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"Patterns of Industrial Upgrading in the Clothing Industry in Poland and Romania"

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PATTERNS OF INDUSTRIAL UPGRADING IN THE CLOTHING INDUSTRY IN POLAND AND ROMANIA

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Abstract

This paper aims at understanding the impact of industrial networks with foreign and other domestic organizations on industrial upgrading of the clothing companies in Poland and Romania over the past decade. The research presented in this paper is based on interviews carried out in ten large clothing companies in Poland and Romania. The paper shows that there are differing structural influences of buyer-driven global networks on the industrial upgrading of Polish and Romanian clothing firms. Taking these global buyers as exemplars to themselves, Polish and Romanian clothing firms follow relatively different upgrading patterns, experiencing more or less the same network relationships with foreign buyers whereas differing networks with other organizations in their countries. As the level of accumulation of knowledge and skills differs among the firms, the pace and level of upgrading differs too. This paper has proposed a stylized pattern but it should not be taken as inevitable since it also tries to show that some firms might skip some sequences. As a consequence, it is not a question of the positioning of the countries on a single upgrading ladder, but more accurately it is different upgrading ladders that have been climbed in each country. There is no single pattern for all of them.

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1. Introduction

International competition has reached such a level that it leaves little room for firms other than to cope with the new challenges as quickly as they can. Today they have to determine their market niches more rapidly than they used to and develop innovation cultures within the firm. A further element for a sustained strategy of continuous innovation and of keeping up with new technologies is engaging in national and/or international networks, including production, innovation, distribution, or other networks. To achieve these, firms need to put some effort into accumulation of technological capabilities and various skills.

We might assume that the very first stage of developing basic pre-investment, production and minor change capabilities would be accomplished in the early industrialisation period. Then comes the development of more sophisticated skills on the way to growth such as linkages (Lall, 1992), marketing, distribution, and major change capabilities (Ernst, Mytelka and Ganiatsos, 1998). However, in a transition economy, the pace of accumulating these skills within a firm is strongly associated with the level of development of the economy in a particular country.

In the transition economies literature, the progress of transition in Central and Eastern European economies is examined in several different ways. Micro level studies deal most often with the ownership transformations and restructuring of enterprises. This paper aims at understanding the impact of industrial networks with foreign and other domestic organizations on industrial upgrading of the clothing companies in Poland and Romania over the past decade. This is an attempt to assess the fruits of enterprise restructuring in the medium term, i.e. over the last ten years.[1]

[1] The prolonged and sluggish privatisation programmes have extended the period for restructuring, thus 10 years is still a short time for the needed restructuring within companies. Moreover, when East Asian examples are taken into account, their upgrading has spread over 30 to 40 years. Yet, the intensive experience of the CEECs with the market economy and with foreign partners goes back to the beginning of the 1990s.

The research presented in this paper is based on interviews carried out in ten large clothing companies in Poland and Romania. The companies interviewed have been selected according to the results of the questionnaire sent to 62 (29 Polish and 33 Romanian) clothing companies with more than 500 employees. The aim of this two-page questionnaire was to determine the degree of their equity and non-equity relationships[2] with foreign and other domestic companies in terms of quantity and activity, such as a supplier – customer – distribution relation, product and/or process development, quality improvement, training, R&D, or technology transfer.

Based on the questionnaire, five companies in each country have been selected and visited for in-depth interviewing. These five companies are scattered in different regions of the countries from southwest to southeast, and differ in terms of the extent of their partnerships with the foreign partners. This sample provides us with a spectrum of companies in the industry. In the rest of the paper we will make a distinction between the two most advanced and the two least advanced companies in terms of their success in upgrading, networking and growth, and consider the others as mid-companies.

In both countries, the first two companies out of the five have competitive advantages in both international and national linkages compared to the last two. The mid-companies are each specific in their own right. Being a rubber producer, the Romanian mid-company commenced garment production after 1990 as opposed to other companies in the sample, and being a producer of lingerie the Polish mid-company has quit OEM production and managed to survive without it (see Annex).

One should bear in mind that these companies are still undergoing restructuring in either organisational or technological terms. We acknowledge that they are still in the learning stage and are establishing their corporate strategies. Our attempt is to elicit the extent of their upgrading through networks with other organisations and to extrapolate how this differs among countries, even in the same geographical region.

[2] Equity relationships consist of joint venture and minority-majority acquisitions; non-equity types of relationships consist of subcontracting, OEM, licensing, research consortia, strategic alliances and cooperation with competitors.

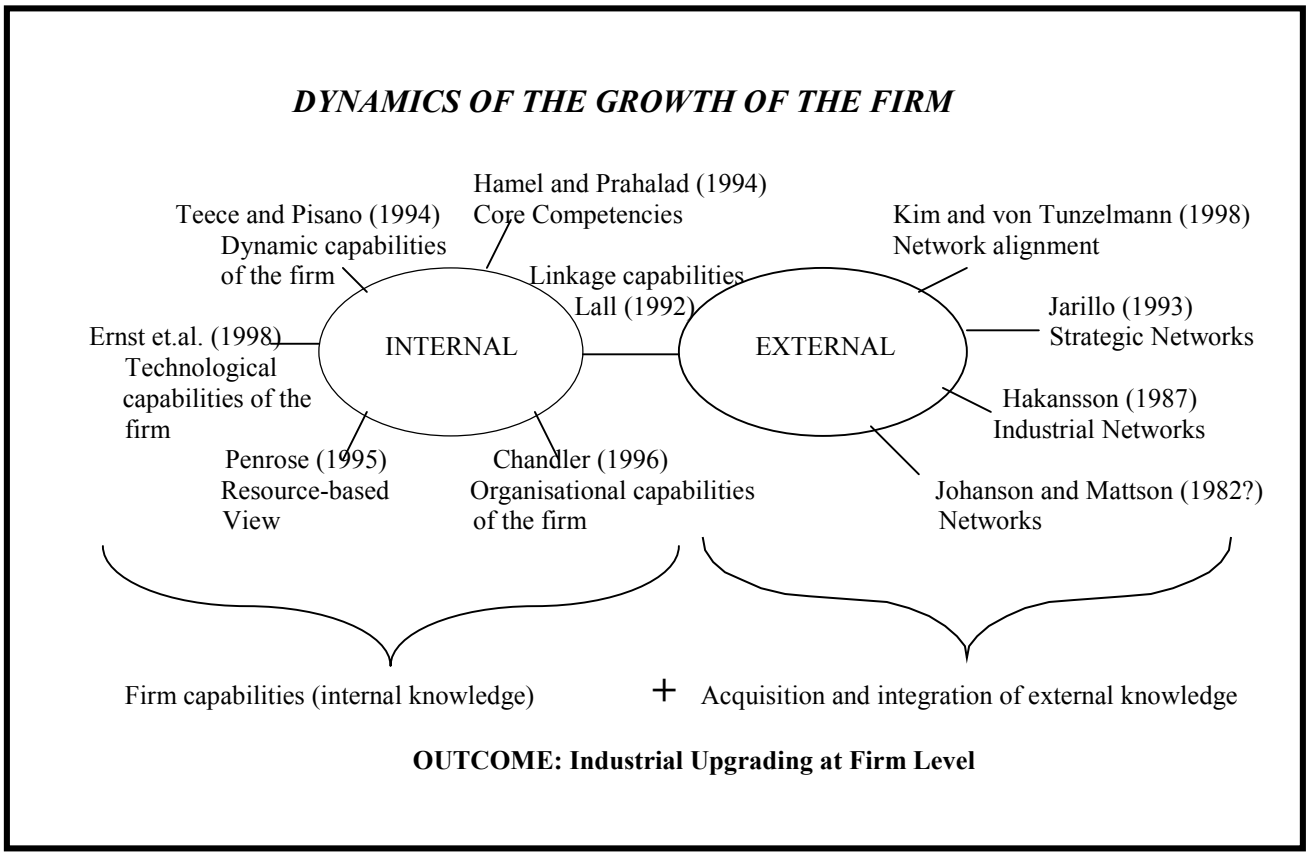
The second part of the paper deals with the theoretical and conceptual background. The third part proposes an upgrading ladder in transition economies particularly in the clothing industry, with the main emphasis falling on process upgrading. This part is based on the generalisation of the empirical work of ten company interviews. The fourth part focuses on the upgrading in Poland and Romania in the light of evidence collected from single interviews and tries to ascertain the role of networks that the clothing firms are embedded in. The fifth part concludes the paper and raises further questions on the subject.

2. Intertwining internal and external resources and capabilities en route to upgrading

Upgrading at the firm level embraces the internal and external dynamics of the firm, as it is a crucial factor in the achievement of growth of the firm. The resource-based view of the firm highlights the internal determinants of its growth. Penrose (1995) focused on the internal resources of the firm and their contributions to explaining the growth of large firms; similarly Chandler (1996) focused on organizational capabilities of the firm. Penrose (1995) argues that the process of growth emanates from the growth of knowledge within the firm, i.e. the managerial ability to see and to take the advantage of all the production possibilities. However, the firm might aim at acquiring resources from outside. Chandler (1996), on the other hand, defines the modern industrial firm as the collection of organizational capabilities, which hinge upon knowledge, skill, experience and teamwork accumulated within the firm and which are the source of firm's competitiveness. Unlike Penrose, Chandler states that firms try to reap competitive advantages from economies of scale, scope and reduced transaction costs through the use of organizational capabilities of the hierarchy. For explaining the ways in which a modern industrial firm grows, he strongly relies on the capabilities of managerial hierarchies. Acknowledging the functional and strategic capabilities of the firm to compete for market share and profits, the internal dynamic is provided by the organizational capabilities of the firm to continue its growth. In this context, the role of

external determinants in fostering capabilities within the firm and generating the growth of the firm is somewhat overlooked. However, neither external nor internal determinants alone are sufficient. It is argued in this paper that externalisation has to be complemented by internalisation so as to facilitate the acquisition and absorption of the external knowledge within the firm, which leads to upgrading.

Figure 1. Intertwining internal and external dynamics of the firm en route to upgrading



Thus the industrial upgrading can be defined as the outcome of certain improvements in the firm capabilities as well as acquisition and integration of (external) knowledge via external (f)actors, which let the firm to be faster than its rivals (Kaplinsky, 2000) and ensure an appreciated position among its peers.

One of the external determinants emphasised in this paper is the *industrial networks* of the firm with other domestic and/or foreign organisations. These networks can mobilise the external resources between actors and can develop new knowledge at the interface of different knowledge areas of these actors (Hakansson, 1987). They might or might not align to triangulate the interaction between state, market and firms (Kim and von Tunzelmann, 1998). Therefore, the specified organisations can be actors in the value chain (suppliers, buyers), market actors (producers, consumers), and universities, state organisations, research institutes, market research and consultancy agencies, etc. Thus the extent to which firms can establish and utilise these international and national linkages would be a significant indicator of both the capability to upgrade and the scope of upgrading.

Evolutionary economists who have developed the key aspects of industrial upgrading have examined the concept mainly in macroeconomic terms: whether a country improves its capacity to use its savings productively. However, as Ernst (1998) stresses, *firm behaviour* shapes the industrial upgrading within the boundaries of *industry* and *country* specificities. Moreover, this is strongly associated with the ability of firms to shift to higher value-added product and production stages, which may be hindered by increasing their *specialisation* within an industry. In the same context, any improvement in terms of functions within the firm is also considered as an element of industrial upgrading (Schmitz, 2000).

Therefore, in this paper, following Kaplinsky and Readmann (2001), we divide upgrading concept into four parts, the fourth category being different than theirs: product upgrading, process upgrading, functional upgrading, and organisational and managerial upgrading rather than chain upgrading. Next, we try to explain them in the context of the clothing industry. Process upgrading is increasing the efficiency of internal processes such that these are significantly better than those of rivals, by re-organising the production system or introducing superior technology. Product upgrading is introducing new products or improving old products faster than rivals. It might include moving into more sophisticated product lines. Functional upgrading is increasing value added by changing

the mix of activities conducted within the firm (for example, taking responsibility for, or outsourcing accounting, logistics and quality functions) or moving the locus of activities to different links in the value chain (for example from manufacturing to design). Organisational and managerial upgrading is improving the efficiency and effectiveness of production and non-production activities by acquiring new forms of organizational and managerial methods, such as teamwork, involvement of workers, application of ISO, etc.

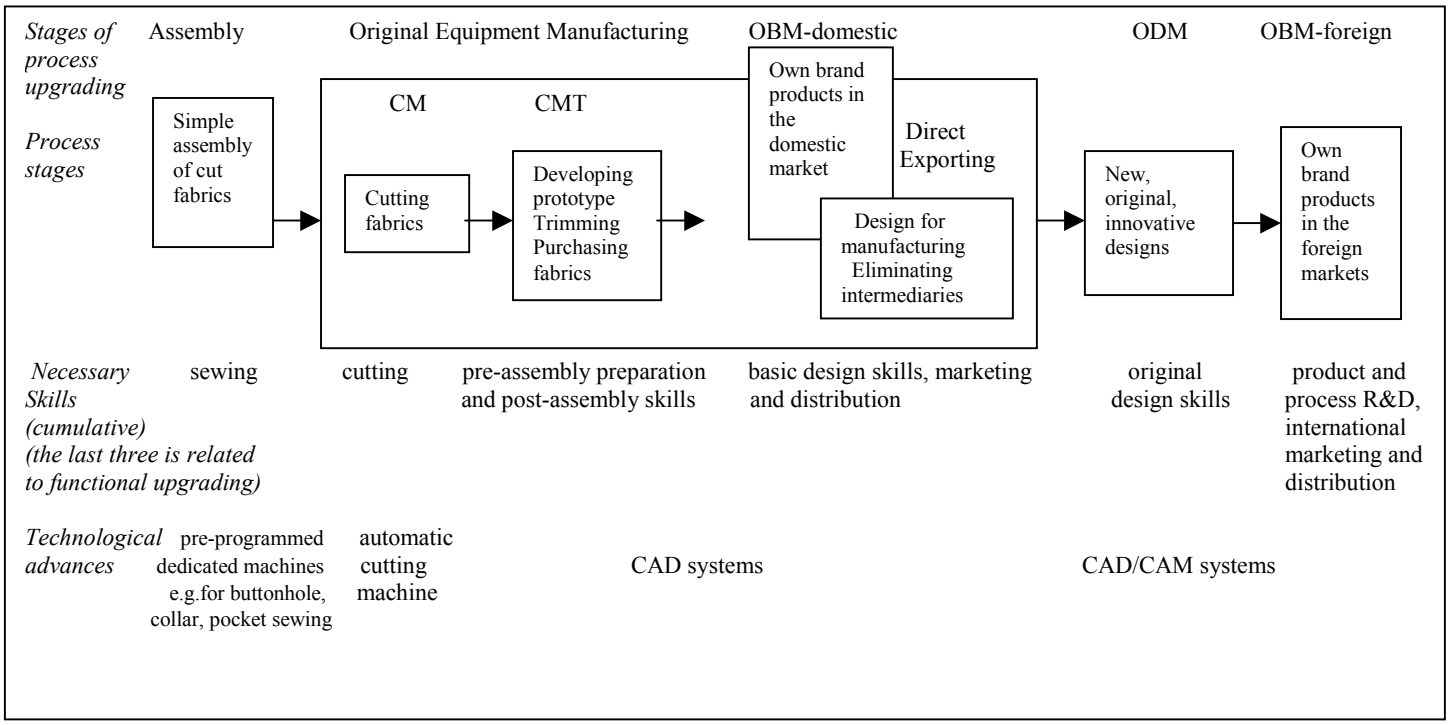
The main emphasis will be given to the process upgrading within the clothing firms with the objective of illuminating the patterns of process upgrading in two contrasting Central and East European countries over the last decade. The paper aims to give some clues regarding the implications of being involved in a buyer driven supply chain on the upgrading of Romanian and Polish firms as well as to capture the extent of networking in course of upgrading.

3. A Schema of Upgrading Ladders in the CEE Clothing Industry

The emphasis is given to the process upgrading since it is critical at the early stage of industrial upgrading in the clothing industry. Figure 1 suggests a possible pattern of process upgrading which is shown as a step-by-step process that is related to capital accumulation and learning, though it may not necessarily take this form. It starts with simple assembly usually under Outward Processing Traffic (OPT) regime in Europe. OPT means that the buyer supplies cut fabrics, thread, buttons, zips and trims, with everything to be assembled according to the design prepared by the buyer to be re-imported.[3]

[3] The underlying reason to supply all the raw materials to be assembled was driven by the fact that EU regulations are based on the protection of the European textile industry, i.e. transforming EU fabrics into clothing (Cleanclothes, 1999). Then OPT took the form of a preferential trade regime granted by the EU during the 1970s for developing countries (Pellegrin, 2000). It is through the extension of these regulations today that in CMT relations buyer companies still do not leave the OEM producer firms totally free in their choices of fabrics. Yet, most of the big CEE companies also use European fabrics in their own brandname production to maintain the quality.

Figure 1: A stylised pattern of process upgrading in the clothing industry



Source: Author's compilation from Hobday, 1995; Gereffi, 1999; Duruiz and Yenturk Coban, 1988, and interview outcomes.

The next stage is that of original equipment manufacturing (OEM), where the supplier undertakes more tasks within the production process, like cutting according to the patterns supplied by the buyer, or preparing and grading the patterns according to the prototype supplied by the buyer, or even purchasing the inputs for OEM production. Hence, the firm's production and technological capabilities should be gradually enhanced. Indeed this stage involves different upgrading steps: in the terminology of CEE clothing companies, the first being CM (cut and make), the second being CMT (cut, make and trim),[4] the third being direct exporting, which will be elaborated in section 4 in the light of some empirical evidence. The fourth stage is that of original brand manufacturing (OBM), initially in the domestic market and then in the European and if possible in the world market. The final stage is original design manufacturing (ODM) (Gereffi, 1999), where the firm is able to make its original designs rather than imitating

world trends and becomes a known and recognisable brand-manufacturer worldwide. As it is apparent, the process upgrading goes hand in hand with functional upgrading, if not with product upgrading.

In CM, the buyer sends the complete set of materials and documentation.[5] He sends the patterns prepared by his CAD system, and fabrics bought by himself through his own negotiation, and receives the ready garments to his fully computerised warehouse, where there are pressing and finishing facilities, before handing the garments to the retailers, marketers, and brand manufacturers. So an OEM producer only cuts the fabrics according to the pre-prepared patterns and sews them according to the prototype pre-defined by the buyer, adding almost nothing to the design from its own capabilities, except cutting. Instead in CMT, the buyer sends the fabrics and may leave it to the producer to buy from the pre-determined European fabric supplier. However, this time the OEM producer is equipped with a CAD system to produce the patterns from the one size sample sent by the buyer, and is able to discuss the construction of the prototypes with the buyer. Moreover, it is allowed to carry out the trimming, pressing and finishing as well, which means the preparation of a finished product. Now the OEM producer is more autonomous under the supervision of the buyer but more flexible regarding the use of its own capabilities, in either tight or loose schedules differing from buyer to buyer. There is more interaction going on between the buyer and supplier. The OEM producer levels up in production stages by exhibiting upgrading to a considerable degree, via acquisition of technology or the accumulation of firm capabilities. This is highly related to having an experienced and well-trained workforce, which is receptive to new methods and technology.

At this stage the foreign customer might prefer the OEM producer to be responsible for contacting the fabric and trim suppliers, under its instructions. The reasoning for keeping this under control recalls the reasoning behind the OPT relations (see footnote 3), because the OEM producer is asked to contact European fabric suppliers. Buying the materials

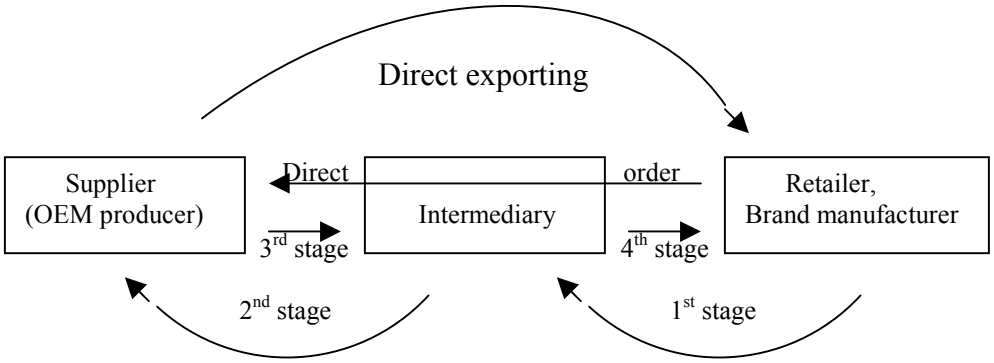
[4] The Romanian companies term CM and CMT production the 'lohn' system.
[5] CM is the most primitive stage of OEM and is relatively close to OPT. However, in CM, while the buyer is responsible for the preparation stage of the production, the cutting is added to the tasks of the OEM producer as well as pressing and finishing in some cases.

gives the OEM producer an opportunity to get to know the upstream in addition to the downstream of clothing industry. Engaging in the purchase of the fabrics, trims, etc. promotes the networking skills of the companies. This is basically what has started to happen in more advanced Romanian companies, whereas the Polish companies buys materials for buyer companies for a long time, either on their own or with the assistance of the buyer.

The tendency to use European fabrics in their own-brand products for the domestic market come as a result of knowing the better suppliers as well as meeting the European quality standards. The move to this stage, not surprisingly, occurs in parallel to a focus on the strengthening of their own-brand products in their domestic market. Generally, the underlying explanation for investing in a CAD system is not the preparation of the patterns for the OEM production, but rather for their collections of own-brand products. The CM stage of OEM is the period where they gain experience as well as accumulate necessary finance for such investments.

The important point here is the role of the buyer, mostly European, as an '*intermediary*' between the CEE firm and the global brand manufacturer, retailer or brand marketer. Until recently, except in companies like Benetton or GAP, the OEM producer rarely had direct contact with the brand marketer or retailer at this stage. As the retailers do not have production facilities they prefer to order the ready-to-wear garment to be prepared according to their specifications, such as the raw material, prototype, or quality. Thus the intermediate agent transfers the cutting, fusing, sewing, and sometimes pressing and finishing stages of production, as mentioned above, to the OEM producer (see Figure 2). In section 4.3 we show that this intermediary role is played by the more advanced Polish firms themselves against other small Polish firms, while the more advanced Romanian firms are not financially strong enough to be in this position.

Figure 2: Elimination of intermediary and passage to the direct exporting stage



The third stage of OEM, which is direct exporting, involves the elimination of these intermediaries (see Figure 2). There is not much difference from the CMT production in terms of the production process, but it indicates leapfrogging in the stratification of the supplier chain of the brand manufacturer, marketer or retailer from the second tier to the first tier.[6] The elimination of the intermediate firm is an advantage not only for the OEM producer but also for the main buyer, though it is not easy for the former to do so unless the latter wants to.[7] The challenge here is that the local companies have the potential to be direct exporters as there is some kind of accumulated knowledge within their firms, whereas they do not have competitive power, combined with a huge lack of global marketing abilities.

In addition, the changing trend in the retailing sector towards developing their own-label supply chains eliminates the intermediaries and leaves more room for the OEM producers to have direct links with the retailers. This is basically taking place in the supplier chain of the retailers, like Migros, Metro, Tesco, etc., who are 'manufacturers without factories' (Gereffi, 1999) in production of their own-label products. As these retailers are interested

[6] It can be said that, as second-tier suppliers, the CEE firms are more open to learning processes as their customers are dealing with production as well, while being a first-tier supplier means that the customers have nothing to do with the production and thus CEE firms are expected to be professionals with regard to production.

[7] This has happened in R.2 just by luck. They admit that they would hardly have managed to start direct exporting if the intermediary had not gone bankrupt. Just before the company became bankrupt, the agent of the bankrupt company had contacted them to continue working for the end-buyers, which were brand manufacturers like Mulberry, Jaeger, Harrod's and Aquascutum. These companies have agreed on trial stages with the Romanian company. Their OEM relationship has lasted for one year so far.

in providing some product lines to consumers at lowest possible prices, they choose to order from the ready collections of these clothing companies to be sold under their own brandname rather than dealing with the technical specifications.

Retailers, which are foreign, have existed in the CEECs since the mid-1990s and are keen to exploit every possible opportunity in their own interest, such as using the reputation of the OEM producer's own brand in the domestic market. The OEM producer, so as not to run the risk of jeopardising the reputation of its own brand through sale from the retailer's shelves rather than as a separate shelf in the shop (which is called a 'shop-within-a-shop'), might end up by creating a sub-brand under its own brand for this retailer customer. Another drawback in this relation is the push by the retailer to get same quality garments with the own brand of the OEM producer at a low cost. The OEM producer in no way uses the same input.

The assembly stage consists of total exploitation of low labour costs by the global buyers without any kind of interaction between the two. By contrast, OEM allows the supplier to be more autonomous and thus gives room to the supplier in terms of potential learning. Once they climb up the steps of OEM, they start thinking of strengthening their brand in their domestic market that has existed since the communist era. Therefore, it is not atypical that the final step of OEM, which is direct exporting, is pursued only after the (domestic) achievement of the OBM stage.

The sequential of stages in the upgrading ladder is not necessarily the only path, but can be one of the possibilities. A supplier company which is positioned in a supply chain of a global brand manufacturer, retailer or brand marketer (Gereffi, 1999) may not necessarily pass through all these stages before becoming a brand manufacturer. If they in one way or another pass through one of these stages, they ultimately end up with being on a dynamic learning curve (Ernst 1998). In the case of CEE companies, it is not only the technological matters but also, and perhaps more crucially, the business functions that they need to learn. Considering that they are in transition, there is a discernible need in the companies for organisational and functional learning which obviously will strengthen

their positioning on the learning curve. This is mainly what they benefit from out of their relationships with buyers. They learn how to make contracts, how to exercise and sustain these contracts, how to organise divisions in the company, what is marketing and distribution, etc. Therefore, the duration of and progress in learning is highly related to the managerial ability to develop close relationships with other parties, such as their business partners, universities, consultancies, etc., i.e. linkage abilities to use networks.

In the age of the Internet, it is no longer hard to find where the best technology is located. Once the company has sufficient resources to invest in a new technologically improved machine, the two sides find each other. The apparel machine and CAD/CAM system suppliers are either from the West or from Japan, which immediately after the transition opened their sales offices and employed representatives in these countries. The machinery is externally sourced in the clothing industry, yet today the competitive edge of the clothing industry hinges mostly on design skills, choice and use of new fabrics, meeting quality standards and efficient organisation of production stages, which are the fruits of growth of knowledge within the firm (Penrose, 1995). To be a brand manufacturer the firms should primarily aim at improving design skills, optimal reorganisation of production lines, marketing, distribution systems, etc. as well as raising capital for investments in new machinery, new production lines, and computer systems. The improvements in organisational capabilities of the firm (Chandler 1996), like greater flexibility, quick response and service, as well as new methods of motivating and involving the employees (Byrne, 1995), eases their relations with their partners. Basically, the industrial upgrading ladder comprises both aspects in accord with networking.

4. Evaluation of industrial upgrading in Polish and Romanian clothing companies

This section will try to answer to what extent the CEE clothing companies benefit from the global value chains (once they end up being on dynamic learning curves), and perhaps reflect their gains to the local commodity chains they have established. The product and functional upgrading will also be assessed in this section in the light of the

evidence from the Polish and Romanian clothing firms. In order to do so, four indicators of industrial upgrading in the clothing industry will be examined, which in the end dovetail the interaction of networking and upgrading with the growth of the firm. These indicators are: the extent of OEM relations; the extent of own-brand production; the extent of industrial networks with domestic companies; and the extent of relationships with universities, research institutes, market research and consultancy agencies.

4.1. Extent of OEM relations of CEE clothing companies with foreign buyers

Having OEM relations with foreign customers, the clothing companies guarantee being in the global value chain, which is an aspect of being involved in networks, more precisely in vertical networks. Seemingly, as explained above, there are expected gains of firms from being in the global value chain once they pass from the preliminary stage of assembly to OEM.

Historical background

Before transformation in the CEE firms, there were ongoing OPT relationships[8] with some foreign customers[9] via state trade institutions,[10] to a limited extent compared to their own production for the domestic market and exports to the Russian and Comecon market. In the early 1990s, the Romanian companies continued their OPT relations whereas the Polish companies stepped up to the first stages of OEM relationships. After a few years, they moved to CM and CMT production. Almost five years ago, they became real OBM producers in their domestic markets, with their own 'designs for manufacturing'. It is still contentious to what extent the more advanced Polish firms can

[8] Both Polish and Romanian companies had one or two foreign customers for 20 or more years, having started their relationship in the 1980s. Some relationships have come to an end, some continue today with improvements from OPT to CM and CMT or with no change at all.

[9] In 1980, EC had a general but still quite restrictive trade agreement with Romania, the only country among the former communist countries which wanted to show a degree of autonomy. Since 1986, MFA-type textile arrangements have been in force with Poland, Romania, Hungary, Czechoslovakia and Bulgaria. This agreement rejected textiles and clothing (T&C) taking part in the trade liberalisation agreements between EC and CEECs for a while after 1988, when the USSR fully recognised the EC and the EC-Comecon relations started. In 1990 and 1991, the selected quotas in T&C increased and were followed by an Association Agreement first with Poland in 1991 and then with Romania in 1993 that created free trade areas (Pelkmans, 1993).

[10] In Poland, they were called Foreign Trade Organisations (FTO). In Romania a special department of the trade ministry was in charge of each industry; called CONFEX for the clothing industry.

be considered as original design manufacturers. Some of them have designs that can be considered as 'new designs' by art-design educated and well-known Polish designers. As for the more advanced Romanian firms, there is no doubt that they are at the beginning of being domestic OBM producers, which are still endeavouring to develop their design skills as well as marketing and distribution systems, whereas the less advanced firms are even one more step behind (see Figure 3).

In these relationships the central and east European companies were in an extremely passive position, since the foreign trade organisations were handling the contacts and arrangements of all commercial relations between buyer and supplier. The oscillations in most of the clothing companies after 1989 was partly due to the lack of abilities of company managers to retain these relationships and play their role according to the rules of the market economy. In this sense, participation in the global value chain through OPT relations provided short-cut 'organisational learning' opportunities to CEE companies and widened their perspective in understanding what the dynamics of the market economy were in terms of price, quality and delivery standards of the products (Gereffi, 1999). They knew how to work with the global buyers to a certain extent as a result of their previous relations. They were sewing for the foreign buyers whatever they sent to them. However, today little is known about the depth of the relations at that period.[11] These relations were not the bulk of their businesses; conversely, the Russian market was the whole target. And when the presence of intermediary agencies is taken into account, we could conclude that the extent to which these companies were interacting was very limited. This might be the underlying reason why at the turn of the 1990s the global buyers had to teach the clothing companies how to fulfil their expectations and determine business relations amongst them in order to control them.[12] On the other hand, the local companies were and still are willing to learn whatever is taught to them by their customers, as they were seeking long-term relationships with these customers.

[11] It is mainly because of the relatively new positions of most of the interviewees in the companies.
[12] Just as the European food retailers, who invaded Central Europe in the mid-1990s and tried to develop their own-brand product supply chain recently, complain about the lack of a knowledge base and practice of the local food producers who do not know how to work for private label products and to comply with their specifications and rules.

The companies recovered only after they have been transformed into trading companies. Poland was quicker than Romania in transformations, since privatisation of Polish firms took place earlier than the Romanian firms (see Annex). The late (but active) integration of Romania into international production networks can partly be explained by delays and failures in privatisations in Romania compared to Poland. Other reasons include the need for investment in modern equipment to keep pace with the severe price competition and quality standards, as well as financial deficiencies, from which the Romanian companies suffer comparatively much more than the Polish companies. With a relative lag between the more advanced Polish and Romanian firms, they have overcome cash-strapped situations through OPT, since they received rapid cash flow without needing to afford the raw materials in the short term (Cleanclothes Campaign, 1999). For this reason, they still cannot simply leave OEM production, as they continue to finance their own-brand production via non-risky cash flow from CMT.[13]

There are two key points. The first is that as a result of the closure of the Russian market for exports, without OPT production it was almost impossible for many clothing companies to survive even for one year after the transformation, when the situation of the domestic market was taken into consideration. The second is that these companies are well aware of the fact that they cannot develop their businesses by relying solely on these relationships. Still today the domestic market, especially in Romania, does not support the companies in terms of profits. The less advanced Romanian companies especially, which do not have any competitive advantage in comparison to the more advanced ones, should continue to rely on CMT relations for a long while. The share of CMT production within the total production of the less advanced Polish clothing firms is less than their Romanian counterparts which puts them in a better condition in their domestic market. Despite having not very well-known brands, they are able to prepare their own collections and distribute them. Also, they hold licences from global brand-manufacturers, which necessitates sufficient technical capacity.

[13] OPT is regarded by a Romanian manager in the interviews of the Cleanclothes Campaign as 'a matter of survival, but not a good basis for running a company'.

Technological advances

It is known today that despite efforts during the 1980s by Japan, West European countries and the US to develop full automation in the clothing industry, it is hard to automate all production stages in the clothing industry, particularly sewing which is a combination of experienced labour with technologically improved machinery. Several projects in Japan, in the US and in Europe have ended up with other modest but generally useful innovations like automated seaming (Byrne, 1995) and specialised machinery like automated buttonholing or collar sewing. When CAD is considered as pre-assembly stage where design, grading and marking of patterns are prepared, the only fully automated segment in the assembly stage is cutting (first introduced in the 1970s). The labour-intensive characteristics of the clothing industry remain, as the one-machine / one-operator configuration of the sewing stage has not been altered. Developing countries are thus still attractive due to low labour costs, which makes them a part of the supply chains. In the last five years, labour costs in Poland have increased vis-à-vis Romania. Despite the decrease in the share of OEM production in total production of Polish firms, they are still considerable OEM producers for the foreign global buyers.

The technological advances have played a significant role in determining the process upgrading the firms have experienced. The more advanced Polish companies pursued technological changes in the industry more closely in the late 1980s than their Romanian equivalents. Among Polish companies, today's stronger market leaders have had their own CAD systems for up to 12 years and at least for 6 years, whereas even the more advanced Romanian companies have had these systems only for 2-3 years. Nonetheless, automatic cutting machines were barely introduced in more advanced Polish firms 2-3 years ago. It should be taken into account that the last technological improvements in most of the Romanian companies were conducted in the 1965-75 industrialisation period when Ceausescu came to power, with an attempt to catch up with the developed countries, yet they have not been followed up.

This picture at first sight implies a position of the Polish and Romanian companies on the learning curve in favour of Poland, which appears valid, but one should not be misled

regarding the extent of Romanian backwardness. In spite of the late introduction of CAD systems in Romania, they are close to the latest technology together with equally experienced labour force as in Poland, as well as having cheaper labour than in Poland.[14] The upgrading propensities seem different from country to country. Polish firms are stable at the second stage of OEM and show no tendency to increase their potential to form closer links with the foreign customers. Rather, they try to get rid of them and nourish their own brands. Romanian firms try to deepen their relationships with foreign customers and increase their customer base as much as they can.

Through the mid-1990s, the more advanced Romanian companies struggled financially and started to think about catching up in technology and developing their relationships with foreign buyers. Over the same period, the more advanced Polish companies were already technologically well-equipped and financially endowed, thanks partly to their long-term foreign customers. This gave them both financial and technical opportunities to direct their attention to the domestic market and improve their own brandnames. The Romanian firms have followed them in this path after at least 3-4 years of lag.

Technological learning

The first two stages of OEM relationships, CM and CMT, operate as training in terms of 'technological learning'. Firms learn better sewing techniques in compliance with quality standards and what machinery and type of fabrics are needed for quality production.[15] Also, the foreign customer is involved in purchase of machinery, training of engineers, technicians, and advice on production, management and financing.

In the CM and CMT stages, though both Polish and Romanian companies are specialised in the segment of clothing industry in which they are operating, in most cases a

[14] However, this situation does not affect many Polish clothing companies in terms of OEM relations, instead the import of garments into the domestic market from cheap world producers by street sellers at the price of the fabrics that Polish companies use pressure them to survive.

[15] For instance, the more advanced Polish companies in shirt production have licences of global brand-manufacturers to use the techniques the latter want Polish producers to use in order to maintain production standards: they cover the seams with high-density overcast stitching, sew buttons with cross-stitches for long-fast guarantee, use HAI collars tailored and stiffened with a high stand and replaceable fins, and stitch collars and cuffs with 0.6cm wide quilting. On this basis they won the Gold Medal of the Poznan International Fair in Autumn 2000 (Poznan Fair Magazine, 2001).

technician of the buyer company comes and stays for several months until the production of the ordered pieces finishes, and monitors the quality as well as teaching how to do one particular task or how to use one particular machine they brought for a specific sewing type,[16] etc. This is an advantage more than a disadvantage when the company can make use of these foreign technicians.[17] Basically, as they spend more time in the company, they make suggestions to the OEM producer about purchase of machinery, and advise on needs and changes in the production line. Furthermore, the OEM producer improves its customer base through personal contact with these technicians.[18]

Poland – Romania comparison

Pellegrin (2000) points out two facts. One is decrease in the overall OPT trends in all the CEECs after 1997 with the increase in the quantitative restrictions on OPT. The other is increase in the OPT specialisation in countries like Romania and Bulgaria in 1997 relative to 1991, yet not at the expense of OPT in Poland and Hungary. Nevertheless, the overall decrease can be partly explained by the increase in restrictions on OPT quotas. Especially when the increase in OPT relations of east European countries vis-à-vis central European countries is considered, the upgrading in the clothing companies becomes a matter of observation. Moreover, the trade liberalisation between the EU and CEECs has gradually altered the pattern of totally dependent OPT relations to more flexible and autonomous relations within a fiercely competitive environment, to which CEE clothing firms need to adjust.

The more advanced Romanian firms are at the middle stage of being both CMT producers and direct exporters. The more advanced Polish firms are CMT producers as well as being direct exporters. This situation occurs as a result of their existing skills which after obtaining the necessary capital accumulation through OEM production,

[16] These specialised machines are bought by the buyer firm for the production of a particular seam, button, collar, etc. and rented to the OEM producer for the duration of the production of the ordered pieces. If the OEM producer thinks that it is a useful machine to own for its own-brand production, it buys the machine from the buyer firm under different terms, otherwise the buyer firm takes the machine back when the production ends.

[17] When they have a problem on the production line either of their own brand or of other CMT customers, they consult these foreign technicians.

[18] As both sides develop good relations, when these technicians leave their company, they might bring the OEM producer as a supplier to their new company (interview with R.2).

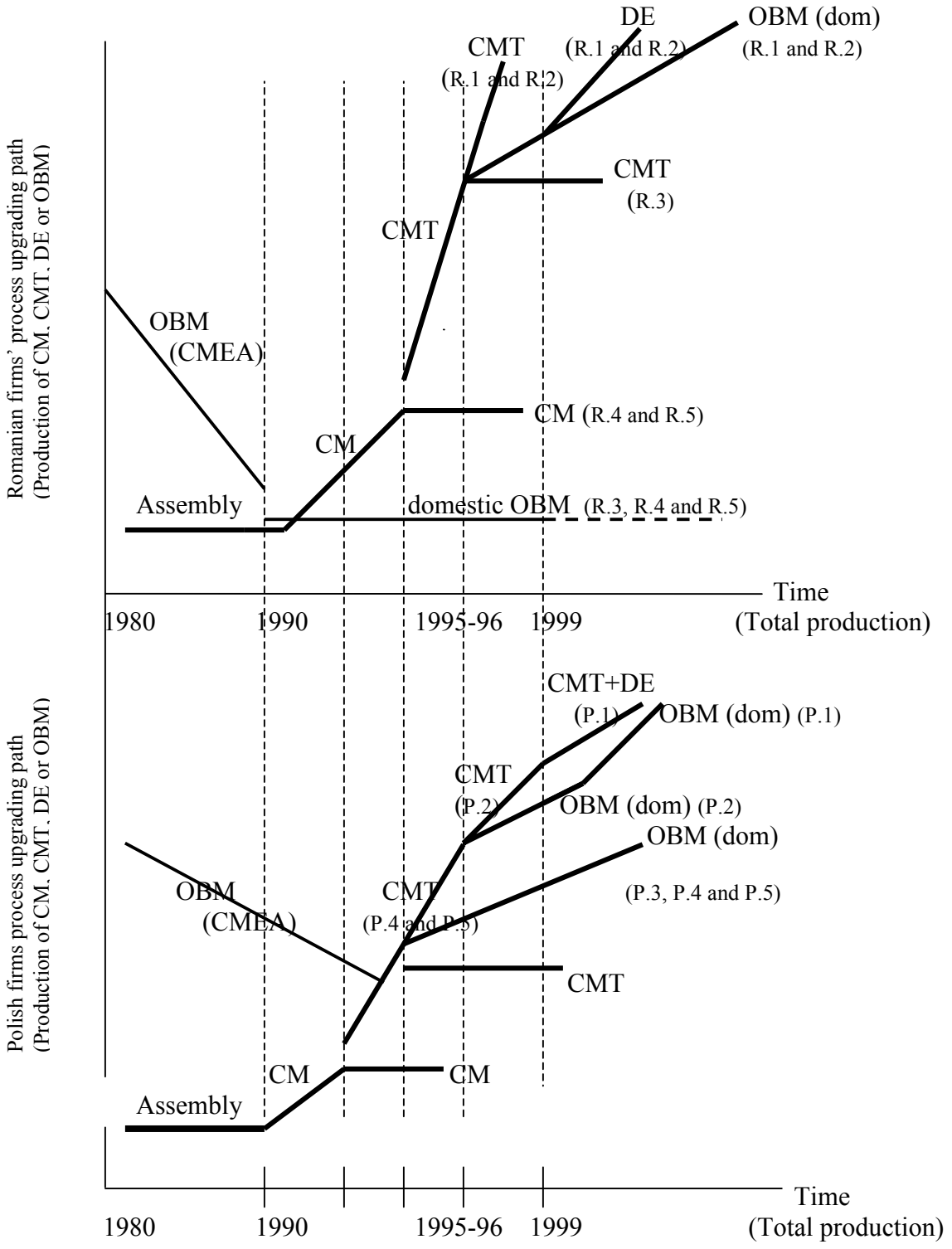
converted into their own-brand production and gave momentum to their presence in the domestic market. Also the appreciation of Polish zloty works against them in export markets and becomes a good reason to turn their back on OEM production as much as they can[19].

Because Romania was suffering more than Poland during the communist era in terms of bureaucracy in management, improvements in technology, etc., Romanian firms have to follow the steps of the upgrading ladder in order first to open up and then to catch-up on the world. The ongoing dire straits both in the financial sector and in markets do not help Romanian firms to focus more on their own-brand production. They are rather forced to lock into OEM relations for the next few years. However, there are some large Polish firms that have also locked into the same situation as Romanian counterparts, as a result of the mismanagement of the companies by NIF, the appreciation of zloty, the invasion of cheap clothing pieces from Far East, general decrease in the purchasing power parity in the country and the increasing labour cost in Poland.

Figure 3 tries to display these differences between the countries in question via graphical presentation. The comparison in Figure 3 is shown through time segments that should be analysed separately in order to grasp the simultaneity of the events. The firms and the associated upgrading stage are coupled as well. In the Romanian graph, between 1980-1990, while the firms were assembling for the foreign buyers, their domestic brand production for CMEA and domestic markets was continuing but at a decelerating speed, so that after 1989, these firms stopped producing their own brand clothes and gave momentum to OEM relationships with West European buyers. The less advanced firms (R.3, R.4, R.5) kept their brand from the communist period in a stationary position, yet the more advanced firms (R.1 and R.2) managed to develop fresh forms over time. Conversely, Polish firms never totally stopped producing their own brand clothes but decreased their volume in total production. When they thought the right time came to revitalise their brands in a rather fresh form, they started to re-market them domestically.

[19] There are exceptions within large Polish clothing companies, which are in financial difficulties due to wrong strategies that have been pursued by the management of the NIF and therefore have given

Figure 3: Process upgrading path of Romanian and Polish clothing firms over time



Source: Adapted from Garnsey (1998), derived from interviews.

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importance to OEM relations with the foreign customers, like Bytom.

In the next stages, there are always choices for the firms; either to pass into CMT from CM or stay in or locked into CM ('steady state' where there is no change in CM production), either to pass into domestic OBM and continue CMT at the same time or to stay in or locked into CMT (again 'steady state' where there is no change in CMT production).

The slopes are rather important as well. They show the speed of changes in relative shares of the upgrading stages (i.e. CM, CMT, DE, and OBM) in the total production of the company[20]. At the top of the Romanian figure, the steeper slope of CMT compared to OBM means that the share of CMT production still surpasses the share of OBM production within the total production. That of Polish figure tells us the volume of OBM production is increasing whereas that of CMT production is decreasing deliberately in more advanced firms only. One should bear in mind that some of the firms might be at some other stage of the ladder as can be understood by the codes of firms. So, the figure is able to expose the positioning of both the more and less advanced firms.

Another difference between firms in the two countries is the preference of Polish firms to be licensees of West European firms, like Pierre Cardin, in the domestic market. Moreover, almost all companies have held the licence of Woolmark for many years, as Polish customers consider it as a quality guarantee. This helped them to follow and update with progress in the wool market.

At this point, one thing should be clarified: that none of the OEM producer companies in our sample have the competitive power to play in the world market with their own

[20] The slope of each line can be defined as follows: $\frac{\text{change in production of upgrading stage}}{\text{change in total production}}$
where upgrading stage is CM, CMT, DE or OBM (domestic). Please refer to the titles of axes in the parenthesis when the slopes are the concern.

brands, so they cannot be presented as OBM exporters at this stage of their transformation, despite their desire to be so.

4.2. Extent of own-brand production in the domestic market

Historical background

CEE clothing companies did not come into being with OPT relations with foreign customers. They were already there with a long historical record, owning their own brandnames and exporting largely to the Former Soviet Union and communist bloc countries. They were forced to add momentum to their OPT relationships in order to survive. If they were not in financial straits, we would not know about the developments in the CEECs.

Moreover, what they have experienced is not the same upgrading process as in East Asia, i.e. a reverse product life-cycle (Hobday, 1995). They knew how to sew and they had experienced personnel in sewing, yet due to the centrally planned economic system, they neither needed to differentiate products nor felt the necessity to increase efficiency. More advanced Polish companies were pursuing the technological changes, if not the Romanian ones. Only after the transition was the clothing industry characterised by a competitive market structure with foreign and domestic competition.

Their brandnames were only representative of the then giant state-owned companies. Given the lack of competition, they were producing for the Russian market and whatever they produced was bought. The designs of these clothes and the colours used were significantly different from West Europe. Most of the production was for military use in most of the factories. Their products in no way met the quality standards of the European market and had bad reputations as low quality products that hindered any possible attempt to make inroads into foreign markets.[21] This is why the foreign customers were involved only in assembly under OPT relationships to use the skilled labour force at low

[21] That is, it was impossible to sell these products other than to communist bloc countries.

cost, rather than engaging in CMT or direct exporting which brings more interaction into the producer - buyer relationship.

There were several reasons why clothing firms have increased their focus on CMT relationships with foreign customers rather than focusing on their brandnames. Firstly, as they were very big companies with a huge production capacity, after the demise of the CMEA market, they should have converted idle production capacity into more fruitful use. Secondly, the demand of domestic customers was negligible. Thirdly, they were lacking competitiveness in foreign markets due to the reasons noted above. Lastly and most importantly, financial weakness was an enormous drawback to strengthening their brandnames after 1990, while they were trying to survive on their own resources. The firms with clever management through numerous means, which do not coincide with one another, have overcome the basic obstacle of financial strength. This took different amounts of time for each company. Polish companies, as mentioned before, have relied on cash flow from their OPT relations as well as small shares of sales within the domestic market. Their situation was not as dramatic as the Romanian firms, which had nothing to rely on except OPT relations, following the discontinuation of exports to the Former Soviet Union. Two more advanced Romanian companies have managed to overcome financial deficiencies through establishing joint ventures with an Italian investor as a solution to the crisis period of the company in 1991 (R.1) and through modifying the financial sourcing scheme of the company (R.2). At the time of the interviews, the other Romanian companies were still relying on their CMT partners, and not thinking of developing a design unit within their firms.

Revitalizing their brandnames

After a time, the export market conditions pushed the more advanced companies to think about rejuvenating their brandnames. In no way is OEM production as profitable as own-brand production. In the case of Romanian firms, since they have accumulated knowledge from these partnerships, though in the absence of technologically improved

machinery and systems,[22] they did not lose time in implementing them in order to strengthen their already existing own-brand's domestic market position. They became quite successful in just 1-2 years. However, the number of these firms is just a handful.

The idea of strengthening or launching new brandname(s) and/or lines within the brandname(s) varies from firm to firm, whilst the years more or less coincide. In Poland, the segmentation of the products started in 1995-6. Some took the advice of the consultancy firm Arthur Andersen in pursuing opportunities for market segmentation; some developed the strategy within their management or marketing departments. At the time, the new lines addressing young people were new ideas in the market. They have successively added new brands to their traditional brandnames. All Polish companies have established their own brandnames in the domestic market with differing competitive power, control and reputation. They have succeeded in putting more value into new brands and lines since 1996, while launching new brands and lines. By launching these new brands, P.1 has aimed at dividing its consumer segments according to income: high income, middle income and low income consumers. P.2 has introduced a novelty in the domestic market through a system which is advertised as '100 way suits' for different occasions. P.4 has failed as a result of an early decision for diversification in the business before the firm was mature enough in its own segment.[23]

In Romania, firms R.1 and R.2 have chosen to introduce a totally new brand besides their own traditional brands, as a result of the trends in the business market and a need for a new image for the firms in the market, otherwise the old brandnames were a weak form of resistance against cheap imports from other low-cost garment producer countries. The formation of different lines within new brands has been influenced either by the changing CMT orders of the foreign customers or by the designer(s) of the firms who pursue the

[22] Their technology was Russian. However, it is well known that American, Japanese and German technology is the best in the clothing industry.

[23] P.4 had three times changed its management after the transformation. The latest management has taken the decision to focus on what they do best, that is women's wear. However, the previous management exaggerated abilities and without market research jumped into production of men's collections, as an organiser of producers rather than producing themselves in the factory, and got the licence of Pierre Cardin's women's collection. Both of them failed: the first because of very strong companies in men's wear and the second because of the high prices of Pierre Cardin for traditional P.4 customers and the lack of reputation of Pierre Cardin's women's collections among customers.

objective of creating a consumer base in the market that knows their dress style. R.3, R.4 and R.5 have their own brands with no significant influence in the market and low sales percentage in their production, so that they cannot be taken as OBM even in the domestic market.

Poland-Romania comparison

Just as in Ernst's (1998) comparison of Korea with Taiwan in the electronics industry, in Poland there is more concentration on the development of *own-brand* products and a *European brand image* as a long-term goal, while Romanian firms have focused primarily on a continuous upgrading of their position as OEM suppliers. This is the first bifurcation point for the countries to develop their upgrading according to different patterns.

To do so, Polish companies give emphasis to their own-brand production in their market, whereas, except P.1 and relatively P.2, the others have not increased the proportion of own-brand production relative to OEM production. To alter the proportion of OEM to own-brand production by volume is one of the main aspirations of the companies in Poland, as the proportions by value are just the opposite of those by volume. All of them have complained of the lower profitability of OEM exporting, but since they still do not have competitive advantages even in their domestic markets, they are compelled to continue working with foreign companies in their supply chain. This therefore does not go beyond being a major long-term target of the biggest companies.

Technological learning

As far as the clothing industry is concerned, it is unexpected to have many differences in firm behaviour in terms of technological learning, as the production stages show homogeneity and thus the sources of learning are limited. Therefore, the pattern of technological learning is the same whereas the applications might differ. This is basically related to the low-technology nature of the industry. In the early stages of upgrading, the companies focus on *inter-organisational learning* with the foreign customers, which have enabled them to upgrade rapidly from relatively simple to increasingly complex forms of

international OEM arrangements. Scope for technological learning does not go beyond these relationships, with the exception of relationships with the specialized university faculties in textile engineering, though not art design faculties. In terms of machinery, the dominant type of learning is 'learning by using' (Malerba, 1992), through use of technology or learning on-the-job through training on-the-job. So, they do not go beyond being a user of the technology. However, they are capable of reflecting the capabilities that they obtain through learning by using on the reorganisation of the production lines to optimise efficiency and thus productivity. The clothing firms call these people 'technologists', and they most of the time work with CAD unit personnel. This is one of the advantages that they learn directly from their foreign OEM customers.

This stage brings about the development of marketing and distribution skills in the companies. P.1 and P.2 have experienced several changes in the organisation of the marketing departments and developed distribution channels with other leading Polish firms in complementary clothing segments, as they are concerned with improving their position in the domestic market more than R.1 and R.2. Yet, the latter are forming such co-operations in distribution rather sluggishly.

4.3. Extent of industrial networks with domestic companies

This section will cast light on the production and distribution networks between domestic firms at the national level. There are two aspects of national production networks: one is between large and small firms, the other is between more advanced and less advanced firms, which are horizontal networks in contrast to the former.

The former is a reflection of the OEM relations with foreigners over the domestic producer market by the large companies. In practice, when the large companies establish an OEM relationship with a foreign buyer, they transfer the production of these orders to the small companies, which are functioning as small-scale subsidiaries of these large companies, i.e. having different management and independent status but controlled by the mother firm. This structure is not confined to more advanced companies in Poland, as

companies in less advanced positions have such small companies as affiliates, too. Most of these small firms were incorporated into them when they were giant state companies during communist era, and were separated when they were transforming into trading companies after transition. These small companies, located in towns and villages, have their own OEM relations but most of their production capacity is exploited by the large companies, as the latter do not want to keep more than one production unit in big cities due to the high cost of producing in the cities. Also, when they have difficulties in meeting the demand of foreign customers they subcontract other small firms. At this stage, none of them have any propensity to shift their production to low labour cost countries.

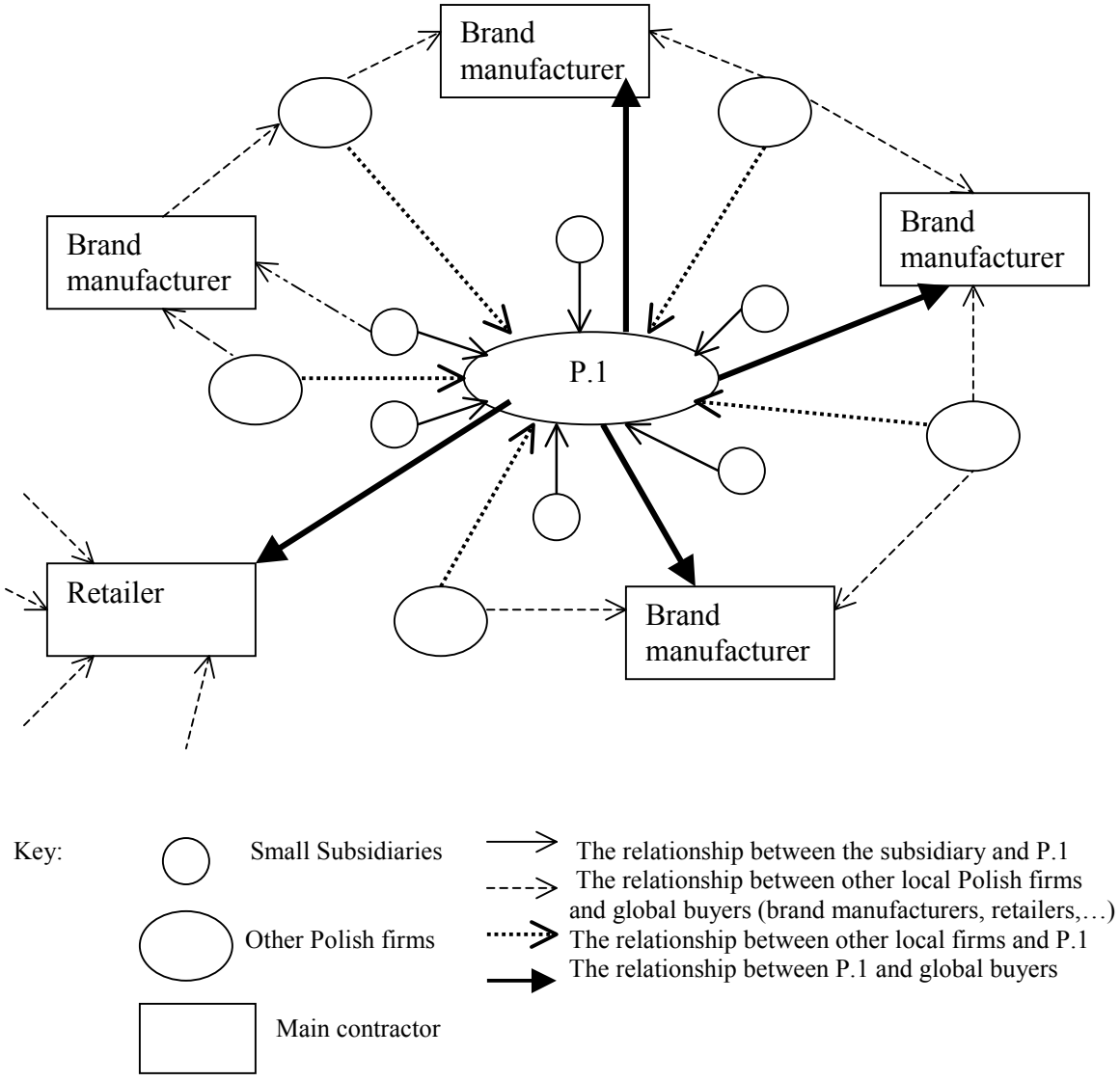
The more advanced Romanian firms do not have such a network, rather they have the outlook to create their own network of Romanian subcontractors. It seems that the demand of foreign customers is higher than their capacity, and as these more advanced companies try to increase their quality their prices increase as well. So, through having subcontractors they aim to meet the demand of foreign customers in terms of both capacity and costs.

In the end, they all want to move from production to fashion design. More advanced Polish firms put their effort into this project, while more advanced Romanian firms perceive the changes in the trends but still concentrate to a larger extent on the OEM production.

The second aspect of production networks is confined to more advanced and less advanced Polish companies (see Figure 4). Apparently, the only successful example has been P.1, where it plays the *'network organiser'* role. After launching a new brand in the second half of 1998, the vice-president developed the idea of complementing their own products in this new brand with other products. So they started to subcontract other large Polish clothing companies, which are good at men's coats, men's knitted products, shirts, ties, belts, etc. P.1 prepares the designs and give the materials to the firms in relatively less advanced position, yet there are more advanced firms among them to whom P.1

gives suggestions only. All these companies, which produce for this brand, have the licence of the brand from P.1 in order to be able to sell the products they produced for this brand within their collections. It works very well that the same company has created another brand with lower quality at cheap prices, where it wholly subcontracts the producers of complementary products under its instructions for designs and materials. This brand is sold only by the organiser firm P.1 in its own shops. The origins of this idea presumably go back to the time when P.1 started to cooperate with a well-known, good-quality shirt company for sale of their products in their common shops in 1997. After this shirt company became one of the licensees for the good quality brand, they considered merging in order to play as a giant in the market, yet things did not go well and now shirt production is licensed to another producer.

Figure 4: A simple illustration of production networks between agents in Poland



Such a network formation has not been observed between Romanian firms, apart from the marketing co-operation of R.1, which is a shirt producer, with a Romanian tie producer firm. However, they are considering opening shops together for distribution of their products, just as men's shirt and suit producers in Poland did from the mid-1990s.

In Poland, there have been failures as well. Just about the time that strong Polish firms were introducing new lines and brands, P.4, one of the women's wear producers, had wrongly decided to launch its own men's wear collection under two new brands. They

prepared the designs and subcontracted other men's wear producer Polish companies, two of which are P.5 and P.2. P.4 quit, as the brands were unsuccessful in competing with the established brand names like Wolczanka, P.1 and P.2. So, the rule to play in Polish clothing market for the time being is that every player should play within its own boundaries.

4.4. Extent of relationships with universities, research institutes, market research and consultancy agencies

The relations of the clothing companies with other organisations than firms are immensely determined by the firm's needs at any one point at a time. These needs arise from the lack of capabilities within the firm. As the only way to source technology is externally, under package purchases that include installation of and training on the machinery, if they have serious problems they contact the machine supplier. In Romania, if the warranty period is over, they might contact the textile engineering faculty of Gh. Asachi Technical University in Iasi or CERTEX, an institute that is specialised in textiles. Also when they plan to make investments in new machinery, they consult these organisations not only to know what the state-of-the-art is and where to find it, but also where to use the new technology in the factory to get the most benefit out of it, or indeed whether they need it at all. Despite there being a specialised faculty for textiles and clothing in Lodz in Poland, none of the companies mentioned that they have any kind of relationships apart from recruiting their graduates as production manager, technologist or designer.

Regular participation in international and national textile and clothing fairs helps exchanges of knowledge and becoming informed as to the latest machinery, fabrics and designs.

Polish companies are very much concerned about their market shares, and work very closely with market research agencies, since they are in competition with one another. In

the mid-1990s, the more advanced companies benefited from the consultancy agencies but they do not work with them any more.

The role of state organisations in network alignment is one of organising meetings between companies and foreign customers. Polish firms participate at the Poznan international fair twice a year with their collections to get orders from the Polish customers and to meet new customers. Romanian firms join activities organised by Romanian embassies in West European countries and in Bucharest to meet the potential customers.

5. Conclusions and further questions

This paper shows that there are differing structural influences of buyer-driven global networks on the industrial upgrading of Polish and Romanian clothing firms. Taking these global buyers as exemplars to themselves, Polish and Romanian clothing firms follow relatively different upgrading patterns, experiencing more or less the same network relationships with foreign buyers whereas differing networks with other organisations in their countries. As the level of accumulation of knowledge and skills differs among the firms, the pace and level of upgrading differs too. This paper has proposed a pattern but it should not be taken as inevitable since it also tries to show that some firms might skip some sequences. This means that some of them might move among or simultaneously engage in OEM and domestic OBM, while some others might focus only on OEM or on domestic OBM. As a consequence, it is not a question of the positioning of the countries on a single upgrading ladder, but more accurately it is different upgrading ladders that have been climbed in each country. There is no single pattern for all of them.

Below Table 1 provides a summary of the comparison of Polish and Romanian clothing firms' upgrading patterns in the light of indicators used in the paper. The indicators help dovetail networks of the firms with their pattern of upgrading.

Table 1: Summary table of the comparison of Polish and Romanian clothing firms

Indicators	**Polish firms**	**Romanian firms**
Extent of OEM relations with foreign buyers	- have not benefited in terms of technological learning and introducing technological advances to the firm - try to diminish the share of OEM relations within their total production	- have benefited from the interaction with the foreign buyers in terms of technological learning and introducing technological advances to the firm, - have benefited from technicians of these buyers within the firm - try to proliferate and deepen their relationships with foreign buyers
Extent of own brand production in the domestic market	- developed their own brands in their domestic markets earlier than Romanian counterparts - put intensive effort to strengthen their positioning with their brands in their market - aim at being OBM in the foreign markets	- lagging behind the Polish counterparts - most of them still could not initialise their own brands - more advanced firms put effort to strengthen their brands in the domestic market.
Extent of industrial networks with domestic firms	- there is an organised web of networks within domestic companies via a network organiser clothing firm - the other domestic firms are a part of this web in a hierarchical structure (large advanced firms are licensors, whereas small laggards are subcontractors)	- no network development among domestic firms at all - unrealised idea of having subcontractors by the second more advanced company.
Extent of relationships with universities, research institutes, market research and consultancy agencies	- no relationships with universities - limited relationships with consultancies during the mid-1990s when they were in need of supervision	- extensive relationships with universities for consultancy in terms of machinery and organisation of production process - relationships with independent consultants

The evolution of the OEM route of East Asian and Latin American countries in the global production networks is different as well. The strategies followed differ: Polish firms establish multi-location entities as well as generate formidable network structures,

Romanian firms seek to develop national OEM arrangements, and East Asian firms choose to divert their production to low labour cost neighbourhoods in Asia. The networking between different organisations also changes according to the environment. Polish firms have rather loose relations with other organisations apart from other firms; Romanian firms are in need of consultancy both in technical and in organisational issues. The national innovation systems in each country particularly in the clothing industry serve in different ways, having retrospective structures. So a further research question can be to what extent national systems of innovation affect the constellation of networks for industrial upgrading.

Lastly, being stuck in the OEM relationships might label some firms as laggard, but this does not necessarily show that these firms lack capabilities to upgrade. It is a matter of time and willingness, and its extent again differs among firms. The diffusion of knowledge within OEM partnerships and the assimilation of technology transferred alter from one to another. The use of other networks (that arise within systems of innovation) is varied, too. On top of upgrading discussions in the context of OEM, there is a new debate on the functional classification of OEM as traditional and 'advanced' OEM in electronics industry, where in the latter the technological capabilities of the firms nurtured through traditional OEM are such that they catch-up with the technological frontier and supply products with their own process technology. This leaves us further questions of whether in the clothing industry firms might go on with OEM relationships at an advanced level or follow the foreseen stages in the name of upgrading.

ANNEX

Table A1: Information about the companies in the research sample

Romanian Clothing Firms

Company code in descending ranking	Year of foundation	Year of privatisation and method of privatisation	Number of employees	Percentage of exports	Products
R.1	1950	1996 – MEBO	Over 1500	90%	Men's/boy's shirts, ladies' blouses
R.2	1959	1994 – MEBO	1000-1500	95%	Women's/girls' outerwear
R.3	1954	1995 – MBO	750-1000	75-80%	Men's/women's outerwear, sportswear, workwear
R.4	1896	1994 – direct privatisation	900	92%	Knitwear
R.5	1991 - via separation from SOE clothing firm	1995	1000-1250	96%	Men's wear

Polish Clothing Firms

Company code in descending ranking	Year of foundation	Year of privatisation and method of privatisation	Number of employees	Percentage of exports	Products
P.1	1945	1993 – NIF	Over 1500	11-25%	Men's suits
P.2	1949	1993- NIF	750-1000	60%	Men's suits
P.3	1961	1995	500-750	26-50%	Lingerie
P.4	1908	1992-NIF	1000-1500	75%	Women's outerwear
P.5	1945	1991 –NIF	1000-1500	73%	Knitwear

Source: Questionnaires sent to the Polish and Romanian firms in November-December 2000.

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