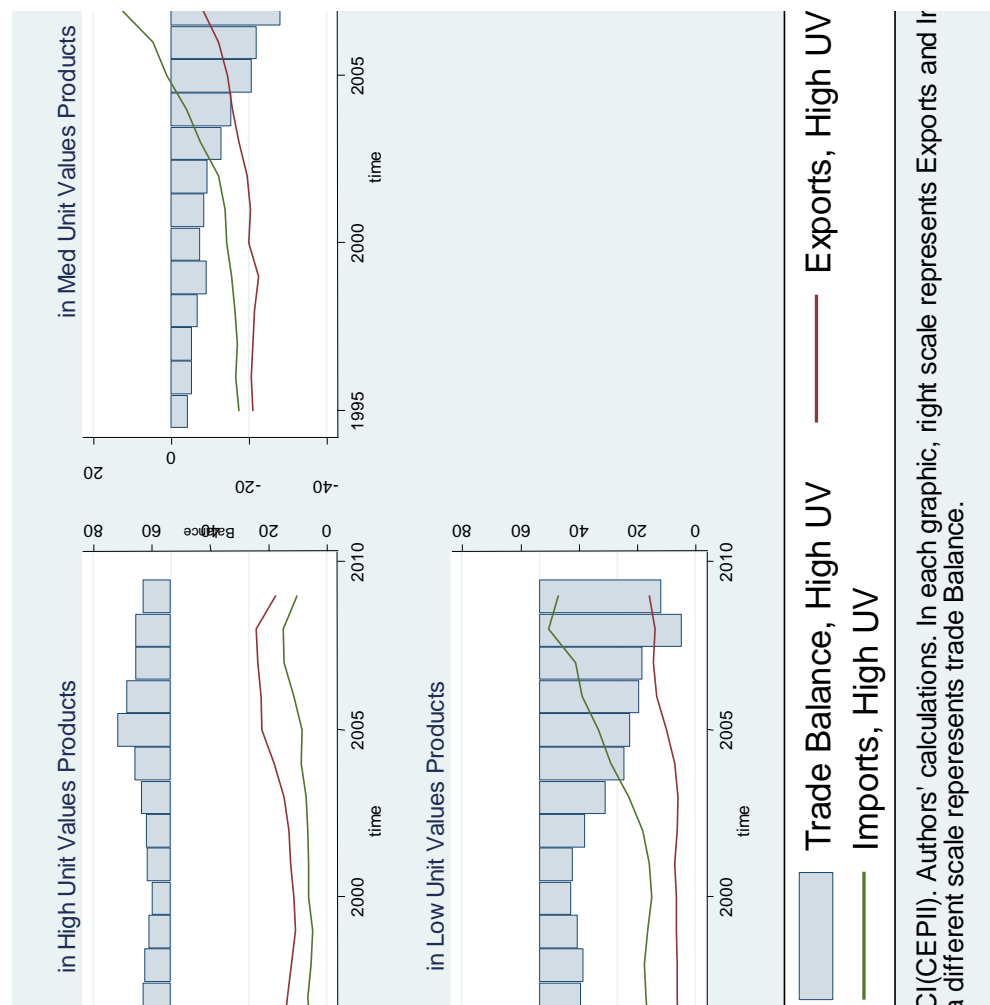
- Leaving aside the Within EU market, EU27 importers appear to have increased substantially their imports from high growth developing and transition countries: India and Turkey increased their exports to the EU by a factor of 2 to 2.5 over the period, China's exports to the EU has been multiplied by more than 6 and, to a lesser extent, the rest of EU increased their exports to their neighbours by around one third.
- Besides, most of this increase in imports from developing countries is concentrated in Clothing and to a lesser extent, Footwear.

3.4.3 EU27 Fashion Trade across 'quality' segments

As already noted above, the trade deficit in the Fashion industry is increasing, mainly due to the higher share of low wage countries exports to the EU in Clothing and Footwear. One would then expect these countries to contribute to the deterioration of the trade balance mainly through their exports of Low unit values goods. Does the data confirm our thoughts?

Figure 42 dresses the evolution of EU trade flows across the 3 markets segments (Low, Medium and High Unit values' segments).

Figure 42: Evolution of EU27 Exports, Imports and their Trade deficit in Fashion Industries across ranges of Unit values (quality proxy), in Billions of US Dollars.



Indeed the bulk of the dramatic growth of trade deficit is observable in the Low segment of the fashion markets. But this is not the whole story: 1/ the same tendencies are observable too in the Mid segment of the market and 2/ Even in the High segment market, although the trade balance has been favourable to the EU countries during the period the gains in *net* exports that were observed between the beginning of 2000s and 2005 have been eroded since then.

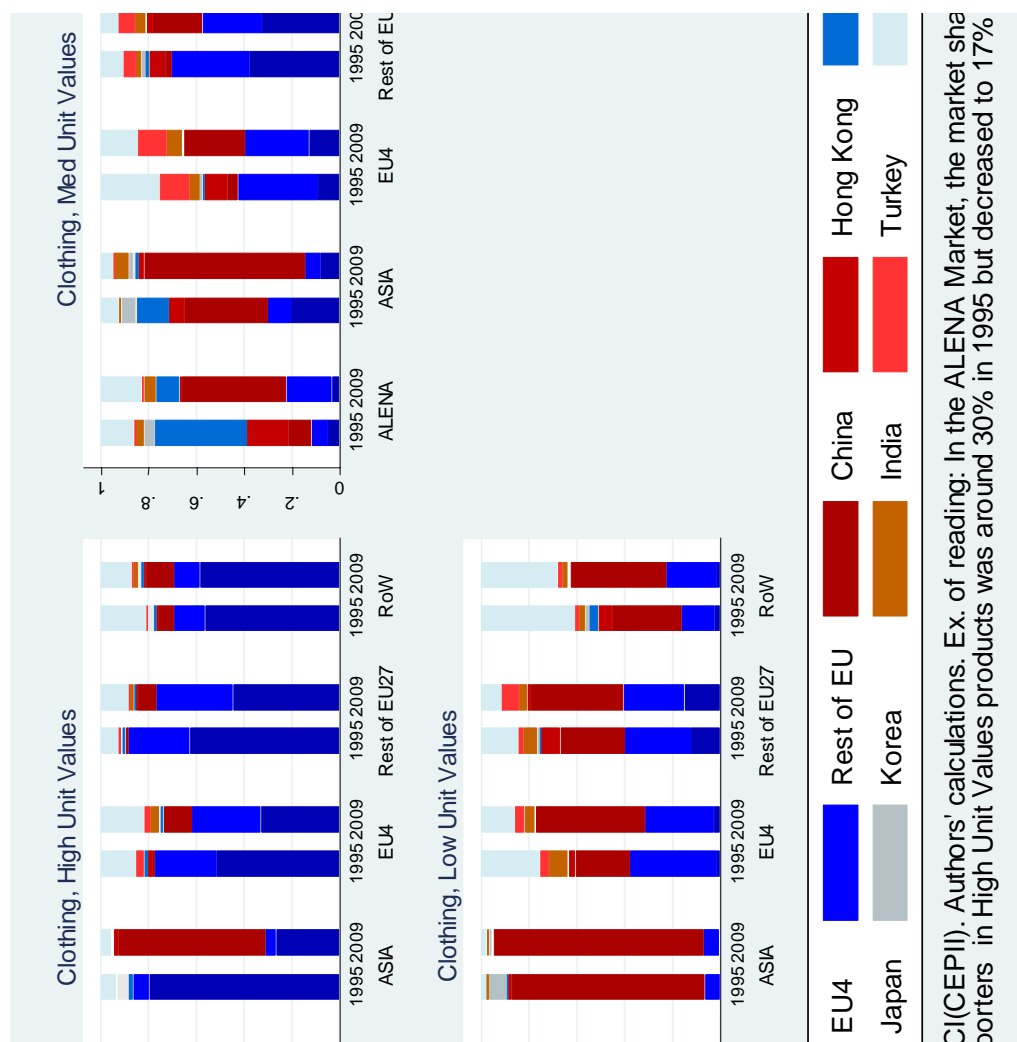
3.4.4 EU performance v/s that of its main competitors in the different segments of the fashion markets

The EU seems to have difficulties to gain exports to the world markets other than its own, even in the Up-market, market for which it is used to have a large comparative advantage. So one would be tempted to ask which countries are the main EU competitors in the world markets and whether they are changing over time. These are the questions addressed in what follows. The next paragraphs describe the market shares' portraits by category and segment.

3.4.4.1 Clothing

Figure 43 shows the market shares in the Clothing industry.

Figure 43: Market Shares of the 10 Biggest Exporters, in Clothing (In each of the 5 Big World Markets)



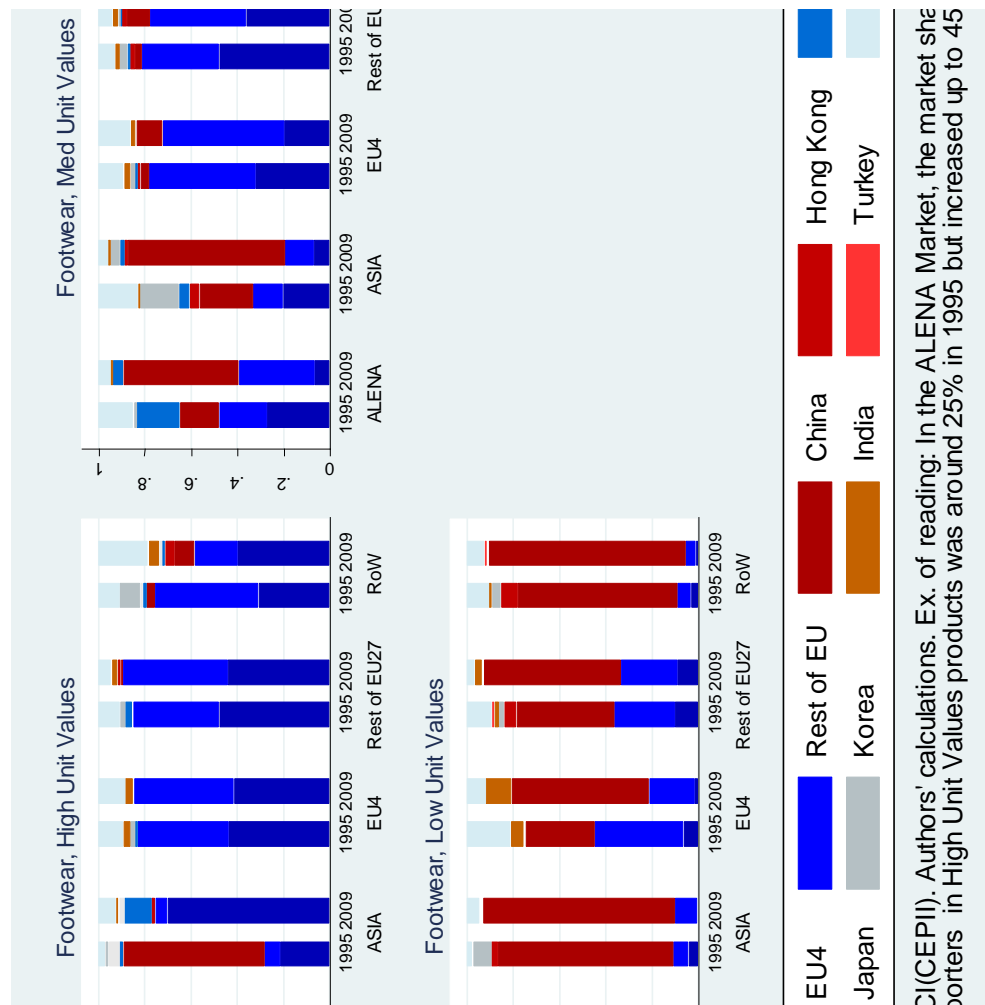
Several facts need to be highlighted:

- The first rather expected fact is that the EU shares were the highest in the Up-market in 1995. Taken together; EU4 and Rest of EU exporters of High unit values products had from 40 to 80% of market shares depending on the region considered.
- In 1995 and to a lesser extent in 2009, most of these EU shares belonged to the 4 main EU exporters.
- More interestingly, when looking at the dynamics of the market shares in Clothing over the period, EU exporters' shares appear to be decreasing in most of the Up-segment markets, and stagnating or increasing in most of the Mid and Down segment ones. In particular, most of the EU gains in market shares in North America (NAFTA) noticed in the above section are not actually obtained in the High-segment but in the middle and Low segment markets. Besides the gains are due to the 'Rest of EU' exporters' countries not the main 4 EU ones.
- Finally, in all segments China seems to be the exporting country which benefited mostly from the losses incurred by the EU exporters in Clothing. Chinese market shares have experienced a dramatic increase in 15 years especially on the medium and high segment markets, in its own region (Asia), as well as in North America (NAFTA region).

3.4.4.2 Footwear

Figure 44 portrays market shares in the Footwear industry.

Figure 44: Market Shares of the 10 Biggest Exporters, in Footwear (In each of the 5 Big World Markets)



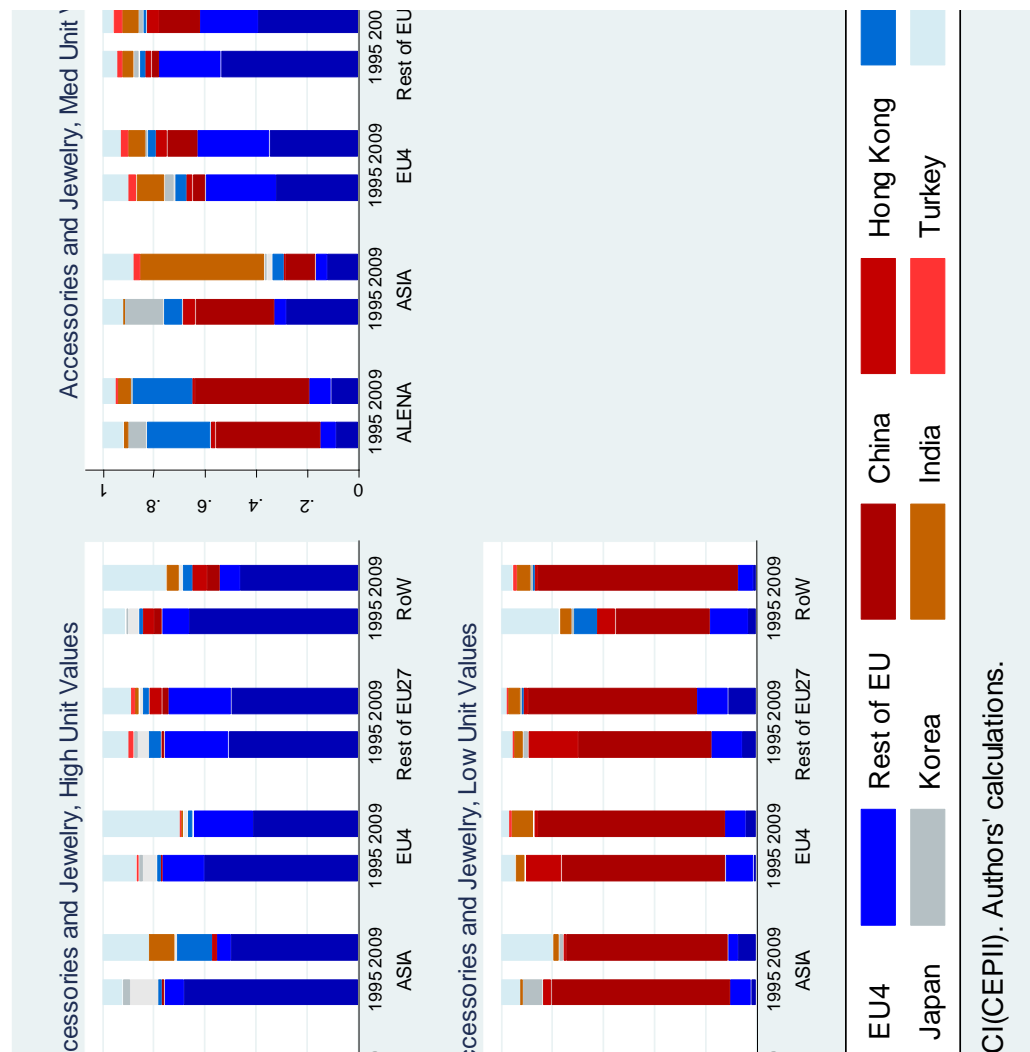
These suggest the following:

- In 1995, the European economies appear to be the main exporters in the Up-market in 4 out of the five regions, except Asia. In 2009, they even succeed in increasing significantly their share on the Asian markets. Besides, most of this increase is observed for the 4 main EU exporters in the fashion industry.
- Unlike in Clothing, EU exporters of Footwear seem, however, to lose their market shares especially in some Mid and Low segments and in particular, in the NAFTA region.
- Again, it is China which benefits mostly if not exclusively from EU losses in market shares in the medium and Low markets.

3.4.4.3 Accessories and Jewellery

In accessories and Jewellery (Figure 45), the tendencies for the EU exporters follow to some extent those in Clothing mentioned above.

Figure 45: Market Shares of the 10 Biggest Exporters, in Accessories and Jewelry (In each of the 5 Big World Markets)

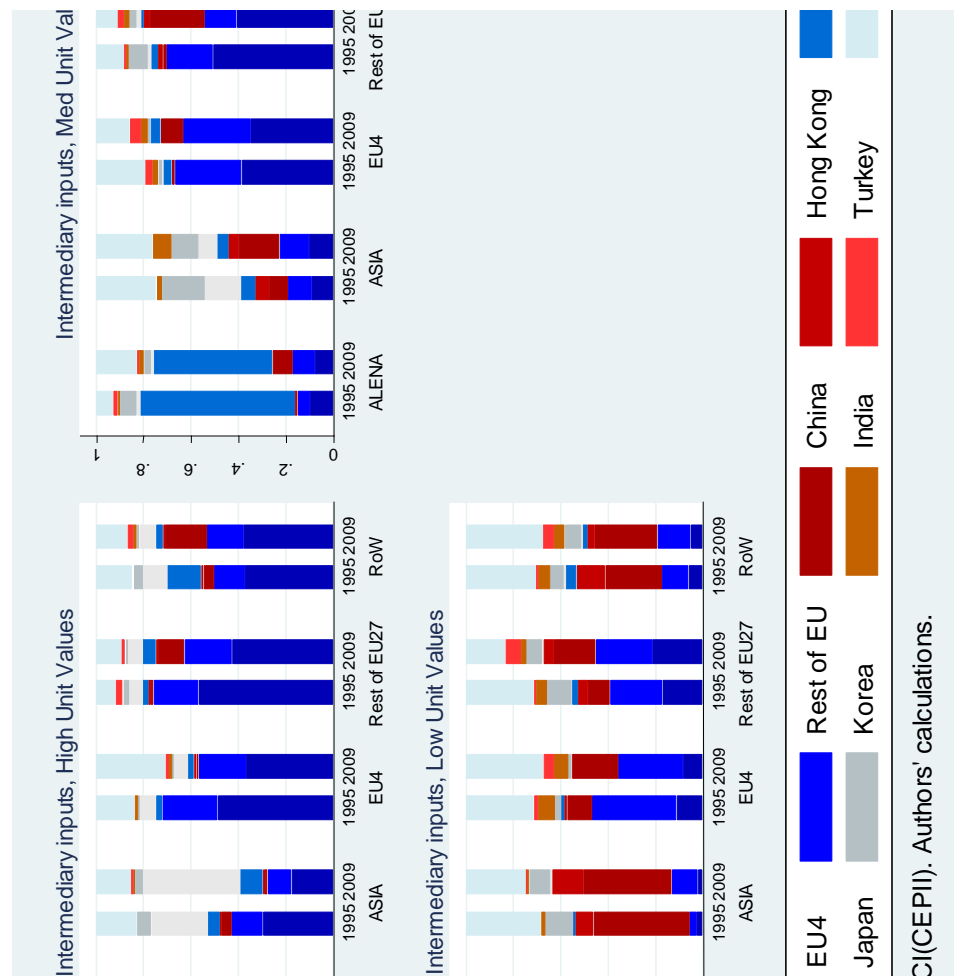


- The EU exporters lost market shares mainly in the Up-segment again, while maintaining most of their shares in the Mid and Low segments markets.
- Interestingly however, the US and India seem to be the growing competitors of the EU in Asia, in the Up and Mid-segments respectively, not China. Nevertheless, over the period, the latter gained markets in the Up and Low segments in the NAFTA region.

3.4.4.4 Fashion-related Intermediate products

Finally, in intermediate products (Figure 46) the pattern of market shares across segments and categories is quite different from the rest.

Figure 46: Market Shares of the 10 Biggest Exporters, in Intermediate Inputs in the Fashion Industry (In each of the 5 Big World Markets)



Besides, with some exceptions, this pattern does not change much over the period. In particular,

- The biggest exporting countries seem to be leaders in their own Region in 1995 and 2009. Namely, in all segments, while the US seems to dominate the NAFTA market, EU exporters dominate theirs. Interestingly, Japan is the leader in the Asian market for the Up-market of intermediary products while on the other hand China appears as the country with the biggest share in the Low market segment. Finally, both China and Japan share their primacy in the Mid-segment of the market.
- It is interesting to notice however, that while they were almost absent from all the segments of the markets in 1995, developing countries (China but also India and Turkey) are gaining some shares in most of them in 2009.

3.4.5 Increased competition from non EU-countries

The trade analysis shows that competition in the fashion sector from third countries has increased in the EU, as witnessed by the high growth in EU imports (average annual growth rates of more than 8 per cent), and the trade deficit of the sector that has shown an increasing trend since 2002. The figures also indicate that EU import growth and the increasing trade deficit have largely been accounted for by the subsectors clothing and footwear.

The clothing and footwear industry has traditionally been characterised as a low-skill and labour intensive industry with a low level of innovation and minimal capital requirements. The textile industry is more capital intensive and has higher innovation intensity. Increasing global integration have shifted footwear and clothing, and to a lesser extent textile production into countries with low cost labour³⁷. Consequently both the number of companies and employment within the fashion industry have declined in Europe³⁸ (see also section 3.2).

This shift of production by EU fashion companies to countries outside the EU has been caused by a decrease in transport and communication costs and been further fuelled by the EU's elimination of subsidies, and a decrease in protection or any form of privileged status for the fashion industries. Protection has been reduced through agreements in the World Trade Organisation (WTO) and through various bilateral and regional Free trade Agreements (FTA). Especially the textiles and clothing segments of the fashion industry experienced significant changes in market liberalisation, through the elimination of the Multi-Fibre Arrangement (MFA) and the WTO Agreement on Textiles and Clothing (ATC)³⁹ in 1995. According to the agreement, MFA import quotas on textiles and clothing had to be gradually eliminated by 2005.

Several studies have been carried out analysing the ex ante impact of trade liberalisation for both the EU and the rest of the world, most of them focusing on the elimination of the textile and clothing quotas of the MFA⁴⁰. It has been estimated that the elimination of trade quotas would result in an increase in clothing exports of 70-190 per cent. The welfare gains derived from this increase in exports are likely to be mainly realised by importing countries as a consequence of lower prices; the effects on the exporting countries are more ambiguous⁴¹. For the EU one study estimated that the removal of trade quotas would increase EU imports by 20 percent.⁴² Asian countries, and especially China, would be the largest gainers in terms of shares of EU imports.

The predictions with respect to EU imports are largely confirmed by the figures of the trade analysis in section 3.4.2, which shows that China is the main source of fashion imports and also other developing countries have increased their share. This increase in EU imports from developing countries is concentrated in clothing and to a lesser extent footwear.

Liberalisation of clothing and textile trade has thus increased competition between the EU industry and foreign suppliers but also between the foreign suppliers themselves.⁴³ For the EU this means increasing competition but also a change in the structure of its suppliers.

There are several publications (although mostly focusing on clothing and to a lesser extent textiles), which report on the strong position of China in EU fashion imports, and to a lesser extent Turkey, India, Bangladesh, Vietnam, Pakistan, Indonesia and Tunisia (e.g. Gereffi and Frederick (2010), Gereffi (2010)). Although regional suppliers from North Africa and Eastern Europe are still important for the EU fashion industries, their market share has decreased because of the increased competition of low-wage countries. It is important to note that all leading fashion suppliers into the EU, with the exception of China and Hong Kong, receive either duty-free or preferential tariff treatment. Tunisia and Morocco are part of the Euro-Mediterranean Partnership, and Romania, Bulgaria, Poland, Hungary, and Turkey are part of the EU-27 or EU Customs Union. To varying

³⁷ Taplin and Winterton, (2004); Taplin (2006)

³⁸ Taplin and Winterton, (2004); Dunford; (2004)

³⁹ Taplin and Winterton, (2004); Keenan et al., (2004); Taplin, (2006); Stengg, (2001)

⁴⁰ Keenan et al. (2004); Stengg, (2001); Audet, (2007); Baleix, (2005); Adhikari and Yamamoto, (2007); Nordas, (2004)

⁴¹ Nordas, (2004)

⁴² Baleix (2005)

⁴³ Stengg (2001)

degrees, Indonesia, Thailand, Pakistan, Vietnam, India, Sri Lanka, and Bangladesh receive benefits from the Generalized System of Preferences (GSP) program.⁴⁴

Box 3: Outward Processing Trade

An interesting element of EU fashion imports that is worth mentioning is Outward-processing trade (OPT). This is a common feature within the European clothing sectors. OPT refers to a situation where a European company exports fabrics to be further processed in a third country and then re-imports the finished garments back to Europe. Outward-processing trade is attractive for the European clothing industry as it reduces labour costs, which account for the majority of costs within the clothing industry. However, OPT is considered to accelerate the shift of apparel production to low-wage countries. This is discouraged by trade policies: when EU and non-EU fabrics are used under OPT, a 14 per cent tariff is levied on their re-imports, which offsets the advantage of lower production costs. Hong Kong SAR⁴⁵ and China play a central role as OPT exporters to the European market but also neighbouring areas such as North Africa, Turkey, Eastern and Central Europe as well as former members of the Soviet Union are important.

Related to the surge of imports from developing countries that impacts the EU fashion industry, the EU has used trade defence instruments to protect the sector from unfair practices. In 2011, for example, the EC started an expiry review of the anti-dumping measures being imposed on Chamois leather from China since 2006.⁴⁶ In 2006 the EC decided to impose anti-dumping duties on footwear products with uppers of leather from China and Vietnam. In 2011, these anti-dumping measures had expired.

3.4.6 Consolidation of the global fashion industry⁴⁷

An analysis of trends in the globalisation of the fashion industry over the past two decades has revealed that there has been a longer term process of global consolidation, whereby a handful of leading suppliers (countries and firms) has strengthened their positions in the value chain, which has complicated the adjustment strategy of smaller or more vulnerable players.

On the country side, China has been the big winner as shown in the trade analysis. It has increased its dominant position in all of the major industrial economies, including the European Union. It has also diversified its export reach by gaining ground in many of the world's top emerging economies as well, such as Russia for finished goods, and India, Brazil and Turkey for intermediate goods, such as textiles. Other developing economies have also gained after elimination of the MFA quota system, such as Bangladesh, India, Vietnam and Indonesia.

On the firm side, the quota phase-out and economic recession have accelerated the on-going shift to a rationalization of global supply chains. Major retailers, brand marketers, and brand manufacturers have been stressing their desire to work with fewer, larger, and more capable suppliers, strategically located around the world.⁴⁸ The ability to offer "full-package-services" which include parts from production to tagging and packaging has become more important.⁴⁹

As a result, sourcing strategies of lead companies have changed. On the demand side, retailers focus on marketing and branding and need suppliers (or agents) capable of bundling and selling the entire range of manufacturing and logistics activities. On the supply side, the need for coordination and networking has become more important due to the breadth and specialization of apparel products and the increasing number of

⁴⁴ Gereffi and Frederick (2010)

⁴⁵ SAR= Self Administrated Region

⁴⁶ DG Trade, <http://trade.ec.europa.eu/tdi/>

⁴⁷ It should be noted that most of the sources specifically discuss the clothing segment, but it seems that most of the developments for this segment are also valid for other segments.

⁴⁸ Gereffi (2010)

⁴⁹ Keenan et al. (2004)

countries with advanced production capabilities. As a result of these needs, two groups emerged to provide the key links between producers and retailers: East Asian transnational manufacturers with established buyer relationships who set up and managed global production networks, and traders (import-export companies) and agents who emerged as intermediaries between established buyers and sellers in the apparel value chain. To reduce cost and mitigate risk, many buyers established overseas sourcing offices in their main producing countries. Over the years retailers shifted more responsibilities to these overseas sourcing offices, to benefit from lower cost and the skills of the staff based there. Many are also moving product development and design offices closer to the manufacturing process. Direct sourcing requires manufacturers to provide faster reaction times and better factory understanding of a retailer's particular needs.⁵⁰

The removal of trade quotas has revealed the vulnerability of global business models based on a fragmented value chain.⁵¹ Countries that produce both textiles and clothing have become more competitive as they can save on transportation costs of inputs, and on time needed to access inputs. In fact, low production costs may not be as important as quick turnaround time is for achieving competitive advantage. In 2005, China, India, Turkey and the US who gained most in the EU fashion market all have an integrated textile and clothing industry and thus the ability to meet short production and delivery commitments. It has also been argued that in the future access to high quality textiles will be the single most important competitive factor in the post-quota period for exporting countries.⁵²

3.4.7 Resulting adjustments in the EU fashion sector

Although the global shift in the fashion industry has reduced the number of companies and people active in manufacturing in the EU (see section 3.2), European fashion chains and consumers benefit from being able to source their inputs from the cheapest/best suppliers. It is also important to note that as a result of the strong bargaining power of retailer groups vis-à-vis (often small) producers in low-wage countries located relatively close to European markets, shifting manufacturing outside Europe has not only reduced manufacturing costs but also cut down lead times and increased flexibility within the supply chain. These lower costs contribute to the competitiveness of the European supply chains.

Nevertheless, the manufacturing part of the European fashion industry has been forced to increase its efficiency and focus on market segments which require higher skills levels to respond to the increased competition. Thus, the sector has become more focused on fashion segments which have higher added value and are not easily transferable (e.g. luxury brands which require specific designing)⁵³. However even within the high quality segments production has been rationalised in terms of cost effectiveness because as shown in section 3.4 also in the high quality segments (as measured by the unit values) competition is fierce.

A higher level of efficiency has been gained through organisational restructuring which has included adoption of just-in-time production, quick response techniques and other computer controlled methods as well as systematic use of teamwork and multi-skilling⁵⁴. Although these measures have increased labour productivity in Europe, the benefits from these increases are low given the high costs of labour⁵⁵. Outsourcing and improvements in distribution channels have also increased the efficiency of the sector.⁵⁶

⁵⁰ Gereffi and Frederick (2010)

⁵¹ Audet (2007)

⁵² Audet (2007)

⁵³ Taplin and Winterton, (2004); Keenan et al., (2004); Stengg, (2001)

⁵⁴ Taplin and Winterton, (2004); Taplin, (2006)

⁵⁵ Stengg, (2001)

⁵⁶ Stengg (2001)

Furthermore, increased efficiency has been gained in the EU through mergers and acquisitions which have led to a consolidation of the industry⁵⁷. The concentration of the industry is strongly related to the amount of international outsourcing⁵⁸ and also increased the leverage of retailers over manufacturers in the fashion industry.⁵⁹ Large retailers can demand lower costs, smaller amounts of varied goods and more sophisticated product replenishment from their manufacturers and suppliers. Together with stronger price competition, shortened life cycle dimensions and difficulties with acquiring new technologies these demands have caused many value added jobs to be offshored, production to be mechanized where possible and new innovative production technologies to be applied in manufacturing and supply⁶⁰.

3.4.8 Conclusion

The analysis of the international trade position of the EU fashion industries has highlighted some important trends:

- 1- The EU deficit in the fashion industries has substantially increased in the last 15 years. The Clothing and Footwear products were those which contributed most to this deficit. Especially the low segment of the fashion market is accountable for the bulk of the dramatic growth in the trade deficit.
- 2- Nevertheless, the EU27 and among them the biggest 4 EU economies seem to better resist to low wage countries competition than the US or Japan, in most of the markets and segments.
- 3- In some regions like North America EU's share is increasing in the mid and low segments, thanks to the 'rest of the EU countries' shares.
- 4- The EU primacy in the fashion industry over most of the world markets in the up and mid segments still resists the competition from the rest of the world. However, it seems to be threatened since mid-2000s by exporters coming from developing countries, mainly China.

The competitiveness of the EU fashion industries in the future will depend on innovation, research, fashion design, creation and quality, and the use of new technologies as well as positive industrial relations.⁶¹ In addition, development of know-how and skills through effective education and training is important in order to maintain competitiveness. We refer to part 4 for a more detailed discussion of these drivers of competitiveness.

One way for the European fashion companies to cope with the changing market has been to expand their geographical coverage. As income levels are rising in the emerging and developing countries, the demand for fashion items has increased within these markets⁶². The shift of fashion brand retailers to new markets has been further fuelled by a spreading understanding of brand images due to globalisation⁶³. Push and pull factors influencing the decision of fashion retailers to expand have been identified⁶⁴. Push factors include among others domestic market maturity, a restrictive regulatory environment, hostile competitive environment, or poor economic conditions, whereas pull factors include an underdeveloped retail structure, favourable exchange rates, niche opportunities, an innovative retail culture, large market, good socio-economic conditions.

Indeed markets in Europe and North America are becoming increasingly saturated as a result of competition and especially luxury brand owners are looking for markets which

⁵⁷ Taplin and Winterton, (2004); Dunford, (2001)

⁵⁸ Dunford, (2004)

⁵⁹ Keenan et al. (2004)

⁶⁰ Taplin, (2006).

⁶¹ Keenan et al. (2004),

⁶² The Economist, (2011)

⁶³ Moore et al., (2000)

⁶⁴ Moore (1996)

are new and receptive to their brands⁶⁵. According to the Retail Apparel Index created by T.A. Kearney in 2011, the most appealing emerging markets for apparel retailers included China, UAE, Kuwait, Russia, Saudi-Arabia, India, Brazil, Turkey, Vietnam and Chile. The top three countries have witnessed a sharp increase in the number of foreign fashion companies, especially within the luxury fashion segment. Locations such as Dubai which has established itself as “shopping capital” are able to attract large numbers of high-end fashion companies and thus have become highly competitive. Within the luxury segment European companies are competing against other European companies but also against the companies from US and local designers⁶⁶. For example in China, a high level of competition is driving companies in opening stores in 3rd and 4th tier cities as opposed to only the main cities. Companies are also entering new fashion segments such as sports and expanding their online services. For the mid-market retailers the competition does not only stem from the EU and the US but also from places such as Hong-Kong and from local producers and retailers⁶⁷. The competition in these countries is reflected in the trade figures (section 3.4.2): while EU exports to China, Japan, United Arab Emirates and Hong Kong have increased, they did so only at a limited pace (average annual growth of around one per cent).

⁶⁵ Moore et al.,(2000)

⁶⁶ T.A Kearney, (2011); Gail Research, (2009)

⁶⁷ T.A Kearney, (2011); Gail Research, (2009)

4 THE INTERNAL DRIVERS OF COMPETITIVENESS FOR THE EU FASHION INDUSTRIES

While chapter 3 provides a quantitative analysis of the structure and performance of the EU fashion industries and an evaluation of the current position of the EU fashion industries vis-à-vis global competitors, this part focuses on the underlying internal drivers that contribute to the performance of the EU fashion industries: business strategies, R&D and innovation, human capital and access to finance. They relate to the internal dynamics of the EU fashion industries and can correspond to either strengths or weaknesses of the EU fashion industries (cfr. section 1.2).

4.1 Business models and diversification strategies

As already became clear from the general discussion in part 2 on the fashion industries and value chains, a host of different actors are active in the fashion industries and competition is fierce, especially in the price driven segments of the market. Companies in various parts of the value chain have therefore developed distinct business models and strategies, which are constantly being re-shaped and re-adjusted based on competitive pressures, technological developments, consumer demand, etc.

Business models depend largely on the markets that companies are looking to target (design oriented, price / design oriented or price oriented) and where their focus or core business activities lie. E.g. haute couture is mainly still entirely (or almost entirely) produced by only a few companies in close proximity to the market; other companies, such as ZARA, have proven highly successful in marketing and retailing relatively cheap fashionable apparel, footwear and accessories, primarily made in the EU⁶⁸.

As explained in part 2 EU fashion companies have adjusted their activities and functions in response to changes in the competitive conditions for the industry and production companies have increasingly become knowledge companies. Thus core activities are increasingly related to design, marketing and sales. Production companies have increasingly integrated such activities into their business models while outsourcing traditional production processes. Retailers have also increasingly focused on design, marketing and branding as core activities, while tightening their control over other parts further upstream in the value chain.

The fashion industry can broadly be divided into five different Strategic Clusters based on the company/brand characteristics and their business strategies. These clusters include:

1. Luxury Fashion Brands
2. Premium Fashion Brands
3. Vertically integrated Retailers
4. Department Stores and Mass Retailers with Private Labels
5. Small independent actors (e.g. designers, manufacturers, retailers)

The following sections will take a deeper look into each of these clusters based on the available literature. After describing the typical actors active in each cluster and the type of products put on the market, the focus will turn to identifying the business models most commonly used within these clusters. In the context we will look at the design process, sourcing process, manufacturing process and distribution and retailing process.

⁶⁸ In 2009, about 76% of all products sold by ZARA were made in Europe.

4.1.1 *Luxury Fashion Brands*

Luxury brands can be defined as brands with heightened status that affords an opportunity for their owners to charge premium prices. They are considered desirable beyond their functionality and they provide their users with perceived status. The appeal and desirability of luxury brands is at least partly caused by their low availability and their association with certain social segments⁶⁹.

Luxury products are often associated with characteristics such as excellent quality, high price, scarcity and uniqueness, aesthetics and polysensuality⁷⁰. These characteristics include recognizable symbols, iconic product designs, personality of the brands' creators, locations, brand name and brand history⁷¹. Furthermore, luxury fashion brands can be distinguished by their global recognition, critical mass, high product quality and innovation and powerful advertising⁷².

Several critical success factors have been identified for luxury products⁷³. These factors include emotional appeal, premium quality, craftsmanship, exclusivity, style and design, country of origin and uniqueness. A luxury product does not need to possess all these qualities but usually has several of them. For the luxury fashion products especially quality, style and design, country of origin, craftsmanship and emotional appeal along with brand reputation and creation of life style are important⁷⁴. Although increasing competition is forcing luxury brand producers to take the efficiency of their operations and lead times into account, success in more mainstream segments factors, such as costs and efficiency, are rarely their key concerns. Understanding the critical success factors for luxury fashion products is crucial for luxury brand companies in order for them to create supply chains which are able to match product characteristics with customers' requirements. In addition to providing products which match with the critical success factors, supply chains must also be adaptable to the luxury fashion industry's highly volatile and unpredictable selling volumes and product variability.

A specific feature within the luxury fashion segment is to have an umbrella company which owns a large number of different luxury brands. A good example of this type of company include Louis Vuitton Moët Hennessy (LVMH) which owns brands such as Louis Vuitton, Bvlgari, Fendi, Marc Jacobs, Givenchy, Dom Perignon and many others. The company also covers a variety of different luxury product categories such as fashion and leather goods, wines and spirits, perfumes and jewelry as well as lifestyle publications⁷⁵. Other well known umbrella companies in the luxury fashion segment include PPR and Richemont.

Design process: Design is a core competency for luxury brands and is therefore often kept in-house⁷⁶. Although some luxury products are considered timeless and classic, most product collections of luxury brands are constantly changing and innovation is crucial for the brands' success⁷⁷. Some luxury brands design *haute couture* products which refer to products that are exclusive and custom-fitted where as others produce only ready-to-wear product lines which refer to products which can be produced in larger patches and are sold in finished condition. Haute couture business has however declined as the ready-to-wear lines have increased their popularity⁷⁸. Brands can be divided into two categories based on their search for new designs. Brands which apply designer-driven search have a design process where the creation and development of new products always start from the designer. Designers have strong internal control over any

⁶⁹ Moore and Britwistle (2005)

⁷⁰ Dubois et al. (2001)

⁷¹ Bruce and Kratz (2007)

⁷² Bruce and Kratz, (2007)

⁷³ Caniato et al. (2011)

⁷⁴ Caniato et al., (2011); Brun and Castelli (2008)

⁷⁵ LVMH (www.lvmh.com/the-group/lvmh-companies and brands/)

⁷⁶ Brun and Castelli (2008)

⁷⁷ Cillo and Verona, (2008)

⁷⁸ Djelic and Ainamo (1999)

changes that take place within the collection. On the other hand brands which apply market-driven search have a design processes which is triggered by continuous market sensing and understanding as well as market intelligence⁷⁹. Another distinct design strategy for luxury brands is to design different categories of products based on their accessibility for consumers. Providing products which are perceived relatively inaccessible for consumers (because of high price, low production volume, limited distribution) keeps up the exclusive reputation of the brand. On the other hand adding products which are relatively accessible, and often slightly cheaper, enables luxury brands to widen their consumer base⁸⁰.

In order to further widen the consumer base luxury brands also design products which are specifically targeted for markets outside the traditional western markets. As an example Burberry has product lines which are designed only for the Japanese market⁸¹. Finally, many luxury fashion brands have diversified their product portfolio into covering products outside the traditional fashion product categories. Examples of these products include perfumes, wines and home decorations. In some cases the production of these items have been dedicated to different organizational entities under the same holding company⁸². Some luxury brands have been accessing external design skills and competencies by hiring notable designers. Although well-known designers contribute to the design of the products they also shape the brand image and are therefore closely connected to marketing and brand development strategies⁸³. New designs are produced in time to meet the main seasonal events.

Sourcing process: Textiles industries, and to certain extent leather and fur industries are by far the most important suppliers of materials for luxury fashion products. The demand for premium quality is the underlying determinant of the sourcing strategies of most luxury fashion brands. In order to ensure high quality of final products, all materials and components must comply with high requirements. Thus fabrics and other inputs are sourced from suppliers who are known to be reliable⁸⁴.

In general the sourcing strategy of luxury brands differs between standard and customized components or materials. For customized pieces, small batches and strategic high quality materials brand companies collaborate intensively with suppliers and try to establish common objectives and strategies. This includes involving important suppliers into new product development⁸⁵. In addition to quality, the location of the suppliers may also be important in order to provide consumers with materials that are perceived authentic and comply with their expectations of the country of origin. For example, cashmere wool is often imported from India, leather from Italy and crocodile skin from Australia in order to guarantee authentic and superior quality. Thus, some materials are sourced globally but not in order to cut costs. Suppliers of less critical and standardized materials (such as small metal components) are usually chosen based on their cost/service level ratio. As luxury fashion brands are often large and well-known companies they have significant bargaining power over their suppliers which enables them to have a high level of control and to maintain long-term relationships with a large number of dedicated suppliers⁸⁶. Fashion brands have also adopted internal quality control systems in order to ensure high quality and performance as well as good relationships with their suppliers⁸⁷.

Manufacturing process: As already mentioned the demand for individual luxury fashion products is highly unpredictable and subject to fashion trends which are driven by

⁷⁹ Cillo and Verona, (2008)

⁸⁰ Bruce and Kratz, (2007); Moore and Britwistle, (2004); the Economist,(2011)

⁸¹ Moore and Britwistle, (2004)

⁸² Djelic and Ainamo, (1999)

⁸³ Bruce and Kratz, (2007)

⁸⁴ Caniato et al.,(2011); Brun and Castelli (2008)

⁸⁵ Luzzini D. and Ronchi S. (2009)

⁸⁶ Caniato et al. (2011); Luzzini and Ronchi (2009)

⁸⁷ Luzzini and Ronchi (2009)

seasonal events. In addition, many fashion items have a very short maturity period. This implies that the supply chain must be efficient in producing relatively small volumes of products but also flexible in order to follow the demand patterns. Given the high unit costs of luxury fashion items, it is necessary for companies to avoid stocking their products due to the risk of obsolescence. To reduce delivery times but also to respond to consumer preferences and to strengthen the brand image, manufacturing activities are often located near the main markets. Nevertheless, outsourcing is a common practice within the luxury fashion cluster. The motivation for outsourcing is to access special competencies and skills, rather than saving costs⁸⁸. In order to maintain the high quality of the products and to keep the manufacturing process flexible, many luxury fashion brands maintain a high level of control over their suppliers and subcontractors and rely on strong coordination among various partners⁸⁹. Suppliers are often small and fully dedicated to the brand⁹⁰.

Distribution process: It is important for luxury fashion brands with a high symbolic value to align their distribution channels with their critical success factors such as emotional appeal, premium quality, exclusivity and style and design. Therefore luxury fashion brands pay special attention not only to the display, availability and variability of their products in their outlets but also to the shopping experience as a whole which includes personal service, outlet location and interior design⁹¹. In order to control for these factors downstream integration towards point of sale is common⁹². Luxury fashion brands hold tight control over their distribution channels which vary from company owned flagship stores to wholesale and licensee distribution channels⁹³. Overall the recent trend among brand owners has been to open their own stores⁹⁴. A common alternative for the fully owned store is selective distribution which permits manufacturers of luxury goods to supply only to authorized retailers who meet certain criteria in order to protect the image of the product⁹⁵.

Another distinct part of the distribution strategy of luxury fashion brands is a different availability of products in different distribution locations. Typically flagship stores have a full product range at all times whereas the product range becomes more limited in regular retail stores, department stores, designer outlets and specialty fashion stores. Many luxury fashion brands have also established online stores. Online stores allow the brand owner not only to increase its sales and profits but also to hold tight control over its products, prices, and presentation⁹⁶. In addition, online sites play a key role as a communication tool between the brand and consumers⁹⁷. Indeed communication and advertisement is crucial for luxury brands in order to create an image that appeals to consumers. Many brands spend large amounts on lavish advertisement campaigns which support their brand image. Fashion shows also play an important role in maintaining a certain brand image.

It should be noted that while the development of an online market has had many positive effects for luxury brands, it has also increased the amount of available counterfeit products and thus has undermined the reputation and sales of the brands. Brands such as LV and Chanel as well as individual designers have raised successful court cases against sites selling counterfeit products as well as demanded search engines and social networking sites such as Google and Facebook to de-index or remove sites selling these products from their search results⁹⁸. Court cases have also been raised against

⁸⁸ Caniato et al. (2011)

⁸⁹ Caniato et al. (2011); Moore and Birtwistle, (2004); Djelic and Ainamo, (1999)

⁹⁰ Brun and Castelli (2008)

⁹¹ Caniato et al. (2011); Atwal and Williams, (2009)

⁹² Brun and Castelli (2008)

⁹³ The New York Times (2010); Buettner et al (2009)

⁹⁴ Gereffi and Frederick (2010)

⁹⁵ Clark et al. (2009)

⁹⁶ The New York Times (2010)

⁹⁷ Moore and Birtwistle, (2004); Bruce and Kratz, (2007)

⁹⁸ Telegraph (2011); BBC (2011)

companies such as eBay⁹⁹ which has bought keywords resembling those of the brand names in order to direct people who use these search names into eBay's website. The ability of sites as eBay to offer both real brand products as well as counterfeit products with significantly lower prices than in actual stores is considered to be a major challenge for luxury brand's reputation and sales¹⁰⁰.

In this field, a new Regulation (Commission Regulation (EU) No 330/2010 of 20 April 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices) and the related Guidelines on Vertical Restraints has been recently adopted. According to these rules, it is possible for the producers to restrict internet sales, under certain conditions, to distributors operating a physical shop, and they may limit the distribution of their products via 'third party platforms' (online distributors) where such platforms are in strict compliance with the suppliers' selective criteria.

As the number of wealthy people and therefore the demand for luxury fashion items has increased also in the emerging economies, many luxury brands have opened stores in an increasing number of locations¹⁰¹. For example, Luis Vuitton has been expanding its presence in China from first-tier to second-tier cities and has now 39 stores around the country¹⁰². Similarly, Gucci has increased its number of stores in mainland China from two in 1997 to 31 in 2010 and is planning on expanding its operations further¹⁰³. Expansion of markets (both in terms of product variability and geography) requires more production capacity which has led to the use of increasingly sophisticated production equipment, standardization as well as more outsourcing¹⁰⁴. There is a risk in this trend, however, as the brand owners run a risk of losing their luxury brand status when their products lose their exclusivity and uniqueness¹⁰⁵.

Examples of luxury fashion brands include: Giorgio Armani, Burberry, Chanel, Dior, Ermenegildo Zegna, Gucci, Jil Sander, Jimmy Choo, Loewe, Louis Vuitton, Prada, Salvatore Ferragamo etc.

4.1.2 *Premium Fashion Brands*

Premium and luxury are often used as synonyms and therefore drawing a clear distinction between premium fashion brands and luxury fashion brands is not straight forward. As described by Uche Okonkwo, the author of "Luxury Fashion Branding - Trends, Tactics, Techniques", premium brands are brands which aspire to be luxury and prestige brands but whose marketing strategies target (luxury) mass markets. Whereas the traditional luxury products base their attractiveness on exclusivity and prestige, the premium products have distinct characteristics that focus around a more attainable and accessible point-of-entry experience available for everyone¹⁰⁶. Premium brands are also referred to as mass-premium brands, mass-luxury brands, near-luxury brands, new luxury and high-end brands.¹⁰⁷

⁹⁹ In October 2010, A Paris tribunal ordered Ebay to pay 200,000 euros in damages and 30,000 euros for the court costs to Louis Vuitton (owned by LVMH) as Ebay was found to be harming Louis Vuitton's trademark and domain name. Ebay had paid search engines such as Google and Yahoo to use miss-spelled versions of Louis Vuitton's name as keywords directing users to Ebay. According to the tribunal by using the miss-spelled brand names, Ebay was promoting its own website by using Louis Vuitton's brand name and therefore it was misleading the internet users. Ebay was further demanded to pay 1,000 euros in penalties every time it uses these keywords.

¹⁰⁰ Reuters (2011); MSNBC (2010); BBC (2011b); Telegraph (2011b); Smartcompany (2012)

¹⁰¹ Nueno and Quelch, (1998)

¹⁰² <http://www.louisvuitton.eu/>; Chinaapparel (2012); China Fashion Trends (2011)

¹⁰³ PPR (2010)

¹⁰⁴ Djelic and Ainamo, (1999)

¹⁰⁵ Nueno and Quelch, (1998)

¹⁰⁶ Danzinger P. N. (2005); DeLise (2010)

¹⁰⁷ Nguyen, (2004); Silverstein M. J. and Fiske N. (2003) DeLise (2010); Okonkwo (jj):

In general premium products are perceived superior to normal goods both in terms of their quality and/or price. In many aspects, such as design, communication and advertisement, premium brands are imitating luxury brands. However they include less craftsmanship, and are often produced in larger volumes and distributed to a larger consumer base which is reflected by their lower prices¹⁰⁸. In order to create a sense of luxury, premium brands are placing more emphasis on the packaging and presentation of the product ¹⁰⁹.

Many products that can be included into the premium fashion category are produced by brands whose main market category is either luxury or mid-market. For example, luxury brands, such as Armani, are offering less elitist lines. Mass-market brands such as Zara and H&M are adding more expensive and luxurious products which have been designed by high-end designers into their collections, although this only involves short-term actions and no permanent product lines. Both types of brands are trying to benefit by filling in the gap between luxury and mid-market products and thus are competing within the same category. The trading-up of mass-market brands and trading-down of luxury brands have been referred to as "democratization of luxury"¹¹⁰.

One of the recent trends for brands has been to create exclusive product lines for mass retailers who wish to offer unique merchandise. The brands together with retailers design and distribute a product line which is sold exclusively by the retailer rather than through multiple retail outlets¹¹¹. Luxury brands expansion has also been called *masstige* which refers to downward expansion through own less exclusive product lines or through collaboration with mid-market retailers¹¹². Due to over-exposure some luxury brands have entirely fallen out of the luxury category into the premium category.

Similarly to luxury fashion brands, some companies focusing on premium fashion brands own several different brands. An example of this includes Max Mara which owns several different product lines. The lines close to the "Max Mara world" usually have names easily linked with the main brand name (e.g. Marella, Max & Co, Sportmax) whereas lines targeted for different markets and/or to increase market penetration without risking to be overexposed, have names which are not related to the main brand name (e.g. Marina Rinaldi, Pennyblack, and Persona)¹¹³. Overall Max Mara has approximately 30 different product lines targeted for different consumer ages, styles, bust-waist-hip sizes and clothing types. The products are sold in more than 1000 company owned stores or franchises. This type of micro-segmentation has enabled Max Mara to offer niche lines and brands and to benefit from economies of scale in production, distribution and geographical expansion. The company further reduces costs by locating its production in Central and Eastern Europe¹¹⁴.

Examples of premium brands are: Armani Jeans, Lacoste, Miu Miu, Paul Smith, Escada, Furla, Hugo Boss, Lancel, Donna Karan, Morris etc.

4.1.3 *Vertically Integrated Fashion Retailers*

A vertically integrated company can be defined as a company that owns assets, organizes activities or controls activities in successive stages of the value chain¹¹⁵. The degree of vertical integration can vary between full vertical integration through

¹⁰⁸ Edberg, (2010)

¹⁰⁹ DeLise, (2010)

¹¹⁰ Heine (2011)

¹¹¹ Gereffi and Frederick (2010)

¹¹² Ginman et al.(2010)

¹¹³ Cavalli and Ravasi (2009)

¹¹⁴ Berg (2009)

¹¹⁵ Richardson, (1996)

ownership to market exchanges which are based on mutual agreements¹¹⁶. Within the fashion industry vertical integration is a response to consumers' new demands of speed, latest fashion trends and affordable prices, which have changed the dynamics of the fashion industry¹¹⁷.

During the last decades the fashion market, especially for the middle price range, has become highly competitive in addition to which the frequency of product changes has significantly increased. This trend has sometimes been described as the emergence of fast fashion which is characterised by low predictability, high impulse purchase, shorter life cycle, affordable prices and high volatility of market demand¹¹⁸. Fast fashion is driven by consumer demand and therefore requires quick response strategies which shorten buying cycles and reduce lead times for getting the produced items into stores¹¹⁹. The key element which enables quick responses is application of on-line electronic communication of sales data from retailers to the upstream operations¹²⁰.

In order to meet the requirements of fast fashion, retailers must meet several distinct requirements. First of all, retailers must be able to make fast connections between the demands of customers and upstream operations, such as design, manufacturing and sourcing. This has been done by designing new information channels which enable better transfer of hard data and information from retailers to designers and producers. Secondly, improved communication and coordination must be accompanied by short product development cycles, rapid prototyping, small batches and large variety. Thirdly, an integrated, fast and responsive supply chain is a requirement for sufficiently frequent delivery of products and materials. In order to reach the growing number of potential customers retailers have set up an increasing number of stores worldwide¹²¹. In addition, in order to compress the response times retailers have reduced their number of suppliers in order to increase dedication and flexibility. Intermediaries who add relatively little value into the value chain have been eliminated. Quick response tools and techniques must be accompanied by good relationship management skills in order to make the supply chain truly flexible¹²².

In general, vertically integrated fashion retailers can be characterised by central management, seeking to reduce costs and increase speed in all parts of their value chain. Due to the preference of consumers towards constantly changing trends, the quality of the products is considered less important than their sense of trend¹²³. Given these characteristics, vertically integrated fashion retailers are highly global both in terms of their distribution as well as sourcing and manufacturing¹²⁴. Typically, retailers are looking for suppliers and distributors who can be considered as partners with shared interest in building profitable strategies¹²⁵.

Given the global strategies of many vertically integrated fashion retailers, this type of retailers (although this is not exclusive for this business model) have received criticism regarding their social and environmental standards. Given the demands from the consumers, corporate social responsibility (CSR) campaigns and social advocacy groups regarding responsibility and transparency, many companies have paid special attention to environmental compliance requirements, green initiatives as well as social issues¹²⁶. We refer to section 5.4 for a more detailed discussion of this issue.

¹¹⁶ Richardson (1996); Hines (2007)

¹¹⁷ Bhardwaj and Fairhurst, (2010); Barnes and Lea-Greenwood, (2006)

¹¹⁸ Bhardwaj and Fairhurst, (2010); Hines (2007)

¹¹⁹ Barnes and Lea-Greenwood, (2006)

¹²⁰ Fiorito et. Al., (1995)

¹²¹ Tokatli, (2007)

¹²² Hines, (2007)

¹²³ Bhardwaj and Fairhurst, (2010); Barnes and Lea-Greenwood, (2006)

¹²⁴ Tokatli, (2007)

¹²⁵ Barnes and Lea-Greenwood, (2006)

¹²⁶ Gereffi and Frederick (2010)

Design process: A specific characteristic for vertically integrated fashion retailers is their limited investment in design. Instead, their designs are inspired by trends spotted at the fashion shows as well as by information collected from the mainstream consumers and customers visiting retail stores¹²⁷. These trends are transformed quickly into products through in-house designers. Designs can also come from suppliers. In order to shorten the turnaround time between design concept and delivery of the product to store, designs are computerized and electronically transmitted to manufacturers. Representatives of manufacturers and suppliers are also often included into the design phase in order to ensure smooth transfers¹²⁸.

Manufacturing process: Vertically integrated fashion retailers can be divided into two categories based on whether they own manufacturing facilities or not¹²⁹. Retailers who do not own manufacturing facilities outsource their manufacturing to other firms. An increasing amount of manufacturing is done by companies located in the partially industrialised countries where production costs are low¹³⁰. In many cases subcontracted manufacturers are working exclusively for their retailers¹³¹. Retailers who own their manufacturing facilities, such as Benetton and Zara, have widely ranging manufacturing strategies in terms of locations. For example Benetton produces most of its items in Italy and relies on its ability to compensate for higher production costs by higher flexibility and lean inventories. On the other hand, Zara, who used to locate its production into Europe has gradually started shifting its manufacturing into cheaper countries such as Turkey and Morocco as well as Asian countries¹³².

Similarly to the design processes, manufacturing is electronically connected to other parts of the supply chain which enables flexible and fast responses to demand changes¹³³. This has also entailed that manufacturers are taking on increasing responsibilities which have traditionally been born by the retailers. These types of manufacturers are increasingly becoming intermediaries establishing networks of global suppliers which are able to offer full-package services. These networks make products for multiple brands, based on the buyers' requirements, and are able to offer services such as quality control, packaging, tagging and even product development, along with the traditional production capabilities¹³⁴.

Sourcing process: Also sourcing processes must be organised in a way that small and medium volumes of fabrics and other materials can be delivered in a very short period of time. In order to reduce the delivery times and achieve better availability, many vertically integrated companies use garments designed of standard fabrics, such as stock or greige fabrics which can be easily dyed to match the demands of consumers¹³⁵. Although the fabrics are not highly sophisticated, they need to be in line with the current trends. The requirement for fashionable materials, the ability to provide small volumes of products and short delivery times have led many companies to look at sourcing locations for materials which are close to their manufacturers and markets but also where suppliers have an understanding of the fashion requirements. A country such as Turkey has become one of the emerging countries for delivering fast fashion products. Fabrics which are more lasting in terms of their popularity can still be bought from low cost locations such as China as the demand is more predictable and lead times do not play such an important role¹³⁶.

¹²⁷ Tokatli, (2007); Hines, (2007)

¹²⁸ Richardson, (1996)

¹²⁹ Tokatli, (2007); Richardson, (1996)

¹³⁰ Tokatli, (2007)

¹³¹ Richardson, (1996)

¹³² Tokatli (2007)

¹³³ Hines (2007)

¹³⁴ Barnes and Lea-Greenwood (2006); Hines (2007); Gereffi and Frederick (2010)

¹³⁵ Hines, (2007)

¹³⁶ Barnes and Lea-Greenwood, (2006)

Distribution and retailing process: Typically vertically integrated companies hold a high level of control over their own stores and franchisers. All the stores carrying the name of the companies follow tight instructions on layout, pricing, presentation and merchandise mix. Point-of-sale (POS) data enable retailers to track their sales, order replacements and to drop items from their product line within a very short notice period. Retail stores are also in a central position with regards to informing other parts of the supply chain about consumer demands. Usually orders and deliveries are centrally managed and franchisers have a limited ability to influence what is offered in their stores¹³⁷. Typically stores do not replenish stocks of products. Rather, when one type of product is sold out, the retailer substitutes it with the next fashion item. This strategy minimizes inventory but also encourages customers to visit the stores more often in order not to miss the most trendy and new items and therefore maximizes the sales¹³⁸. Stores are typically located in all the major cities within clusters of other similar stores (malls, shopping areas etc.)¹³⁹.

Examples of vertically integrated retailers include: Adidas, Benetton, H&M, Zara, Next, Puma, etc.

4.1.4 *Department Stores and Mass Retailers with Private Labels*

There has been a sharp increase in the volume and diversity of retailer private labels introduced by department stores and mass retailers¹⁴⁰. Offering private labels has several benefits for merchandisers, department stores and retailers.¹⁴¹ By offering private labels department stores and other mass retailers are able to offer unique products and a larger variety which attracts more customers. The use of private labels by these stores also often requires engaging in manufacturing to reduce costs¹⁴². By eliminating the middle man associated with national brands, retailers are able to shave costs and widen profit margins¹⁴³. Having private labels department stores and large retailers are more able to respond faster to changes in consumer demand and have better control over the quality of their products. Finally, by being in charge of the design and production of their own products, these stores can better use the information they receive from their customers regarding the design and marketing of these products. It has been argued further that department stores and large retailers value private labels because they have full control over the positioning of their labels with respect to other brands¹⁴⁴.

Indeed, private labels are often close substitutes for national brands which are brands sold nationwide by various retailers. Increased competition against national brands through private labels allows department stores and other mass retailers to negotiate better supply conditions with national brand manufacturers which further increases their profitability¹⁴⁵. In terms of product diversification, private labels offer competition not only for the fashion clothing items but especially for other related products such as accessories, wines and spirits¹⁴⁶.

When it comes to the quality and prices of the private labels, a number of observations can be made. In general private label products are priced lower than equivalent national brands¹⁴⁷. An increasing number of supermarket chains, such as Walmart in the US and Tesco in the EU have developed their own private labels and as a result have been able

¹³⁷ Richardson, (1996)

¹³⁸ Hines (2007); Barnes and Lea-Greenwood (2006)

¹³⁹ Richardson (1996)

¹⁴⁰ Raju et al. (1995); Gereffi and Frederick (2010)

¹⁴¹ Sen (2008)

¹⁴² Morton and Zettelmeyer, (2004)

¹⁴³ Gereffi and Frederick (2010)

¹⁴⁴ Morton and Zettelmeyer, (2004)

¹⁴⁵ Morton and Zettelmeyer, (2004); Soberman and Parker, (2006)

¹⁴⁶ Hines, (2007b)

¹⁴⁷ Soberman and Parker, (2006)

to increase their share in fashion clothing retail trade¹⁴⁸. Their shares have increased faster in terms of volume than in value which indicates that supermarkets are selling more for less and therefore their competitive advantage may be derived from price rather than fashionability. As a consequence many retailers with well-known private labels, such as Marks&Spencer and C&A have been losing ground to supermarkets.¹⁴⁹ Regarding the quality of private labels different observations have been made. Some have found that private labels are generally considered to have an inferior quality in comparison to brand products.¹⁵⁰ It has, however, also been observed that in some cases the quality of private labels matches or even exceeds that of the designer brands. Similarly, in some more rare cases the prices of these products can be comparable to high-end products¹⁵¹. Many private labels are making efforts to develop their image as reliable brands to gain customer loyalty.

Similarly to vertically integrated retailers, it is common for department stores and other large retailers to apply quick response techniques into their supply chains. By using quick response systems department stores and retailers are able to convey the information they collect on the store level through online electronic communication to designers, manufacturers and marketing, and to optimise their product design and inventory based on the market demand¹⁵².

Design process: As mentioned above private label products have changed from standardized products into more fashionable items. Although many are imitating the designs of leading fashion designers some private label producers have hired well-known designers in order to boost their products' appeal¹⁵³ (e.g. C&A). It is common that private label products are designed by in-house design-teams¹⁵⁴.

Manufacturing process: Although most private labels are producing their products offshore in low-cost locations with long lead times, many have reshaped their manufacturing process to comply with the quick response approach¹⁵⁵. This implies that products are ordered in small batches from manufacturers located close to where the products are sold in order to reduce their inventories. Similarly to the manufacturing process of vertically integrated fashion retailers, manufacturers of private label products are often including activities such as packaging, labelling and inserting price tickets into their operations¹⁵⁶. Manufacturing volumes are based on the online information coming from the retailers¹⁵⁷.

Distribution process: By definition, private label brands are only sold by a single retail chain or group.

4.1.5 *Independent small actors (e.g. designers, manufacturers, retailers)*

Although the foregoing text look at business models covering the value chain of the fashion industry, it is important to realise that a large part of the sector is made up of independent small actors. Although this group generally receives less attention in the literature than the other models, they play a vital role in the sector, at different levels: design, manufacturing of fashion products and retail. These are each discussed below.

Small fashion designers: The core competence of small fashion designers is their ability to create unique designs. They exist in all types of fashion, ranging from luxury products to low-priced every-day casual clothing. However, small designers typically draw their

¹⁴⁸ Hines (2007)

¹⁴⁹ Hines, (2007)

¹⁵⁰ Ailawadi et al., (2003)

¹⁵¹ Kumar and Steenkamp (2007)

¹⁵² Priorito et al., (1995)

¹⁵³ The New York Times, (1988)

¹⁵⁴ Gereffi and Frederick (2010); Chen et al., (2010)

¹⁵⁵ The New York Times, (1988);

¹⁵⁶ Sen, (2008)

¹⁵⁷ Priorito et al., (1995)

competitive advantage from the creation of innovative fashion products. They often create items which push the boundaries and shape the next generation of fashion but which may not be highly commercially viable. Small size, limited commercialisation and independency are considered important to remain highly creative¹⁵⁸. On the other hand, growth is not always an option given the limited capital base of small designers¹⁵⁹ and problem of access to finance (see also section 0). Limited capital resources also makes it difficult for small designers to meet consumers rapidly changing demands¹⁶⁰.

In empirical studies regarding small designers in the UK and Italy, it has been found that many designers are lacking resources to penetrate their products into the mass market and to sustain growth¹⁶¹. In addition to resources, small enterprises are lacking competencies in key strategic functions, such as R&D, sales, branding and financial areas, and are falling behind in integration of IT technologies into the new production development processes¹⁶². In order to overcome the lack of resources, small designers are sometimes seeking cooperation with high street retailers to benefit from their expertise in mass-manufacturing processes and mass market distribution. Small fashion designers have also benefited from branding themselves as the designers of fashion items that have been successfully imitated by the downstream mass market retailers¹⁶³. Furthermore, collaborating with larger companies can give small design enterprises access to stable supply and greater variety of raw materials, additional production options and may even help them to enter new export markets¹⁶⁴. Especially for the small designers of luxury fashion products, appearing in international fashion events and trade fairs is important in order to gain orders from significant retailers.

As an alternative for large high street retailers, small designers may sell their products through small retailers and boutiques. As smaller retailers are often more flexible and order smaller volumes, it allows small, and especially new, fashion designers to learn how quickly they are able to produce their products and how to structure their orders¹⁶⁵. A third alternative for small fashion designers is to sell their products in their own stores. In the smallest enterprises the designer is also an entrepreneur who is in charge of the sales and managing the shop¹⁶⁶. Owning a store allows designers to communicate with customers and to get regular feedback on their products and ideas¹⁶⁷. Previous research regarding small designers in UK found that close relationships with relevant customer and lifestyle groups was crucial for small designers¹⁶⁸. Finally, an increasing amount of small designers are turning into online retailing as it enables designers to gain higher margins for their products as well as to access better customer information¹⁶⁹. Good relationships are considered as a crucial success factor also in the upstream part of the value chain¹⁷⁰. Finding a good and reliable manufacturer is a major challenge for most designers and therefore developing good and sustainable relationships with manufacturers is essential¹⁷¹. Some of the key issues creating problems between designers and manufacturers include on-time delivery, high costs associated with small orders,

¹⁵⁸ Lin, (<http://www.fashion.arts.ac.uk/media/research/documents/Shuyu%20Lin%20-%20Sources%20of%20Creativity.pdf>)

¹⁵⁹ McRobbie, (2002)

¹⁶⁰ Karra (2008)

¹⁶¹ Lin (<http://www.fashion.arts.ac.uk/media/research/documents/Shuyu%20Lin%20-%20Sources%20of%20Creativity.pdf>) and Rabino et al. (2008)

¹⁶² Rabino et al., (2008)

¹⁶³ Lin, (<http://www.fashion.arts.ac.uk/media/research/documents/Shuyu%20Lin%20-%20Sources%20of%20Creativity.pdf>)

¹⁶⁴ Rabino et al. (2008). An example of such collaboration is the co-operation between Belgian fashion designer Walter Van Beirendonck and retail chain JBC for the design of their 'Van Beirendonck' kids collection.

¹⁶⁵ CNNmoney (2009) (<http://smallbusiness.blogs.cnnmoney.cnn.com/2009/01/15/how-fashion-designers-break-into-boutiques/>)

¹⁶⁶ Malen (2008)

¹⁶⁷ Crewe and Foster (1992)

¹⁶⁸ Raffo et al. (2000)

¹⁶⁹ Karro (2008)

¹⁷⁰ Malen (2008); Crewe and Forster (1992)

¹⁷¹ Crewe and Forster (1992)

payment terms, lack of specific skills and trust issues¹⁷². In order to keep the sourcing process flexible and maintain close relationships with their suppliers many small designers often source their products locally. However, it is not uncommon that even the small designers manufacture in more than one country¹⁷³.

Small fashion manufacturers: In addition to small independent designers and retailers, the fashion industry includes a large number of small and medium sized manufacturers who are engaged in fashion manufacturing. These manufacturers can be further divided into five different categories:

- Cut-Make-and-Trim (CTM) manufacturers, which produce fashion items out of cloth and designs which have been provided by their customer (e.g. designer or retailer).
- Contractor manufacturers, which produce items under strict instructions of their customers but can source their own cloth and design.
- Captive suppliers, which typically work only for one customer in an often mutually beneficial relationship which resembles a partnership.
- Independent Manufacturers, which manufacture their own designs under own or private label. This type of designers/manufacturers is less dependent on single retailer groups.
- Independent Manufacturers or Marketers, which are similar to Independent Manufacturers but with an addition of a brand. They are able to switch between brand and "own" label and are highly independent.

The last two types of manufacturers clearly overlap with independent designers and therefore making a clear distinction between manufacturers and designers is sometimes difficult.

Due to their small size, SME manufacturers are often able to meet the speed, volume and variability requirements of fast fashion and quick response approaches. As retailers are transferring an increasing amount of responsibility and risk to manufacturers, many are adopting more integrated operating models and better use of new information technology/information sharing. Thus it is no longer necessary for manufacturers to hold large inventories but instead they are directly connected to both up- and downstream parts of the value chain and are therefore able to improve their efficiency¹⁷⁴.

Small fashion retailers: In order to distinguish themselves from large retailers, small fashion retailers are often concentrating on alternative fashion labels and unique designs and thus cater small niche markets¹⁷⁵. Increasing number of small retailers are also focusing more on design products which convey quality, branding and exclusivity¹⁷⁶. However, independent retailers do pay attention to popular design trends and apply them in more down to earth, more affordable and attractively priced versions which attract fashion sensitive young consumers¹⁷⁷. Especially in Southern and Eastern Europe, independent shops still have a significant part of the market and are also focused more on mainstream products. In addition to the product qualities, customer care and shopping experience are found to be important for small retailers, which is reflected into staff training and store layout and interior¹⁷⁸. Many independent retailers are utilizing a mixture of own brands and designer labels in their stores. By sourcing from local

¹⁷² Karra (2008)

¹⁷³ Karra (2008)

¹⁷⁴ Lawson (1998)

¹⁷⁵ Law et al (2004)

¹⁷⁶ Crewe and Forster (1992)

¹⁷⁷ Law et al.(2004)

¹⁷⁸ Crewe and Forster (1992)

suppliers (manufacturers and designers) retailers have gained a reputation of exclusivity and are able to offer unique brands. Just like small designers, many small retailers are highly integrated throughout their supply chain in order to gain flexibility and responsiveness.

Online customized retailing has significantly expanded over the last two decades and there deserves some special attention. As consumers are increasingly interested in individual and unique products, many online retailers have taken advantage of additional opportunities that internet offers and have started focusing on providing customised fashion items where consumers are involved in the design, production and/or delivery process even before the actual purchase has taken place¹⁷⁹.

The growth of online customisation can be attributed to its ability to provide customers who are looking for specific, individually fitted, products with new assets, but also because it reduces costs for retailers and encourages customers to overcome their reluctance for online shopping. According to a recent study, if a consumer is involved in the customisation process, 72% of the time the same consumer will buy the product, as opposed to 23% of the time for the fashion business in general¹⁸⁰. Online customisation further provides opportunities for costs saving through better planning conditions, a reduction of fashion risks, a drop in distribution stock-keeping and higher customer loyalty¹⁸¹. Furthermore, internet allows online retailers to collect valuable information about the potential consumers' consumption habits and preferences as well as to interact with them through various online tools, such as emails, consumer forums as well as social media¹⁸².

In the literature the provision of customized products has often been referred to as mass customisation. Although customers are involved in co-designing the product according to their needs, their choices are often limited within a fixed solution space offered by the retailer. Keeping consumers choices limited allows for stable and responsive processes but maintains costs associated with customization on a level which does not force retailer to switch in an upper market segment¹⁸³. In its simplest forms customisation may refer to choosing a colour of a t-shirt whereas in the more complex processes the consumer is able to design highly individual items by choosing for example the size, colour, fabric and print/design for their item. In the most complex processes new technologies such as 3D-bodyscanning is used in order to create products which fit the exact body type of the customer. Throughout the production chain, companies focusing on mass customisation take advantage of information technology, flexible processes and organisational structures. The production processes are often highly integrated and flexibility is further improved by applying systems such as computer-aided-design (CAD) and computer-aided-manufacturing (CAM) systems¹⁸⁴.

Although customised products are not necessarily associated with premium prices, in many cases consumers' willingness to pay extra is reflected into their prices¹⁸⁵. In addition to companies which focuses purely on online retailing (e.g. Bivolino), many brand products, including luxury brands, have started providing their own customisation services. As an example Nike and Vans have for long offered their customers the opportunity to co-design their shoes. In the luxury fashion segment, customisation offers brands an opportunity to offer their customers the most unique and exclusive products, which is one of the key features within the segment. Brands such as Hermes, Moët &

¹⁷⁹ Kamali and Loker (2002);

http://www.bizreport.com/2008/03/study_consumers_want_online_customization.html)

¹⁸⁰ http://www.usatoday.com/life/lifestyle/fashion/2007-07-31-online-shopping_N.htm

¹⁸¹ Pillar (2005)

¹⁸² Kamali and Loker (2002)

¹⁸³ Pillar (2005)

¹⁸⁴ Bae and May-Plumlee (2005)

¹⁸⁵ Pillar (2005)

Chandon and Ralph Lauren are all offering customised products¹⁸⁶. Online customised retail is thus a phenomenon that is used in different business models, ranging from well-known brands to independent designers, and from large to small companies. Linked to this, the sourcing and manufacturing process also differs.

4.1.6 *Summary of key developments in the fashion value chains*

The roles and relationships among national and global lead firms, apparel manufacturers, and intermediaries have become increasingly blurry in recent years. Based on the foregoing analysis, there are a number of key developments in the sector that we would like to emphasise, and that are relevant to several business models. The following are trends in buyers' strategies and long-term objectives:¹⁸⁷

- The **growing importance of intermediaries** in the value chain, where:
 - *Full-package manufacturers become intermediaries*: Instead of expanding manufacturing operations, manufacturers are establishing a network of global suppliers. There are many firms in countries around the world that make products for multiple brands, based on the buyers' requirements, providing full-package services along with production capabilities.
 - *Intermediaries/agents are expanding their roles* to include a range of services to buyers, including design, product development, and quality control in addition to providing a network of suppliers and logistics.

Related to the trend of the use of intermediaries is the trend towards reducing/consolidating the number of traders and suppliers by developing long term relationships with them. At the same time firms aim to maintain diversified sources of supply, so as to reduce dependency on specific countries (e.g. China) or suppliers.

- **Further diversification** of the fashion market as witnessed by:
 - *Increase in private-label brands*: There has been a sharp increase in the volume and diversity of retailer private labels. Retailers that develop proprietary brands use in-house design teams and outsourced manufacturing capacity, often by direct foreign product sourcing. By eliminating the middleman associated with national brands, retailers can shave costs and widen profit margins.
 - *Brand marketers creating exclusive product lines with mass retailers*: Exclusive product lines are a way for mass retailers merchants to offer unique merchandise. Retailers are striking agreements with brand marketers to develop and distribute brands that are sold exclusively through the retailer's stores instead of the traditional brand marketer model in which goods are sold via multiple retail outlets.
- **New sales channels**, notably reflected by:
 - *Growing importance of online sales* of fashion items. Related to this is also the importance of online promotion tools like fashion blogs, or social networks like facebook and twitter, to promote certain products, trends or styles and to be in direct contact with (potential) customers.
 - *Brand owners becoming specialty retailers*: Brand manufacturers and marketers are increasingly opening their own stores.
- **The use of dual sourcing strategies - quick response and fast fashion**: Buyers tend to source fashion-sensitive products from suppliers that can deliver in a flexible and speedy manner, while basic products are sourced from the lowest-cost countries. This leads to the distinction between fast fashion and quick response. Quick response

¹⁸⁶ <http://www.guardian.co.uk/lifeandstyle/2010/nov/10/fashion-statement-customisation-burberry>

¹⁸⁷ As partly identified by Gereffi and Frederick (2010)

is associated with replenishment purchases for basic products. Fast fashion is quick response in new merchandise (with little or no replenishment), involving shipping fewer pieces, in a great variety of styles, and more often. Fast fashion has not led to more local sourcing, as Asian suppliers have adapted the capabilities to serve fast-fashion buyers, including reducing minimum-run requirements at lower cost of goods.

- **Increasing attention to Social and Environmental Standards:** This began with corporate social responsibility (CSR) campaigns and social advocacy groups (e.g. clean clothes campaign). Now environmental compliance requirements and green and social initiatives are moving to the forefront. Consumers are demanding that lead firms become more responsible and transparent about their practices.

4.2 R&D and innovation

Classified as non-research-intensive and low-tech, the importance of research, development and innovation in fashion industries is underestimated. Although the OECD-Eurostat classification of technology-intensity, calculated by the ratio of R&D expenditures to output provides an easy-to-measure scheme, it neglects (at least) three important factors, which has resulted in the above misleading conclusion:

1. This classification scheme does not consider the fact that industries are not homogeneous: each industry (even high-tech ones) incorporates some non-research-intensive segments, while low-tech industries encompass some high-tech, research-intensive segments. The point of departure of this section is that fashion drivenness is strongly correlated with research-intensity: the more fashion-driven a segment of the otherwise low-tech textile, clothing, leather and footwear industries is the higher research-intensity it features.
2. The simplistic application of the OECD-Eurostat scheme considers only *R&D investments* and neglects *investments into intangible capital* – even though this latter type of investments is one of the main drivers of competitiveness in the fashion industries.
3. This classification considers only *innovation generation* but disregards technology adoption (cf. *learning by using*).¹⁸⁸ Fashion industries serve as a perfect example for innovativeness in terms of technology adoption and use. Inter-industry interdependencies and the interaction of new and old technologies can also be clearly demonstrated with the example of fashion industries.¹⁸⁹ In fact, these industries integrate and exploit innovations developed in other sectors or industries: they represent the demand side for innovations generated elsewhere. Thereby they are *key markets for technology* since they can relatively easily be integrated with other materials and embed technologies the attributes of which add to the aesthetic and functional features of their products. Fashion industries try to differentiate their products and enhance their value added by adopting the scientific results and technologies developed in scientific disciplines as diverse as materials science, chemistry, physics, ICT, electronics & microsystems, biotechnology, nanotechnology, fibre optics, and engineering & process technologies (see also section 0).

¹⁸⁸ Pavitt, K. [1984]: Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy*, vol. 13, No. 6

¹⁸⁹ Hirsch-Kreinsen, H. [2008]: "Low-tech" Innovations. *Industry and Innovation*, vol. 15, No. 1; Mendonça, S. [2009]: Brave old world: Accounting for 'high-tech' knowledge in 'low-tech' industries. *Research Policy*, vol. 38, No. 3; Hansen, T. – Winther, L. [2011]: Innovation, regional development and relations between high- and low-tech industries. *European Urban and Regional Studies*, vol. 18, No. 3

The example of fashion industries is frequently mentioned when trying to demonstrate the irrelevance of classifications of innovativeness along “low-tech – high-tech” taxonomies.¹⁹⁰

This section will focus on the fashion industries’ related research trends and efforts. Our analysis is based on data of the international textile and clothing research registers covering the years of 2008, 2009, 2010 (International Journal of Clothing Science and Technology). The annual special issues of this journal compile and publish the research undertakings of industry stakeholders of the given year: list the research projects, the associated funding, the key participants and stakeholders, the purposes and the results (deliverables and publications) of the given projects, as well as their implications.

These inventories, together with the analysis of European fashion industries related research programmes¹⁹¹ and the U.S. National Textile Center’s programmes (www.ntcresearch.org) help to identify major research trends, and hot topics in the textile and clothing industries. It will be shown that the main RDI trends can be classified into two categories: *technological and non-technological*.

The quality-based competitiveness of fashion products (similarly to all other finished products) is influenced by 1) material properties and function value, 2) process parameters and manufacturing practices, 3) design and symbolic or emotional value including also brand value. Technological innovations concern the first and second items: they are manifest in the products’ new attributes, and in the transformed and enhanced production process. Through the development of new materials, and new (non-conventional) or enhanced conventional manufacturing processes¹⁹² technological innovations integrate emerging and key enabling technologies into traditional manufacturing technologies and into traditional products. New fabrication technologies and smart materials with enhanced functionality promise to revolutionize and rejuvenate mature fashion industries.

However, it is recalled that innovations may take place in any part of the value chain. Non-technological innovations may refer to innovations in the business model,¹⁹³ in companies’ organisation, supply chain management, marketing, branding, or in other business processes. Innovations that increase the intangible value of products, or result in the development of new or improved product services, new patterns of innovation co-operation, new delivery or sales systems, new marketing concepts, new brand images, smart organisations, etc. are all classified as non-technological innovations. This far from all-encompassing list makes it obvious that non-technological innovations constitute a much broader category than the third item of the above list.

Following the analysis of the main technological and non-technological RDI trends in fashion industries, and the evaluation of Europe’s competitiveness in these respects, we scrutinise the main barriers to innovation and conclude with some policy recommendations on the ways to increase European fashion industries’ innovation-driven competitiveness.

¹⁹⁰ Cf. von Tunzelmann, N. – Acha, V. [2005]: Innovation in ‘low-tech’ industries. In: Fagerberg, J. – Mowery, D.C. – Nelson, R.R. (eds.) The Oxford Handbook of Innovation. Oxford: Oxford University Press, pp. 407-432

¹⁹¹ For a list of EU co-funded textile research projects and related technology platforms see: <http://www.textile-platform.eu/links/>

¹⁹² For example development of unconventional spinning, weaving, knitting, braiding, finishing and nonwoven technologies or enhancement of factory automation, robotic sewing, or development of efficient manufacturing solutions, that allow customisation (e.g. digital printing, 3D printing, 3D body measurement, body scanning, rapid manufacturing, etc.).

¹⁹³ Although we do not discuss here research on, or rather experimentation with business models, marketing methods and organizational solutions, we firmly believe that the concept of fashion is similar to that of innovation. Similarity refers on the one hand to the disruptive properties of fashion cycles: fashion – just like innovation – is about creative destruction (cf. Potts, J. [2007]: Fashionomics. Policy, vol. 23, No. 4).

4.2.1 *Technological RDI trends and efforts*

4.2.1.1 *Nanotechnology*

Although according to Just-style's "Global market review of technical textiles in apparel - forecasts to 2011" (2007 edition) no fundamentally new¹⁹⁴ fibres have been developed since the mid-1970s which means that industry actors' RDI efforts target *existing materials*,¹⁹⁵ nanotechnology-based research efforts are in the process of changing this situation.

In fact, one major fashion-related research field is nanotechnology.¹⁹⁶ Nanotechnology is applied in various segments of the fashion value chain ranging from materials production, to processing and finishing, as well as to design.

By far the largest and most rapidly expanding field of nanotechnology application is conventional textile processing (finishing, coating and dyeing). Another field that is currently subject to intensive research is the development of nanocomposite fibres and nanofibres, which promises the long-awaited change of new material development (new fibres and new fabrics).¹⁹⁷ A third research direction is nanotechnology enabled in-built technologies including microencapsulation and nano-electronics embedded (smart) garments (discussed under the heading of smart textiles).

A related research field is dedicated to the risks (e.g. for the health and the environment) posed by engineered nanomaterials in consumer products.¹⁹⁸

Applied initially in industrial and military niches, nanotechnology-based textile enhancements have rapidly penetrated into the processes and products of performance clothing and mainstream apparel manufacturing, since along with aesthetic properties consumers' expect also improved functionality, such as easy-care (fade/wrinkle resistance, stain and dirt resistance); breathability; odour absorbance; heat/cold resistance, UV protection, water repellence, tear-strength, etc. This has led to the proliferation of multi-purpose apparel including also casual or designer's clothing¹⁹⁹: a marriage of function and fashion.

As for microencapsulation (when perfumes, cosmetics, dyes, phase changing materials etc.²⁰⁰ are entrapped in thin coatings of polymers forming microcapsules²⁰¹ for later

¹⁹⁴ Fundamentally new is a question of definition though. Professional papers from time to time report about the development of new fibres with fashion related applications (among others). A recent example is a new polyester fibre with modified cross-section: with eight projections aligned in a radial pattern around a hollow fibre. The new fibre offers rapid sweat absorption and drying, low weight, and heat shielding (insulation). It is marketed for innerwear, fashion apparel and many other uses. http://specialtyfabricsreview.com/articles/120211_polyester_fiber.html

¹⁹⁵ Cf. the claim that „Low-tech industries are capable to carry out incremental innovation at best" (e.g. Hirsch-Kreinsen op. cit).

¹⁹⁶ "Nanotechnology deals with the science and technology at dimensions of roughly 1 to 100 nanometres (1 nm = 10⁻⁹ m). Nanotechnology is concerned with materials whose structures exhibit significantly novel and improved physical, chemical and biological properties, phenomena and functionality due to their nanoscale size." (Joshi and Bhattacharyya, 2011, p. 156). According to the cited authors, the textile industry was one of the first industries to demonstrate the applications of nanotechnology for consumer usage. (Joshi, M. – Bhattacharyya, A. [2011]: Nanotechnology – a new route to high performance functional textiles. *Textile Progress*, vol. 43, No. 3)

¹⁹⁷ In contrast to nanotechnology enhanced textiles (i.e. nanotechnology applications in textile processing), the application of nanofibres and nanocomposite fibres is currently restricted to functional apparel: protective, military, industrial and health applications. It will take several years for their fashion related applications to become prevalent.

¹⁹⁸ See e.g. the survey by Som C. – Wick P. – Krug, H. – Nowack, B. [2011]: Environmental and health effects of nanomaterials in nanotextiles and façade coatings. *Environment International* (forthcoming, in press)

¹⁹⁹ According to Hinestroza, the assembly of nanoparticles over textile fibres allows designers the ability to control colours in fabric in a tunable fashion (without using any dyes !) and at the same time the technology adds to the functionality of clothes. (Hinestroza, J.P. [2007]: Can nanotechnology be made fashionable? *Materials Today*, vol. 10, No. 9

²⁰⁰ Only fashion related applications are listed here. At the same time microencapsulation technology offers a wide range of medical applications as well.

release under controlled conditions) the number of fashion-related applications is steadily increasing²⁰² and a plethora of innovative new products²⁰³ is in the process of transforming the life cycle trends of these industries.

In summary, nanotechnology applications enhancing the performance characteristics and functional features of the raw materials of fashion industries have transformed the input-manufacturing segments of the surveyed industries. They triggered rapid knowledge and innovation-driven growth, due to their tremendous functional benefits that promise to improve consumers' quality of life. Raw material production for fashion industries have turned into an emerging industry segment with exponentially increasing number of new products in the developmental and in the market introduction phases.

According to the report "Nanotechnology and Textiles: Market and Applications to 2015" (www.nanoposts.com), the global market for nanotechnology in the textiles industry was around USD 480 million in 2007 and is expected to increase up to USD 4.9 billion by 2015. Nanoposts expects that 24.6 % of all textiles products available in 2015 will incorporate some form of nanotechnology.

Woodrow Wilson International Centre for Scholars' project on emerging nanotechnologies resulted in a compilation of (regularly updated) inventories of nanotechnology-based consumer products in the market. The latest inventory published in March, 2011 contained 1317 nanotechnology enhanced consumer products. The heading of "clothing" contained 182 items, that of "sporting goods" 119 items. The breakdown of products by region indicated a clear leadership role of the U.S. with 587 products (including non-fashion related ones). Europe was distant second with 367 products followed by East Asia with 261 products²⁰⁴.

In their survey on nanotechnology-based RDI in the textile industry Joshi and Bhattacharyya (op. cit.) list 14 functional nanofinishes commercially available in 2008, together with the properties they ensure (i.e. the main applications) and the names of the IP-holder companies. The 14 nanofinishes pertained to 12 global companies: the headquarters of seven of them are in the US; one in Canada; two in Europe (Germany and UK); one in Japan and one in China. Although 2008 data may seem already outdated in 2011 in this research- and intellectual property instruments-intensive technological field, this distribution may well reflect Europe's lagging competitiveness vis á vis the USA, in the textiles-related nanofinishes.²⁰⁵

The main barrier to commercialisation of nanotechnology enhanced products – an important RDI issue in itself – is that manufacturing costs (especially costs related to specialized machineries; raw material costs and the costs of human resources) are still quite high. A breakthrough in this respect is equally important for competitiveness than breakthroughs in the research related to materials properties. Moreover, the lack of comprehensive legislation is still hindering major investments into the commercialisation of existing inventions, which calls for further research of the risks posed by engineered nanomaterials in consumer products, and for the development of related scientific testing methods.

²⁰¹ In contrast to coatings, microencapsulation "works" inside the fabric.

²⁰² Microencapsulation methods were developed already in the 1940s, but their application in the textile industry started only in the 1990s. Application possibilities were multiplied with the advent of nanotechnology.

²⁰³ An example is an innovative start-up company that introduced "slimming leggings" in the market, the material of which has micro-massaging properties, and is embedded with encapsulated extracts that have slimming and anti-cellulite effects, such as green tea. (Source: Entrepreneur Shazia Awan launches innovative slimming garments. Wales Online, 02/12/2009)

²⁰⁴ http://www.nanotechproject.org/inventories/consumer/analysis_draft/

²⁰⁵ According to WIPO's most recent data on patent applications by technological field and country of origin (2003-2007 total) Japan is the clear leader in surface technology and coating – a field of technology that is much wider than the above-analyzed nanofinishes (and not necessarily textiles-related). The US accounted for 32,061 patents in the surveyed period, while the respective data for the European Union was 21,970, for China: 8264, and for Japan: 51,174 (!)

4.2.1.2 Making fashion industry products smart

Technological developments enhancing the “intelligence” of fashion industries’ traditional products were first manifest in the development and diffusion of smart textiles. Smart or intelligent textiles are functional textiles, which can sense and interact with their environment. They are part of the so-called ambient intelligence: intelligent devices embedded in peoples’ ambience to provide various services. Smart textiles respond to external triggers e.g. to temperature, noise, and light.²⁰⁶ Responses include changes in colour and/or shape; emission of light; release of substances (e.g. fragrances) or, in the case of in-built thermal actuators: heating/cooling etc. Moreover, examples for in-built functionality include data processing and communication (wearable computing), energy harvesting and power storing functions (e.g. solar panels, in-built batteries). From this account it is obvious that smartness is a broader term than e-textiles, this latter concerns only the integration of electronic and computational elements into fabric.

The global market for smart textile applications (wearable systems) is estimated today at EUR 500M (and an additional EUR 50M for stretchable electronics) but rapid growth is projected (12-17 % annually). The share of the EU (currently somewhat below 40 %) is predicted to increase up to 40%, provided its commercialisation performance be improved.²⁰⁷

Although fashion industries currently account for a relatively small fragment of smart textiles applications, the scope of fashion related applications keeps expanding. Restricted initially to sport and performance wear²⁰⁸ within fashion industries, nowadays we find smart textiles applications²⁰⁹ in fashion products such as shape/colour changing and light-emitting garments, wearable LED solutions e.g. in motorcycle jackets, haute couture garments, fashion accessories, e.g. handbags etc. Other examples include integrated panels in jackets for operating MP3 players or mobile phones; heated textile products and footwear, intelligent shoes²¹⁰ etc.

In their survey on the state-of-the-art and future directions of smart textiles, Schwartz et al. (2010) review the main smart textiles related European research projects.²¹¹ From the survey it turns out that these projects try to respond to societal needs and finance research in the field of health monitoring, safety and civil protection, or try to contribute to technology transfer and inter-firm networking. Fashion industry related applications are spillovers from the results of publicly sponsored projects.²¹²

At the same time the authors of all cited surveys²¹³ acknowledge that there are still few products on the market, i.e. the commercialization of research results is inferior to expectations. As for fashion industry applications, fashion news abound in items that

²⁰⁶ Only fashion related stimuli are listed here. Smart textiles in medical or military applications or in work-wear respond to various other external triggers including moisture, pressure, electricity, chemicals, radiation, magnetic fields etc.

²⁰⁷ Source: PASTA project, Newsletter 1, July, 2011, www.pasta-project.eu

²⁰⁸ Systex Vision Paper provides a table (p. 18-19) of the main companies and their smart products introduced in the sport and wellness markets. SYSTEX Vision Paper for fostering commercialization of smart textiles in European in lead markets. <http://www.esma.com/en/esma-news/50-articles/373-systex-vision-paper>

²⁰⁹ Systex (op. cit.) lists the commercialized products and related companies in the interactive clothing market (p. 19-20)

²¹⁰ For example shoes that provide real time user localisation, or shoes equipped with a) automatically adjusting cushioning with the help of in-built sensors and computer chips; b) sensors that compile, store and send information about running (speed, total distance etc.) and transmit data to the wearer’s iPod.

²¹¹ Schwarz A – Van Langenhove L. – Guernonprez, P. – Deguillemont, D. [2010]: A roadmap on smart textiles. *Textile Progress*, vol. 42, No. 2. Another list of smart textiles research projects including also some publicly funded projects in the U.S. are provided by Simon, C – Potter, E. – McCabe, M. – Baggerman, C. [2010]: Smart Fabrics Technology Development. Final Report. A NASA Innovation Fund Project. http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20100042366_2010045164.pdf (accessed: 21.11.2011)

²¹² Military and space related technical textiles research projects also provide extensive opportunities for fashion related spillovers.

²¹³ See also Dunne, L. [2010]: Smart Clothing in Practice: Key Design Barriers to Commercialization. *Fashion Practice*, vol. 2, No. 1

inform about the creation of prototypes in which fashion and function are aligned but they remain in the prototype phase of commercial introduction without a chance for scaled-up production.

According to Ariyatun et al.²¹⁴, smart consumer products still feature selected deficiencies that hinder consumers' uptake of the novelties. These products are manufactured in small production batches and are prohibitively expensive. In fact, „the process for mass producing traditional textiles does not translate well to smart textiles: cutting patterns from rolls of cloth and sewing them together to make garments breaks electronic connections in an uncontrolled manner. Because of this, smart fabric elements are generally integrated by hand into textiles produced by standard methods“ (Simon et. al. (op. cit. p. 7)). Some newly developed products are not comfortable/wearable: the careful balance between function and design is not stricken. Matching smart functions and fashionable design so that they break out of their „niche solution“ status and enter the mass market is a demanding task, since in contrast to fashion products, functional clothing has long lifecycle.

In summary, smart textile products are still in the technology-push phase. Transition to market-pull development will intensify commercialisation. One precondition of successful commercialisation of smart textiles and wearable technologies by the fashion industries is that aesthetics and design transcend the currently prevalent technology-focused and functionality-minded approach. Instead of *l'art pour l'art* futuristic technological solutions, functions rather ought to enhance expressiveness otherwise barriers to consumers' acceptance cannot be overcome.

According to the consensus finding of the cited surveys, the European Union is a clear leader in this technological field in terms of both R&D inputs and outputs. European companies' good competitive position is due to the fact that they can benefit from non-negligible R&D funding provided by the European Commission's 6th and 7th framework programmes: they co-operate with universities and public research organisations and are ahead of their American counterparts in the commercialisation of the results. This advantage should however be assessed in the context of a meagre overall commercialisation performance and the threat of rapidly emerging Chinese and other Southeast Asian competitors²¹⁵ in the high-value technological segments of the fashion industries.

4.2.2 *Non-technological RDI efforts*

Though seemingly obvious, the claim that design is one of the key constituents of RDI in fashion industries was only recently formally acknowledged, when non-technological investments (investment into knowledge) were recognised as being part of R&D and the creation of new design was recognised as innovation.

Though the significance of products' appearance, and of consumers' perception with respect to products' social and symbolic value have been widely researched²¹⁶ and been

²¹⁴ Ariyatun, B. – Holland, R. – Harrison, D. – Kazi, T. [2005]: The future direction of smart clothing development. *Journal of the Textile Institute*, vol. 96, No.4

²¹⁵ Asian fashion industry actors can benefit from a large and rapidly expanding internal consumer market in general and the rapid expansion of the luxury segment in particular. „According to the statistics of World Luxury Association, by the end of 2009, China's consumption of luxury goods totalled USD 9.4 billion, accounting for 27.5 % in global sales of luxury goods. China has surpassed the United States and become the world's second largest consumer of luxury goods.“ Global luxury goods sales are expected to amount to EUR 185 billion by the end of 2011. (China Luxury Market Report <http://www.china-online-marketing.com/news/china-market-news/china-luxury-market-report/>, accessed 23.11.2011).

²¹⁶ One of the classical citations is Veblen, T. [1964]: The economic theory of woman's dress. in Ardzooni, L. (ed.), *Essays in our changing order: Thorstein Veblen* (pp. 65–77). New Jersey: Transaction Publishers

identified as factors of competitive advantage, the definition of R&D traditionally restricted to investments in scientific research²¹⁷ and that of innovation traditionally limited to “technological innovation” were slow to change. It was only in the mid-2000s – with an ever-increasing portion of firms’ investments linked to the aesthetic and symbolic elements of their products and services – that scholars investigating the extent and economic importance of investments in intangible capital²¹⁸ have managed to convince policy-makers and statisticians that the concept of R&D is much broader than what can be captured by traditional R&D indicators.

Cappetta et al.²¹⁹ have developed the concept of *stylistic innovation*. Stylistic innovations generate novelties not in products’ tangible features but in their aesthetic characteristics or more broadly: *in their intangible meanings*. Alcaide-Marzal and Tortajada-Esparza use the concept of *aesthetic innovation* defining it as innovation that “does not provide new functionality to the product; does not alter the way a product is used; may make use of new technologies or materials, but not necessarily; and increases the perceived value of the product and satisfies customer demands concerning taste, social image and preference for novelty.”²²⁰

The particular importance of customer focus in fashion industries places the concept of *user-driven innovation* to centre stage of any analysis of non-technological innovations. Advanced originally by von Hippel²²¹, the concept of user-driven innovation has gained universal acceptance in academic research on the drivers of innovation. As for business practice, fashion firms started to rely systematically on customers as sources and co-creators of innovative ideas with some time-lag, following the publication of the first theoretical academic papers. Customer involvement and customer co-creation were facilitated by ICT and other technological developments.²²² Customers participate in the design and creation of their own fashion items with the help of 3D visualisation, and virtual try-on. Increased customer involvement was manifest also in the role bloggers and other online communities (social media) started to play in shaping fashion trends.

²¹⁷ For example in the UK up till 2007, R&D surveys have specifically excluded fashion industry related design activities (“design costs to meet changes of fashion and artistic design work”) from survey questions. (Galindo-Rueda, F. – Haskel, J. – Pesole, A. [2010]: How much does the UK employ, spend and invest in design? www.ceriba.org.uk)

²¹⁸ E.g. Jarboe, K.P. [2007]: Measuring Intangibles. A summary of recent activity. Athena Alliance Working Paper, No. 2; Van Ark, B. – Hao, J.X. – Corrado, C. – Hulten, C. [2009]: Measuring intangible capital and its contribution to economic growth in Europe. EIB Papers, vol. 14, No. 1

²¹⁹ Cappetta, R. – Cillo, P. Ponti, A. [2006]: Convergent designs in fine fashion: An evolutionary model for stylistic innovation. *Research Policy*, vol. 35, No. 9

²²⁰ Alcaide-Marzal, J. – Tortajada-Esparza, E. [2007]: Innovation assessment in traditional industries. A proposal of aesthetic innovation indicators. *Scientometrics*, vol. 72, No. 1, p. 41.

²²¹ Von Hippel, E. [1986]: Lead users: a source of novel product concepts. *Management Science*, vol. 32, No. 7; Von Hippel, E. [2005]: Democratizing Innovation: Users Take Center Stage. Boston: MIT Press

²²² This exemplifies the interdependence of technological and non-technological innovations. Another example for this interdependence is the enhanced role of sustainability aspects. Incorporating sustainability in fashion products enhances their intangible value, together with brand image: typical example of non-technological innovation. However, the *implementation* of enhanced sustainability i.e. the reduction of fashion industries’ negative impact on the environment requires non-negligible *technological* RDI. Research efforts target the reduction of the environmental footprint all along the value chain. e.g. the development of processing and finishing methods that require a minimum use of chemicals (organic textiles & clothes); development of innovative solutions to reduce water and energy use; methods to increase recycling and materials re-use, methods to reduce the environmental impact of clothes cleaning, etc. UK’s Defra (Department for Environment Food and Rural Affairs) established and implemented a „Sustainable Clothing Roadmap” in 2007 with the aim of improving the sustainability of clothing across its lifecycle, from the crops that are grown to make the fabrics, to the design and manufacture of the garment, retail, use and end of life. The progress Report issued in 2011 lists the actions taken by the main stakeholders involved in the programme. <http://www.defra.gov.uk/publications/files/pb13461-clothing-actionplan-110518.pdf>. MISTRA, the Swedish Foundation for Strategic Environmental Research has sponsored a research programme to survey the ongoing Swedish and European sustainable fashion related research and identify future research needs. Their report published in 2010 (<http://www.proenviro.se/download/18.5004bd9712b572e3de6800037403/Mistra+Future+Fashion+Background+paper.pdf>) lists several international research programmes that focus on the sustainability of fashion industries.

Technological developments have contributed to the transformation of fashion industries' business processes: from mass production to user-centred production.

Beyond increased customer involvement in the co-creation of innovations, dominant part of user-centred innovations in the fashion industries concern efforts to uncover and understand consumers' needs, and the impact of changes in consumer lifestyles on their purchasing choices and preferences. In fact, user-centred RDI efforts are characterised by a systematic and scientific approach (research methods are borrowed from various social sciences including psychology, sociology, anthropology, etc.) to identify fashion-related preferences of selected segments of the society. While this type of user-centred research is supported by non-negligible public funding in the U.S.,²²³ European fashion companies tend to finance similar research from own funds, which puts these firms at relative disadvantage.

Marketing and branding are other elements of non-technological innovation efforts: by shaping consumer needs they constitute key drivers of the competitiveness of fashion industries. Marketing as well as changes in business models respond partly to increased speed-to-market requirements and to the accelerated dynamics of fashion industries (small collections, increased number of seasons, shorter life-cycles, reduced mark-down periods and merchandise volumes).

Other non-technological innovation efforts are centred around the development of smart organisations, innovative business models, collaborations and networking. They include e-business and management research (innovative supply chain solutions, intelligent logistics and distribution), and research & development of virtual partnerships (e.g. virtual co-design, co-engineering, knowledge sharing and virtual prototyping).

Efforts related to innovative management and business model solutions have turned away from focusing mainly on the cost efficiency of manufacturing and started to research rather the ways to increase profit margins. A major business model type of innovation was the shift from producer-driven to buyer-driven chains.²²⁴ A recent solution, still in the process of continuous improvement, is fast fashion (rapid adoption of new trends in products' design and reduction of the time gap between design and consumption). UK retailers are considered to be the first to develop and apply this business model, albeit global imitators were quick to react.²²⁵

The above-listed non-technological innovation efforts have one common feature: in contrast to technological research efforts, substantial part of which can benefit from public funding, non-technological innovation efforts are mostly privately funded. Exceptions include some EU-funded programmes that envisage collaboration and knowledge sharing relevant to the fashion industries, e.g. CoReNet, CrossTexNet, Enviro-Tex-Design, eBIZ-TCF or, various European Technology Platforms (ETPs) related to fashion industries. In particular, the project PROsumer.NET, aims at roadmapping and promoting the networking among the participants of various consumer goods related ETPs (see also footnote 25 in the section on technical textiles). Other non-technological

²²³ One of the U.S. National Textile Center's key research areas with respect to which call for proposals are announced each year is "systems" (in addition to areas such as chemical applications, fabrication, and materials). "Systems" concern research in the management of product design, sourcing, production, distribution and *consumption systems*. Examples for publicly funded user-centred RDI projects include: "Masculine fashion choices – shifting identities"; Hispanic characterisation systems"; research on brand personalities; on the impact of brand image on customers' attitudes; gathering social, psychological and behavioural data of plus-sized tweens, etc. (www.ntcresearch.org)

²²⁴ Gereffi, G. [1999]: International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics*, Vol. 48, No. 1; Dicken, P. [2003]: The global shift: reshaping the global economic map in the 21st century. Fourth edition, London, Sage Publications

²²⁵ Bhardwaj, V. – Fairhurst, A. [2010]: Fast fashion: response to changes in the fashion industry. *The International Review of Retail, Distribution and Consumer Research*, vol. 20, No.1

innovation related, publicly funded research concerns national level design-related creative industry strategies.²²⁶

4.2.3 *Barriers to R&D and innovation*

The above-listed descriptions of the main technological and non-technological innovation efforts make it clear that several R&D + innovation initiatives and results, as well as various non-technological innovations have shaped the evolution of the industry. A major explanatory factor of industry actors' competitiveness is their ability to generate or at least take up these innovations. However, according to CIS4 data, only 36.1 % of textiles and 17.4 % of all clothing firms are innovative (conduct R&D activities in-house, or contract out research, or innovate through technology adoption). The share of enterprises introducing marketing innovations seems also quite low (11.4 % in textiles and 5.6 % in clothing).²²⁷

CIS data can hardly be compared with similar data in EU's main competitors' markets. For example, according to U.S. National Science Fund's (NSF) statistics, 19 % of the textiles, apparel and leather companies reported about having performed product or services innovations (versus 22 % of the average of all enterprises) and 18 % of them have generated process innovations over the period of 2006-2008.²²⁸ Nevertheless NSF data can hardly be compared with CIS data (this would be comparison of apples to oranges). The U.S. National Science Fund surveys enterprises (by industry) *with product or process innovations*, whereas CIS surveys cover the industry-level shares of enterprises that *are engaged in innovative activities*.

This difference is highly important not only from the point of view of the resulting fuzziness of EU – U.S. comparisons. In fact, if similar innovation output indicators were available in Europe as in the U.S. this would reveal a worrying deficiency of European innovative actors: irrespective of the non-negligible share of European textiles and clothing firms engaged in innovative activities, European firms have important shortcomings in technology transfer, i.e. in turning scientific results into business success.

Intra-EU comparisons i.e. with the respective CIS-data in other European industries reveal a particularly meagre innovation performance of apparel industries. One reason is the overwhelming weight of micro companies, employing less than 5 persons. Average European textile and clothing firms face serious difficulties in innovation financing, but the lack of funds hampers most seriously micro- and small enterprises' innovation efforts (see also section 0 on access to finance). Another barrier to innovation identified by Europe INNOVA is the shortage of qualified personnel. Since qualified personnel are key condition of innovation adoption, this deficiency also proves to be a serious barrier to innovation. Moreover, according to Europe INNOVA's analysis, European clothing enterprises invest much less into employees' training than the manufacturing average. On the one hand this can be explained by lack of funds and deficient capital accumulation capability, but on the other hand shortcomings in the financing of training, together with the relatively low intensity of external knowledge acquisition (both embodied and disembodied) hamper the improvement of the sector's innovation performance.

²²⁶ Cf. Cunningham's survey and international comparison of advanced economies' creative industry policies: Cunningham, Stuart D. (2009) Trojan Horse or Rorschach Blot? Creative industries discourse around the world. *International Journal of Cultural Policy*, vol. 15, No. 4; Foord, J. [2008]: Strategies for creative industries: An international review. *Creative Industries Journal*, vol. 1, No. 2

²²⁷ Calculations made by Dachs, B. – Zahradnik, G. [2010]: Sectoral Innovation Performance in the Textiles and Clothing Sector. Europe Innova, Sectoral Innovation Watch, http://www.europe-innova.eu/c/document_library/get_file?folderId=696707&name=DLFE-13319.pdf

²²⁸ The share of companies in manufacturing industries reporting process innovations was also 22 % in the U.S. Source: Boroush, M. [2010]: NSF Releases: New Statistics on Business Innovation. <http://www.nsf.gov/statistics/infbrief/nsf11300/>

4.2.4 Policy implications and recommendations

Both policy and business stakeholders in the fashion industries of advanced (and increasingly also in catching-up) economies have long recognised that the traditional segments of fashion driven industries face irresistible competitive threat by producers of low-wage economies. Unless the value added of fashion products continuously increases, fashion industry jobs and capacity will progressively get lost.

One way to increase value added is through intangible investments into brand value, marketing, design, and innovative organisational solutions. The other way is through improving fashion products' material properties and achieving enhanced functionality by means of science-based research. European companies can benefit from developed research and education infrastructure²²⁹ as well as from a number of publicly financed programmes that support R&D efforts both at national/regional and at EU level.²³⁰ Nevertheless, an important competitive deficiency manifest in European companies' relatively poor commercialisation performance is that both EU-level and national support are excessively focused on scientific research. Support schemes for market introduction and growth are lacking, and even existing industry-university co-operation schemes do not deliver in terms of the introduction of new innovative and creative products to the market.

A range of *small projects* (as opposed to large-scale bureaucratic collaborative projects) targeting 1) the application of research findings, i.e. technology transfer and entrepreneurship; 2) the market introduction and the up-scale of innovative products 3) system integration (i.e. the integration of traditional fashion industry companies, electronic component providers, research institutes and design companies) ought to be designed and implemented. These targeted projects complement the larger-scale longer range RDI projects and focus on commercialisation, on turning innovative scientific findings into business success.

Example for such targeted commercialisation oriented small programmes can be found in the U.S. SBIR (Small Business Innovation Research) and SBTR (Small Business Technology Transfer) programmes. Both programmes grant fast-responding, small-scale²³¹ project funding instruments to innovative SMEs. A rapid search in www.sbir.gov's site resulted in 156 textile related awards over the period between 2005 and 2010. The keyword "clothing" resulted in 142 matches over the same period, the keyword "shoe" in 24 matches; that of "footwear" in 8 matches. In contrast, the typical EU co-funded projects such as PASTA or STELLA are large-scale, and medium-term (lasting four years on the average). Their costs amount to EUR 9-13M, and they involve a great number of consortium members. Though similar large-scale interdisciplinary research projects are indispensable, and they provide a good basis for research-driven competitiveness, they ought to be complemented with SBIR-type small-scale projects that focus on commercialisation.

4.3 Human capital and skills development

The fashion industries (directly) employ over 5 million people in Europe. Jobs in the fashion industries range from labour intensive jobs to managerial jobs, from highly

²²⁹ In Germany alone there are 16 research institutes engaged in textile-based research. (Deutsche Bank Research: Heymann, E. [2011]: Textil- und Bekleidungsindustrie: Innovationen und Internationalisierung als Erfolgsfaktoren. Aktuelle Themen No. 519, 06.07.2011). Textranet, the European Network of Research Organisations has 32 members (and 3 associated members) while AUTEX the network textile universities of Europe has 31 members (including Turkish universities).

²³⁰ Note however, that according to Euratex, industry participation in EU research programmes keeps declining since FP4. (Euratex Position Paper, 18.05.2011) However, this is declining participation of industry in successive editions of the Framework Programme is not specific for the textile and clothing industry, but is a general trend.

²³¹ SBIR Phase I awards do not exceed USD 150,000. Programmes aimed to establish the technical merit, feasibility and commercial potential of the proposed RDI project last a maximum of 6 months.

creative jobs to more operational. Similarly, skills required range from technical engineering to creative design, from ICT skills to handcraft fashion goods making.

As a consequence of globalization many jobs have been lost in the EU fashion industries and the industries' structure has changed significantly over the past decades. This structural adjustment process also has altered the employment profile over time and will continue to do so in the future. To remain competitive and to allow the industry to take full advantage of the external drivers that we describe in section 5, the EU fashion industries will need to further evolve from a labour-intensive low-technology industry to a knowledge-intensive industry²³².

This section will analyse the current employment profile in the fashion industries, discuss the different structural changes that drive skills demand and identify the main barriers to meeting the changing skills demand for the fashion industries to remain competitive.

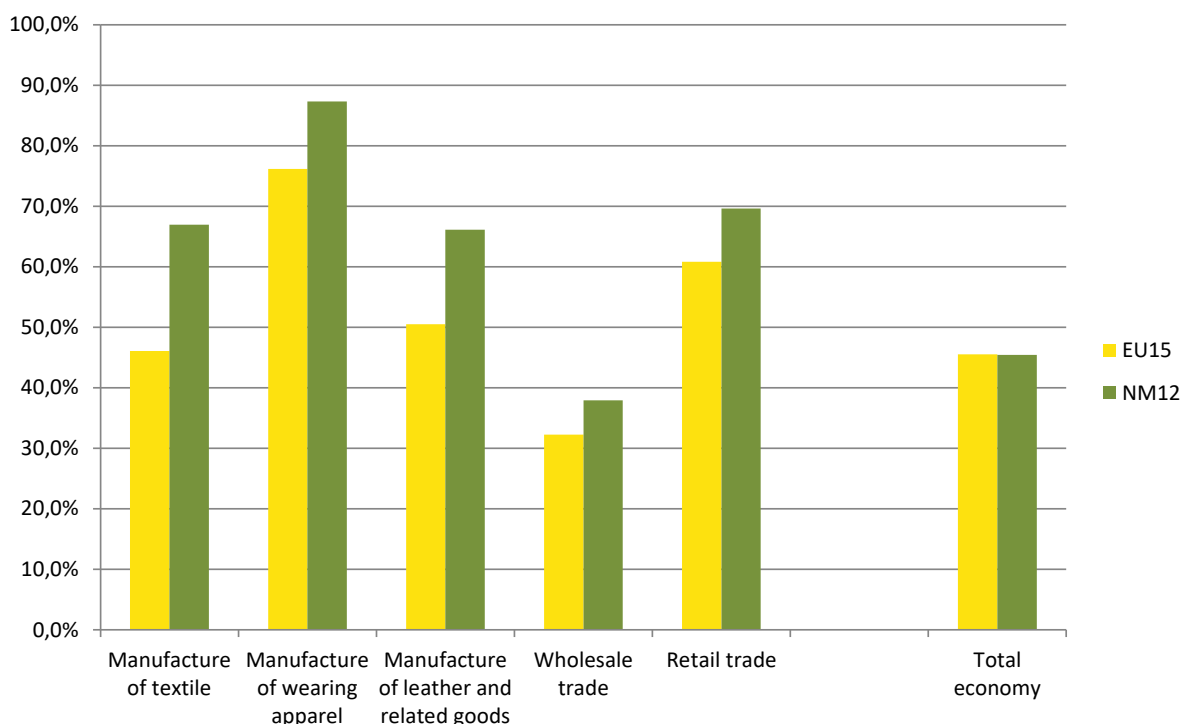
4.3.1 *Current employment profile*

4.3.1.1 *Gender*

The EU fashion industries traditionally employ a relatively high share of women. Apart from the wholesale trade activities, all other sub-industries are characterized by a more than average share of female employment compared to the total EU27 economy (Figure 47). Whereas women represent around 45% of total employment in the EU27, their share in employment amounts to over 80% in the manufacturing of wearing apparel.

Looking at geographical differences across Europe, the share of female employment in fashion industries is significantly higher in the most recent EU Member States (NM12) compared to the EU15. Differences range from 6 percentage points in wholesale trade to even 20 percentage points in the manufacture of textiles.

Figure 47: Female employment in the EU fashion industries, 2010



²³² Eurofound, 2008; Europe INNOVA, 2010

Source: Eurostat, Labour Force Survey data

Apart from the different share of female employment in the fashion industries, Economix (2009) also highlighted differences between EU15 and NM12 in the occupational change of women over time. Whereas female employees in the fashion industries in the EU15 managed to gradually move towards more skilled jobs over the period 2000-2006 (such as e.g. engineers, computing professionals, business professionals), this shift was far less visible in the NM12.

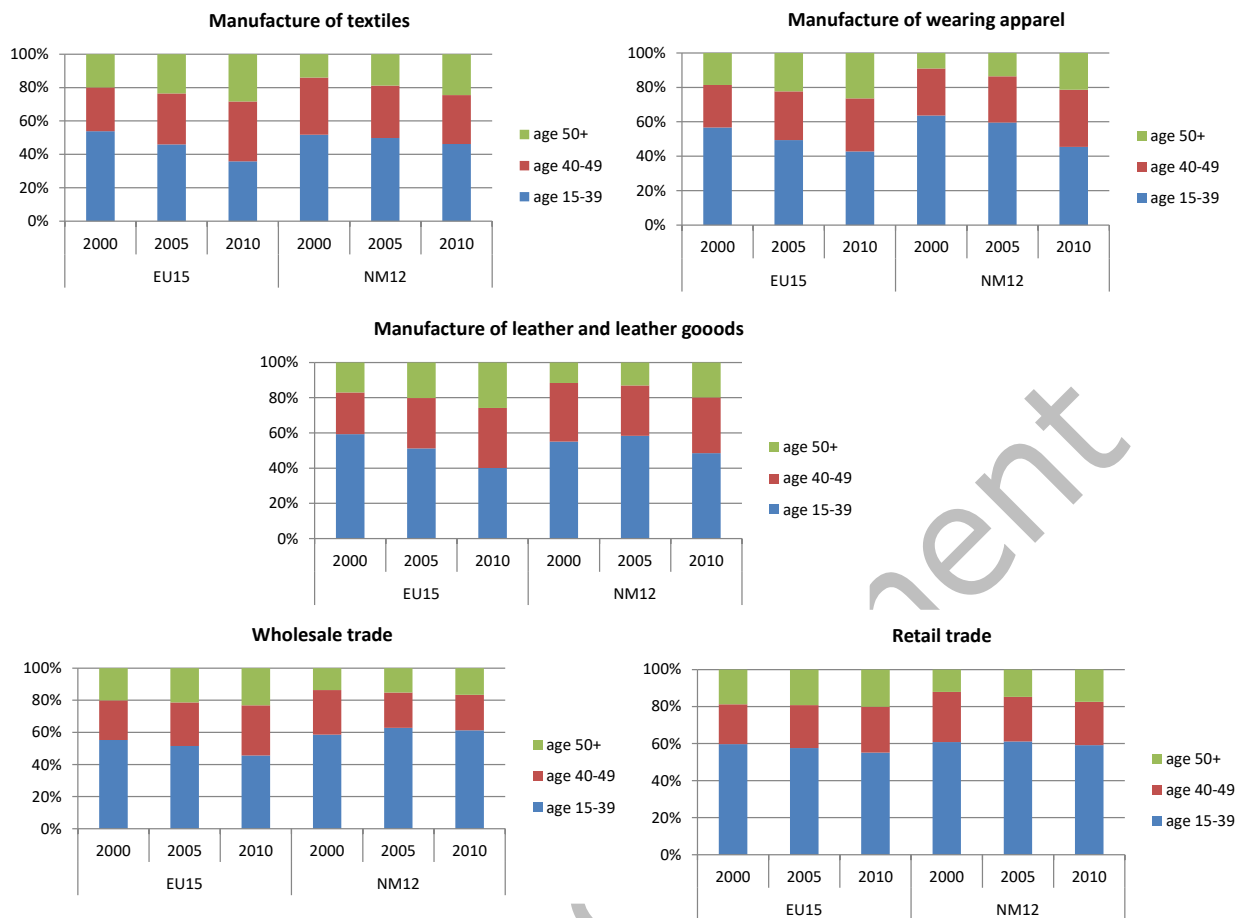
4.3.1.2 Age profile

In line with demographic changes in Europe, employment in the EU fashion industries is ageing. Between 2000 and 2010 the share of the 15-39 age group in fashion employment has declined, whereas the share of the 50+ age group has increased. The ageing of the workforce especially affects manufacturing activities, whereas shifts in wholesale and retail trade are less pronounced (Figure 48).

Also, although the ageing process can be observed in both the EU15 and NM12, this process is much slower in the last group. In this context, Economix (2009) remarks that due to less flexible labour markets in the EU15, especially younger people (15-39) have been hit by the job cuts in the fashion industries whereas older people – in particular the 50+ age group – more often could keep their jobs thanks to more legal protection and thus gained in relative terms. Moreover, the structural decline of the manufacturing sub-industries in Europe has provided these sub-industries with a rather negative image, making especially the manufacturing activities in the fashion industries unattractive for many young people. The ageing process that affects the European economy in general, thus affects the EU fashion industries more than average due to declining economic activities. The age structure is an important indicator to monitor, as a lack of young employees can undermine the long term competitiveness of the EU fashion industries²³³.

²³³ Economix (2009)

Figure 48: Age profile of employment in EU fashion industries, 2000-2010



Source: Eurostat, Labour Force Survey data

4.3.1.3 Level of education in fashion manufacturing

Focusing on the level of education of the workforce in the EU fashion manufacturing, there is a clear difference between the EU15 and the NM12.

Labour Force Survey data from 2006 show that in the EU15 most employees in fashion manufacturing (57.6%) have a low level of education (ISCED 1, 2) and only 33.2% has a medium level of education (ISCED 3, 4)²³⁴. Moreover, the share of employees with a low level of education is higher in fashion than in other manufacturing activities. This lower level of education in fashion has been confirmed by more recent data from the UK, where it was found that in fashion and textiles 20% hold no qualifications compared to 10% across the wider economy²³⁵.

The picture is rather different in the Eastern European and Baltic countries. In those Member States only 13.1% of the employees have a low level of education, whereas the majority (81.1%) has a medium level of education. This significant difference between both groups of countries can not only be observed in fashion manufacturing, but can be seen throughout all manufacturing activities (Economix, 2009).

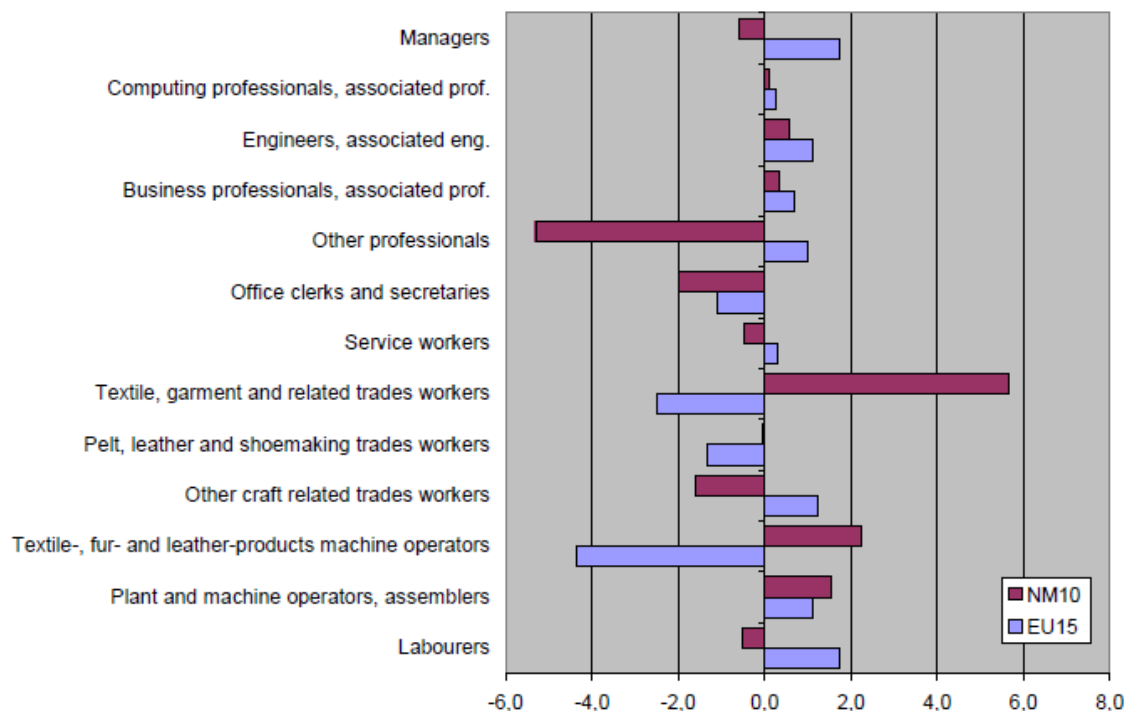
²³⁴ Economix (2009)

²³⁵ Skillset (2011)

4.3.1.4 Occupational shift in fashion manufacturing

The structural adjustment process that has affected the EU fashion industries – especially fashion manufacturing – is also translated into an occupational shift within the fashion manufacturing industry. Between 2000 and 2006, the share of managers and professionals increased in the EU15 while production-related occupations decreased together with service and administrative work²³⁶. In the Eastern European and Baltic countries on the other hand, especially the number of jobs for skilled production workers and assemblers increased. These shifts reflect the gradual specialization of the EU15 on more knowledge-intensive activities, while the Eastern European and Baltic countries specialize in (standardized) production activities.

Figure 49: Occupational shift in fashion manufacturing by country group, difference of % shares 2006 compared to 2000; ISCO groups (a)



(a) No data for Bulgaria and Romania

Source: Economix (2009), based on Eurostat Labour Force Survey data

4.3.2 Main drivers of future skills demand in fashion industries

With the structural adjustment of the EU fashion industries, skills demand has evolved over time, as the previous section on occupational shift has illustrated. It is expected that different external drivers (see also section 5) will continue to put pressure on the EU fashion industries to adapt skills to be able to remain competitive.

The following table summarizes the main drivers behind the changing skills needs in the EU fashion industries over the last decade and in the near future, as well as the related skills implications.

²³⁶ Economix (2009), based on Eurostat Labour Force Survey Data

Table 1: Main drivers of changing skills needs²³⁷

Driver	Key factors	Skills implications
Globalization and rising competitiveness of Asian Countries (China in particular) => move towards higher value added products	Liberalization of trade policy and a continued sophistication of communication and supply chain technology have led to the set-up of truly international value chains and an emphasis on higher value added activities in the EU.	<ul style="list-style-type: none"> • An increased pressure for higher productivity levels • Demand for more qualified and skilled workforce with technical skills • Increased demand for people with outsourcing knowledge and international supply chain management skills
A redefined sector	General decline in manufacturing activities but also development of new strategies (often in specific niches), particularly in the manufacturing sub-sector.	<ul style="list-style-type: none"> • Relocation of machine operating and assembling functions • Increased demand for high-level technical and scientific skills • A need for individuals capable of developing and commercializing new, innovative products and processes
New technological advances and digitalization (see also section 0)	(Recent) ICT developments allowing for new production methods or new models of distribution to emerge. Introduction of new materials into fashion, such as technical textiles.	<ul style="list-style-type: none"> • Challenge for businesses and training providers to keep up with technological advances to ensure that the workforce is appropriately skilled • Increased demand for high-level technical and scientific skills • Technology and application oriented engineering in specialty textiles • Fashion occupations with a combination of both creative ideas and technical skills • A growing need for IT skills and multi-platform skills²³⁸
Fast fashion (quickly responding to changing consumer demands)	Increasing pressures on companies to supply their retail markets and a need to ensure that products are suited to the latest fashions and styles.	<ul style="list-style-type: none"> • A need for individuals that understand sourcing, production lead times and consumers, facilitated by good customer facing skills • A need for creative design skills and flexible and efficient production practices
The experience economy and changing consumer behavior (see also section 5.1)	Importance of storytelling, the upcoming 'prosumer', focus on niche products, increased search for uniqueness	<ul style="list-style-type: none"> • Increased demand for marketing and sales skills • Increased focus on creative and innovative skills • Increased importance of strategic market intelligence • Growing need for more

²³⁷ Sources: Europe INNOVA (2010), Economix (2009), Skillset (2010, 2011), HKU (2010)

²³⁸ Multi-platform skills: the creative and technical skills to develop and produce creative content for distribution across all potential platforms, and the ability to understand and exploit technological advances.

Driver	Key factors	Skills implications
		managerial skills in creative businesses
Sustainable growth objectives	Environmental costs and concerns, legislation, the sustainability agenda and ethical standards.	<ul style="list-style-type: none"> Increased demand for a diverse set of skills on environmental issues (technological knowledge, legal expertise, product life cycle knowledge) Increased need for global monitoring capabilities across the value chain to safeguard sustainable business development (ethical sourcing, environmentally friendly production, waste management) Innovative and creative individuals that can help businesses to effectively respond to these demands
Policy focus on stimulating growth of SMEs	Recognition of important role of SMEs in regional economic growth. Several policy measures to more actively support SMEs to grow and become internationally active	<ul style="list-style-type: none"> Growing need for more managerial skills in SMEs Increased need for skills to manage the position of SMEs within global value chains Increased need for more "hybrid skills" combining effective leadership with innovation, creativity and understanding of technology, and the analytical skills to understand audience interests and translate it into business intelligence

Finding adequate answers to the shortages and gaps in specific skills that have been identified in Table 1, is a major challenge for the EU fashion industries as these skills can contribute to improving the industry' productivity and its overall competitive position.

4.3.3 *Challenges to respond to changing skills demand*

To be able to effectively respond to the changing business environment and to exploit the opportunities to strengthen the competitive position, the EU fashion industries have to overcome a number of barriers in the supply of skills. Initiatives to overcome three important barriers relate to:

- Improving the industry's image towards potential employees
- Promoting entrepreneurship in SMEs
- Increasing management skills in creative businesses

4.3.3.1 *Improve the industry's image towards potential employees*

The EU fashion industries – especially the fashion manufacturing – face problems in finding the right skills. As already stated in paragraph 4.3.1.2, the industry is confronted with a loss of skills when people retire, particularly traditional and technical skills, and a lack of young people entering the sector. Consequently, some of the skills will not be replaced.

The EU fashion industry is to some extent an 'invisible' industry. Many potential employees are unaware of the broad range of jobs and careers in the fashion industry (potential new entrants have little knowledge about working in the industry and even less about how to enter), together with a poor perception of parts of the sector²³⁹.

Specifically for higher skilled labour, the fashion industries face strong competition from other industries to attract scientists, engineers or other highly skilled workforce. Due to the lower levels of productivity, the fashion industries pay lower wages compared to many other high tech manufacturing industries.

Unlike the more technical, operational or high skilled jobs, the more creative jobs (design, marketing) are far less affected by such negative impact. In general, they are not confronted with a shortage of candidate employees willing to work in this type of function. But for the EU fashion industries to remain competitive, creative talent needs to be supplemented by other specialized talent. Initiatives are needed to create awareness about other job opportunities in the industry next to creative jobs.

4.3.3.2 *Promote entrepreneurship in SMEs*

As highlighted in the analysis of the industry's structure in section 3.2, SMEs are the backbone of the EU fashion industries. A large majority of these SMEs are enterprises with less than 10 employees. As entry barriers are low in most fashion sub-industries, it is relatively easy to start a fashion business. However, many enterprises are run by people with limited or no education or training in entrepreneurship. They often lack managerial and leadership skills, have limited or no knowledge about innovation or their potential position in (global) fashion value chains.

For SMEs to be the growth engine of the EU economy, the European Commission has already taken several measures to support SMEs in their further development (cfr. EC Small Business Act). However, continued efforts are needed to reach all SMEs and to create sufficient awareness of the importance of entrepreneurship, innovation and internationalization for growth, and how it can be translated into the daily business.

4.3.3.3 *Increase management skills in creative businesses*

As the EC underlined in the Green Paper on Cultural and Creative Industries (CCI)²⁴⁰, creativity and innovation are at the centre of a new economic growth model and cultural and creative industries still have a lot of untapped potential to create jobs and growth in Europe. To consolidate its competitive position, also the EU fashion industries must explore new ways of creating value-added, building on the strengths of the EU cultural and creative industries. European creativity and design in fashion is unique in the world and highly praised internationally.

However, for creative companies to play the role that policy makers envisage, the Green Paper identifies a number of challenges with respect to the further development of creative companies. One of these challenges specifically relates to skills. Different studies have identified a lack of managerial and commercial skills, e-skills and financial skills to mobilise potential investors, as a barrier to fully exploit the potential of CCIs in Europe (e.g. HKU (2010), Skillset (2010), Flanders DC (2011)). Many educational programmes for fashion design across Europe have a very strong (international) reputation when it comes to developing creative skills. However, topics such as entrepreneurship or financial management can hardly be found in the curriculum of arts schools. Conversely, only few business schools offer specific management programmes directed towards creative entrepreneurs.

²³⁹ Skillset (2011)

²⁴⁰ EC Green Paper on "Unlocking the potential of CCIs" (2010), COM(2010)183

Unless specific actions are implemented, there is the risk that skills shortages, mismatches and gaps will prevent Europe from using the full potential of CCIs²⁴¹. As the majority of creative businesses are also SMEs (often even micro enterprises), initiatives to increase management skills in creative fashion companies should be aligned to measures to support entrepreneurship in fashion SMEs.

4.4 Access to finance

Access to finance is a key determinant for the start-up, development and growth of businesses in the fashion industry (as for any business). Access to finance requires a bank, business angel or other type of investor who is willing to take the risk to financially support the business in exchange for financial reward later on. Potential investors depend their investment decision on a risk assessment of the specific investment project, generally taking into account different elements such as management profile and experience, sector, company size, assets or sales.

4.4.1 *Potential market failure*

A number of characteristics that relate to the fashion industries result in potentially reduced access to finance for many businesses in the industry.

A first element relates to the **average size of enterprises** in the EU fashion industries. The quantitative analysis has shown that the industry is predominantly populated with micro enterprises, i.e. enterprises with less than 10 employees or even sole proprietors. Different studies already have underlined the vulnerability of SMEs in obtaining sufficient financing to invest in innovation and growth (e.g. OECD (2006)²⁴², ECB (2011)²⁴³). SMEs tend by their very nature to show a far more volatile pattern of growth and earnings, with greater fluctuations, than larger companies. Their survival rate is lower than for larger companies. Banks and other traditional sources of credit may decide that SMEs represent a greater risk than larger companies, and respond by charging higher interest rates (OECD, 2006). The OECD does remark that the problem of access to finance for SMEs in general should not be overestimated. As OECD countries have competitive financial markets, banks perceive SME finance as an attractive line of business and are developing, or have developed, effective techniques to deal with them. They are replacing their traditional risk assessment models with new techniques to distinguish high- and low-risk SME borrowers, and to identify those likely to expand and survive. A particular group of SMEs that does face particular problems when attempting to access financing in most OECD countries, are innovative SMEs as they mostly represent a higher risk than traditional SMEs or large firms.

Another element that might negatively influence the willingness to invest is the **type of activity** in which fashion businesses are active. Especially those enterprises being active in fashion design are considered to have an above average risk profile, due to two specific characteristics of their business: high uncertainty about the demand for their products and services, and lack of business assets. Their business shows a number of similarities with innovative companies. But contrary to innovative businesses in technological fields, the immaterial assets of CCIs have no recognised value in balance sheets and their investments in developing new talents and creative ideas are not in line with the standard concept of "research and development". Similar to other parts of the cultural and creative industries (CCI)²⁴⁴, fashion design companies are confronted with two specific types of market failure with respect to access to finance (Caves, 2000)²⁴⁵:

²⁴¹ EC Green Paper on Unlocking the potential of CCIs (2010), COM(2010)183

²⁴² OECD (2006), "Financing SMEs and entrepreneurs", OECD Policy Brief, Nov. 2006

²⁴³ ECB (2011), "Survey on access to finance for SMEs"

²⁴⁴ See KEA (2006), EC Green Paper on "Unlocking the potential of the CCI" (2010)

²⁴⁵ Caves, R. (2000), *Creative industries: contracts between art and commerce*, Harvard University Press

- *Problem of adverse selection*: with banks and other investors being risk averse, high uncertainty about the business success and economic valuation of the creative process potentially leads to underinvestment in fashion design companies
- *Problem of moral hazard*: this problem arises when the interests of the entrepreneur are not aligned to the interests of the investor. Many investors fear that creative business owners are more motivated by the creative process than by investor targets²⁴⁶

According to Tooth (2010) some fundamental issues that investors consider while investing in creative businesses, are:

- **The entrepreneur and management team**: The quality of the team who is running the business is critical for any investor. But often the creative individual or group lack strategic management, finance and marketing skills or experience to successfully manage the growth of the business (see also section 4.2 on skills).
- **Capacity to present the investment opportunity to investors**: Due to the lack of management and marketing skills, creative entrepreneurs often are unable to sufficiently present their business proposition and investment opportunities to investors.
- **Relevant Business Model**: Creative entrepreneurs often lack a business plan that provides investors with solid information about revenue generation or turnover, to provide sufficient assurance of loan/debt repayment. For many creative businesses, especially those in the services areas such as fashion design, the business model for revenue generation and sales is frequently complex making them very difficult to value for investment.
- **Scalability and Valuation**: Many creative businesses (as well as SMEs in general) fail access to industry or market intelligence about other similar businesses or sector trends or to monitor their competitors as reference points. However, this is critical information to support the investment proposal.
- **Intellectual Property Protection**: Understanding IP and how to protect your business is a core requirement of any access to finance support scheme. We refer to section 5.6 for further discussion of the IPR issues in the context of the fashion industries. In light of attracting external investors, legal and financial advice may be necessary to sufficiently protect IP and select the right corporate structure that gives security to potential investors and is tax efficient.

A direct consequence of the market failure is that investors either refrain from investing or are more likely to ask for collateral. Fraser and Lomax (2011) found that the availability of collateral is a greater issue for access to finance among creative businesses than in non-creative businesses. They also found that due to the ever returning uncertainty about the market success of new creative products (such as a new fashion collection), longer financial relationships did not reduce the likelihood of rejecting investment proposals in the same way as it did in other industries. Investors do not see past success as an indicator for future success in creative businesses as they do in non-creative businesses.

4.4.2 The financial crisis and access to finance

Whereas access to finance already was a problem for the EU fashion industries before the financial crisis, one effect of the crisis is an even reduced access to finance, especially for SMEs. For each of the manufacturing industries within the fashion industries (leather

²⁴⁶ Fraser S. and S. Lomax (2011), "Access to finance for creative industry businesses", report prepared for BIS and DCMS

tanning and leather goods, footwear, textiles, apparel and accessories) the EC has forecasted a reduced access to credit in its 2009 sectoral overview²⁴⁷.

Specifically for creative businesses, Fraser and Lomax (2011) did find that in the UK investors were significantly more risk averse towards creative businesses than non-creative businesses at the beginning of the financial crisis (2008). However, the difference between both disappeared as of 2009 when all businesses were confronted with reduced access to credit.

4.4.3 (Policy) initiatives to facilitate access to finance

At the European level one of the key priorities set out in the Europe 2020 strategy, as well as in the Commission's Single Market Act and the Small Business Act is to facilitate access to finance for SMEs. In December 2011, the EC has presented its Action Plan to improve access to finance for SMEs which contains various policies that it is pursuing to make access to finance easier for SMEs in the EU. Also several Member States have taken initiatives to facilitate access to finance for SMEs as well as for creative businesses (e.g. Cultuurinvest and St'Art - Belgium, European Venture Fund for CI – Finland) ²⁴⁸ .

Different studies²⁴⁹ underline that to overcome the problem of access to finance, it is not sufficient to improve only the supply of finance. Additional initiatives should be taken to make both fashion companies and investors more "investment ready". On the supply side, this means that investors build up sufficient industry intelligence about the fashion industries and investment opportunities, as well as about valuation techniques to better assess investment risks. On the demand side, Tooth (2010) highlights that there are a wide range of investment readiness schemes to provide support to businesses (e.g. in business plan writing). Most of these schemes are more generic business support schemes, not specifically focused on the fashion industries. A few dedicated investment readiness schemes do exist for creative businesses in several Member States, which also focus on fashion businesses²⁵⁰.

²⁴⁷ EC (2009), "European industry in a changing World – updated sectoral overview", SEC(2009) 1111 final

²⁴⁸ See Tooth (2010), Annex 2 for more examples

²⁴⁹ See e.g. Fraser and Lomax (2011), Tooth (2010)

²⁵⁰ See Tooth (2010), Annex 1

5 EXTERNAL DRIVERS INFLUENCING THE COMPETITIVENESS OF THE EU FASHION INDUSTRIES

Whereas the previous chapter focused on the main internal drivers that contribute to the performance of the EU fashion industries, this chapter discussed a number of trends in the business environment that can be considered external to the operations of enterprises in the fashion industries, but nonetheless have an impact on the competitiveness of the industry. We will discuss access to new markets, changes in consumer behaviour, technological developments impacting the fashion business, sustainable development, access to raw materials and counterfeiting and IPR issues. The external drivers can pose either an opportunity or a threat for the competitiveness of the EU fashion industries (cfr. section 1.2).

5.1 Access to new markets and trade policy

5.1.1 *Emerging consumer markets for fashion goods*

As illustrated in the previous sections, globalisation has influenced the fashion industries profoundly over the last four decades. Being a labour-intensive industry, the manufacture of apparel has been one of the first industries to make use of global restructuring to take advantage of international differences in labour cost. And also the other segments of the fashion sector reflect this trend. Until now, the dominant model of geographical division of activities has been one where design and retail are concentrated in developed countries whereas manufacturing (for consumer markets in developed countries) takes place in low cost countries.

But with rising income levels in countries such as China, India, Russia or Brazil, consumer markets for fashion goods are no longer uniquely concentrated in the economic "triad" (i.e. US, Japan, Europe). Many emerging countries have changed their status within the fashion industries from 'low-cost manufacturing location' to 'consumer markets with high growth potential'. The development of new markets for fashion has been mainly driven by increasing demand for luxury fashion²⁵¹. Several emerging and developing markets around the world have large potential for fashion industry. Access to these markets is strategically important for the EU clothing industry given that these are highly quality-conscious markets where EU has the highest comparative advantage²⁵².

For the EU fashion industries to be able to compete on these new emerging markets, issues such as the need for understanding of cultures and consumers in these third country markets are important. Box 4 below describes shortly the growth of the fashion industries and consumer characteristics in each of the BRIC countries, namely China, India, Russia and Brazil. Although there are several other emerging markets, such as those in the Middle East, South East Asia and in the countries surrounding EU, BRIC countries are important for the fashion industry given their large and young populations and significant economic growth. BRIC countries also provide a good example of the impact of cultural differences and consumer approaches on fashion.

²⁵¹ Bruce and Kratz (2007)

²⁵² http://ec.europa.eu/enterprise/sectors/textiles/external-dimension/trade-issues/index_en.htm - European Commission: Textiles and Clothing Trade Issues

*Box 4: Characteristics of apparel markets in the BRIC countries²⁵³***China**

With a population of 1.3 billion (2011) and an annual economic growth of 10.3 per cent (2010), China has become one of the largest markets in the world. Globalization together with increasing incomes and changing consumption habits has led China to become the second largest apparel market in the world with a value of 110 billion USD in 2009. The Chinese apparel market is also the fastest growing apparel market within BRIC countries - during the past five years the apparel market has grown by 16 per cent and is projected to continue growing at the rate of 11 per cent during the coming years. The growth is fastest in the luxury/high-end product market where spending on apparel has been estimated to grow by 30 per cent annually.

Traditionally Chinese consumers have been wearing very similar outfits to all occasions, which have limited their interest in niche fashion categories. However during the past years fashion has been shifting towards a more occasion-based dressing where clothes are chosen differently for work, social occasion and home which has led to a sharp increase in the sales of the casual wear segment. The fashion market is driven by young consumers with preference towards up-scale casual and sportswear. Chinese consumers are increasingly aware of foreign brands, yet they have low brand loyalty and only a quarter believe foreign brands to be superior to local ones in terms of their value/quality. Instead Chinese consumers are highly price conscious and base their buying decisions as well as valuations of quality on the price of the product. Chinese consumers are also found to value promotions and quality/design of products more than customer service or store layout.

Department stores are the most successful format of retail in China and account for 30 per cent of the apparel sold. However all forms of retail, ranging from flagship stores, street boutiques, stores-in-stores, department store counters, franchising and online shops, are present in China and address different consumer needs.

India

Similarly to China, India's economic growth reached 10.4 per cent (2010) and it had a growing population of 1.2 billion (2011). The apparel market represents 10 per cent of India's total retail market and was estimated to have a total value of 25 billion USD in 2010. The apparel market has been growing by more than 10 per cent over the last five years which is more than the growth of other retail sectors. The luxury segment has been estimated to grow by 30-32 per cent. The growth is expected to continue over the coming years and the market is likely to nearly double by 2015.

Mostly the growth of the Indian apparel market has been attributed on the rising income levels, increasing variety of clothing suitable for different occasions, growth in women's clothing segment and increasing fashion sense of Indian consumers (inspired by television, films and internet) and their desire to express themselves through clothing. In addition, the market is expected to grow, as in the coming 20 years India's urban population is expected to grow by 300 million. Most of these new urban citizens are young and thus more likely to consume more on fashion that fits with their urban lifestyle. Another key factor is growth of organized retailing. In 2010 the apparel market was still dominated by small family-run shops and only 20 per cent of products was bought from organized retailers. Over the past few years shopping malls have opened in the largest cities and the trend is likely to continue. Discounters, international franchises, hypermarkets, and luxury European boutiques are new arrivals in the Indian market. Large European retailers such as Zara are only just entering the Indian apparel market.

²⁵³ McKinsey (2007); Mishra (2010); McKinsey report: "From Mao to Wow: Winning in China's booming apparel market", http://csi.mckinsey.com/Knowledge_by_region/Asia/China/chinaapparel; McKinsey report: "India's fast-growing apparel market", http://csi.mckinsey.com/Home/Knowledge_by_region/Asia/India/Indias_fast_growing_apparel_market.aspx; McKinsey report: "Dress for success: Cracking Russia's apparel market" http://csi.mckinsey.com/Home/Knowledge_by_region/Europe_Africa_Middle_East/Cracking_Russian_apparel_market.aspx; CIA World Factbook India/China

(continue)

A distinct feature of Indian fashion consumption is that most new items are bought for special occasions such as weddings. Most Indian's always do their shopping with family and consider it as the best way to spend time together. Although women usually choose the items bought, men choose the store which will be visited. Thus retailers in India have to consider the demand for clothing suitable for the special occasions but they must also make the shopping experience suitable for the entire family. Indians are also considered to be one of the world's most brand conscious consumers.

Russia

By the end of 2011 the Russian apparel market has been estimated to be worth 50 billion USD. The market has been hit by the global economic downturn and therefore growth has been modest since 2008. However, the market has been estimated to grow by 8 per cent per year until 2015. The growth is slightly more than that of income growth. The fastest growing segments are men's and children's clothes. Also, the majority of consumers are interested in premium brands. However, most sales come from the mid-market items.

Overall, Russian retail is still relatively limited and still in 2011, 45 per cent of apparel was sold in open-air markets and 26 per cent in old-fashioned department stores. However, both forms of retail are showing signs of decline with increasing demand for more sophisticated and modern retail options. Single-brand clothing, footwear and accessories chains have been estimated to grow by 15 per cent annually. The top 10 apparel retailers account for 7 per cent of Russia's apparel sales.

Russian consumers have traditionally been prioritizing quality over other product characteristics. Although Russians have a relatively good knowledge of brands, most consumers state that brands do not affect their buying decision. This can be partly due to high prevalence of counterfeit apparel sold in the Russian market.

Brazil

In 2010, Brazil's textile and apparel chains earned 52 billion USD which was approximately 10 per cent more than in 2009. It has been estimated that the apparel market will continue to grow by 7 per cent annually. Although some multinational retailers, such as Zara and Mango, have entered the Brazilian market, in general very few international chains are competing in the mass market which is dominated by local shops and large single-format retailers.

Brazilian consumers are keen on fashion trends but their product demands differ to some extent from those of western markets and there is a strong preference for local fashion. Fashion trends are strongly determined by local (television) celebrities which makes it easier for local retailers to provide mass market segments with these products. 81 per cent of Brazilian consumers were found to state that they trust local brands and only 11 per cent agreed that foreign brands provide higher quality than local brands. Brazilian consumers were also more willing to buy apparel with credit than consumers in other BRIC countries. Due to underdeveloped credit systems many retailers were offering their own credit cards either through their own financial operations or jointly with banks. Brazilian retailers also use attractive credit offerings as a marketing/promotion strategy.

In addition to having significant cultural differences which may have an impact on the valuation and demand by local consumers of various fashion items, many emerging countries have a growing middle class which has stimulated the development of domestic fashion industries that are able to become trendsetters themselves. In countries such as Brazil, consumers have a clear preference for local brands which gives them a competitive advantage, whereas for example in China the government has made an investment plan for the textile and apparel industry which includes providing funds to encourage domestic companies to focus on domestic demand and on the cultivation of

domestic brands that may be exported in the future. Some of the domestic companies from emerging markets have indeed been internationally successful and have already expanded globally. In addition to benefiting from consumer (or government) preferences, domestic competitors in many countries have a cost advantage over their foreign counterparts and are quickly learning marketing techniques from foreign retailers²⁵⁴.

5.1.2 *Market access and non-tariff trade barriers*

A significant issue limiting the entry of the EU fashion industry into the markets of emerging and developing countries is the growing presence of non-tariff measures and barriers (NTMs/NTBs) which can be defined as any measure other than tariffs that distort trade. The entry of the European textile and clothing industry into many export markets has been found to be limited by the existence of various NTBs which can undermine reductions in tariffs that have been agreed upon over the past decades.²⁵⁵ NTBs cause a significant disincentive especially for small and medium size enterprises to take part in international trade²⁵⁶. According to EURATEX most damageable measures limiting market access for the European textile and clothing industry include additional tariffs and taxes, intellectual property right issues, custom documentation and certification and technical barriers. In addition, especially SMEs were suffering from complex labelling requirements, time consuming customs clearance, pre- and post-shipment inspections and security checks, restrictions to distribution as well as export restrictions. Priority export markets where tariffs and non-tariff measures were found to cause hurdles for the EU textile and clothing industry include the BRIC countries as well as Mexico and the US. Non-tariff measures were found to hamper EU's export development in Indonesia, Malaysia, Argentina, Egypt, Pakistan, South-Africa, South-Korea, Taiwan and Thailand²⁵⁷.

Frederick and Gereffi, (2009) further argue that in addition to trade procedures, non-tariff barriers may come in the form of lack of social and environmental compliance, or non-compliance with the GSP, and the Government Procurement Agreement. Social and environmental compliance refers to a situation where a country relaxes or does not comply with the common regulations and therefore reduces costs for domestic operators. Although GSP and Government Procurement Agreement have been designed to encourage international trade, they have mechanisms which can be used to promote domestic consumption and thus need to be monitored. It has been found that in recent years trade protection has been shifting from the developed to developing countries. It has also been pointed out that protection is moving away from apparel and more towards textiles and raw materials. In general Frederick and Gereffi found no significant upward trend for non-tariff measures especially in comparison to the total amount of trade protection activities²⁵⁸.

Within the context of textile and clothing trade the European Commission has emphasised harmonisation and more transparency on barriers such as regulatory issues, labelling, certification of conformity procedures, export restrictions, importers' registration and complex taxation systems²⁵⁹. Often these requirements are presented as methods to protect and inform consumers. However they cause delays and increase the financial burden for the European exporters. Especially in the emerging markets such as India, China and Brazil, European exports are not considered competitive and high duties further decrease their attractiveness for the local consumers. In addition, entry of the European companies to some emerging markets have been complicated through

²⁵⁴ Frederick S. and Gereffi G, (2009); Vincent I. (2007)

²⁵⁵ European Commission: Industrial Goods, Textiles and Footwear - <http://ec.europa.eu/trade/creating-opportunities/economic-sectors/industrial-goods/textiles-and-footwear/>; European Apparel and Textile Organisation (2005)

²⁵⁶ http://ec.europa.eu/enterprise/sectors/textiles/external-dimension/trade-issues/index_en.htm - European Commission: Textiles and Clothing Trade Issues

²⁵⁷ European Apparel and Textile Organisation (2005)

²⁵⁸ Frederick S. and Gereffi G, (2009)

²⁵⁹ European Commission (2011); http://ec.europa.eu/enterprise/sectors/textiles/external-dimension/trade-issues/index_en.htm - European Commission: Textiles and Clothing Trade Issues

direct limitations to investments in establishing retail outlets or distribution services. In some countries entry to market is conditional on setting up a joint venture with a local partner²⁶⁰. More recently, there has been attention to the access of raw materials. Especially the leather goods sector is widely affected by export taxes and export restrictions, but there have also been examples of export restrictions on raw cotton and cotton yarn²⁶¹.

One of the largest issues for the EU industry is the violation of Intellectual Property Rights. It has been estimated that the share of fake products in global trade amounts to 8 percent.²⁶² In a number of countries access to enforcement measures, such as effective remedies or criminal sanctions has remained limited despite the fact that copying of fashion items remains a common practice. Illegal copying is especially an issue for high-end products of which the value in emerging markets decreases as the availability of cheaper copies increases²⁶³. Intellectual property rights are also an issue with products under geographic indicator classification which includes product traditional for a certain location, such as Cashmere for Mongolia²⁶⁴. It is important to note that non-tariff barriers can take a variety of forms which can be country and fashion segment specific. For example in India, the entry of luxury fashion companies to the market has been limited due to a lack of store space suitable for their image. The rents were also found to be disproportionately high.²⁶⁵

Market access has become a priority in the European Community trade policy for the textile and clothing sector, as well as the footwear sector. The aim is to establish trade relations which work in both directions. In order for a country to gain more access to the EU market it must be willing to liberalise its own market. The European Union monitors the policies and practices of its trading partners to ensure compliance with the requirements. The European Union has also committed itself to anti-dumping and anti-subsidy policies which comply with the rules and disciplines of world trade and expects the same from its partners²⁶⁶. Overcoming the high duties and other charges in key markets, such as India and Brazil, is of primary importance for the European Union. As there are a number of non-tariff barriers which can be country specific, the EU applies multiple and adaptable trade tools, such as dialogues, negotiations, markets access tools and enforcement procedures. The first forum for the EU to tackle trade barriers are multilateral negotiations which are done in the framework of the Doha Development Agenda (DDA). In addition to the multilateral level, bilateral trade negotiations are one of the key trade tools. The European Union's Market Access Strategy is an alternative offensive trade approach for addressing trade related problems in the framework of the on-going dialogue.²⁶⁷ The strategy provides tools for regular monitoring and supports information exchange between Commission, Member States and business. Market Access Teams which are trade diplomatic networks that have been created in order to target specific non-tariff barriers in third countries play a key role in the Market Access Strategy and provide assistance for addressing ad hoc issues in the short term through the means of soft policy tools²⁶⁸.

²⁶⁰ European Commission (2011)

²⁶¹ In the second half of 2010, India imposed restrictions of cotton exports to protect its domestic textile industry from rising raw material prices. The restrictions were lifted again in the summer of 2011, http://www.fibre2fashion.com/news/textile-news/newsdetails.aspx?News_id=101566

²⁶² http://ec.europa.eu/enterprise/sectors/textiles/external-dimension/trade-issues/index_en.htm - European Commission: Textiles and Clothing Trade Issues

²⁶³ European Commission (2011)

²⁶⁴ Rangnekar (2004)

²⁶⁵ Mishra (2010)

²⁶⁶ http://ec.europa.eu/enterprise/sectors/textiles/external-dimension/trade-issues/index_en.htm - European Commission: Textiles and Clothing Trade Issues

²⁶⁷ European Commission (2011)

²⁶⁸ Tiedemann (2009); European Commission (2011)

5.1.3 *Impact on fashion businesses*

The fashion industry has expanded its business outside the EU over the last decades and would thus benefit from increased market access. Exports or foreign direct investments take place in nearly all business models. It is for example not only the luxury brands that sell their products in places like Dubai, but also vertically integrated retailers like H&M, that have opened up stores outside the EU. Mainly larger brands/companies seek to expand their business outside the EU, although some niche products or players may also export outside the EU.

5.2 Changing consumer behaviour

Being active in the consumer goods market, it is very important for fashion businesses to closely monitor consumer trends to remain competitive. Changes in consumer behaviour have to be taken into consideration when evaluating existing or setting up new business strategies. Changing consumer trends point to falling and rising demand for existing products and services but also new demand that creates new business opportunities. Factors influencing consumption patterns include gender, age, ethnicity and income level. Consumers may choose products and services based on considerations such as convenience, value for money or pleasure.

According to EMCC (2008) ²⁶⁹ changes in the constellation of the consumer base will lead to a new type of average fashion consumer. Recent evolutions that significantly affect the consumer base for the EU fashion industries are:

- **Demographic change in Europe:** Europe faces a declining birth rate in combination with improved health. European population (and thus the European consumer base) is reducing in size and at the same time growing older.
- **Increased purchasing power:** The purchasing power of especially young people has significantly increased over time. Young people also have become more actively involved in families' buying decisions.
- **New upcoming markets:** Referring to the previous section, stable economic growth in several large markets provides a growing potential consumer base for EU fashion enterprises.

Besides the changes in constellation, there are also more general changes in the behaviour of the fashion consumer base. Globalization, fiercer competition, decreasing search costs and increased purchasing power provide consumers with more options to explore different fashion segments and to optimize the purchasing process. As a consequence, over time, the fashion consumer has acquired a more central and determining position. The following trends in consumer behaviour have already had and most likely will have further impact on the EU fashion industries:

- From functionality to experiences
- The consumer as 'prosumer'

5.2.1 *From functionality to experiences*

In our so-called "experience economy", the buying process for many goods has shifted from functional buying to buying lifestyles. The experience economy is one of the strongest forces behind the booming fashion and personal luxury goods industries.

²⁶⁹ EMCC (2008), "Trends and drivers of change in the European textiles and clothing sector: mapping report", European Foundation for the improvement of living and working conditions

Fashion goods are perceived as lifestyle goods, similar to other personal luxury goods such as mobile phones, travel or home furniture: “you are what you wear”. Moreover, with raising income levels in many consumer markets, especially young people spend increasing amounts to fashion goods to create their own “unique” personal identity. Fashion goods create a wordless means of communication to identify to which social group one belongs. The symbolic value of fashion is so high that it keeps people buying even when they do not have a need (Tran, 2008). It is an evolution from status symbols to status stories: customers increasingly try to express their unique identity through the stories attached to the clothes they wear, rather than just through the cut, color, style or visible logos. Consumers actively search for the story behind the functional good and evaluates to what extent this story matches with his or her personal values and view of life. Therefore, we may expect a further shift from brands telling their own story to brands helping consumers to tell *their* own status-yielding story to other consumers (trendwatching.com²⁷⁰).

As a consequence, niche fashion, or fashion goods targeted to specific sub-cultures or sports, is booming. These niches are often not just defined by a specific function, but rather by a lifestyle (e.g. eco-clothing), and seen as a means of self-expression. This growing importance of niche markets and fashion as a means of self-expression leads to a growing fragmentation in the fashion and clothing market, which has a twofold impact on EU fashion companies (Europe INNOVA, 2010). It poses a (logistical) challenge to the major international brands that need to transform from mass production to mass customization. The core idea behind mass customization is to provide the customer with a kind of user toolkit (in practice, mostly web-based) that allows the individual to design a product that suits his or her personal preferences and in addition seems to be exclusively produced for him or her. Mass customization is, however, only a promising strategy in case customers have sound preference insights, if preferences are heterogeneous and if production technology is able to facilitate small lot sizes at almost mass production costs (Franke and Schreier, 2008²⁷¹). At the same time, it creates opportunities for small scale fashion houses that operate in specific niches and often provide unique and authentic fashion items with high symbolic value. An illustration of mass customization is presented in Box 7 on the story of Bivolino, a Belgian online store selling customized clothes (mainly shirts) on the web.

Trendwatching.com identified three important sub-trends related to this story-telling evolution:

- **Greenest:** consumers’ interest in eco-friendly goods and services will continue to create huge opportunities for brands that deliver more sustainable solutions. Items with eco-friendly sourcing, production and distribution activities are appealing to those consumers who find the ‘green story’ important. The importance of “green” was also shown in a presentation of the MoTIV workshop in 2008²⁷² on sustainability in fashion. An analysis of the individual aspects that are most relevant in the purchasing process of clothing demonstrated that between 2002 and 2006 eco-related aspects, such as skin-friendliness, being tested on harmful substances, environmentally-friendly production and 100% natural fibres, became significantly more important, while the importance of other aspects such as price, brands and fashionability only slightly increased or even decreased over time.

²⁷⁰ trendwatching.com is an independent and opinionated trend firm, scanning the globe for the most promising consumer trends, insights and related hands-on business ideas. For their information, they rely on a network of hundreds of spotters in more than 120 countries worldwide. Their trend findings help marketers, CEOs, researchers, and anyone else interested in the future of business and consumerism.

²⁷¹ Franke N. and Schreier M. (2008), “Product uniqueness as a driver of customer utility in mass customization”, *Marketing Letters*, Volume 19, Number 2, 93-107

²⁷² MoTIV (2008), “Wat betekent duurzaamheid voor fashion?” (What does sustainability mean for fashion?), MoTIV workshop

There are, however, still some problems with the mark “eco-fashion”. Designers want to distance themselves from the shapeless, unattractive eco-designs of the past that were associated with images of “colourless hemp-made, organic clothes” and “hippies wearing dull sacks”. There is an increased demand for more fashionability and trendiness in eco-fashion. Moreover, two important drawbacks currently limit the growth of eco-fashion: colors are still limited and the production costs of eco-friendly organic clothing are higher than the costs of conventional clothing.

- **Embedded generosity:** Brands start to link their business to social projects and use their brand to make giving and donating effortless, if not automatic. By embedding generosity into products, brands can build a strong connection with their consumers by involving them in the principles and values that matter to the brand.
- **Still made here:** consumers are increasingly searching for authentic products, instead of the universally uniform, invisible and impersonal throw-away culture of the globalised mass production and fast fashion era. A new niche with high potential offering an answer to this need is the slow fashion and authenticity, where the identification and visualization of the products’ provenance becomes a strong marketing message and sales argument.

In the EU fashion industries numerous fashion companies – both large and small – develop innovative products and business models that respond to these trends (see Box 5).

Box 5: Greenest, Embedded generosity and Still made here – inspiration box

Greenest

Pleasemachine is a boutique and label offering shoes made from second-hand and salvage shoes and clothes. The shop was opened in 2010 in Budapest. Each pair showed in the store had a detailed description of the origins and materials that were used.

www.pleasemachine.net



The UK based designer **Lili Giacobino** has developed an innovative bio plastic process, BioBijoux™, made with food ingredients (based on corn, potato or even tapioca). BioBijoux™ is 100% natural and biodegradable. Every piece of jewellery is unique, bendable and skin-friendly.

www.lili-design.com

C&A launched a **Bio cotton collection**. In 2008, already 15.3 million articles of this collection were sold. In 2010, this amount nearly doubled up to 26 million, meaning that already 13% of the total cotton collection of C&A is made from bio cotton.

Embedded Generosity

H&M supports directly a number of projects in the communities in which H&M and its supply chain

operate, for example:

- In 2009, in co-operation with UNICEF, H&M launched the **All for Children project** to address the causes of child labour and improve conditions in Indian cotton production.
- H&M has been collaborating with **WaterAid** since 2002. WaterAid is an international NGO that works to improve access to safe water, hygiene and sanitation in the world's poorest communities. Every summer the retailer sells an exclusive bikini or a whole beachwear collection dedicated to the effort, with 10% of proceeds donated toward providing safe water and sanitation to developing countries. In 2011, a pop-up beach store was opened for two days in The Hague's popular Scheveningen seaside resort. A variety of essentials for men, women and kids from H&M's 'Beachwear in Shades of Blue' line were available at the shipping container-style shop on the beach. A full 25% of the sales proceeds went directly to WaterAid (trendwatching.com)
- **LUTA** (<http://www.luta.co.uk/>), a British owned sports apparel brand, launched its street wear range in May 2011 with 50% of proceeds going to international nonprofit Fight For Peace. Fight For Peace teaches children from Rio de Janeiro's slums the art of boxing. The T-shirts in the collection are designed by illustrators from Rio who grew up in poverty.



Still made here

In the beginning of 2010 **Prada** launched a line of clothing that paid homage and credit to the countries in which the garment were manufactured. Called "**Made in...**", the concept involves four speciality collections of handmade goods from around the world. Japan, Scotland, India and Peru are the chosen locations — providing denim, tartan for kilts, chikan and alpaca for the wool knitwear collection, respectively. The items are produced in traditional workshops in their countries of origin.



5.2.2 The consumer as 'prosumer'

Related to the search for more stories, consumers also look for more interference and control in the designing and production process of his fashion articles: the consumer as co-producer, or the rise of the 'prosumer'²⁷³.

A prosumer distinguishes himself from the regular consumer by being far more informative, proactive, critical and controlling. He actively searches for information, and to this end he consults several sources including the internet and frequently communicates via several channels (informative). In general, the prosumer is more receptive to multimedia and the internet as a source of information compared to regular consumers. Moreover, in order to optimize his information sources, he constantly searches for new channels and instantly makes use of new inventions in the increasingly growing media supply. In one of the studies, conducted by Euro RSCG²⁷³, on 'prosumerism' 67% of the interviewed prosumers reported that besides their regular media sources, they also use other media, while this was only the case for 49% within the group of regular consumers. In addition, 61% of the prosumers indicated the use of weblogs, bulletin boards and news groups in order to get more information and opinions of other consumers (proactive). Because of this large amount of information that he consults from all kinds of sources, the prosumer is, in general, more critical than regular consumers. The prosumer does not take marketing slogans and advertisements for granted, and misleading or incorrect advertising will receive immediate critique. Because

²⁷³ <http://www.chainconnection.com/wat-is-een-prosumer>

of his reputation, the prosumer is not only a source of information for his own purchasing decisions, but also for the other consumers in his social network that look for advice on specific brands or products. As a consequence, the prosumer can exert serious pressure on the success and failure of a brand or product. But this is exactly what he wants: having an influence on the services and products he is interested in (controlling).

According to the Euro RSCG study, the group of prosumers is already quite large: 20% of the total consumer base can be considered as prosumer. Given the large differences the use of different media sources, it is important for fashion companies to map the regular sources of the prosumers to be able to provide these media sources with information on their brand or products.

To meet the needs of the prosumer for more information and control, some fashion companies have already started to adapt or set up specific business models.

- **Making information more transparent:** some companies have already picked up the concerns of the prosumer and actively support him in the search for better and more reliable information. Box 5 already presented the "Made in..." concept of Prada where the actual origin of the fabric is indicated on the label, instead of the "Made in Italy"-tag. Another example is the website "Honest By", founded by the Belgian designer Bruno Pieters and offering designer products with complete transparency in price and manufacturing. The brand applies the sustainability concept to all aspects of working, designing timeless and season-less garments. All items are limited edition and sold exclusively online via the "Honest By"-website (<http://www.honestby.com>). 20% of profit goes to charity chosen by the designers, while 80% funds growth, including hiring new staff and expanding collections. Box 6 provides an illustration of the high level of detailed information provided on the "Honest By"-website.
- **Mass customization:** besides the perceived uniqueness of a self-designed product, mass customization is also driven by the demand for products that are better adapted to individual customer's size and functional preferences (Franke and Schreier, 2008). Tools that help the customer to design a product that suits his or her preferences does not only refer to the design and the aesthetics, but also to the fit and functionality. This goes beyond a simple indication of size in terms of characters (XS, S,..., XXL) or numbers (36, 38,...), but makes use of digital simulation models making use of several body measures.

Some companies that offer (online) mass customization services only limit their offer to the functionality part. Others, such as Bivolino (see Box 7), also allow the customization of aesthetics and design.

Box 6: Honest By - the road to full transparency.

The sleeveless cotton jersey crew neck



Label information: Vegan - Skin friendly - European ●

Description of the article:

This fabric is made out of natural fibres. The presence of irregularities that may appear in this fabric is not to be considered as a fault. Garment manufacturing: made in Europe, Poland. Cleaning care and washing instructions: we advise hand wash. Please use an environmentally friendly detergent, free from optical whiteners and phosphates since these have a negative impact on our planet.

Size and fit:

View the product measurements: true to size. Close fitting style also at neck and armholes. Male model is 189 cm / 6' 2" tall and wearing size 46

Material information:

Detailed information on fabrics, knit trimming, sewing and cotton thread, fusible interfacing to even the composition of the brand, size, care and "made in" label, the security seal, the hand tag and the safety pin.

Example of the brand label: Composition: 100% polyester; Certificate: Oekotex; Origin of raw material: Italy; Manufacturer: EE Labels, Heeze, the Netherlands

(continue)

Manufacturing details:

Detailed information on the pattern, the garment manufacturing and the knit trimmings

Example of the knit trimmings:

Company: Pentlja P; Location: Zgornje duplice, Slovenia Address: Zgornje Duplice 10, 1290 Grosuplje, Slovenia; Owner: Mr Matija Vene Since: 1992; Number of employees: 5

Knitting time: 10 min; Amount of pieces made: 7 pieces; Amount per size: 1/2 pieces

Price calculation:

Detailed price calculation of the used material and manufacturing steps, plus information on the development, transportation and branding costs, the wholesale and retail mark up, and charity share.

Example of wholesale mark up:

The wholesale mark up covers a part of the Honest by Bruno Pieters collection costs such as staff, design, research, development of new collection, purchasing of fabrics and trimmings, utility costs, insurance, communications, rent, transportation, intellectual property rights, professional association costs, office supplies, maintenance costs, legal and accounting costs.

The wholesale mark up is the total cost time 2,0: $51.66\text{€} \times 2,0 = 103,32\text{€}$

Carbon footprint:

The analysis and calculation of the carbon footprint was made by Ecolife. The calculation is based on detailed transportation information collected from the suppliers, where available, for all fabrics and trimmings used in this garment. For every step in the production process from raw material, fabric spinners and weavers to the finished product, we gather information about transportation. This takes into account the amount, weight and dimensions of all materials used, as well as total distance travelled and type of transportation used.

The impact of all materials combined for this item is 0,95 kg of CO₂, which is equivalent to: driving a car for 5,94 km or using a classic light bulb for 36,54 hours. On average, one tree can absorb 3,268kg of CO₂ a year. It will take one tree approximately 106 days to absorb and neutralize the amount of CO₂ created to transport all the components, such as fabric and trimmings, this item contains.

Box 7: The story of Bivolino: "the consumer co-designs"

The company

Bivolino was founded in 1954 as a traditional Belgian textiles manufacturing company. In the late 1990's, one of the buildings was seriously hit by a fire. After this incident, the owner had to reconsider how to proceed in the future. Given the great losses of the fire, the large investments for a new plant and the growing pressure of increased labour costs, directed the owner towards a completely new type of business: *online customization solutions*, resulting in the foundation of "BivolinoServices".



Its services

BivolinoServices is a specialized provider of a collaborative platform for e-custom fit apparel, with an exclusive focus on the fashion industry. The company offers an end-to-end solution for mass customization, covering the entire 'mass customization'-value chain from order configuration to order tracking and fulfilment. Thus, they deliver both the technology as well as supporting consulting services.

The process and technology

The solution consists of software modules and manufacturing facilities, providing e-tailers the following capabilities:

New consumer facing capabilities:

- **Make to measure shirts on the website:** a software module allowing publishing all information related to the configurable shirts that are presented on the website, including pictures, product information, navigation tools, and so on.
- **Configuration of the shirts** with intelligent support on capturing measures, using a few biometric consumer data. In addition, options on colour, style, colour form, and so on, are visualized and displayed as finished product according to actual consumer selection.



Concerning the capturing of the measures, only 4 indicators (height, collar size, weight and age) have to be filled in by the customer, together with the preferred fit (comfort, regular or slim). These data are inserted in a software package based on digital simulation models making use of several body measures. One of the biggest success of mass customization is that users/customers who designed their own products, report an impressively high degree of perceived fit (Franke and Schreier, 2008). This is confirmed by the extremely low rate of return of Bivolino articles (Only 7% returns after the first shipment, after which the customer can ask for a free second shipment of an adjusted version of the article. After the second shipment, only 3% returns).



- **Taking orders and payment and credit control**

New supply chain and back-end capabilities:

- Database holding all information related to both product (colours, fabrics,...) and production (e.g. BOM, BOLabour)
- Measurement conversion to exact measures for cutting and production
- Configuration and transmission of cut files to supplier
- Configuration and sending lot size 1/n orders to supplier
- Order tracking and supplier integration
- Demand planning, enabling forecasting of future sales

Functionality and aesthetics

BivolinoServices does not only focus on functionality and fit, but also on aesthetics and personality. For one of their temporary actions, they asked some famous artists to design a 'shirt-painting'. These prints were added to the website, so that the customer could not only construct a fitting shirt, but could also add a rather unique design.

Its personnel

Nearly all employees from the 15-headed staff are IT-ers. The required skills are only limitedly connected to fashion. For the design activities and clothing aesthetics, they make an appeal on external experts.

Its clients

In its B2B-channel, BivolinoServices has over 50 customers, including well known retail brand and large international e-tailers. As an example, the Marks&Spencer Made to Measure Shirts – application is fully run on the Bivolino-platform. Besides, BivolinoServices also offers a limited own collected (mainly personalized shirts, both for men and women, but also personalized boxers, and a complementary collection of cufflinks and ties) on its website as a B2C-supplier.

5.2.3 *Impact of changing consumer behaviour on fashion businesses*

Although changing consumer behaviour is an important element to monitor for businesses throughout the fashion industries (being a producer of consumer goods), it provides opportunities and challenges for fashion businesses in different ways depending on the type of business model:

- Those business models that strongly focus on 'storytelling', image building, uniqueness and authenticity are clearly in pole position to take advantage of the changing consumer demand. This is especially the case for luxury brands, independent (avant-garde) fashion designers and other small independent actors that focus on specific niches and authentic production. Some vertically integrated fashion retailers and department stores also try to anticipate on these changing consumer trends, by introducing temporary 'exclusive' product lines. However, under these business strategies, companies are far more limited to take advantage of these changes.
- Business models that are mainly focused on efficient production and high volumes, are challenged to find a right balance between cost cutting and standardized production on the one hand, and customization on the other hand.

5.3 Technological developments

Although the fashion industries are not considered as a high tech industry in itself (see also section 4.2), the industry has always been an adopter of new technological developments in other industries. Technological developments in ICT have been introduced in the fashion industries as of the 70's to build and manage global production networks, to set up large customer relation management systems or to develop new business models (e.g. e-commerce).

A number of ongoing technological developments in different industries have the ability to provide (partial) answers to a number of the challenges that we indicate in the study. They thus might have an important influence on the competitiveness of the EU fashion industries.

Based on existing literature (e.g. Europe INNOVA, 2010, Eurofound, 2008) we have identified three fields where technological developments are likely to influence the fashion industries over the coming years:

- New production methods
- New distribution methods
- New materials

5.3.1 *New production methods*

New production methods such as Rapid Manufacturing, new recycling techniques or changes in colouring and bleaching procedures, can make the production of fashion goods less labour and energy intensive and allows for higher flexibility.

5.3.1.1 *Rapid manufacturing in fashion*

from Rapid prototyping (RP)...

There are a number of Rapid Prototyping (RP) technologies that allow the direct fabrication of 3D parts from a 3D computer aided drawing (CAD) model. These technologies use an additive fabrication approach in which a three dimensional (3D) object is directly produced. The main purpose of RP software is to generate computer

aided manufacturing (CAM) data that are used in the production phase. (Yarkinoglu O., 2007²⁷⁴).

... to Rapid Manufacturing (RM)...

Compared to traditional manufacturing methods the main cost implications of using RP are formed by the build volume and the capacity of the build system to manufacture exactly what is required within specification limits and with an acceptable yield. This implies that the economic advantage of the RP technology is positively correlated with the level of functional integration within a single part (i.e. the more parts that would otherwise be formed separately and mounted afterwards). RP has been originally developed for prototyping as the name implies, but users soon saw the potential to use it in direct manufacturing for components where personalization or customization makes it more cost effective than producing tools for low volume production.

... to RM in fashion²⁷⁵.

In the beginning, RP and RM were primarily used in the sports footwear industry where large numbers of sole units were being produced for design communication and assessment. The ability to produce sole units directly from CAD was seen as advantageous. Via traditional techniques, these units would be made from wood and/or wax and each would take on average a week to produce, and up to eight iterations might be required. Most of the large sport shoe companies adopted this practice.

Apart from the potential cost benefits of RM for smaller volumes, the technology also allows for new possibilities in creative design. Designers in different fields now make use of the new technology to extend the limits of existing designs. The materials used in RM allow lightweight yet strong designs, which use less material than traditional techniques. Moreover, the design-freedom allows complex designs which would be difficult or impossible to build using traditional casting techniques.

Figure 50: Example of full-wearable shoes, 3D printed in polyamide (a) and titanium (b), created and produced by students of design schools in Stockholm (a) and London (b).



5.3.1.2 New digital printing technology

3D-printing

Because of the large possibilities of rapid manufacturing, industrial 3D printers are more and more used for rapid prototyping in many industrial sectors, including the fashion

²⁷⁴ <http://etd.lib.metu.edu.tr/upload/12608834/index.pdf>

²⁷⁵ Eckert, C. M.; Delamore, P. and Bell, C. (2010). Dialogue across design domains: rapid prototyping in aerospace and fashion. In: the 11th International Design Conference DESIGN 2010, 17-20 May 2010, Cavtat-Dubrovnik, Croatia.

industries. 3D printing allows fast fine tuning of a fashion design and as a consequence it reduces the development schedule by weeks or even months. The designer can test form, fit and function and explore as many design iterations as he wants. He has the opportunity to see their design-trials come to reality through 3D printing.

The time to bring a new fashion item to the market is very short. New collections happen in quick succession (every season or even faster). And even for non-clothing items, such as footwear or accessories the pace of responding to rapidly changing fashion trends is very high. Already in the early 1990's, McKinsey & Co. reported in a study that if a product is late to market by six months it will have lost up to 33% of its potential gross profit over its life cycle.

With little time for error, there is increasing pressure on companies to be the first, in order to assure success. This puts an increasing amount of pressure on the design process to be highly collaborative, efficient and fast. However, this high pace might endanger the quality of the design phase. For, the most critical design and specification decisions are made during the first 10% of the design cycle or at the conceptual stage. These decisions can affect almost 80% of the product's total cost by establishing material selection, manufacturing techniques, and longevity of the design. It is therefore extremely important to make the correct decisions by evaluating different or multiple design concepts during this early stage. That is exactly why 3D printing offers huge advantages to the fashion industries: it provides a highly cost-efficient means of producing numerous design iterations and immediate feedback throughout the critical beginning stages of the development process. The ability to quickly refine form, fit and function can significantly affect production costs and time to market. To this end, it creates a distinct competitive advantage for those companies who include it as an integral part of their design process (Stratasys inc. and Hancock S.P.²⁷⁶).

Box 8: More illustrations of 3D-printing in fashion

Asher Levine, a menswear designer came up with special custom-made 3D printed sunglasses.



London-based designer Hoon Chung presented a collection of footwear to show how far designers and fashions could go with a 3D printer. These 3D-printed heels, wedges and flats are not only stylish, but also wearable.



Victoria Spruce, another London based footwear designer, launched the SS12 collection. It is a combination of finest leathers and plastic divertimento, inspired by the lines and shapes in architecture and sculpture. She combined traditional shoe making techniques with currently 3D

²⁷⁶ Stratasys Inc. (s.d.), "The competitive advantages of 3D printing"

Hancock S.P. (s.d., post August 2009), "Gaining a Competitive Advantage With 3D Printing"

printing technology to create sculptural and yet easily wearable footwear. Looking at organic shapes, she decided that her creations should not be divided into upper and heel, as it happens with normal footwear, but that they should consist of a single piece molded and twisted to create the desired shape. Each piece can then be synthesized into a flowing, continuous line that springs directly from the anatomy of the foot.



Source: <http://www.3ders.org>, How far fashion goes using 3D printing this week (12 February 2012)

2D-printing

Not only the 3D-printing, but also the 2D direct to garment printing technology (also referred to as DTG printing, digital garment printing or inkjet to garment printing) offers a wide range of possibilities to the fashion (mainly clothing) industry. It is a process of printing on textiles and garments using specialized technology. A DTG printer requires a transport mechanism for the garment and specialty inks (inkjet textile inks) that are applied to the textile directly and absorbed by the fibres.

Most digital printing technologies are non-contact processes, meaning that media is printed on without hand contact, allowing for a more precise image. This prevents the image distortion that takes place in screen printing. Further, digital printing has multicolor registration built-in to its system, employs sophisticated color matching and calibration technology to produce accurate process color matching, and most digital printing processes require less or no color overlap or trapping.

Digital processes can vary every print, allowing for personalization and customization. Another advantage of DTG printing is that it requires minimal press setup and is less consuming than the traditional garment printing methods such as screen printing. By digital printing technology the designer can print, proof and sample very cost effectively and when the design is finalized, it permits quick response and just-in time print delivery.

Today major inkjet technology manufacturers can offer specialized products designed for direct printing on textiles, not only for sampling but also for bulk production. However, the maintenance costs are still very high for mass production and digital inks and toners are limited in capacity and carry high price tags (Cahill V.²⁷⁷).

To take full advantage of the new opportunities that both 2D and 3D digital printing can bring to fashion industries, a number of barriers still have to be overcome. Currently, both 2D and 3D-printing techniques are not cost-effective yet, or not capable yet of printing at a large scale, making them still inadequate for mass production.

Technological advances to the digital printing techniques that are able to deal with significant orders, producing larger amounts of garments/shoes in a short time span, would create a whole range of new opportunities for the fashion industries, both in terms of design as well as the organization of production processes and, more in general, in terms of business strategies.

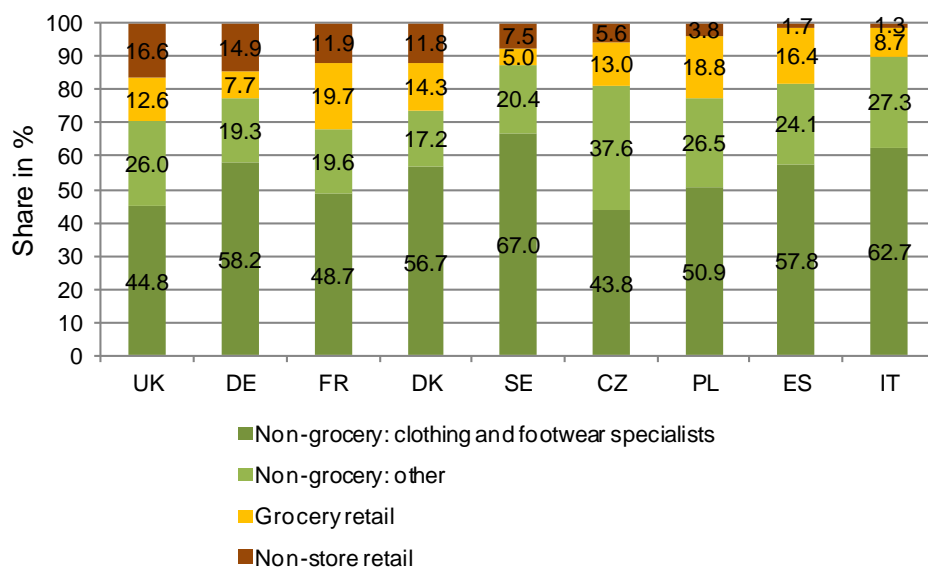
²⁷⁷ Cahill V. (s.d.), "Introduction to Digital Printing Technology", techexchange.com

5.3.2 New distribution methods - internet retailing

Digital innovations provide important opportunities for fashion companies to (radically) review their model of distribution and set up new business models. New distribution methods and ICT technologies such as 3D Body Measurement, advanced CAD (computed-aided design) or personalized avatars can mean a breakthrough in the use of e-commerce for fashion goods (especially clothing and footwear). The introduction of track-and-trace systems might also allow consumers to find information about the 'production history' of fashion goods, thus pushing fashion retailers and manufacturers to act according to principles of CSR (Corporate Social Responsibility).

Retail of fashion goods still primarily takes place in physical shops. Euromonitor data on the retail of clothing and jewellery in EU Member States²⁷⁸ show that in most Member States still over 85% of all retail of clothing takes place in non-grocery or grocery retail stores and over 90% for jewellery.

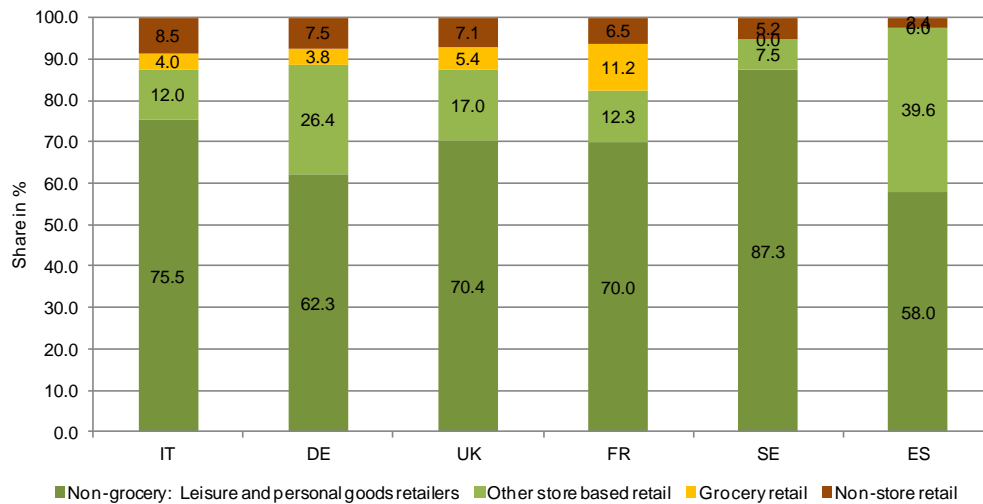
Figure 51: Relative importance of different channels in total retail of clothing, 2010, by country



Source: Euromonitor

²⁷⁸ Country coverage for clothing: CZ, DE, DK, ES, FR, IT, PL, SE and UK – Country coverage for jewellery: DE, ES, FR, IT, SE and UK

Figure 52: Relative importance of different channels in total retail of jewellery, 2009, by country (a)



(a) Data for grocery retail was not available for ES and SE.

Source: Euromonitor

Nevertheless, as in many other industries internet has become a retail channel of growing importance for fashion companies.

Focusing on **non-store retail of clothing**, Euromonitor data show that in 2010 over half of the non-store retail involves internet retail, except in Germany. Internet as non-store retail channel is most popular in Poland and Sweden, where internet retail makes up around 90% of total non-store retail. This is in contrast with the German market situation, where internet retail only represents 41% of the non-store retail; home shopping is the most important non-store retail channel in Germany.

Figure 53: Share of different non-store channels in **non-store** retail of clothing, 2010, by country (a)

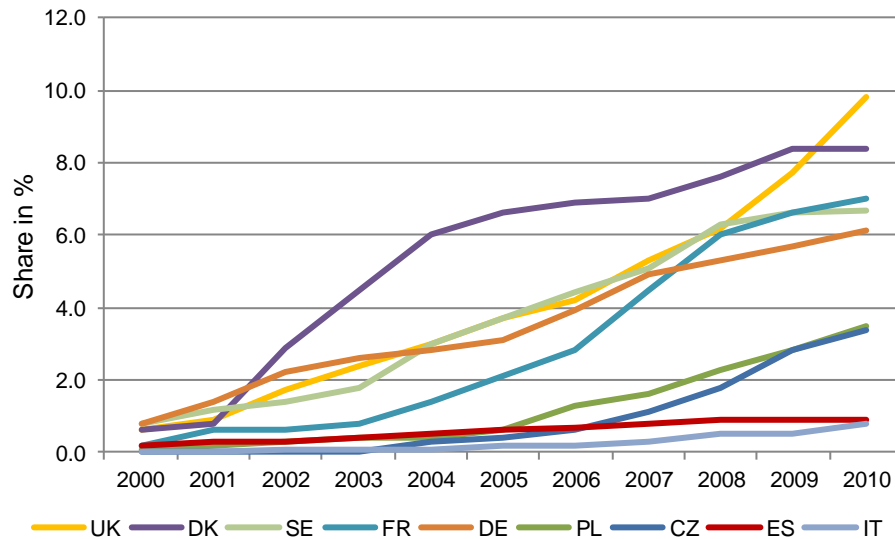


(a) Data for direct selling was not available for DK and CZ

Source: Euromonitor

Analysing the evolution of internet retailing over the period 2000-2010, we report the steepest increase in the UK (from a market share of only 0.6% to nearly 10%). But in most of the observed countries, growth is stabilizing or even declining over time.

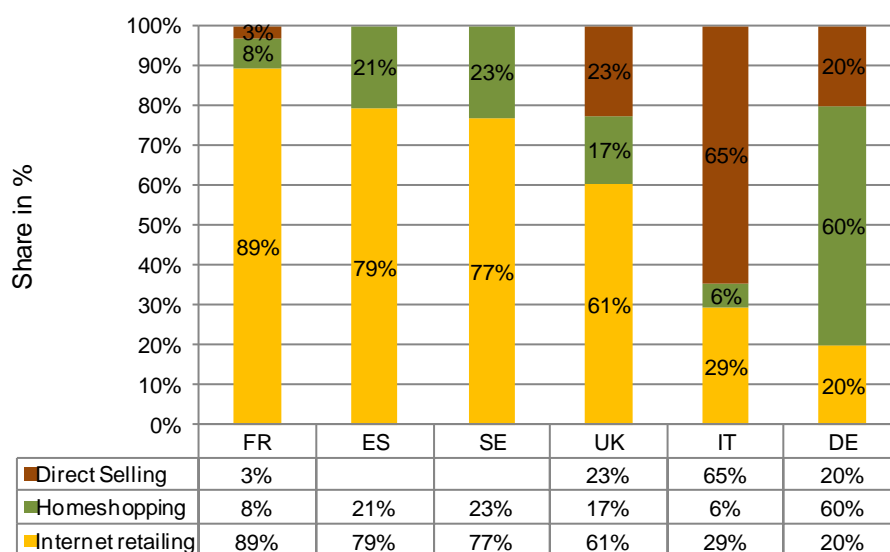
Figure 54: Evolution of share of internet retailing of clothing in total retailing



Source: Euromonitor

If we look at the relative importance of the different **non-store retailing channels for jewellery** in 2009, we notice that except for Italy and Germany also for jewellery internet retailing is the most important non-store channel, with more than 60% up to 89% of total non-store retailing. In Italy, 65% of non-store retailing is direct selling, while only 29% is via the internet, while in Germany, 60% is through the home shopping channel.

Figure 55: Share of different non-store channels in **non-store** retail of jewellery, 2009, by country (a)

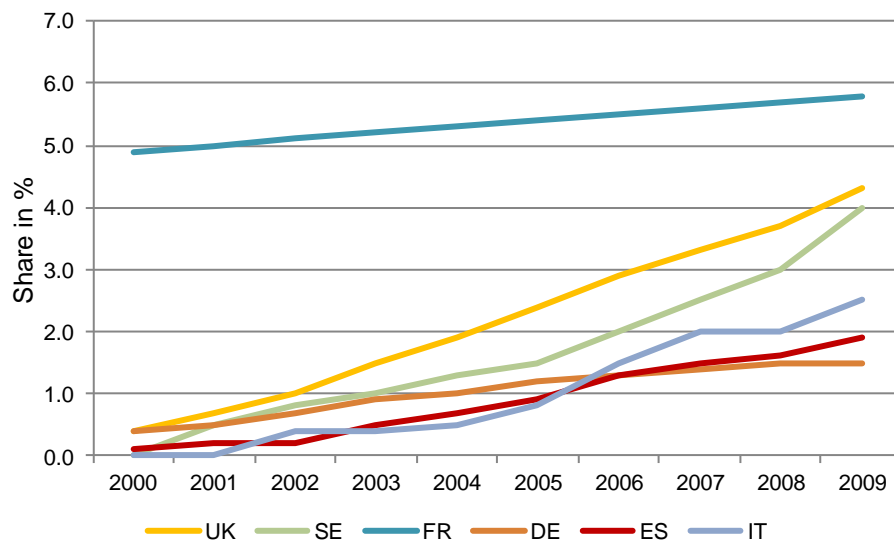


(a) Data for direct selling was not available for SE and ES

Source: Euromonitor

Between 2000 and 2009, the use of internet as retail channel has increased in all observed Member States, although in some Member States only gradually (DE, ES). But despite the growth in importance, in 2009 internet sales of jewellery still only represent less than 4% of total retail sales.

Figure 56: Evolution of share of internet retailing of jewellery in total retailing



Source: Euromonitor

An important reason for the limited growth of internet retail in fashion goods, is the fact that fashion consumers still tend to have strong preferences for trying on clothes and shoes, to feel the fabric before buying them and to make sure they really fit well. CBRE (2011) executed a study on consumers' vision on online shopping. They gathered survey responses from a representative sample of more than 10,000 shoppers between May and June 2011 in 9 EU27 countries (BE, DE, ES, FR, HU, IT, PL, SE and UK) and Russia. Besides clothing and footwear also books, music and entertainment, groceries, electrical items, cosmetics, pharmacy and computer games were considered in the survey. They came to the following conclusions:

- Two in five of the surveyed people shop online, with clothing and footwear among the fastest growing online shopping categories.
- Men are the main drivers of online shopping. Nearly twice as often (every 2.5 weeks compared to once a month).
- The physical store still remains an essential part for the shopping experience: 90% of the respondents stated that they visit shops to view the product before buying it online. And only 10% of the UK respondents, with the UK as one of the most important online shopping markets, stated that the presence of a physical store was not important when buying clothing and footwear.

Developing new digital tools to better capture the 'feel-and-touch'-factor online therefore is a major challenge for the further spread of e-commerce in fashion.

Another possible explanation is the lack of trust by consumers in e-commerce, which is a critical factor for the stimulation of online purchases. Trust encourages customers to return for additional purchases, and makes them loyal in the long run. On the other hand, damaging consumers' trust might keep them away forever. Online stores, especially start-ups, are weak in getting initial trust from consumers because their storefronts are merely lean/impersonal electronic media. The low entrance barriers in opening online stores might also explain lack of trust in e-commerce.

In their study, Chae et. al. (2004)²⁷⁹ developed a process of initial trust building. They excluded offline reputation from their model, because they only looked at click-only online stores. In their model they estimated the effect of a number of trust factors on 'initial trust in an online store' (the dependent variable). For the selection of the explanatory variables, they started from a literature review and identified the following factors: personal internet skills and personal propensity to trust (*individual* trust factors), third-party authorization and legal foundation (*institutional* trust factors) and perceived information quality, perceived website design, perceived service reliability, perceived variety of options, perceived willingness to listen to consumers, perceived reputation of the store, perceived active use of the bulletin board (amount and contents of messages on the site) and perceived easiness of use (*relational* trust factors). So they investigated the importance of different 'trust cues'. For example, if a customer had a bad experience with delivery of a product he purchased online, he would pay attention to other customers' evaluation regarding the delivery ability of the store on the bulletin board. Others may focus on the website design or easy navigation because it could make them think that the store is financially stable enough to invest in the development of an attractive site.

Their results show that factors influencing initial trust in online fashion stores may be different from those for trust in general. Four variables were found to be significant: perceived variety of options, legal foundation, perceived service reliability and perceived easiness of use. While their results failed to confirm the significance of perceived website design and perceived quality of information, the importance of these two trust factors was stressed during additional interviews with practitioners and users. There are three further remarks to make regarding these results. First, initial trust factors that are important for fashion online store might differ from other products due to the nature of the good. For example, for customers buying digital content, downloading speed seems very important. Secondly, online shopping behaviour might evolve over time. The authors mentioned the increased importance of attractive design and graphic images for fashion goods websites. Some factors depend on the consumer type. While in many other studies third-party authorization was shown as an important factor, it was rejected in the study of Chae et. al. One explanation they suggested was the fact that Korean online consumers do not seem to have enough understanding in third-party authorization. Therefore, when online stores want to know which initial trust factors are important for their business, they have to take into account specific product and consumer properties.

Finally, besides these consumer-driven arguments, there are also on the side of the fashion goods distributors a number of reasons that might explain the limited growth of internet retail in fashion goods:

- As has already been stated in the discussion on the barriers to R&D and innovation, the EU fashion industries with many (very) small and medium-sized firms face difficulties with the introduction of new technologies (see section 4.2.3).

Many fashion companies, especially the small independent actors, lack both the skills of how to introduce and manage organisational change and the financial capacity to make investments. Moreover, studies on the adoption of ICT in the footwear and clothing industry have shown that the limited degree of computerisation and the diversity of technological equipment in place are constraints for the adoption of e-business²⁸⁰. Small company size is reported as a main reason by firms in both the clothing and footwear industry which say that e-

²⁷⁹ Chae M., Park Y., Lee B. (2004), "Strategy for building initial trust in click-only online fashion stores", Journal of Electronic Science and Technology of China, Vol. 2. No. 3

²⁸⁰ European Commission (2005), "ICT and Electronic Business in The Textile and Clothing Industry ICT adoption and e-business activity", E-Business W@tch Sector Impact Study No. 02; European Commission (2006), "ICT and e-Business in the Footwear Industry: ICT adoption and e-business activity in 2006", E-Business W@tch Sector Report No. 2/2006

business does not play a significant role in their operations. This reflects the perception of ICT as a mean to primarily automate processes and save costs in production processes of large companies rather than as a way to redesign activities, improve competitive positioning and gain visibility over the value chain. Larger companies on the other hand appeared to be fairly well equipped with ICT systems such as Enterprise Resource Planning (ERP) and Supply Chain Management (SCM) systems, indicating that they have taken the lead towards supply chain integration and online trading with business partners.

- As have been mentioned in section 4.1.1 on the business model of luxury fashion brands, the online market has increased the amount of available counterfeit products and thus has undermined the reputation and sales of the brands. The ability of sites as eBay to offer both real brand products as well as counterfeit products with significantly lower prices than in actual stores is considered to be a major challenge for luxury brand's reputation and sales²⁸¹.

5.3.3 *New materials: technical textiles*

Among the major "raw-material-type external drivers" of the competitiveness of fashion industries technical textiles (TT) stand out in importance. This fast growing segment of the textile industry can be labelled not only 'emerging', innovative, investment- and research-intensive: it also becomes gradually *devoid of its niche characteristics, and permeates into several segments of the fashion industries*.

TT are traditionally defined as textiles in the case of which the physical properties and the performance of the material are more important than its aesthetics²⁸². Over time, this definition has become increasingly misleading as a consequence of the penetration of TT into mainstream apparel and other fashion industry segments. The exclusion of fashion applications of TT was already criticised a decade later by OECD.²⁸³

TT's fashion relatedness can be explained with the fact, that there is a lot of potential for crossovers between fashion designers and innovative TT firms.

- **New material properties** allow designers flexibility in product implementation or enhance *the uniqueness of the garment* (e.g. photochromatic dyes, or nanoengineered surfaces that allow changes in colour; light emitting garments, etc.). The development of the physic-chemical and aesthetic properties of materials *extends the known boundaries of material behaviour* – a key factor, fashion designers can rely on. TT permit that designers' traditional activities be augmented by results of interdisciplinary experimentation with in-built (added) technologies (wearable electronics, wearable sensors, solar or electroluminescent panels, actuators, logic circuits, micro-encapsulation²⁸⁴ etc.) and technologies that generate advanced *intrinsic* material properties (e.g. nanofabrics) like touch, handling, flexibility, texture, appearance etc. 21st century consumers expect fashion products to offer enhanced functional properties, such as breathability, odour absorbance, water repellence, easy-care, i.e. fade/wrinkle resistance, stain and dirt resistance, etc., displayed previously only by specific niche products (e.g. performance wear). This augments the application of TT in "everyday" fashion products, in mass markets.
- Another aspect that enhances the relevance of TT for the fashion industries is **sustainability**. Environmental considerations represent a major challenge for the textile industry (see also section 5.4) and at the same time a major opportunity

²⁸¹ MSNBC (2010); BBC (2011b); Telegraph (2011b); Smartcompany (2012)

²⁸² definition adopted in 1994 by the Textile Institute (Textile Institute, Textile terms and definitions, Tenth Edition, Textile Institute Manchester, 1994, quoted by OECD, 2004, p. 146)

²⁸³ OECD [2004]: A New World Map in Textile and Clothing, Adjusting to Change. Paris: OECD

²⁸⁴ Microcapsules are tiny containers that release their content (e.g. thermochromic and photochromic dyes, fragrance, climate control materials etc.) under controlled conditions (cosmeto-textiles). See additional details in section 3.2.5.

for TT in general and for its crossovers with fashion in particular. Nowadays, environmental credentials are not only part of textile and clothing related regulations, but they are increasingly relevant for fashion considerations as well: *sustainability has a symbolic meaning* and as such, is increasingly important for trend-sensitive consumers (cfr. section 5.1).

Initially, consumers' increased awareness of sustainability triggered eco-design-type responses: for example designers incorporated recycled material in garments. However, this remains a small, statistically insignificant niche: handmade by skilled artisans. On the other hand, TT-research has increasingly focused on sustainability aspects: durable, super washable products were developed, solar panels incorporated, etc. These latter scientific results have the potential to become *disruptive innovations* with their applications expanding from the high-end market to mainstream, mass markets.²⁸⁵

In summary, while initially the use of TT was considered only in specific industry niches (military and protective textiles; industrial, aerospace, automotive, medical and sport-related applications, etc.) – fashion applications are currently *driving a convergence between TT's various application segments*. Consequently, TT add function to fashion.

5.3.3.1 Factors that shape the evolution of TT

In contrast to a contraction of output in advanced economies in the traditional labour-intensive segments of the fashion industries, the production of TT fabrics and related products kept increasing – driven by steadily increasing global demand. Between 1995 and 2010 the volume of global technical textiles consumption (in tons) increased by 70 %, to 23.77 million tons.²⁸⁶

Out of the 12 main application areas of TT²⁸⁷ the three most fashion related ones are 'Clothtech (footwear and clothing); 'Sporttech'; and 'Hometech' (home & interior textiles and floor coverings). Growth in consumption in these three segments over the same period amounted to 54.5 %; 64 % and 53 %, respectively. These fashion related applications accounted for 24.8 % of total technical textile consumption (in tons) in 2010.²⁸⁸ Among the non-institutional (not public procurement related) and non-military demand factors that drive the evolution of this industry segment the following ones stand out: growing and aging population, increased purchasing power, increased health and safety awareness, quality of life considerations, regulations and environmental concerns.

The rapid, unabated expansion of possible applications has granted the TT segment extraordinary growth potential.²⁸⁹ Though estimates of the global market for TT vary in our surveyed literature, most of the analyses calculate with a global market size amounting to approximately EUR 100 billion in 2010-2011. With production decline in the traditional textile sector, the share of TT within total industry output keeps increasing. Although TT constitute a complex and fragmented industry segment, and the segment's

²⁸⁵ Cf. Christensen, C.M. [1997]: The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Boston: Harvard Business School Press.

²⁸⁶ Data published by the Knowledge Centre of Textile Exchange, Global B2B Marketplace for Textile Industry Manufacturers, www.teonline.com

²⁸⁷ These application areas include agriculture; construction industry; clothing & fashion industries; geotextiles (separation, filtration, soil reinforcement, fluid transmission); home textiles; industrial textiles; medical textiles; transportation (automotive & aerospace industries); environmental industries; packaging; protective textiles; and sports and leisure (performance textiles). These application areas are referred to as Agrotech, Buildtech, Clothtech, Geotech, Hometech, Indutech, Medtech, Mobiltech, Oekotech, Packtech, Protech, and Sporttech respectively. Horrocks, A. – Anand, S. [2000]: Handbook of Technical Textiles. Manchester: Textile Institute

²⁸⁸ Source: author's calculations based on the data published by the Knowledge Centre of Textile Exchange, Global B2B Marketplace for Textile Industry Manufacturers, www.teonline.com

²⁸⁹ Deutsche Bank Research forecasts 5 % annual growth in global demand for technical textiles. Deutsche Bank Research: Heymann, E. [2011]: Textil- und Bekleidungsindustrie: Innovationen und Internationalisierung als Erfolgsfaktoren. Aktuelle Themen No. 519, 06.07.2011.

definition varies from country to country²⁹⁰ rendering statistical quantifications and international comparisons quite difficult,²⁹¹ all existing estimates emphasize that the weight of TT within total textile output, and value added will progressively increase. This is in line with the shift to higher value adding, innovative products in advanced economies' textile and clothing industries. In Germany for example, the share of TT in total textiles sales was above 50 % (in 2009-2010) up from 30-35 % in the mid-1990s.²⁹² In France this share is still much lower: 27 %, but steadily increasing,²⁹³ in Canada 23 % (in 2007),²⁹⁴ in China 20 % (foreseen to increase to 25 % by 2015.²⁹⁵ In India the targeted and predicted share of technical textiles within total textiles industry is 10 % by 2015.²⁹⁶

A consensus finding of all our surveyed analyses is that Asia in general and China, India, Japan, Korea, and Taiwan in particular are driving the expansion of global consumption.²⁹⁷ Asian TT companies are in the process of intensive technology accumulation in order to upgrade and expand domestic TT production. Professional newspapers frequently report about licensing, subcontracting and outsourcing agreements between Asian TT companies and their European or U.S. counterparts.²⁹⁸ This demonstrates though, that the main manufacturers of advanced TT as well as of modern TT manufacturing equipment²⁹⁹ are still European, U.S. and Japanese companies. According to Deutsche Bank Research³⁰⁰ German producers account for 45% of world TT market, followed by the U.S. and Japan.

In summary, *the factors that drive the evolution of TT are of both market-pull and technology-push type*: a continuously increasing market demand and a wave of new innovations creating new market & application segments.

5.3.3.2 The role of government support

An important factor stimulating the development of TT is government support. Institutional buyers in sectors like the military, aerospace, fire fighting, and healthcare

²⁹⁰ There is neither a complete nor a universally accepted definition of technical textiles. Definitions based on the descriptions of the product or process characteristics get rapidly outdated with TT's continuously expanding application fields. Consequently the currently applied definitions cover a continuously decreasing part of TT varieties.

²⁹¹ The definition of 'Clothtech' for example includes only segments that are not really fashion-related: shoe laces, interlining, zip fasteners, labels, hook and loop tapes, sewing threads etc. There is no separate category (nor are statistical data compiled) of intelligent fabrics for apparel, or fabrics with nanoengineered surface for apparel, etc. In this vein statistics of the production and consumption of 'Clothtech' are distinct from fashion related TT production/consumption. Similarly, 'Sporttech' includes among others items such as artificial turf, parachute fabrics, ballooning fabrics, sleeping bags, sport nets, sport shoe components, tents etc.

²⁹² Heymann op.cit.

²⁹³ Source: Los textiles técnicos, un mercado con un inmenso potencial, Redacción Interempresas, 08.03. 2011, www.interempresas.net

²⁹⁴ A Technology Roadmap for the Canadian Textile industry. Innovation Through Partnership. A CTT Group Publication, 2008. For the U.S. we have data for the production share (in tons) of TT (referred to as specialty fabrics): it was 45 % in 2008 (source: IFAI).

²⁹⁵ Kunyuan, X. (Vice Chairman, China National Textile and Apparel Council) [2011]: Major tasks for China Textile Industry during the 12th Five Year Plan Period. PPT presentation, at China International Textile Feedstock Market Forum, 26-27 May, Shanghai, <http://www.ccfci.net/UpFile/Conference/201106241629586440679.pdf>

China's 12th Five Year Plan strongly focuses among others on China's textile and apparel sector envisaging a shift to increasing value adding activities such as TT, imposing investments in related research as well as in machinery and equipment.

²⁹⁶ Chugan (op. cit.)

²⁹⁷ Russia and Turkey are also emerging as important markets.

²⁹⁸ www.fibre2fashion.com; www.just-style.com; www.specialtyfabricsreview.com, etc.

²⁹⁹ Germany is particularly active in marketing its textiles machinery and related technologies in catching-up developing economies. German TT and conventional textiles machinery manufacturing companies and industry associations regularly organise conferences (and business meetings) in selected emerging economies with titles: "German technology for the Vietnamese/Indian/Brazilian etc. textile industry".

³⁰⁰ Deutsche Bank Research: Heymann, E. [2011]: Textil- und Bekleidungsindustrie: Innovationen und Internationalisierung als Erfolgsfaktoren. Aktuelle Themen No. 519, 06.07.2011

represent the main market for technology. Beyond their public procurement, in selected countries these large institutional buyers occasionally sponsor TT related research. Dominant part of TT-research is however financed by governments' science funds, governmental departments (ministries) and by European-level research programmes.

In the case of publicly funded research the key factor of competitiveness is *commercialisation*: innovative products have to become available to end users and the valley of death between prototypes and products manufactured in a commercial volume have to be bridged.

In the case of privately financed research (i.e. by corporate actors in various TT application segments), government support has to focus on *spillovers*: targeted programmes should promote the spillover of results in one TT segment to other segments.

Though analyses of government support tend to be restricted to international comparisons of publicly funded R&D programmes, developmental interventions are much more diversified, especially in selected developing economies. Beyond science and technology (S&T) policy measures, government programmes include institutional development³⁰¹, strategy design, trade promotion, awareness and image building and various fiscal measures.

Developing countries frequently adopt direct fiscal support measures e.g. interest reimbursement and capital subsidy for investments in TT-related technology upgrading, support to investments into testing infrastructure, establishment of incubation centres, or of national facilities for development of prototypes .

Some developing countries (particularly China and India) have adopted conscious and all encompassing developmental strategies that target the TT segment. They aim to become strong global contenders of advanced economies' TT actors. So far, developmental interventions have substantially increased these economies' competitive advantage mainly in commodity-type TT, but their massive current publicly (co-)financed investments in R&D underpins their catching-up in relatively more sophisticated TT segments as well. While advanced economies still feature major advantages in the most research-intensive segments of TT, supported by considerable public (national and EU-level) grants allocated to R&D and to R&D-based collaboration, policy-makers do not devise mid-term developmental strategies that target specifically this segment.

In advanced economies the main focus of governments' support is R&D, complemented by several related S&T policy measures including the stimulation of horizontal and vertical collaborations within the TT segment, commercial assistance projects for the SME sector, start-up promotion, support measures aimed to facilitate access to finance in technology-oriented companies etc.

While the amount of direct national support available to EU member states' TT companies is dwarfed by the one available to their competitors in selected emerging economies, especially in China, EU-level programmes that target R&D, and collaboration as well as other initiatives such as technology platform programmes, the European lead market initiative (targeting protective textiles) etc. complement nationally available sources of funding (see footnote 191 in section 4.2).

In fact, the main competitive advantage of these EU-level initiatives is not that member states' TT stakeholders can get access to additional funding that complements the national resources, but rather the opportunity for collaboration facilitated by these

³⁰¹ TT-related institutional development is relatively more important in emerging economies since advanced economies usually have a developed and dense institutional network consisting of industry associations, professional societies, research networks, centres of excellence, and interest representation bodies. See <http://www.texi.org/Links/europe.htm> for a list of European federations and associations in the textile and fashion industries.

programmes³⁰² that enhance the inter-TT-segment spillover of scientific results. Thereby they contribute to the rapid expansion of TT's new market applications.

Note that governments' developmental interventions follow a strong hierarchical order starting from military (and space related) applications followed by protective, medical, environmental and industrial applications. Fashion industries have always been and will remain at the very end of this order of hierarchy. Fashion related TT-research and development (similarly to R&D efforts in other TT segments such as the automotive ('Mobiltech') or packaging ('Packtech'), or 'Hometech') is dominantly privately financed, coveting the diffusion and application of scientific results generated in other TT-segments.

Economic policy decision-makers in advanced economies do tend to focus increasingly consciously and systematically on the design-related, creative segments of the economy.³⁰³ Formal "creative industry strategies" are devised (including sections on fashion industries and on the role and economic importance of design). This new policy focus (see also section 3.2.5) is in line with the increased contribution of intangible capital to advanced economies' growth performance and with the increased weight of intangible investments within total investments.³⁰⁴

5.3.4 Impact of new technological developments on fashion businesses

5.3.4.1 ICT developments

The possibilities that internet and new ICT developments offer to set up new types of relationships with customers, affect all businesses that are active in retail. E-commerce, although still limited in importance compared to shopping retail, has been adopted by luxury brands, vertically integrated retailers and mass retailers alike. Technological developments to further adapt e-commerce tools to the specific needs of fashion consumers, therefore are of interest to the whole retail business as they provide opportunities to enlarge their market reach.

The new ICT developments do provide specific opportunities for new types of businesses – often small ICT driven companies – to emerge in the fashion value chain. Different small enterprises have entered the fashion industries with specific services to either fashion goods companies or customers, the example of BivolinoServices being illustrative for this evolution (see Box 7). These small actors are often highly innovative and have (strong) links with research institutes. However, the challenge for these small actors is to find an economically viable business model where either customers or fashion goods companies are willing to pay for the services offered.

³⁰² Examples include the FP7 project: SmartNet that promotes collaboration and networking in, among others, the interior textiles segment. Activities in all phases of the value chain ranging from innovation, prototyping, sampling to production, organisation, management and marketing are supported; ProsumerNet, that promotes the collaboration of the European Textile Footwear and Sports Technology Platforms; the Bio-Tex initiative that support the collaboration of the European SusChem (white biotechnology) platform and Futures Textiles and Clothing, combining complementary elements in a joint technology roadmap; the Alliance for Materials (A4M) initiative targeting the collaboration of six materials related European Technology Platforms (ETPs); ManuTex launched by two ETPs, ETP for assuring the future of manufacturing in Europe (Manufuture) and Textile ETP, in order to realise closer collaboration in pre-competitive research and development at European level between the textile&clothing and related machinery Industries. (Source: www.textile-platform.eu)

³⁰³ Cf. Cunningham's survey and international comparison of advanced economies' creative industry policies: Cunningham, Stuart D. (2009) Trojan Horse or Rorschach Blot? Creative industries discourse around the world. *International Journal of Cultural Policy*, vol. 15, No. 4

³⁰⁴ Cf. Corrado, C.A. – Hulten, C.R. – Sichel, D.E. [2009]: Intangible Capital and U.S. Economic Growth. *Review of Income & Wealth*, vol. 55, No. 3; Haskel, J. – Clayton, T. – Goodridge, P. – Pesole, A. – Barnett, D. – Chamberlain, G. – Jones, R. – Khan, K. – Turvey, A. [2009]: Innovation, Knowledge Spending and Productivity Growth in the UK: Interim Report for NESTA Innovation Index Project. London: Centre for Research into Business Activity (www.ceriba.org.uk); Roth, F. – Thum, A.E. [2010]: Does intangible capital affect economic growth? CEPS Working Document, No. 335, Brussels: Centre for European Policy Studies

However in general, fashion businesses are rather late adopters of e-commerce than they are early adopters. A precondition to take advantage of the new technological developments is the ability of EU fashion companies to absorb these new developments into their daily business to develop new products, new production processes or completely new business models. However, as has already been stated in the discussion on the barriers to R&D and innovation, the EU fashion industries with many (very) small and medium-sized firms face difficulties with the introduction of new technologies (see section 4.2.3).

Many fashion companies, especially the small independent actors, lack both the skills of how to introduce and manage organisational change and the financial capacity to make investments. Moreover, studies on the adoption of ICT in the footwear and clothing industry have shown that the limited degree of computerisation and the diversity of technological equipment in place are constraints for the adoption of e-business³⁰⁵. Small company size is reported as a main reason by firms in both the clothing and footwear industry which say that e-business does not play a significant role in their operations. This reflects the perception of ICT as a mean to primarily automate processes and save costs in production processes of large companies rather than as a way to redesign activities, improve competitive positioning and gain visibility over the value chain. Larger companies on the other hand appeared to be fairly well equipped with ICT systems such as Enterprise Resource Planning (ERP) and Supply Chain Management (SCM) systems, indicating that they have taken the lead towards supply chain integration and online trading with business partners.

5.3.4.2 Other new technological developments and new materials

Whereas ICT developments and e-commerce have a broad influence on all types of fashion industry businesses, the adoption of the other new technological developments that have been discussed (digital printing techniques, technical textiles) at this moment is only limited to specific types of businesses whose competitive advantage lies in bringing innovative fashion products to the market or in bringing fashion products to the market in a highly innovative way. Such early adopters of innovation can be especially found in the group of small independent actors (e.g. creative fashion designers experimenting with new materials and new printing techniques), the luxury fashion brands (e.g. use of technical textiles in haute couture) and niches such as sportswear (especially focusing on exploring the different functionalities of new materials). The high costs that are still related to implementing these new technologies or materials, as well as the fact that many of these developments are still in an experimental phase, currently prevent especially those types of fashion businesses that are concentrated on cost efficiency from investing in these new developments.

5.4 Sustainability

Environmental protection and the importance of sustainable economic growth have become major issues in socio-economic discussions and policy making. This has increased the ecological and social awareness of consumers. Consumers increasingly take into account the (potential) negative impacts of the products they buy in relation to the environment, poor working conditions, the violation of animal rights, and so on.

According to Skov (2008)³⁰⁶, in general consumers do not relate the fashion industries to sustainability in a positive way. Skov identified five ethical controversies that lay at the

³⁰⁵ European Commission (2005), "ICT and Electronic Business in The Textile and Clothing Industry ICT adoption and e-business activity", E-Business W@tch Sector Impact Study No. 02; European Commission (2006), "ICT and e-Business in the Footwear Industry: ICT adoption and e-business activity in 2006", E-Business W@tch Sector Report No. 2/2006

³⁰⁶ Skov L. (2008), "Creativity at Work: Ethics and the fashion industry in West Europe", Creative Encounters Working Papers, No. 18

basis of this negative image: environmental concerns (e.g. waste disposal), fakes and counterfeits, poor working conditions, animal rights and idealized gender and body images. As a reaction to this image, sustainable fashion consumption is more and more becoming an important trend in the developed regions, including the EU. Corporate Social Responsibility (CSR) and ethical sourcing are becoming vital elements of business strategies in fashion and textiles industries (EMCC, 2008³⁰⁷).

The increased ecological and societal awareness of customers provides opportunities for the EU fashion industries to create new niche markets in for example 'green clothing', as well as challenges to review traditional production methods. The increased awareness might also lead to lower consumer adoption of specific technological developments (e.g. in nano- and biotechnology) due to uncertainty about health and environment effects.

The remainder of this section will focus on the major ecological and societal challenges that the EU fashion industries are facing³⁰⁸, the need for more sustainability in fashion and the possibilities for policy intervention to support the EU fashion industries in adopting more sustainable practices.

5.4.1 *Major environmental challenges*

The fashion industries are diverse, both in terms of raw materials that are being used as in terms of the different techniques it employs. At each of the stages from production to consumption of a fashion good, the negative impacts on the environment are as numerous as they are varied. The following list presents some major causes of environmental damage related to the fashion industries³⁰⁹:

- The use of **pesticides and toxic chemicals** during the cultivation of textile fibres such as cotton, but also in many manufacturing stages such as pre-treatment, bleaching, dyeing and printing harm nature and wildlife, and via water disposal they contaminate soil.
- Animal products used in clothing include fur, leather, silk and wool. **Exploitation of animals** often goes hand in hand with intensive farming practises that damage the environment as a whole.
- More and more, **synthetic fibres** such as polyester, spandex or Lycra are being used in the production of fashion goods. The manufacture of synthetic fibres creates **pollution** and they are **hard to recycle** (with nylon taking 30 to 40 years to decompose).
- The fashion industry is an energy-intensive sector that requires large quantities of **burning fossil fuel** to create electricity for the heating of water and air in laundering. Other major energy-flows are the provision of fuel to agricultural machinery and the provision of electricity to production plants.
- In addition, most of the textile machineries cause **noise, sound and air pollution**.
- **Over-usage of natural resources** like plants and water depletes or disturbs ecological balance.
- **Water consumption**, especially in cotton crop cultivation, is very high. Also manufacturing processes as dyeing and printing consume vast amounts of water.
- **Waste volumes** are high and even growing with the advent of fast fashion. For

³⁰⁷ EMCC (2008), "Trends and drivers of change in the European textiles and clothing sector: Mapping report", European Foundation for the Improvement of Living and Working Conditions

³⁰⁸ except for the problem of fakes and counterfeits, which will be discusses separately, in section **Error! Reference source not found.**

³⁰⁹ Cfr. Challa L. (2010), "Impact of Textiles and Clothing Industry on the Environment: Approach Towards Eco-Friendly Textiles", Bangalore University; Allwood J.M., Laursen S.E., de Rodríguez C.M. and Bocken N.M.P. (2006), "Well dressed? The present and future sustainability of clothing and textiles in the United Kingdom", University of Cambridge, institutes for Manufacturing

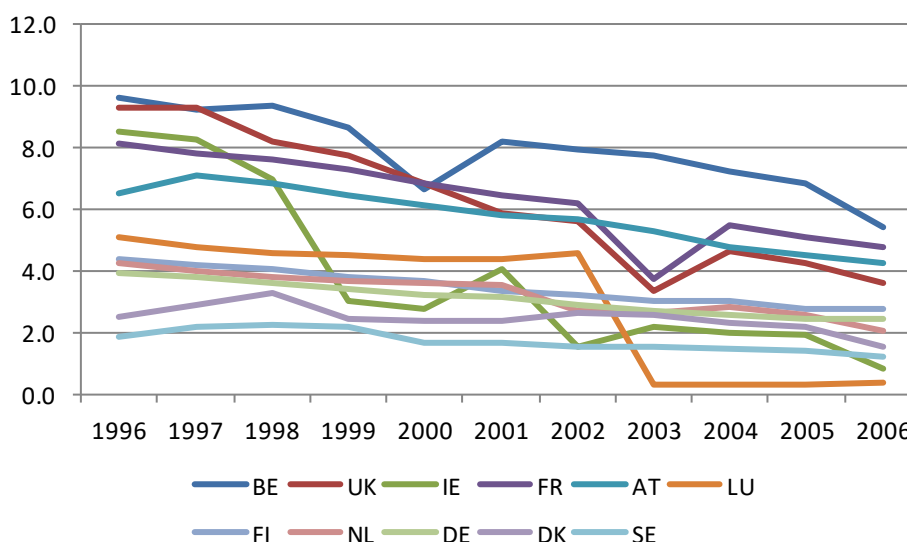
example, UK consumers send, on average, 30 kg of clothing and textiles per capita to landfill each year. Only one eighth of their consumption is sent for re-use through charities.

- The high negative environmental impact of **transportation** in the global value chain of fashion goods.

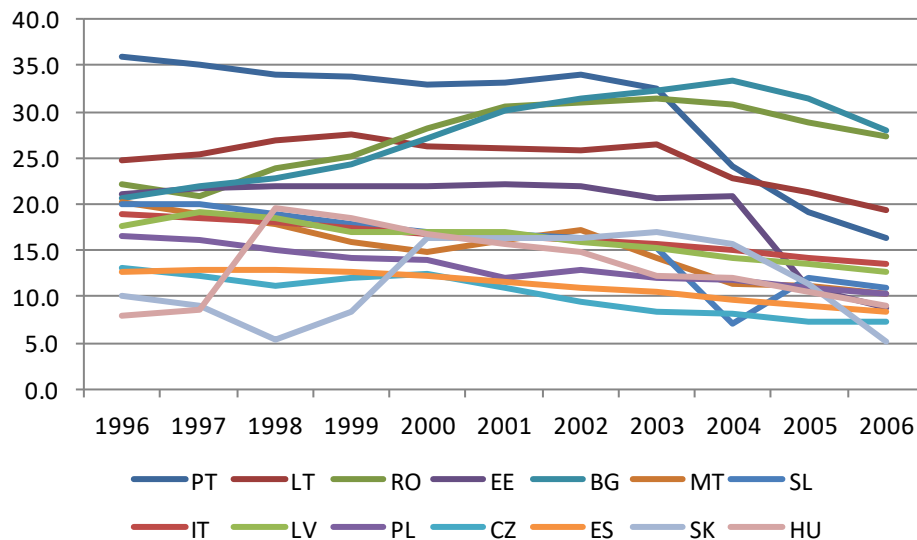
Figure 57 illustrates the evolution of water pollution by the textiles industry in the period 1996 to 2006 for most EU 27 countries. The first figure shows the evolution of the Western European and Scandinavian countries, all with pollution shares ranging between 2 and 10% and declining over time. By 2006, the pollution share of all these countries dropped under 6%. Some countries, like Ireland and the UK, show major improvements in the level of water pollution.

The second figure shows the results for the Eastern and Southern European countries; both regions on average performing worse in terms of water pollution. The evolution over time is also less promising than in the Western and Northern part of Europe. In some countries, such as Portugal or Slovenia the textile industry did some noticeable efforts to decrease the level of water pollution, in a number of other countries the situation stabilized between 7 and 13% (e.g. Spain, Poland), while in some the situation even deteriorated with a significant increase of the water pollution level until 2004 to nearly 30%, like in Romania and Bulgaria.

Figure 57: Water pollution, textile industry (% of total BOD emissions³¹⁰), 1996-2006



³¹⁰ Industry shares of emissions of organic water pollutants refer to emissions from manufacturing activities as defined by two-digit divisions of the International Standard Industrial Classification (ISIC), revision 2: textiles (32). Emissions of organic water pollutants are measured by biochemical oxygen demand, which refers to the amount of oxygen that bacteria in water will consume in breaking down waste. This is a standard water-treatment test for the presence of organic pollutants.



Source: IDEA Consult based on World Bank statistics

Not only the growing and manufacturing phase of fashion goods, however, have a negative impact on the environment. During the *total life cycle of a garment*, also the consumer care phase (washing, laundry,...) has a significant environmental cost, as shown in the following table illustrating an environmental cost comparison at each stage in the lifecycle of a conventional cotton t-shirt versus an organic cotton t-shirt. Apart from the information provided on the 'washing instructions'-label of the garment, the textiles and fashion industry cannot be held responsible for these costs. Instead, this responsibility lies in the hands of the manufacturers of washing and laundry machines, of laundry powder and fabric softeners and of course the consumers themselves.

Environmental cost of each stage in the lifecycle of a cotton t-shirt (US\$ per t-shirt)

	Conventional cotton	Organic cotton
Growing	0.67	0.33
Ginning	0.02	
Processing	0.02	
Distribution	0.08	
Transportation	0.32	
Consumer care	2.69	
Total cost	3.79	3.45

Source: Fletcher K. (2008), "Sustainable Fashion and Textiles: design journeys, Earthscan"

Legal framework

In order to reduce the negative environmental impact of industrial activity, the European Commission has developed a rather extensive and stringent legal framework for the environment compared to other regions worldwide. The current legislation in force, such as the REACH-regulation, IPPC regulations, Framework for Community action in the field of water policy, Scheme for greenhouse gas emissions³¹¹, complemented by some

³¹¹ Proposal for a regulation concerning the Registration, Evaluation, Authorisation and restriction of Chemicals (REACH) and establishing a European chemicals agency; Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC); Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000, establishing a framework for Community action in the field of water policy; Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community

voluntary schemes like EG EMAS³¹² and ISO 14000 have resulted in very demanding rules and framework conditions under which the industrial EU companies, including those in fashion manufacturing have to operate. One of the consequences is that fashion manufacturers will have to improve their efficiency and reduce the energy required for the production of the goods. In countries where regulatory measures are less stringent, increases in production costs will be remarkably lower, implying a competitive disadvantage to the EU fashion companies (mainly disadvantageous for manufacturing companies).

This quite demanding legal framework and environmental regulation compared to less stringent frameworks in other region (such as in Asia) can be seen as both a challenge/threat as well as an opportunity. A potential threat is that further delocalization of certain production/manufacturing stages could occur towards areas where such environmental standards do not apply as there is currently no international level playing field. On the other hand, environmental regulations also provide an incentive to invest in R&D for improving energy efficiency in order to diminish the dependency from traditional sources of energy and to decrease the share of energy in total production costs. However, these are only realizable in the long term, and require significant entrepreneurial endeavour, which is very demanding and risky, in particular for the many SMEs in EU fashion manufacturing.

5.4.2 Societal challenges

Apart from the environmental and ecological challenges that the fashion industries face, there are also important societal concerns. These go from poor working conditions to eating disorders and idealized gender and body images (MoTIV, 2008). In some European countries, such as the UK, retailers are increasingly specifying codes of good practice in labour standards to their suppliers. However, there are difficulties in imposing these throughout the supply chain due to a lack of control at arm's length (Allwood e.a., 2006).

Box 9: Poor working conditions with non-EU subcontractors of the EU fashion industries³¹³

Most countries have a legal minimum wage, but in some cases this is lower than a realistic minimum living wage. In some situations, workers are forced to work long hours for a low pay and this under dangerous and unhealthy working conditions, such as the exploitation of vulnerable people in sweatshops. Further, there are examples of female workers being sexually exploited. And in some countries the right of workers in the sector to form associations (unions) to represent their concerns in collective bargaining is suppressed.

One of the most awkward and problematic aspects related to poor working conditions in fashion and textiles industry, however, is the abuse of child labour: small children working long days under hard circumstances for very little money. According to the International Labour Organization, there are 246 million child-workers (age 5 to 14) in the world today. The Asian-Pacific region exploits the most child labour, followed by sub-Saharan Africa, Latin America and the Caribbean. In the textile sector, children are a cheap workforce for picking cotton, hand-sewing, etc.

Until now the fashion industries, in general, have taken on a defensive rather than a proactive role in tackling poor working conditions. Fashion companies are still in the situation where the main method of minimizing out-of-factory prices is to put pressure on wages (and as a consequence indirectly on the working conditions).

However, following a number of scandals revealed by NGOs (e.g. poor working conditions

³¹² Regulation (EEC) No 761/2001 of the European Parliament and of the Council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) and

³¹³ Allwood e.a., 2006 and Challa L., 2010

at supplying companies of NIKE) and increased consumer pressure, global brands have started to integrate social clauses into their subcontractor agreements (Challa, 2010). Many of them have even gone one step further by integrating Responsible Supply Chain Management as part of their CSR-strategy, for example by adopting instruments that allow them to monitor practices in their supply chain. Initiatives such as the Business Social Compliance Initiative (BSCI), SA8000 or the Fair Wear Foundation are used to improve, monitor and audit working and social conditions. Examples of tools to monitor the environmental performance of textile suppliers are labels such as BlueSign, or Oeko-Tex or the European Ecolabel (van Opijnen M., Oldenziel J., 2011³¹⁴). In addition, since the beginning of this century, more and more companies (e.g. Edun, People Tree and noir) choose ethical fashion as a brand concept, and large retailers like H&M and Marks and Spencer have added fair trade collections to their offerings (Skov, 2008).

Box 10: Illustration of Responsible Supply Chain Management: Inditex Group

The Inditex Group, one of the world's largest fashion retailers, with eight store formats (Zara, Pull & Bear, Massimo Dutti, Bershka, Stradivarius, Oysho, Zara Home and Uterqüe) made strong commitments to Corporate Social Responsibility, on the social, environmental and economic dimension (see next section on sustainability). Within the social dimension, the group introduced in 2001 an internal and external Code of Conduct, containing the principles that should be taken into account by all companies that comprise the group. Example of an internal code of conduct towards employees:

- *Inditex does not employ anyone who is below the legal age.*
- *No-one who is employed at Inditex is discriminated against because of their race, physical disability, religion, age, nationality or sex.*
- *The employees of Inditex have their right recognised to associate or organise themselves or to bargain collectively.*
- *At Inditex no form of physical, sexual, psychological or verbal harassment or abuse is permitted.*
- *The salary received by Inditex employees is in accordance with the function performed, always respecting the pacts of each sector.*
- *Inditex guarantees that its employees perform their work in safe and healthy workplaces.*

A second step was the introduction of the "Internal Guidelines for Responsible Practices of the Inditex's Group Personnel" in 2006. These guidelines provide a pattern for the behaviour expected by the company of its employees, thus providing a mechanism of complaints allowing employees to report, in a confidential manner, any potentially relevant irregularities that they might consider to be a breach of these Guidelines. In order to verify whether the companies comply with these guidelines, the group also introduced an internal audit charter and internal audit regulations: external manufacturers, suppliers and their subcontractors shall authorize Inditex and/or any third parties the former might appoint, to carry out inspections and audits in order to verify the appropriate enforcement of the Code.

5.4.3 *The road to sustainable fashion*

Sustainable or socially responsible entrepreneurship is a necessary condition to secure our planet for future generations. For fashion companies, sustainable development means the integration of economic, ecological and social aspects in the entire production chain and in all production steps (development, production and marketing of (new) fashion products and during the post-production steps, such as maintenance and recycling)³¹⁵. The UK based industry body for sustainable fashion Ethical Fashion Forum (EFF) refers to it as ethical fashion: "*ethical fashion represents an approach to the design, sourcing and manufacture of clothing which maximises benefits to people and communities while minimising impact on the environment*". At the basis of sustainable or

³¹⁴ van Opijnen M. (CREM), Oldenziel J. (SOMO) (2011), "Responsible Supply Chain Management: potential success factors and challenges for addressing prevailing human rights and other CSR issues in supply chains of EU-based companies", Centre for Research on Multinational Corporations, part of a services contract for the European Commission to support the High Level Group on Corporate Social Responsibility, the project was led by adelphi with support from CREM, PPRC, SOMO and ICLEI.

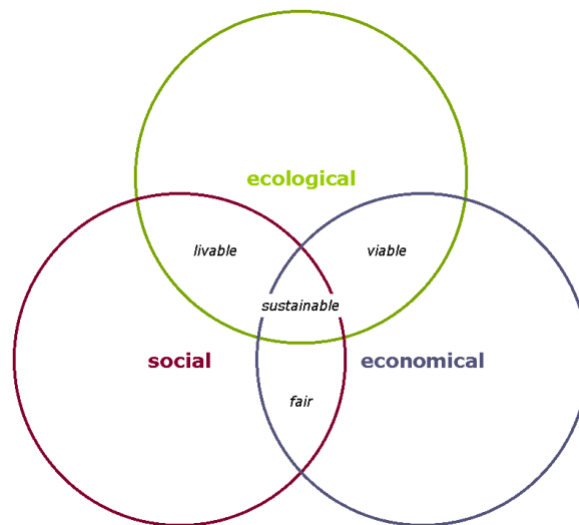
³¹⁵ Cfr. website Centexbel, "expertise Sustainability"

ethical fashion lies the so-called “triple bottom line” that needs to be incorporated at the core of fashion business practices³¹⁶:

1. **Social:** Increasing the capacity and wellbeing of the people and communities behind fashion. Any fashion business depends on the people behind it. In a broader context, poverty and exploitation of the human workforce behind fashion affects the stability of the industry itself.
2. **Environmental:** Minimising the environmental impact of all business operations, throughout the supply chain. Creating and acting upon opportunities to reduce environmental issues beyond the immediate operations- such as awareness raising, investment in and support of environmental initiatives.
3. **Commercial:** Without a robust financial business model, none of the above can be achieved. Good intentions without an effective business structure can backfire. A sustainable approach includes quality products or services that meet market needs and demands and are fairly marketed.

³¹⁶ <http://www.ethicalfashionforum.com/the-issues/ethical-fashion>

Figure 58: Sustainability and the triple bottom line



Source: Centextbel

According to EFF ethical fashion can be translated into 10 criteria that fashion companies should actively strive for:

1. Countering fast, cheap fashion and damaging patterns of fashion consumption
2. Defending fair wages, working conditions and workers' rights
3. Supporting sustainable livelihoods
4. Addressing toxic pesticide and chemical use
5. Using and / or developing eco- friendly fabrics and components
6. Minimising water use
7. Recycling and addressing energy efficiency and waste
8. Developing or promoting sustainability standards for fashion
9. Resources, training and/ or awareness raising initiatives
10. Animal rights

Eco-fashion goods have the aim to integrate economic, ecological and social aspects in the entire production process. They are made by organic raw materials, such as organic cotton³¹⁷ and silk made by worms fed on organic trees. No harmful chemicals are used, or environmentally damaging processes, such as bleaching to colour fabrics. Eco-fashion clothes come from fair trade: people who make these clothes are paid a fair price and work under good condition. They are often made from recycled and reused textiles. High-quality garments can be made from second-hand clothes and even recycled plastic bottles. They are also made to last, to counteract the throw-away mentality.

The most noticeable initiatives to introduce more sustainable practices in the fashion industries come from businesses wanting to underline their own corporate virtues (see e.g. Box 5 and Box 11). MoTIV (2008) provided some important economic arguments in favour of Corporate Social Responsibility. Firstly, it supports the image of the company, both towards potential workers as well as towards customers. It also provides a story to customers and thus increases the symbolic value of the products. This gives an opportunity to ask a supplement for the offered articles. Secondly, it ensures better relationships, based on goodwill and durability. Thirdly, as CSR-company, you are closer

³¹⁷ Organic cotton is much more environmentally friendly than the traditional variety as it uses no pesticides, herbicides, or insecticides during the growing cycle. There are many growers of this crop, and the number is steadily increasing. Organic cotton garments are often also free from chlorine bleaches and synthetic dyes. Even more promising is new cotton that is grown in the tradition of the Aztecs - coloured cotton. Sally Fox, a biologist, spent ten years perfecting coloured cotton with long enough fibres to be spun into thread. She managed to get it to grow naturally in shades of green and brown. It has the added benefit of not fading (in colour) and in fact, it gets more vibrant with the first few types of washing.

to new evolutions in society, in a more leading role, anticipating new legislation.

The use of 'CSR'-labels supports this evolution, so consumers will know if the clothes they are purchasing meet their social and environmental standards. The more consumers know about the content of their clothing, the more they may begin to see it in all of its "lifecycle," from grower to garment. The eco fashion movement, on a small or large scale, is about drawing the connections between consumers and their clothing, moving away from a disposable mentality, which might imply a major shift for a generation accustomed to buying clothes without limitations (Belli B., 2007). However, the MoTIV-studie also presented some challenges and bottlenecks related to the use of CSR-related labels. First, there is the strong proliferation of labels leading to more indistinctness with respect to the selection criteria, the meaning and limitations of these labels, and the measurability and comparability of different labels. Second, the familiarity with a specific label (reputation) strongly depends on the geographic location. In addition, also the scope of the schemes might differ: some cover both environmental and social conditions, others only focus on environmental or only on social conditions.

An answer to the first two challenges is further 'promoting' the use of the European Ecolabel, established in 1992 to encourage businesses to market products and services that are kinder to the environment. The criteria are agreed at European level, following wide consultation with experts, and the label itself is only awarded after verification that the product meets these high environmental and performance standards. Products and services awarded the Ecolabel carry the flower logo, allowing consumers (including public and private purchasers) to identify them easily. Products bearing the logo can be marketed throughout the European Union and the EEA countries (Norway, Iceland and Liechtenstein). Because of the voluntary nature of the scheme, it does not create barriers to trade. On the contrary, many producers argue that it gives them a competitive advantage.

Box 11: CSR initiatives in fashion

The Better Cotton Initiative (BCI)

"Just 2.4 percent of the world's arable land is planted with cotton yet cotton accounts for 24 percent of the world's insecticide market and 11 percent of the sale of global pesticides. 73 percent of global cotton harvest comes from irrigated land." (WWF, 2003)³¹⁸

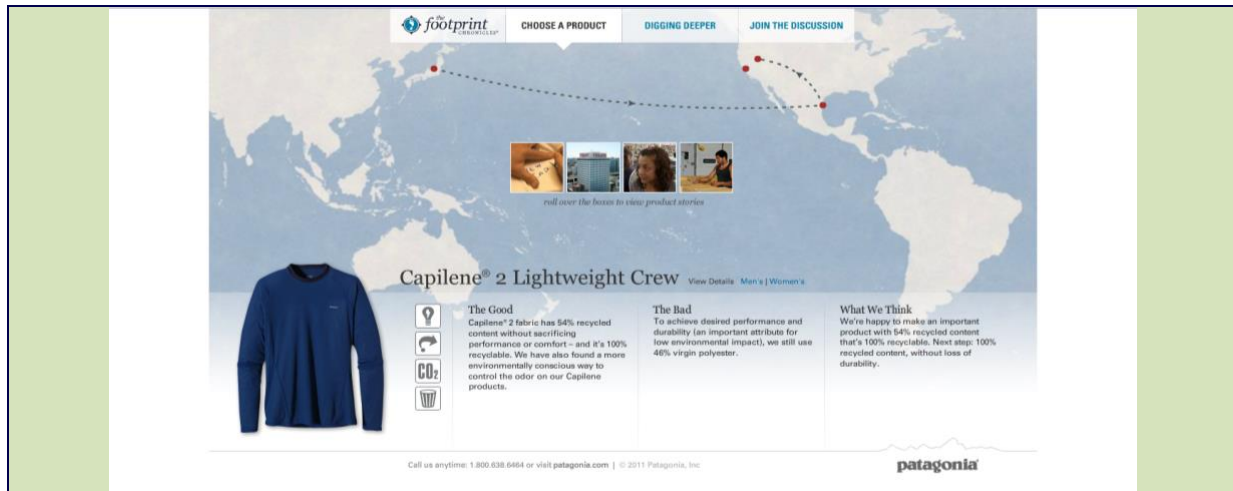
The Better Cotton Initiative was founded in 2005 by adidas, Gap Inc., H&M, ICCO, IFAP, IFC, IKEA, Organic Exchange, Oxfam, PAN UK, and WWF. It aims to promote measurable improvements in the key environmental and social impacts of cotton cultivation worldwide to make it more economically, environmentally, and socially sustainable. Since 2005, the BCI has been working with organisations from across the cotton supply chain and interested stakeholders to facilitate a solution for the mainstream cotton sector. The BCI's philosophy is to develop a market for a new mainstream commodity: 'Better Cotton' and thereby transform the cotton commodity to bring long-term benefits for the environment, farmers and other people dependent on cotton for their livelihood (www.bettercotton.org)

Patagonia – The footprint chronicles

The footprint chronicles allows the customer to track the ecological impact of a specific Patagonia product from design through delivery. The information is quite similar to the Carbon Footprint information on the Honest By website (see

Box 6).

³¹⁸ WWF (2003), "Thirsty Crops: Our food and clothes: eating up nature and wearing out the environment?"



Timberland Responsibility

The Timberland strategic sustainability program is active in all company-areas starting from the design and innovation stage up to the manufacturing and after sales services. It encompasses all aspects of responsibility, from environmental awareness to worker engagement and empowerment, good governance, transparency and accountability. Some concrete illustrations:

- **Eco-conscious materials:** the product creation teams are encouraged to choose environmentally-conscious materials like Green Rubber™ material made from recycled rubber that would otherwise go into landfills, recycled PET (the polymer that plastic bottles are made of), and organic content.
- **Worker engagement:** Engaging as a company in community service over the years has produced a variety of benefits, including employee development, increased attraction and retention, strengthened business partnerships, and reinforced commitment to building communities and goodwill.
- **Public policy:** the company wants to extend its influence as a responsible business, and to this end looks for opportunities within the public arena to build strong communities and a healthy planet, for example as founding member of BICEP (Business for Innovative Climate and Energy Policy).



Other examples: Naturally Hema from Hema, Plan A from M&S, DutchSpirit from JBC and Green Program from Tesco.

5.4.4 Impact of increased attention for sustainable growth on fashion businesses

Fashion and sustainability are not perceived as an obvious combination. Apart from a specific group of fashion companies that really manages to turn the pressure for more sustainability into a competitive advantage (often small niche players, focusing on eco-fashion and building their brand around sustainability), most fashion companies – in particular the established international brands – are in general not perceived as frontrunners in the sustainability debate. Especially regulation and public opinion put pressure on fashion businesses to evolve to a more sustainable practice. This pressure is felt in the first place by those fashion companies that operate in or control international value chains (luxury fashion brands, premium fashion brands, vertically integrated retailers), and those companies that work with raw materials that are under discussion

from a sustainability point of view (especially in luxury fashion brands and to some extent also premium fashion brands):

- Operating and controlling global value chains, first of all brings along a high social responsibility to the international brands to closely monitor working conditions throughout the value chain (including subcontractors). Many globally active fashion companies now have established systems to monitor and audit all parts in the value chain (e.g. Inditex). Secondly, the growing pressure to explicitly account for the high negative environmental impact of transportation in the global value chain in the total cost of fashion goods, provides globally organized fashion companies (especially those businesses with a strong cost-efficiency focus, such as the vertically integrated retailers) with a challenge to potentially reconfigure the value chain over time for efficiency reasons. From an environmental point of view, current low wage countries in Asia might lose part of their attractiveness in favour of countries closer to the large European consumer market. This could provide new opportunities for manufacturers in Europe.
- A second challenge for fashion companies that arises from the sustainability debate, relates to the use of a number of more exclusive raw materials. Ethical discussions about animal rights, but also discussions on biodiversity and the use of environmentally friendly production processes, puts pressure on the use of materials such as fur, exotic leather or silk in fashion goods. This is especially relevant for the luxury fashion brands that are the main users of this type of materials. The other side of the coin is that luxury fashion brands are triggered to invest in finding new and more sustainable exclusive materials such as technical textiles.

Whereas the pressure for more sustainability provides especially the globally active fashion companies with challenges to align their traditional business model with the new expectations, for other businesses it provides good opportunities to build a unique selling proposition. Especially small niche players in the fashion industries are at the forefront in experimenting with more sustainable business models. But also vertically integrated fashion retailers and department stores more and more see the competitive benefits of incorporating sustainability in their business strategies.

5.5 Raw materials and energy

In the previous section, we elaborated on the negative impacts of the textile and fashion industry on the environment and the increased awareness that better environmental protection and sustainable economic growth is needed. Strongly related is the problem of decreased access to raw materials. Recent price increases of both energy and raw materials have highlighted the scarcity of a number of input factors that are important for the fashion industries and its supplying industries. This scarcity will urge fashion and textile companies to rapidly find some feasible alternatives. In addition, the environmental goals that have been set at EU policy level push the EU fashion industries to focus on new techniques and new business models that allow for more resource efficient production mechanisms.

5.5.1 *Textile fibres*

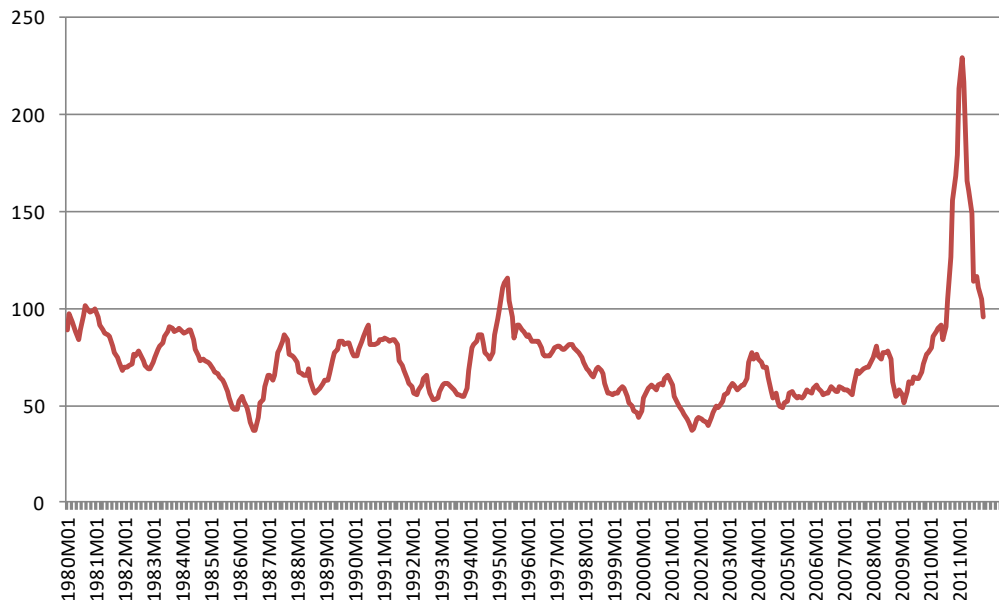
Besides energy, also the cost of and access to textile fibres might become more and more problematic in the future.

5.5.1.1 *Natural fibres*

The following figures present the average spot price of cotton and wool (both fine and coarse) from January 1980 up to December 2011. As seen on the first figure, the price of cotton knows a first drop in the mid-1980's, followed by a gradual and fluctuating increase to a peak in the mid-1990's, above 100 cents per Pound. After 1996, the price

started declining again until 2002. The first years of the new century, the price has been rather stable, except for a steep increase in mid-2011³¹⁹. Currently, the price has reached its normal level again, but the worldwide trade of cotton might become more and more volatile in the future.

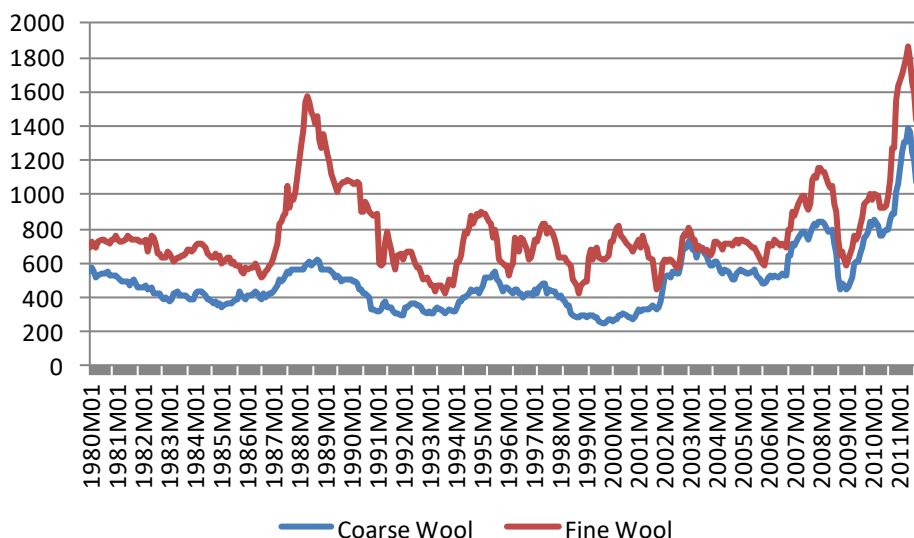
Figure 59: Average spot price of cotton in US cents per Pound for Upland cotton, January 1980 to December 2011, monthly data



Source: IDEA Consult based on IMF, Data and Statistics, Primary Commodity Prices

The second figure present similar price evolution, but this time from fine and coarse wool, using Australian wool exchange spot quotes, expressed in US cents per kilogram.

Figure 60: Australian Wool (fine and coarse³²⁰) Exchange spot quote in US cents per Kilogram, January 1980 to December 2011, monthly data



³¹⁹ Reasons for this high peak were the bad weather conditions and floods in some major cotton producing areas (Australia, Pakistan, China and India), but also the consequential 'panic buying' by cotton mills and export restrictions in order to protect local manufacturers (e.g. India). White G. (2011), "Cotton price causes 'panic buying' as nears 150-year high", The Telegraph - 4 February 2011

³²⁰ Coarse wool: 23 micron; fine wool: 19 micron

Source: IDEA Consult based on IMF, *Data and Statistics, Primary Commodity Prices*

Here, the price pattern is rather different in comparison with the cotton price evolution. The price evolution of coarse wool is rather similar to the price evolution of fine wool, but price increases and decreases are less pronounced (see for example the price increase around 1988, which was far more obvious for fine wool than for coarse wool). From 1995 until 2007, prices for fine wool vary, but on average fluctuate around a price level of about 600 cents per Kilogram. From 2008 onwards, the pattern becomes more volatile, with a significant drop in 2009, but an even more obvious price increase up to more than 1800 cents per Kilogram in 2011.

Over time, natural fibres, such as cotton and wool, have become relatively less important, and more and more replaced by synthetic and semisynthetic fibres, see next paragraph.

5.5.1.2 Synthetic fibres

Many synthetic fibres, such as nylon, polyester and acrylic, are made from petrochemicals. As oil prices have been increasing at a steady pace, this is reflected in the costs for synthetic fibres as well. Moreover and even more important when it comes to access to raw materials, the worldwide stock of petroleum is limited and will phase out over time. Some studies even expect this to happen in 10 to 40 years (Sorrell et.al., 2009)³²¹. This puts a major constraint to the use of synthetic fibres in the fashion industries the longer run.

The semisynthetic cellulosic fibres, viscose rayon and lyocell, are made from wood pulp. The increased use of these fibres have serious impacts on old growth forests that are often cleared and local farmers are displaced to make way for pulpwood plantations. In addition, often eucalyptus-trees are used which are very water-consuming.

5.5.1.3 Organic fibres

Major labels can order large quantities of organic cotton for a mainstream clothing line, but emerging eco-designers face a series of challenges. Most mills are not interested in producing specialty fabrics in small quantities, forcing designers to use an extremely limited colour palette (those olive greens, burlap browns and dusty off-whites) or find creative alternatives from recycling fabrics to making one-of-a-kind pieces (Challa, 2010).

5.5.2 Leather

First half of 2011, the Wall Street Journal published an article on prices and demand of leather in the fashion industry. Cattle-hide prices were in that period at their highest level in almost a decade, having jumped 24 percent from 2010 to 2011. The U.S., ranked third in annual cattle-hide production (China is first, followed by Brazil), had seen an increase in demand, partly explained by the growing middle class in countries as China and Vietnam, but on the other hand a shrinking supplies, putting serious pressure on hide prices. Besides the cattle-hides also the demand for exotic skins increased, because of a "rebound in high-end consumption." Some fashion companies even expect further increases in primary materials in the future (Celeste S., 2011³²²).

Another explanation of the increasing cattle hide prices is the fall in beef consumption, because of the increased popularity of veganism and the increased meat prices. As a consequence the cattle production fell 20 percent in Italy and 13 percent in France from 1995 to 2010, according to estimates from the European Union's statistics agency.

³²¹ Sorrell S., Speirs J., Bentley R., Brandt A., Miller R., "An assessment of the evidence for a near-term peak in global oil production", Technology and Policy Assessment function of the UK Energy Research Centre; Connor S., article from the Independent on August 3rd 2009: Warning: Oil supplies are running out fast. Catastrophic shortfalls threaten economic recovery, says world's top energy economist

³²² Celeste S. (2011), "Leather Costs Hit by Supply Squeeze", Wall Street Journal, March 8 2011

Besides, the decline in beef consumption on the European continent has restricted the availability of top-quality hides, which are free of scars and other defects. At the same time, Latin America, India and China - which account for the majority of leather production outside of Europe - have increased export duties on hides (Roberts A., 2011³²³).

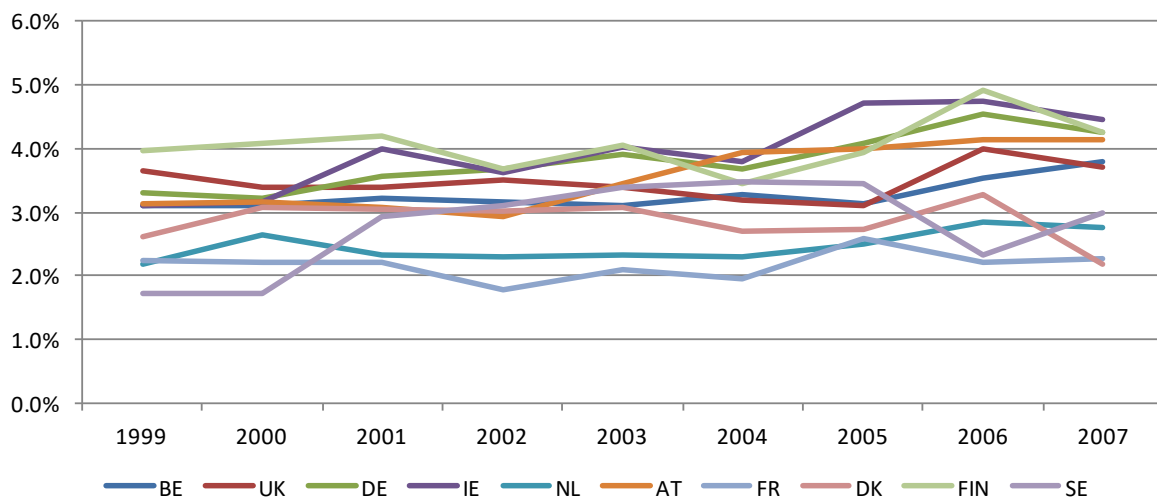
5.5.3 Energy

5.5.3.1 Energy use in the textiles industry

The textile industry is, in general, not considered as a energy-intensive industry (in terms of production processes), but the sector comprises a large number of plants which all together consume a significant amount of energy, both electricity and fuels (Hasanbeigi, 2010³²⁴). The share of electricity and fuels of a country's textile industry within the total final energy use of a country strongly depends on the structure of the textile industry in that country. Some textile processes are more energy-consuming than others. For some processes, the main energy source is electricity (such as cotton spinning systems) while for others (such as wet-processing) this is fuel.

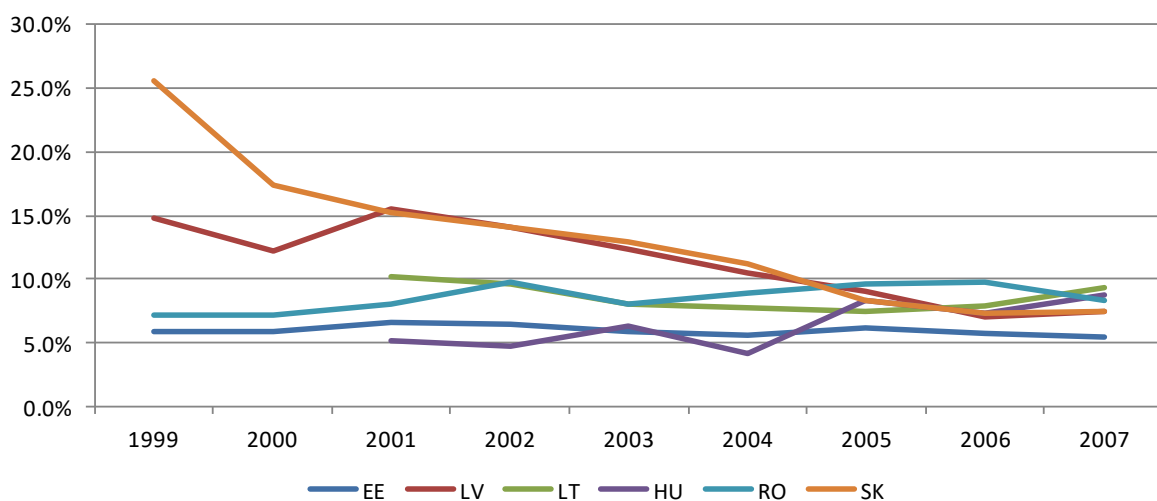
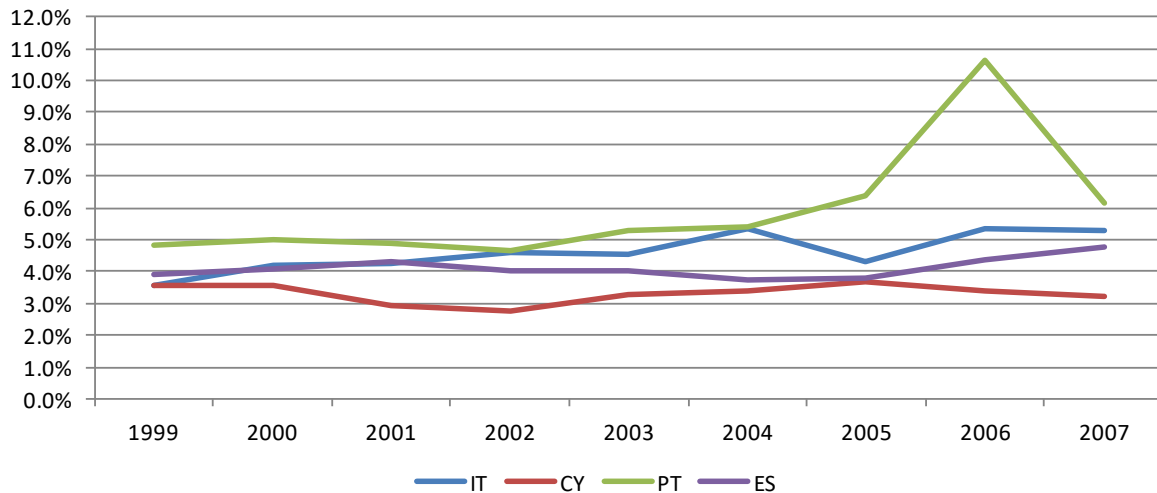
The following figures present the evolution of purchases of energy products in manufacturing of textiles in the period 1999 to 2007 in the different EU 27 countries, split up by geographic region.

Figure 61: Purchases of energy products (as a % of total purchases of goods and services) in manufacturing of textiles, 1999-2007



³²³ Roberts A. (2011), "Luxury brands scrambling as cost of leather soars", The San Francisco Chronicles, Bloomberg Businessweek, September 19 2011

³²⁴ Hasanbeigi A. (2010), "Energy-efficiency improvement opportunities for the textile industry", Ernest Orlando Lawrence Berkely National Laboratory, China Energy Group, Energy Analysis Department, Environmental Energy Technologies Division



Source: Eurostat

The analysis shows that in the Western and Northern European countries, the level of energy use stays more or less the same, between 2 and 5% of total purchases. The purchasing level in the Southern European countries is, on average, slightly higher, but also stays rather stable over time between 3 and 6%.

The Eastern European countries, on the other hand, started in 1999 from a much higher purchasing level, up to more than 25% in Slovakia. Over time, energy costs converged to a level of 5 to 10% of total purchases. However, this level is still higher than the one in the other European areas.

5.5.3.2 Energy use in the leather industry

5.5.3.3 Energy-efficiency improvement opportunities

Increasing energy prices put a heavy burden on the cost-side of production in the sector. Companies always seek opportunities to reduce production costs, without negative impact on their turnover or product quality. One way to achieve this, is to implement more energy efficient technologies and processes.

Hasanbeigi (2010) presents an extensive overview of potential energy-efficiency improvement solutions and opportunities in the textile industry, for different types of processes:

- Energy management programs
- Energy-efficiency technologies and measures in:
 - Spun yarn spinning process
 - Weaving process
 - Wet-processing
 - Man-made fibre production

A separate section discusses some cross-cutting energy-efficiency measures, related to electric demand control, electric motors, compressed air and pumping systems, fan systems, lighting and steam systems.

In addition, the study reports the main applicable emerging technologies and the use of renewable energy in the textile industry.

Figure 62: Extract from the list of energy-efficiency measures and technologies for the spinning process

No.	Energy-efficiency Technologies and Measures	Fuel saving	Electricity saving	Capital Cost (US\$)	Payback Period (Year)**
5.1	Spinning				
5.1.1	Preparatory process				
1	Installation of electronic Roving end-break stop-motion detector instead of pneumatic system		3.2 MWh/year/machine	180/roving machine	< 1
2	High-speed carding machine			100,000/carding machine	<2
5.1.2	Ring Frame				
3	Use of energy-efficient spindle oil		3% - 7% of ring frame energy use		
4	Optimum oil level in the spindle bolsters				
5	Replacement of lighter spindle in place of conventional spindle in Ring frame		23 MWh/year/ring frame	13,500 /ring frame	8

Source: Hasanbeigi (2010)

5.5.4 Impact on fashion businesses

The increasing prices (and price fluctuations) of raw materials and energy is relatively more important for those fashion businesses where the share of raw materials and energy in total costs is high and/or price competition is high. This is especially the case for the vertically integrated retailers and the mass retailers with private labels. Moreover, scarcity of specific raw materials is especially a challenge for those companies whose production depends on larger volumes, but do not possess a strong bargaining position vis-à-vis other buyers.

On the other hand, the increasing leather prices, especially those of exotic skins, in combination with decreasing supply (in general, but also in particular of high quality cattle-hides), put high pressure on the business strategy of the luxury brands, where exclusivity and quality are of extreme importance.

5.6 Counterfeiting and IPR

The share of counterfeit products is relatively high in the fashion industries and negatively affects the demand for EU fashion goods. The OECD calculated a counterfeiting factor of 8 for articles of apparel and clothing accessories in the OECD: the ratio of seized counterfeit products to legitimate traded products is for this product group

more than eight times higher than in total trade (OECD 2008). The increasing globalisation has made the problem of counterfeiting even worse (King et al., s.d.³²⁵).

While the reduction of counterfeiting to zero is not likely, an effective IPR strategy in combination with improved customs procedures and public awareness can help to reduce counterfeiting to an acceptable level (Berden et al., 2009; NetFinTex 2006; OECD 2008).

At the moment, trademarks and designs are the most commonly used IPRs in the fashion industries, followed by patents. However, the large dominance of SMEs (especially micro-businesses employing less than 10 people) in the EU fashion industries currently prevents the use of effective IPR protection in three ways:

- Many SMEs lack sufficient information related to IPR (NetFinTex 2006).
- The procedure to establish a trademark is costly and time consuming.
- If IPR would be violated, the current procedures do not allow for efficient enforcement.
- It is difficult to implement a strong IP protection due to continuous innovation in combination with a highly fragmented industry structure (King et al., s.d.)

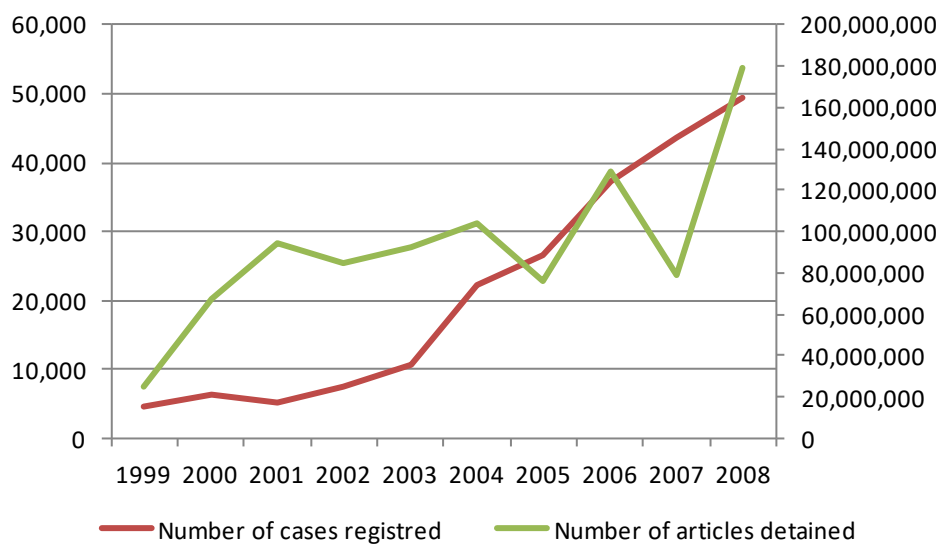
Given that one of the main competitive strengths of the EU fashion industries lies in its unique design and successful branding, often developed in very small companies, the lack of sufficient IPR protection mechanisms for SMEs is a threat to the EU fashion industries. In what follows, we estimate the importance of the problem of counterfeiting for the EU fashion industries' competitiveness and we present the most important existing mechanisms to protect IPR.

5.6.1 The problem of counterfeiting in fashion

According to the OECD (2008) and the EC (2008), fashion items such as clothing, jewellery, accessories, footwear still account for the largest part of counterfeit trade. The textile sector, including shoes, was responsible for 55,8% of the total number of interventions by European Customs in 2008, followed by a 10.4% for the jewellery sector. In terms of detained articles, the textile sector (incl. shoes) was only responsible for 9,9% of the total, and jewellery sector for less than 1%. Most of detained articles relate to the music industry -cassettes, CD's and DVD- (44% of the total) and cigarettes (23% of the total). The EC-report (2008) further shows that the problem of counterfeiting has increased over time, both in terms of registered cases as well as in terms of detained articles, as presented in the following figure. Unfortunately, these yearly data were not split up by sector, but because of this obvious sharp rise, we assume that also in textiles and jewellery the number of registered cases and detained articles has increased over time.

³²⁵ King A., Di Stefano G., Verona G. (s.d.), "Protecting innovation in low-IPR regimes: the case of fine fashion", Università Commerciale L. Bocconi

Figure 63: Evolution of registered cases and articles detained by European Customs, 1999-2008



Source: IDEA Consult based on EC (2008)

The following table presents the distribution of the detained articles by country of origin (i.e the country where the goods are produced). Although many infringers will try to hide the real country of origin of their counterfeits, and to this end use other locations to ship the goods to the EU (country of provenance), the global figures³²⁶ split up by country of provenance show a similar distribution as the ones split up by country of origin.

Table 2: Number of articles detained, expressed as % by country of origin and product type

	Sportswear	Other clothing (ready to wear)	Clothing accessories	Shoes	Jewellery
China	62.65%	60.32%	88.34%	93.42%	84.19%
Turkey	6.72%	12.78%	3.85%	0.77%	0.17%
Hong Kong	-	1.31%	2.94%	0.52%	10.42%
Malaysia	8.31%	3.62%	-	0.46%	-
Vietnam	1.98%	3.92%	-	-	-
Indonesia	4.91%	-	-	-	-
Pakistan	3.94%	-	-	0.29%	-
Others	6.94%	15.90%	3.97%	4.55%	4.27%
Unknown	5.53%	2.15%	0.99%	n.a.	1.06%
Total	100%	100%	100%	100%	100%

Source: IDEA Consult based on EC (2008)

³²⁶ The number of articles detained expressed as % by country of provenance were not reported.

Chaudry and Zimmerman (2008) describe a number of reasons that stimulate the growth of counterfeiting:

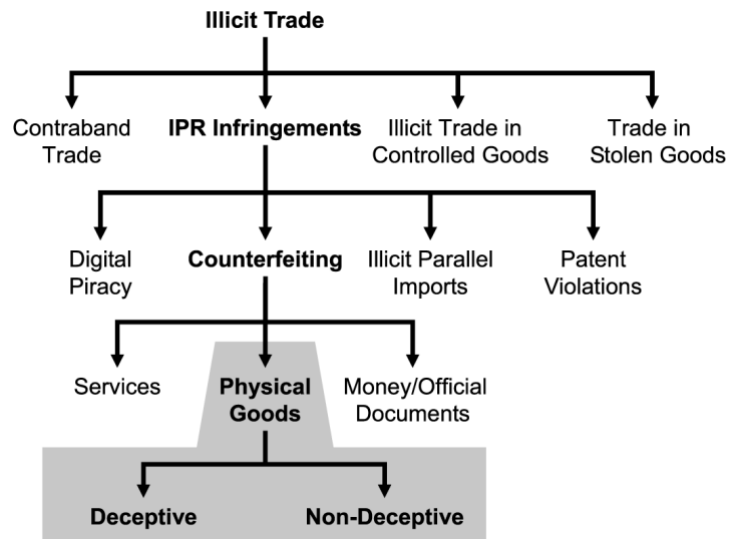
- **Low Cost High Technology = Low Investment, High Profits:** counterfeiters avoid all the costs related to creating and marketing a product, including R&D, advertising, quality control, acceptable minimum wages, a warranty service, and so on. Without all the start-up costs and benefiting from sharply reduced overhead costs, counterfeiting is vastly profitable.
- **Globalization and Lower Trade Barriers.** Especially free trade zones and free ports are attractive to counterfeiters, to ship the products into the free-trade areas and then to re-exported them. This allows the pirates to engage in "origin laundering" (i.e. true origin of these products is obscured or erased). These zones are also used for the manufacturing of counterfeits or to further process unfinished products, such as adding counterfeit trademarks or labels or repackaging.
- **Powerful Worldwide Brands:** Globalization has made it possible to develop truly global brands, but not all consumers can afford to buy them. Counterfeits offer a cheap alternative.
- **Consumer Complicity:** There is evidence suggesting that some consumers are willing to purchase counterfeit products even when they know the products are fake (see below: non-deceptive counterfeits).
- **Expansion of Channels and Markets,** for example the emergence of an affluent class in countries such as China, India. But also the increased popularity of the internet as distribution channel offers counterfeiters a new possibility to sell their products.
- **High Tariffs and Taxes:** implying extra costs that price consumers out of certain markets, especially in less developed regions/countries.
- **Weak International and National Enforcement:** The risk of starting a counterfeit products business is rather low in many countries for one very good reason: weak enforcement of intellectual property regulations (see also paragraph 5.6.2 below).

A next step is to translate the problem of counterfeiting into an economic value. Based on their study of 2008, the OECD stated in their updated version of 2009 that - starting from the 200 billion USD estimate of 2005 and based on the growth and changing composition of trade between 2005 and 2007 - a potential increase of counterfeit and pirated goods up to 250 billion USD in 2007. However, the OECD (2008) remains cautious and explicitly states that the available information on counterfeiting and piracy falls far short of what is needed for robust analysis and for policymaking (De Cat, 2010). Chaudry and Zimmerman (2008) are even more pessimistic and stated that it is actually impossible to determine the real size of the worldwide counterfeit product market since no direct measurement of counterfeit trade can be undertaken because of its illegal character. Besides the problem of identifying the correct number of counterfeited articles, literature reveals some other issues that make it difficult to determine the real problem of counterfeiting.

Green and Smith (2002) refer to the absence of an exact standard or agreement about the factors that should be taken into account when calculating the monetary value of counterfeiting for this non-transparency. Should it be based on objective and pure quantitative information such as production costs, lost sales or total sales, or should also more qualitative costs such as damages to the brand be taken into account? Should it be based on one figure or should a kind of composite indicator be used instead? Besides, they also referred to more indirect costs such as the social costs associated with lost government tax revenues, the suffering from consumers that bought unsafe counterfeits and the impact on employment in countries where the original brands are produced: should these be included and so to what extent? The same concerns have been proposed by Gessler (2009), who distinguishes six cost categories of counterfeiting: the cost to brand owners, government burdens, negative effects on consumers, child and forced

labour issues during production stage of the counterfeits, organised crime and terrorist funding activities of counterfeiters and the moral cost of counterfeiting.

Finally, relating to the concern of the different factors, also clearness about the content and definition of the concept “counterfeiting” is indispensable. A clear explanation has been provided by Staake T. et. al. (2009) defining it as follows: *“trade in goods that, be it due to their design, trademark, logo, or company name, bear without authorization a reference to a brand, a manufacturer, or any organization that warrants for the quality or standard conformity of the goods in such a way that the counterfeit merchandise could, potentially, be confused with goods that rightfully use this reference”*. This implies that



unauthorized use of brand names, characteristic colors, shapes, designs, and the illicit use of control stamps and marks of conformity are included. Other types of illicit trade such as digital piracy by private users, illicit trade in stolen goods and patent violations, however, are not covered. These are infringements of another nature where different methods are required to suppress them. In addition, the authors make the important distinction between deceptive and non-deceptive counterfeiting: in the first case consumers are not aware of the underlying IP-infringement and the counterfeiting character of the article they bought, in the second case they are fully aware of it. Both types of counterfeiting relates to different kinds of consumer behavior and sales tactics of the counterfeiters and therefore also require different actions to defeat them.

5.6.2 Existing mechanisms to protect IPR

Referring to Chaudry and Zimmerman (2008) and the concerns in the introduction of this section, weak national and international enforcement and a lack of IPR-protection is one of the main drivers of the growth of counterfeiting. In the following part, we briefly describe the current legal protection measures that are already in force in the EU, together with their biggest challenges for improvement. In a final paragraph, we refer to the legal protections for fashion designs the US.

5.6.2.1 Protection of design

In the EU, design can be protected as a registered industrial property right at a national level by filing a design at a national office under individual national laws, or at Community level by virtue of the Community design.

Design Directive (Directive 98/71/EC of the European Parliament and of the Council of 13 October 1998 on the legal protection of designs) aimed to harmonize the design right law of the different EU member states. The Design Directive requires all EU countries to enact laws to protect designs by registration and to confer exclusive rights on holders for a period of 5 years from filing, which even could be renewed for additional periods of 5 years, up to 25 years of protection. Further, the Directive left the specific mechanism for protection to cumulate legal protections for designs (Monseau S., 2011).

Even after the enforcement of the Design Directive, however, substantial differences remained between the laws of some EU member states. This had led to the introduction of the Council Regulation on Community designs: **Council Regulation (EC) No 6/2002**

of 12 December 2001 on Community designs OJ L 3, 5.1.2002, p. 1–24. This regulation provides European citizens with two EU-wide legal rights that protect designs, without the need for the enactment of individual national laws (Monseau, 2011):

Registered design rights:

A design that is registered with the Office of Harmonization for the International Market falls under this regime. The rights are similar to those that were established in the Design Directive. A registered design confers on its holder the exclusive right to use the design and to prevent any third party not having his consent from using it across the European Union. So there is no need to provide evidence of copying.

Unregistered design rights:

Up to this regulation, there was no formal protection at EU-level for unregistered designs. It means that, in countries without cumulative rights, new designs can be protected for a period of 3 years without registration. This reduces or at least defers differences in the laws between countries that protect designs under copyright laws at a national level which does not require registration and those with design laws that do require registration. Although, as been mentioned in the text of law, the registered design rights offer greater legal certainty (see “whereas (21)” in the box).

The registration of a design helps the owner to prevent all others from exploiting its new or original ornamental or aesthetic aspects, which may related to a 3-dimensional feature (shape of a hat) or 2-dimensional feature (textile print). However, in practice, only little use made of it, because of the different reasons mentioned in the introduction of this section: it takes a lot of time and considerable financial costs are involved, making it often not worthy because of the short product life cycle (often no more than one six-to-twelve month season) that does not justify these efforts, or simply because small organisation cannot bear these efforts (see intro).

In addition, the design rights only protect against identical or virtually identical copies of a design, such as copies made by counterfeiters or knockoff artists. They are not authorized to prohibit the derivative work of lower-end retailers where for example obvious changes to colours and/or patterns are made. Contrary to the design patents in the US, however, that only protect the ornamental elements of the design (see below), the Council Regulation defines design as the appearance of the whole or part of a product resulting from the features of, in particular, the lines, contours, colours, shape, texture and/or materials of the product itself and/or its ornamentation.

5.6.2.2 Other ways of protection³²⁷

- **Trademark protection**

A trade mark can be any sign that serves as a “marker” for a given product or service. It protects the owner of the mark by ensuring the exclusive right to use it to identify goods or services or to licence another to use it in return for payment. In addition, it helps consumers to identify a product or service on the basis of its nature and quality, indicated by its unique trademark.

The sign can be a particular word, such as a personal name, letters, numbers, stylistic elements, specific colours, as well as a combination of these various stylistic elements. Essentially, it needs to be a sign that makes your product or service visually distinctive from other products or services. In the case of individual trademarks, the sign must not be generic. For example filing the trade mark ‘polo’ for polo shirts would be refused, while filing the trade mark ‘polo’ for a perfume passes because it is not a generic or descriptive sign for a perfume.

³²⁷ IPeuropAware project (2009), “Intellectual Property, A business tool for SMEs” - A Guide for the Textile and Clothing Industry, the Footwear Industry, the Leather Industry – url: http://www.innovaccess.eu/handbooks_lang.html

Trade marks can be individual or collective depending on the ownership of the IPR. Collective trademarks are typically owned by trade associations or cooperatives for the benefit of their members and identify a particular product with distinct characteristics, such as the "Leathermark".

Depending on whether a company decides to file at the national, regional, European or international level, it has to file for trade mark protection under all appropriate class(es) that are relevant for the product that needs protection (e.g. the class of 'bags', 'clothing',...). These classes have to do with the goods and services for which the company registers its trade mark. The most common system at the international level is the Nice classification system for trademarks.

- **Patents**

Patents are intellectual property rights that guarantee ownership of an invention. To qualify for patent protection, an invention must meet the criteria of novelty, inventiveness and industrial applicability. Patents are usually valid for 20 years, depending on the relevant jurisdiction.

The core business of the textile, leather, footwear industries is not based on patents, but rather on design rights, trade marks and copyright. Nonetheless, they are used in these sectors, especially in the field of technical textiles.

5.6.3 Impact of counterfeiting and IPR on fashion businesses

Counterfeiting especially has a negative impact on those companies whose business model is built around a strong (internationally renowned) brand and where price competition is relatively low (as only premium margins make counterfeiting worthwhile). This is the case for luxury fashion brands and premium fashion brands, but also for renowned independent designers. A major difference between both is the ability to act upon this. Whereas the international fashion brands often have dedicated resources in place to better protect IP in the first place and to fight violations (conditional to the fact that it can be traced) when needed, independent designers often lack the knowledge and resources to protect and monitor IP.

6 CONCLUSIONS

[to include in final report]

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ANNEX 1: DEFINITION FASHION INDUSTRIES

Manufacturing	NACE Rev. 2	Description	NACE Rev. 1	Description	Comments
Intermediate goods					
	13.2	Weaving of textiles	17.21	Cotton-type weaving	All
			17.22	Woollen-type weaving	All
			17.23	Worsted-type weaving	All
			17.24	Silk-type weaving	All
			17.25	Other textile weaving	All
	13.3	Finishing of textiles	17.3	Finishing of textiles	All
	15.11	Tanning and dressing of leather; dressing and dyeing of fur	18.3	Dressing and dyeing of fur; manufacture of articles of fur	All
			19.1	Tanning and dressing of leather	All
Fashion goods					
	Clothing				
	14.11	Manufacture of leather clothes	18.1	Manufacture of leather clothes	
	14.12	Manufacture of workwear	18.21	Manufacture of workwear	=
	14.13	Manufacture of other outerwear	18.22	Manufacture of other outerwear	=
	14.14	Manufacture of underwear	18.23	Manufacture of underwear	=
	14.2	Manufacture of articles of fur			
	14.31	Manufacture of knitted and crocheted hosiery	17.71	Manufacture of knitted and crocheted hosiery	
	14.39	Manufacture of other knitted and crocheted apparel	17.72	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	=
	Footwear				
	15.2	Manufacture of footwear	19.3	Manufacture of footwear	

	Accessories			
	14.19	Manufacture of other wearing apparel and accessories	18.24	Manufacture of other wearing apparel and accessories n.e.c.
	15.12	Manufacture of luggage, handbags and the like, saddlery and harness	19.2	Manufacture of luggage, handbags and the like, saddlery and harness
	32.12	Manufacture of jewellery and related articles	36.22	Manufacture of jewellery and related articles n.e.c. All
	32.13	Manufacture of imitation jewellery and related articles	36.61	Manufacture of imitation jewellery All
Distribution				
Wholesale + agents				
	46.16	Agents involved in the sale of textiles, clothing, fur, footwear and leather goods	51.16	Agents involved in the sale of textiles, clothing, footwear and leather goods =
	46.42	Wholesale of clothing and footwear	51.42	Wholesale of clothing and footwear =
	46.48	Wholesale of watches and jewellery	51.47	Wholesale of other household goods Wholesale of watches, clocks and jewellery – own computations
Retail sale				
	47.71	Retail sale of clothing in specialised stores	52.42	Retail sale of clothing =
	47.72	Retail sale of footwear and leather goods in specialised stores	52.43	Retail sale of footwear and leather goods =
	47.77	Retail sale of watches and jewellery in specialised stores	52.48	Other retail sale in specialised stores Specialised retail sale of watches, clocks and jewellery – own computations

Source: IDEA Consult

ANNEX 2: EXAMPLES OF HS6 PRODUCTS IN BACI DATASET, AGGREGATED TO THE 4 SUB-CATEGORIES

HS6 code	Label of product
Intermediary Products (293 selected), among which	
410110	Bovine skins, whole, raw
...	...
410511	Sheep or lamb skin leather, vegetable pre-tanned
...	...
410800	Chamois (including combination chamois) leather
...	...
511211	Woven fabric, >85% combed wool or fine hair, <300 g/m
...	...
540760	Woven fabric >85% non-textured polyester filament, ne
...	...
580126	Chenille cotton fabric, width > 30 cm
...	...
580710	Label, badge, etc, of woven textile not embroidered
...	...
581091	Embroidery of cotton
...	...
Clothing (214 selected), among which	
610333	Mens, boys jackets & blazers, synthetic fibres, knit
...	...
610442	Womens, girls dresses, of cotton, knit
...	...
610610	Womens, girls blouses & shirts, of cotton, knit
...	...
610891	Womens, girls bathrobe, dressing gowns, of knit cotton
...	...
611239	Mens, boys swimwear, of material nes, knit
...	...
611691	Gloves, mittens or mitts, nes, of wool or hair, knit
...	...
620213	Womens, girls overcoats etc manmade fibre, not knit
...	...
620711	Mens, boys underpants or briefs, of cotton, not knit
...	...
420330	Belts and bandoliers of leather or composition leathe
...	...
430310	Articles of apparel & clothing accessories of furskin
...	...
430400	Artificial fur and articles thereof

...	...
Footwear (28 selected), among which	
640211	Ski-boots etc, outer soles, uppers of rubber, plastic
...	...
640230	Footwear, sole/upper rubber/plastic,metal toe-cap nes
...	...
640291	Boots, soles/uppers rubber or plastic, over ankle, ne
...	...
640411	Sports footwear, sole rubber or plastic, upper textil
...	...
640419	Footwear,sole rubber/plastic,upper textile, not sport
Accessories and Jewellery (47 selected), among which	
420222	Handbags with outer surface plastics, textile materia
...	...
621310	Handkerchiefs, of silk or silk waste, not knit
...	...
621600	Gloves, mittens and mitts, textile material, not knit
...	...
630520	Sacks & bags, packing, of cotton
...	...
650400	Hats, plaited or made by assembling strips of materia
...	...
711311	Jewellery and parts, silver, including plated silver
...	...
711719	Imitation jewellery nes of base metal including plate