

Does Outsourcing Create Unemployment?

The Case of the Danish Textile and Clothing Industry

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Abstract

Outsourcing and job losses to countries with lower wage costs are common to many Western countries, and are issues of great public concern due to their economic and social impact. This paper looks at the impact on labor of a dramatic change in the Danish textile and clothing (T&C) industry, causing large reductions in the total level of the employment. This development, which is well known in most Western countries, is characterized by strict rationalization and outsourcing strategies, but has been of a larger magnitude in Denmark than in many other places. In this connection, one would expect a major increase in unemployment among former T&C workers. To address this issue we follow each individual worker employed in the T&C industry and seek to answer the question whether transitions into unemployment are higher than the manufacturing industry average. Contrary to expectations we find that although employment in the T&C industry drops by more than 80% from 1975 to 2000, a surprisingly large number of employees who leave their jobs, or are laid off, are rehired within the same industry until the early/mid 1990s. After this point the majority is able to find jobs in other industries. Moreover, only a small fraction of people from the T&C industry enters unemployment compared to the manufacturing industries in general, while a larger fraction enters retirement and education. Concurrently with this development, we find that the inflow of people into the T&C industry is declining sharply. Hence, based on these findings we argue that the reallocation problem of the T&C industry generally is solved through a natural phase out, and through the ability of employees to find work in other sectors along with a gradual stop of recruitment of new and younger employees.

Keywords: Textile and Clothing Industry; Labor Mobility; Unemployment

JEL Classification: J23; J24; L67

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1. Introduction

Being one of the oldest sectors in the history of industrialization, the manufacturing of textiles and clothing (T&C) has a long tradition in the European as well as in the US economy. As such, the industry is often referred to as one of the ‘traditional industries’ although the sector has gone through dramatic organizational and technological changes in the last couple of decades. Because the European T&C industry is the biggest textile producer in the world, and the third biggest producer of clothing, it is still considered a major industry in the European economy. However, despite the industry’s powerful position, it does seem to have a gloomy future ahead – a future which seemingly, if not to say undoubtedly, already has announced its coming. For quite some time, the European T&C industry has been playing a leading role in terms of innovation, design and technological advancements, yet the production of textiles, and especially of clothing, has remained overly labor intensive. As such, much room for competition driven by cheap wage costs has been left open, which has been taken advantage of in Asian countries in particular. Today, the European industry remains vastly vulnerable with respect to labor cost differences across world regions, and as the industry’s workforce within the EU countries amounts to more than 2 million people, it is obvious that the economic and social consequences of such increased foreign price competition are of significant importance.

1.1. A Scary Aspect of Globalization

The structure of the European T&C industry is dominated by privately owned small and medium sized companies². As such, the production of textiles and clothing is a very diverse and heterogeneous industry. From an evolutionary theoretical standpoint this is a great strength as such a structure weakens the impact of foreign competition due to product diversity and niche production. However, at the same time such a structure also implies the potential of a very small degree of industry concentration meaning that coordination among producers (i.e. in terms of product research and development) becomes a cumbersome and difficult task. Trouble is that such coordinated effort very well may be of great importance in order to withstand increased price competition from low wage world competitors.

Jointly Europe and the US are still dominating the production of both textiles and clothing, however, despite this apparent leading position much have changed in the past decades. Fierce competition has emerged – especially from developing countries. This is not

² The average number of employees per European textile/clothing firm in 1999 was 19 people [Stengg, 2001]

only due to low wage costs, as the increased internationalization of the world must be said to be responsible for the developing world's simultaneous import and application of both high quality production equipment as well as increasing stocks of know-how. Combined with cheap labor such developments obviously make a dangerous cocktail for the Western T&C industry – especially when considering the very attractive markets the US and Europe constitute with respect to life style products. Hence, in the last 20 years the production of both textiles and clothing has skyrocketed in many less developed Asian countries, while the production in the developed world (and even in the Americas) has decreased. Today, China is the largest single producer of clothing, while its textile production is catching up fast with Europe's. China has, for instance, already become the world's biggest buyer of textile machinery [W. A., 2002], and the industry in countries such as Indonesia, India and Vietnam has experienced similar patterns of development. Focusing on the Far-East Asia as an economic region, employment in textiles has increased by 50% from 1980 to 1995, while the increase in clothing has been well above 100%. The increasing domination of Asia must also be seen with emphasis on China's involvement with the WTO. It is no secret that Europe's import of textiles and clothing has increased tremendously in the past years (today Europe is a net importer of both textiles and clothing), despite still existing quantitative trade restrictions favoring the European industry. These restrictions, however, are gradually being removed according to the WTO agreements on textiles and clothing (ATC), which effectively means that by the year 2005, China, will no longer be bound by upper limits on exports of such products.

Naturally, this bleak future has put an immense pressure on the European T&C industry, which has responded by restructuring and modernizing its production and organization of work. This process has basically been going on since the late seventies or early eighties, and has resulted in several changes in the industry. In general, the production has been reoriented towards more innovative and high quality products, design and fashion. Most cases, however, have involved some form of delocalization of labor intensive production tasks, such as outsourcing, to countries like Poland, Tunisia, Morocco and Romania [Stengg, 2001]³. Other strategies including branding, slides of trades, and mergers and acquisitions have also been adopted. In this connection, our primary interest rests with the loss of a vast number of work places due to plant closures and labor re-allocations. From 1980 to 1995 the textile industry in

³ The common element of this group of countries is obviously low labor costs, but also a greater proximity to Europe than, say, Indonesia, India, Vietnam and China – all of which exhibit even lower wages.

Europe lost 47% work places, while the corresponding figure for clothing is 40%⁴, and although production has declined to a much lesser extent due to increasing productivity, the decline in employment seems to continue. In absolute numbers the loss of workplaces amounts to almost 2 million jobs, which is a large number even in a sizable region as the EU. The question therefore arises: What happened to all the people who lost their jobs? The search for answers to this question is the primary focus of this paper.

1.2. Paper Scope, Structure and Data Resources

Obviously, the turbulent period in the T&C industry described above has set its marks on all European countries. Hence, to address the question of what has happened to the many people who have experienced the loss of a job within this industry, focusing on the entire European economy would be a big task. First of all, differences in data availability and quality across countries would seriously limit the scope of such a general analysis, and secondly, although the decline in the industry share common traits across Europe, its actual evolutionary path across countries and regions is likely to exhibit big differences. Combining these arguments it therefore seems reasonable to narrow the case, and continue where data sources allow for detailed and region specific analysis. In the following, we limit our analysis to the case of the Danish T&C industry, and leave extensions for future work.

The paper is structured as follows. In section 2 we first take a brief look at the particular industry responses in the Danish T&C industry, from which we specify two mutually exclusive hypotheses about the fate of employees who leave or loose their job in the industry. In section 3 we turn to the demographic specificities of the declining workforces of the textile and clothing sector, and make the argument that the nature of decline differs across the two sectors in the sense that the clothing sector experiences a larger movement towards a better educated workforce. To support this claim, in section 4 we investigate the employment in- and outflow in each sector, whereas section 5 deals with the development in the sectors' firm structure and productivity. In section 6 we turn to the fate of the people who lost their job in the face of the decline in the T&C industry, while section 7 concludes on our findings.

The following analysis is conducted on data extractions from register-based data sources (CCP-data created by Statistics Denmark), which comprise all persons in Denmark between 16

⁴ Corresponding figures for the Americas in the same period (1980-1995) are 30% for textiles and 20% for clothing [Stengg, 2001].

and 74 years old, who at one point in the period from 1980 to 2000 have been employed within the private sector. All records are based on ultimo November registrations, and through these data we are therefore able to obtain a concise snapshot of each included person's state in all years. Hence, our sample is a panel data set including all individuals employed once or more within the T&C industry on a full time basis.

2. The Danish Textile and Clothing Industry

In Denmark the turbulent period experienced by the European T&C industry forced several changes in the industry's organization of production. Being faced with a severe price competition based on large wage difference disadvantages, the rationalization strategies pursued by the industry have primarily been concentrated on keeping high quality products, while cutting production costs – in particular wage costs. As such, the response has generally been to move the most labor intensive production processes to low wage countries. The typical manual processes such as sewing, folding, packing, and cutting have in this manner been moved abroad, while the more capital intensive processes such as dyeing, printing, weaving, knitting and spinning to a large extent have remained within Denmark, as have tasks such as design, logistics and distribution. In this way, the composition of labor in the domestic industry has changed according to the three general strategies highlighted in table 2.1.

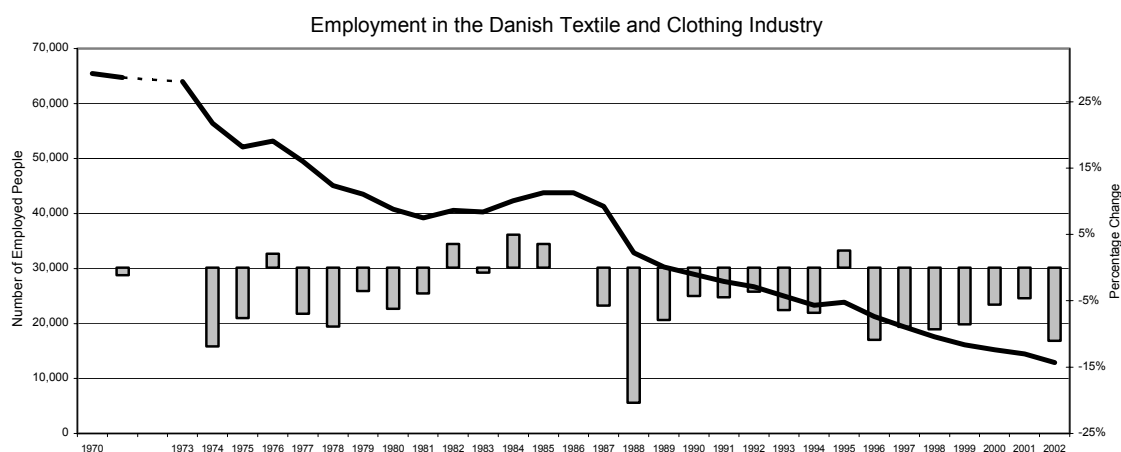
Table 2.1: Rationalization Strategies of the T&C Industry

<i>STRATEGIES</i>			
	Outward Processing Traffic (OPT)	Cut, Make & Trim (CMT)	Sourcing from Own Design (SOD)
Foreign Production Intensity	LOW	MEDIUM	HIGH
Foreign Production Tasks	Sewing Packing	Sewing Packing Cutting Quality control Yard goods refinement	Sewing Packing Cutting Quality control Yard goods refinement Yard goods purchases
Domestic Production Tasks	Design Logistics Distribution Yard goods purchases Cutting Yard goods refinement Quality Control	Design Logistics Distribution Yard goods purchases	Design Logistics Distribution

Source: Dansk Tekstil og Beklædning [DTB, 2000]

As seen from the table above, OPT is characterized by a relative small movement of production relative to CMT but more so to SOD. More specifically, the outflow of jobs in OPT is concerned only with sewing and packing. CMT includes cutting, yard goods refinement and quality control, whereas SOD on top of that also seeks to move the task of purchasing yard goods abroad. Typically, only design, logistics, and distribution, which are the most human capital intensive processes, are commonly kept domestic. Naturally, these rather ambitious rationalization countermeasures have caused a large structural change of the industry implying a huge impact on the workforce, and on the thousands of workers who have left the industry or were laid off. Indeed, the overall employment in the industry has dropped tremendously as the following figure clearly illustrates.

Figure 2.1: *Development in Employment in the Danish T&C Industry*



Source: Statistic Yearbook 1975 and STO various years

Note: Missing data between 1970 and 1973. The bars indicate the year to year changes (%) in employment. Employment in the Leather manufacturing sector is included in this graph. This does not, however, alter the general picture as it only account for a small fraction of the industry's total employment.

The graph depicted in figure 2.1 shows a dramatic development in employment in the Danish T&C industry. In general the employment has declined strongly since 1973, and despite a break in this trend from 1981 to 1986, caused by an increased consumption of life style products in connection with the emerging yuppie culture, the overall change in employment is startling. Over the entire period the loss of jobs amounts to more than 50,000 corresponding to an immense drop in employment of more than 80%, and the drop in production has been around 30%. As such, the European textile and clothing experience has certainly not left Denmark untouched. Yet, while the industry has declined employee wise, the employment relocation and

outsourcing has made it possible to change the organization of work and production in the industry with a clear increase in GDP per employee as a result. The following figure illustrates this development.

Figure 2.2: *Development in the T&C Industry's GDP*



Source: STO, various years

Nevertheless, although the industry has been able to increase its GDP per employee due to outsourcing strategies, this has come at the price of a vast fall in the industry's domestic employment. Hence, with an employee reallocation problem of this magnitude, it would not be surprising if the question concerning the fate of the thousands of workers losing their job could be answered simply by unemployment.

2.1. Specifying Two Hypotheses

According to table 2.1, the majority of the jobs lost in the rationalization process of the Danish T&C industry have been frontline jobs, which typically comprise job tasks dominated by manual processes. In this connection, manufacturing tasks such as sewing, packing and cutting are characterized as low wage jobs requiring a minimum of skills to perform. Henceforth, when a low waged, low skill employee is laid off due to rationalization countermeasures, or simply due to plant closure, it is both reasonable to believe and highly possible (yet pessimistic) that this person enters unemployment. This argument is strengthened even further considering the high Danish unemployment from the late seventies to the late nineties. In this connection it

would probably be too optimistic to suggest that the employee reallocation problem faced by the T&C industry solved itself, so to speak, through a smooth inflow of laid off T&C workers into other industries. Based on this, we specify two mutually exclusive hypotheses with respect to the loss of work places in the T&C industry.

1. *The likely but pessimistic:* Employees, who leave or loose their job in the declining industry, enter unemployment in large numbers, which cause social and economic industry specific as well as personal problems.
2. *The unlikely but optimistic:* Employees, who leave or loose their job in the declining industry, escape unemployment by entering jobs in other industries, which only cause minor disturbances with respect to unemployment related problems

3. Textiles and Clothing: Dissimilar Declines

By looking at figure 2.1 it is more than clear that there has been a major decline in the number of employees in the T&C industry as a whole. However, as the production of clothing is highly labor intensive relative to the more capital intensive textile production, it seems likely that the rationalization strategies specified in table 2.1 are adopted more easily within the clothing sector. As such, one would also expect labor force delocalization, i.e. outsourcing, to be more profitable in the clothing industry, and thereby exploited to a greater extent relative to the textile sector. In this light we can therefore not assume that the nature of decline in the one sector corresponds to that of the other, and looking at the T&C industry as a whole could therefore be misleading. Hence, we decompose the T&C industry into the sectors of textiles and clothing to take the differences that exist in production methods with respect to labor and capital intensity into account. This simple grouping is illustrated in table 3.1.

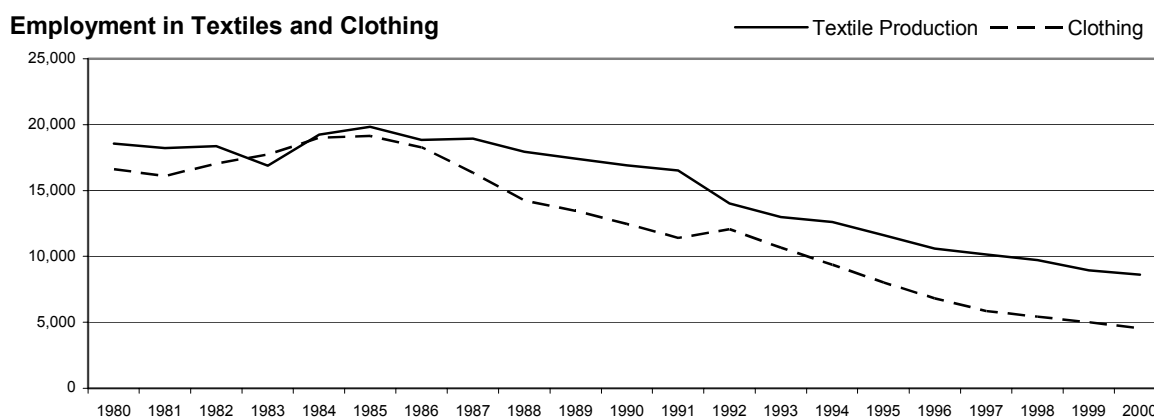
Table 3.1: *Differences across Textiles and Clothing*

	<i>GROUP</i>	
	Capital intensive	Labor intensive
Sector	Textiles	Clothing
Level of Outsourcing/ Decline in Industry	Low	High

As figure 3.1 shows, the decline in the number of employees in the clothing industry is indeed bigger than in the textile production from 1985 and onwards. Looking at the entire

period, from 1980 to 2000, the decline is 54% in the textile sector and 73% in the clothing sector. This fits the hypothesis that the outflow of workers in the labor intensive production of clothing is larger than the outflow in the more capital intensive production of textiles.

Figure 3.1: *Sector Specific Employment in the T&C Industry*



Source: CCP

Note: The development in the leather manufacturing sector is excluded from the figure.

3.1. General Demographics of the Declining Workforce

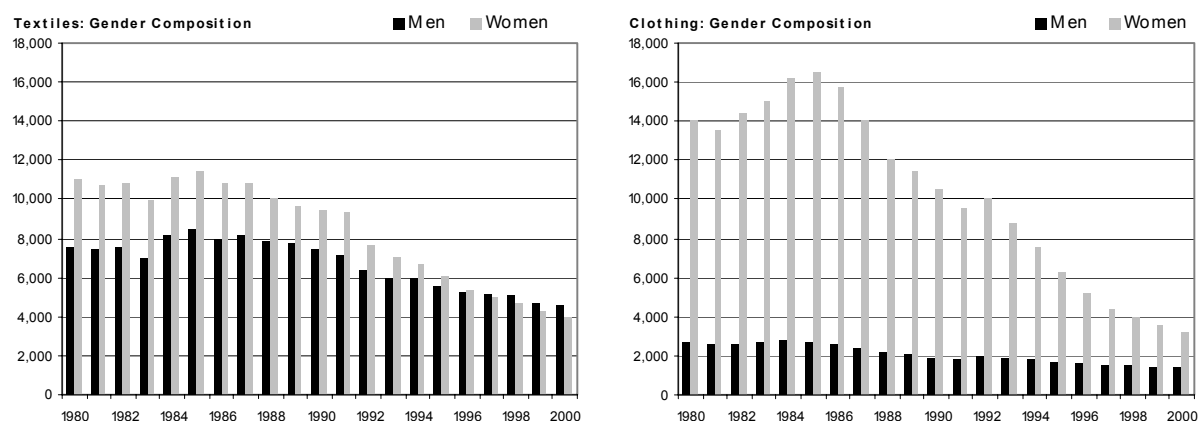
According to table 2.1 and 3.1 we expect the outflow of workers to be mainly low wage, low skilled workers in labor intensive jobs. As the fraction of jobs satisfying this description is higher in clothing than in textiles, it follows that the composition of the workforce, at least with respect to skills, is likely to change more in the direction of a better skilled employment stock in the clothing sector than in the textile sector. In order to further determine how the workforce is developing within the two sectors, we look at the compositional change with respect to the basic demographics gender, age and education. In so doing, we also get a picture of who actually risks the fate of unemployment by leaving the clothing and textile sectors. Moreover, we turn to the employment inflow and outflow of both sectors to investigate whether the decline in both sectors predominantly is driven by the increase in layoffs or by decreases in recruitment.

3.1.1. Farewell to the Women

The T&C sector has always been a typical ‘female workplace’, and as such the decline has also affected more women than men. Overall, the share of women in the T&C industry has fallen from 70% to 54% through the decline, but there are large differences between sectors as revealed in figure 3.2. Since occupations such as sewing traditionally have been held by women,

women dominate employment in the clothing sector to a very high extent. In contrast, the more capital intensive production of textiles, shows a higher frequency of men relative to clothing since weaver jobs typically are held by men. However, women dominate employment in both sectors. The decrease of employed women exceeds 77% in the clothing sector, and is about 64% in the textile sector. The corresponding figures for men ‘only’ amounts to 48% in clothing and 39% in textiles. The very large drop in employed women in both sectors has resulted in the fact that from 1997 and onwards, the share of men in textiles has been above that of women, and the share of men has doubled from 15% in 1980 to 30% in 2000 in clothing.

Figure 3.2: *Gender Compositions in the Textile and Clothing Sector*



Source: CCP

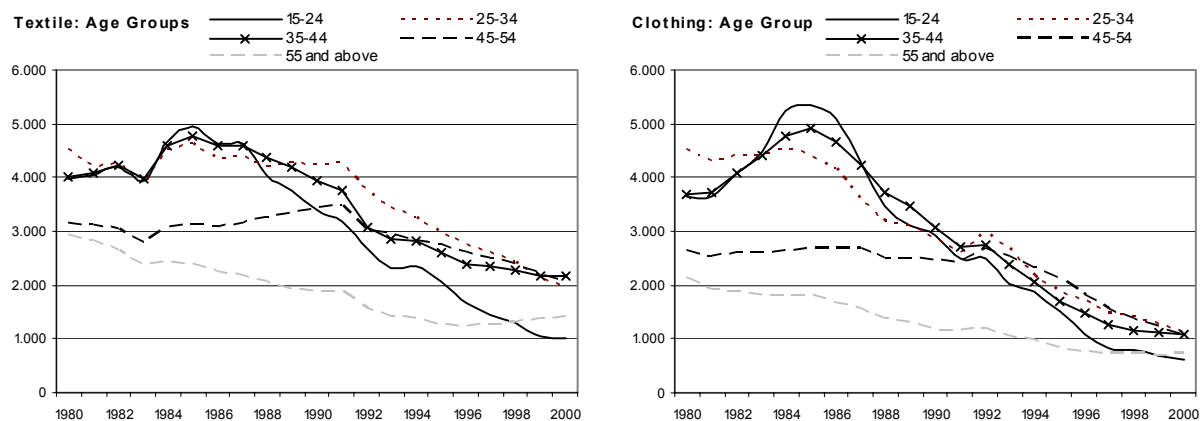
The developments in gender compositions across the textile and clothing sector depicted above seems to support that there is a higher probability for labor intensive job tasks to be outsourced, and thereafter for the job to be terminated, relative to the more capital intensive jobs. Hence, since women dominate the occupation of labor intensive jobs within the T&C industry (especially within the clothing sector) we observe particularly large drops in the employment of women. This fits well the rationalization strategies from table 2.1, and with the labor/capital production intensity issue from table 3.1.

3.1.2. The Doom of Youth

We now turn to the changes in age composition to see how the general decline in employment has affected the age distribution in the two sectors. In this respect, it is common to expect a large outflow of older employees, who often, in the case of a declining firm, more or less willingly leave their job for retirement, thereby leaving behind a larger share of younger

workers. This, however, is neither the case in the textile, nor the clothing sector, which is illustrated by Figure 3.3.

Figure 3.3: Age Composition in the Textile and Clothing Sector



Source: CCP

Conditioning on age groups, the decline in both sectors is of a significant larger magnitude for the youngest workers than for any other age group. Despite this similarity, however, the decline in employment among the youngest age group is largest in the clothing sector. To get a more precise picture of the overall reduction rates of the different age groups in each sector, these have been summarized in table 3.3. Focusing only at the groups below the age of 55, we note that the rate of decline falls as the age increases. We also note that the decline in clothing generally is more evenly distributed across all age groups than in textiles, which is mainly due to the fact that the overall decline in the production of clothing is of a relatively larger magnitude.

Table 3.2: Age Group Employment Reduction Rates

	Age Groups				
	15-24	25-34	35-44	45-54	55 +
Textile Sector	74%	57%	46%	35%	51%
Clothing Sector	83%	75%	71%	61%	67%

Source: CCP

Concerning the production of textiles table 3.2 indicates that the decline in the workforce consists of two parts. The first is a large reduction of younger employees, revealed by the

declining employment reduction rate as age increases, whereas the second is a sudden large increase in the reduction of employees above 55 years of age⁵. While it is quite likely that the people belonging to the last group withdraw from the labor force in some way or another, and thereby do not contribute to the likelihood of the pessimistic hypothesis, the same cannot be said concerning the large group of younger people who leave the sector. Moreover, if the large drops within the younger age groups are supported by a strongly reduced rate of recruitment, the pessimistic hypothesis could very well be two-sided. In this case, the concern of people entering unemployment arises also among the young potential entrants experiencing increasing problems in finding a job in the T&C sector, as well as for those who leave or are being laid off. These are issues that we will investigate further when we look at employee in- and outflow in section 4.1.

3.1.3. Towards a Higher Skilled Workforce

Concerning the change in educational composition of the two sectors, we expect this to follow table 2.1 and 3.1 such that the share of employees with higher educations gain ground on behalf of the less educated. This is due to the fact that manual low skill jobs are believed to dominate the processes chosen for outsourcing within both sectors. Indeed, the development in the educational composition in both the textile and clothing sector, depicted in figure F5, supports this view. Moreover, it shows that the change towards a larger share of people with a higher education is bigger in the clothing sector than in textiles. In this connection, the biggest difference across sectors is without a doubt the falling share of workers with a basic education, as this expectedly falls more in the labor intensive clothing sector. More specifically, the fraction of workers with a basic education falls from 72% in 1980 to 42% in 2000 in the clothing sector, and from 73% to 50% in the more capital intensive textile sector. The fractions of the other educational groups are summarized in the following table.

⁵ Regarding the production of clothing it can be noted that despite a more evenly distributed rate of reduction across age groups, we see a similar trend in this sector as in the textile sector.

Table 3.3: *The Educational Composition in 1980 and 2000*

Education	Industry					
	Clothing		Textiles		Manufacturing	
	1980	2000	1980	2000	1980	2000
Basic education	72%	42%	73%	50%	56%	38%
High school degree	3%	17%	5%	13%	7%	15%
Apprenticeship	22%	31%	17%	28%	28%	35%
College degree and above	3%	10%	5%	9%	9%	12%
Total	100%	100%	100%	100%	100%	100%

Source: CCP

Despite the fact that the largest educational group in both sectors still is employees with a basic education, we do observe a clear movement towards a more highly skilled workforce within both sectors – and especially so with regards to the clothing sector. The educational composition of both sectors also tend to become more ‘alike’ the average manufacturing industry. Summing up, we can conclude that the workforce in the T&C industry has changed in a way such that the fraction of men has increased to a much higher level in the year 2000 than in 1980, that the level of education generally is higher, and that the employees on average are older. Hence, low skilled women, in the younger ages, dominate the majority of the workers leaving the T&C industry. Moreover, the gender, age, and educational composition figures above indicate that the inflow into the T&C industry must have changed during the industry’s decline. We will deal with this issue in the following section.

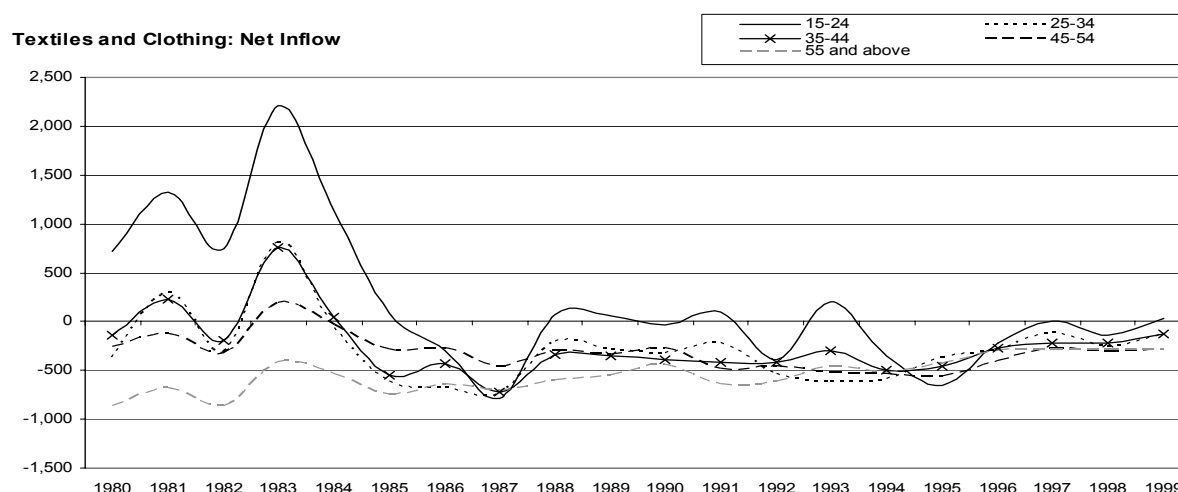
4. Who Comes in, and Who Leaves?

Before turning to our hypothesis about the fate of the thousands of workers who leave the T&C industry, we take a brief look at the composition of inflow and outflow with respect to age and education. This is first to cast some light on the forces behind the high rate of employment reduction among employees in the youngest age group. For instance, we noted the possibility above that the high reduction rate could be driven by a strong reduction in recruitments, giving less power to the argument related to layoffs. Similarly, we are also interested in whether educational competences are more likely to increase through recruitments or if this development merely is a result driven by the large outflows of workers with basic educations.

4.1. Age Groups

Looking at age first, we generally observe more pronounced differences between clothing and textiles in the beginning of the period, however, as time develops, the trends look rather similar. The inflow of young workers (between 16 to 24 years) into both sectors dominated the outflow until the mid 1980s. This was especially the case in the clothing sector. From that point on, the outflow exceeded the inflow in almost every subsequent year – a trend which has been relatively larger in the clothing sector. This development reveals the fact, that the drop in employment in the youngest age group is heavily influenced by a sharp decline in recruitments. Obviously this also means that the young people, who would have been employed in the T&C industry had recruitments not fallen, were forced to seek jobs elsewhere, increasing their risk of entering unemployment. The following figure depicts the net inflow across age groups for the industry as a whole.

Figure 4.1: *Net inflow in Textile and Clothing Industry (Age Groups)*



Source: CCP

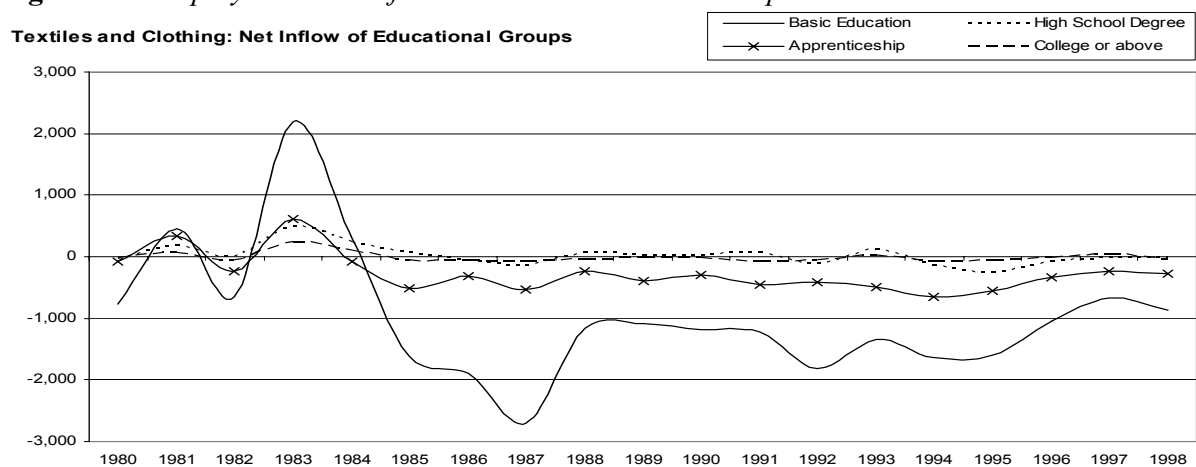
Though differences across textiles and clothing exist as mentioned, these are minor from the mid 1980s and onwards. From this point, there is an excess outflow of all age groups in almost all subsequent years, the only exception being the youngest age group.

4.2. Educational Groups

Turning to the inflow and outflow with respect to education the two sectors also share very similar trends. Generally, it can be said that both textiles and clothing experience very large

outflows of employees holding a basic education, although the magnitude of this outflow typically is larger in the clothing sector. If looking at the net inflow of employees holding either a high school degree or a college degree (and above), there are hardly any differences across the two sectors. This is especially so from 1986 and onwards, and in this period the inflow almost equals the outflow in all years. The large increase in the share of employees with a high school degree in both the textile sector, but especially the clothing sector, is therefore not driven by a larger inflow of people with such an education, but more so by the large outflow of people holding a basic education. The same can be said regarding the share of employees with a college degree. The only other educational group that dominates in terms of a net outflow is apprenticeships. This trend is again similar across the two sectors, but larger in the clothing sector. Hence, the reason for the increase in the share of employees holding an apprenticeship is also caused by relatively larger outflows of employees with a basic education. The following graph depicts the net inflow of employment across educational groups for the textile and clothing industry as a whole.

Figure 4.2: Employment Net Inflow across Educational Groups



Source: CCP

The figure above supports the fact that outsourcing of low skilled manual labor tasks (indicated by the high outflow of people with a basic education) as well as job termination of such work processes (indicated by the high drop in inflow of such workers) have been common practice within the T&C industry. Moreover, as the magnitude of this outflow has been larger in the clothing sector compared to the textile sector, it also supports the view that this practice has been more commonly applied in the clothing sector. This is in line with the strategies of table 2.1, and the underlying ideas of table 3.1, and explains in addition what we observed in section

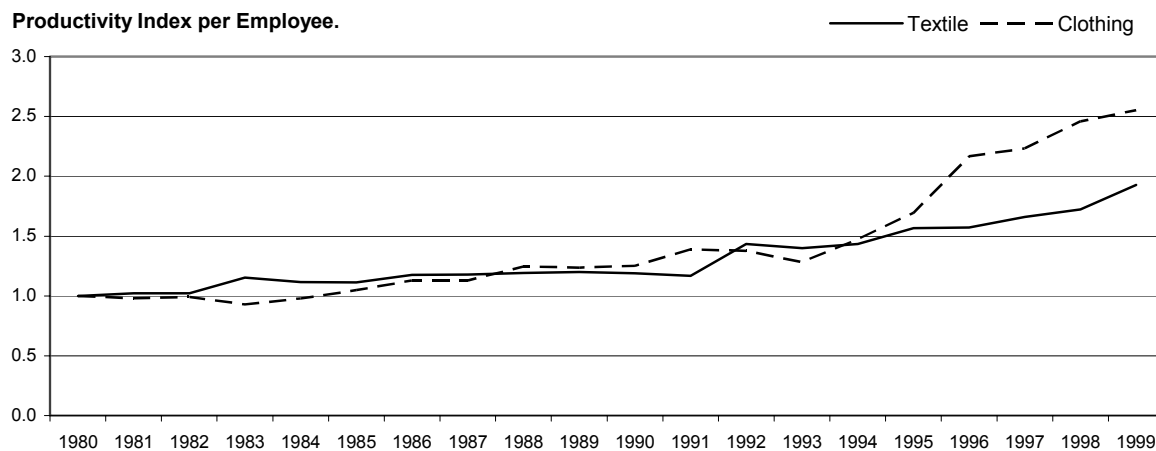
3.2.3, namely that the overall increase in the workforce's educational competences is higher within the clothing sector than in the textile sector.

In conclusion it seems that one can make a good argument that the decline in the clothing sector is of a slightly different nature than the textile sector. This must be the case as we observe a larger structural shift in the composition of the clothing sector's workforce, as well as in its recruitment/layoff practices. Indeed, a larger amount of low skilled work processes seems to be terminated in the clothing industry (possibly in connection with outsourcing), which shifts the domestic focus towards more human capital oriented work processes, such as design, logistics, and distribution. Hence, despite clear similarities across the two sectors, it seems that while the capital intensive textile production to a larger extent keep their production within the borders of Denmark, the labor intensive clothing industry outsource their production to low wage countries. To gain support for this view, we take a brief look at the changes in firm structure and productivity in the two sectors.

5. Firm Structure and Productivity

The number of firms has, not surprisingly, decreased within both the textile and clothing sector, but at a very different pace. In 1980 there were 930 firms in the clothing sector, and 755 firms in textile sector. By the year 2000, however, the textile sector outnumbered the clothing sector not only employee wise, as seen above, but also firm wise. In 2000, there were only 331 firms in the clothing sector (a drop of 64%), while there were 423 in the textile sector (a drop of 44%). In the same period, the share of firms with 1 to 5 employees increased from 45% to 65% in the clothing sector, while being almost constant in the textile sector. As such, the decline in the clothing industry has not only moved the sector towards a better educated workforce, but also towards smaller (and fewer) firms. It also turns out that the entering firms, on average, exhibit a higher level of education than do both the staying and exiting firms. This pattern is general across the entire period, but especially in the last half of the 1990s, and supports the view that the clothing sector is becoming more oriented towards human capital. Focusing on productivity, figure 5.1 shows that the clothing sector also is experiencing a rising productivity per employee of a significantly larger size than what we observe for the textile sector from 1993 and onwards.

Figure 5.1: *Productivity Increase in Textile and Clothing*



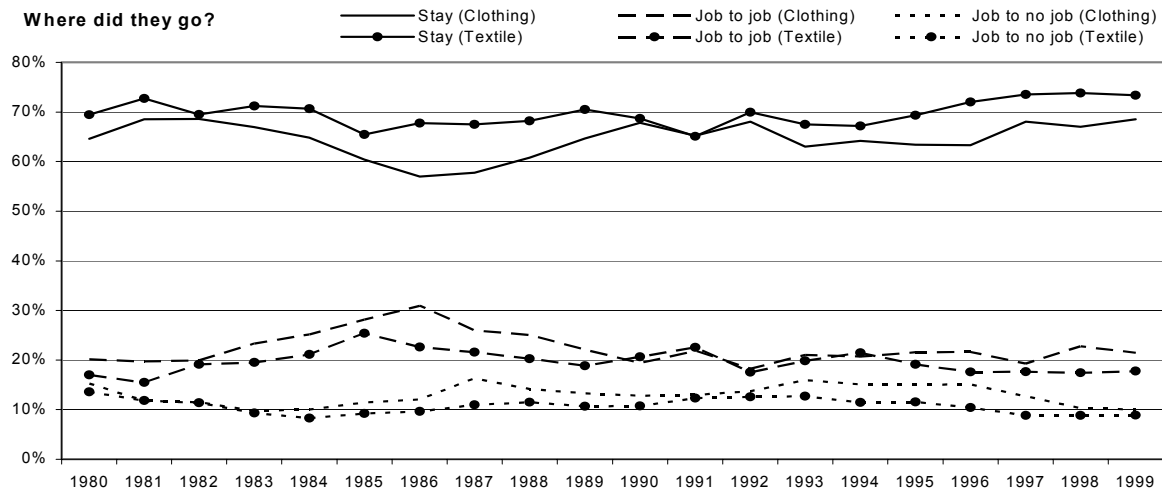
Source: Stat Bank Denmark (Statistics Denmark)

Hence, the changes in firm structure and productivity support the assumption of the clothing industry becoming relatively more human capital intensive as the industry declines. The fate of the thousands employees leaving the industry, however, remains unanswered.

6. Where did the Workers Go?

Despite some differences with respect to employment outflow between the textile and the clothing sector, both sectors exhibit a major general outflow of workers, and we now pick up the thread of what actually happened to the thousands of people who left their jobs. Hence, we seek to determine the year to year state movements of the people employed in the T&C industry. In this respect, our primary interest rests with the question if the people, who were employed in either sector in the year t and separated from this job, were reemployed elsewhere in the year $t+1$ (the unlikely but optimistic hypothesis), or if they had entered unemployment (the likely but pessimistic hypothesis). Based on the analysis so far, we expect the pessimistic hypothesis to hold meaning that a large number of people, especially young women from the clothing sector, has entered unemployment. Figure 5.1, however, indicates that this story is far from being true.

Figure 6.1: Year to Year Employment Flow of Textile and Clothing



Source: CCP

Description: Figure 3.1 illustrates the stay/job/no-job composition of people working within the T&C industry one year before indicated in the graph (i.e. the year to year T&C employment flow).

Note: Figures are percentages of totals. Hence, the area between ‘to job’ and ‘to job in T&C’ corresponds to the percentage of people who went into employment in an industry other than that of T&C.

As we already know, the decline of the clothing sector has been somewhat more costly employee wise than the decline of the textile sector, and as such we observe a larger fraction of ‘stayers’ in the textile manufacturing sector. The group of ‘stayers’ in both textiles and clothing is quite stable throughout the period excluding the drop in the mid/late 80s in the clothing sector. Remarkably, and surprisingly enough, the greater proportion of the employees who do *not* stay in their job, i.e. the potential entrants to unemployment, flow into other jobs rather than to no job. This even holds true to a slightly *larger* extent for the clothing sector.

6.1. Is the T&C Industry Really that Different?

Inspired by Frederiksen and Westergaard-Nielsen [2002], who studied similar ‘job to job’ and ‘job to no job’ transitions across the entire private sector in Denmark, we compared our findings regarding the transitions in the T&C industry with transitions in the manufacturing sector in general. Table 6.1 and 6.2 summarizes these benchmark results.

Table 6.1: Decomposition of 'Job to job' and 'Job to no job' from 1980 to 1993*Period: 1980-1993*

	Manufacturing		Textiles		Clothing	
	<i>In % of employment</i>	<i>In % of separations</i>	<i>In % of employment</i>	<i>In % of separations</i>	<i>In % of employment</i>	<i>In % of separations</i>
Separations	40.54%	100.00	34.11%	100.00	39.39%	100.00
Job to job	24.03%	59.27	22.55%	66.12	25.69%	65.23
Same firm, other plant	4.44%	10.95	2.52%	7.40	1.94%	4.92
Same Industry	3.56%	8.78	6.56%	19.23	9.11%	23.13
Private Sector	11.15%	27.50	8.36%	24.51	8.55%	21.69
Public Sector	2.07%	5.11	2.12%	6.21	2.99%	7.59
Self-employed, same industry	0.38%	0.94	0.87%	2.54	0.92%	2.33
Self-employed, other industry	1.15%	2.84	0.83%	2.45	1.09%	2.77
No physical workplace	1.28%	3.16	1.29%	3.79	1.10%	2.79
Job to no job	16.51%	40.73	11.55%	33.88	13.70%	34.77
Unemployed	8.72%	21.51	5.50%	16.14	7.07%	17.95
Education	2.13%	5.25	1.16%	3.39	2.90%	7.37
Pension	0.73%	1.80	0.88%	2.57	1.36%	3.45
Post employment wage	1.97%	4.86	1.15%	3.38	0.84%	2.12
New labor policy		0.00		0.00		0.00
Out of labor force	2.23%	5.50	2.18%	6.38	0.61%	1.56
Unknown	0.74%	1.83	0.69%	2.02	0.91%	2.31

Table 6.2: Decomposition of 'Job to job' and 'Job to no job' from 1993 to 2000*Period: 1993-2000*

	Manufacturing		Textiles		Clothing	
	<i>In % of employment</i>	<i>In % of separations</i>	<i>In % of employment</i>	<i>In % of separations</i>	<i>In % of employment</i>	<i>In % of separations</i>
Separations	37.06%	100.00	30.60%	100.00	38.23%	100.00
Job to job	23.14%	62.44	20.06%	65.58	23.94%	62.61
Same firm, other plant	3.61%	9.74	2.20%	7.19	2.62%	6.86
Same Industry	3.47%	9.36	3.18%	10.40	4.08%	10.68
Private Sector	12.03%	32.46	10.88%	35.55	12.09%	31.63
Public Sector	1.79%	4.83	1.68%	5.48	2.27%	5.93
Self-employed, same industry	0.35%	0.94	0.60%	1.95	0.82%	2.14
Self-employed, other industry	0.95%	2.56	0.66%	2.14	0.85%	2.23
No physical workplace	0.99%	2.67	0.88%	2.87	1.20%	3.15
Job to no job	13.92%	37.56	10.53%	34.42	14.29%	37.39
Unemployed	5.26%	14.19	3.40%	11.11	4.86%	12.72
Education	1.88%	5.07	1.23%	4.03	2.66%	6.96
Pension	0.75%	2.02	0.78%	2.56	1.78%	4.65
Post employment wage	2.01%	5.42	1.06%	3.46	1.02%	2.67
New labor policy	1.15%	3.10	1.26%	4.13	2.04%	5.34
Out of labor force	2.15%	5.80	2.23%	7.29	0.83%	2.18
Unknown	0.72%	1.94	0.56%	1.84	1.10%	2.87

Note: Frederiksen & Westergård-Nielsen [2002] inspire these tables. Separations are calculated as the following $\text{separations} = \text{separations}(t, t+1) / [0.5 * (\text{separations}(t, t+1) + \text{hires}(t, t+1)) + \text{stayers}(t, t+1)]$. The New Labor Policy was introduced only in 1994 and participants are therefore underrepresented.

Table 6.1 is split up into two periods. The first period is from 1980 to 1993 whereas the second is from 1993 to 2000⁶. The reason for this split is the introduction of the New Labor Policy in 1993, which covers different leave scheme- and job activation programs that were not available before. Looking at separations in percent of total employment across both time periods there are actually less separations on average in the textile industry compared with the manufacturing industry as a whole. The number of separations in the clothing sector, on the other hand, is almost equal to that of the manufacturing industries in general. Seen in this light both textile and clothing do not seem significantly different from an average manufacturing industry. This may sound surprising, but separations in this context also represent general labor mobility, and not only declining industries. One should therefore keep in mind that these measures do not take into account the concurrent fall in recruitment in the T&C industry. As such, when looking at totals, the picture drawn by the T&C industry is not very different from the manufacturing industry in general, but when decomposing the transitions there are at least two interesting observations directly related to the hypotheses raised earlier: First, we observe that the fraction of separations concentrated in unemployment is actually much smaller in both the textile and clothing sector than what is the case in manufacturing in general⁷. This is clearly contradictory to the pessimistic hypothesis. And secondly, if looking at the ‘job to job’ transitions to the private and public sector combined, which can be interpreted as *between* industry movements, both the textile and clothing sector show very similar figures to those of the manufacturing industries in general. Hence, while the first point contradicts the pessimistic hypothesis, the second point gives at least some support to the optimistic hypothesis. At the risk of confusion, one is at this point therefore tempted to note that the ‘unlikely’ hypothesis seems far more likely than the ‘likely’. At least, the optimistic hypothesis certainly seems to offer a much more reasonable picture of the industry’s decline.

The tendency to enter unemployment when separating from a job in the T&C industry, which is actually low compared to the manufacturing industry in general, is even falling over time. On average, 47% of the employees in the manufacturing of textiles, and 50% in the clothing sector, who go from employment to ‘no job’ ends in unemployment or the New Labor Policy. In this connection, there is a clear decrease in the fraction of people entering

⁶ The two periods may seem overlapping, but since we are looking at year to year transitions, the first period ends with transitions from 1992 to 1993 whereas the second period starts with transitions from 1993 to 1994.

⁷ If comparing separations with the private sector as a whole, we observe that the share of separations ending in unemployment is a little higher for the clothing sector, and virtually the same for the textile sector. Flows into retirement, education, leave scheme programs, and exiting the labor force, however, are all somewhat higher.

unemployment from 1993 and onwards, and it is obvious that this decrease matches the simultaneous increase in people entering the New Labor Policy. The fraction of people who retire or enters early retirement is also larger in textiles than in clothing (but not manufacturing in general), which supports the earlier indication that the outflow of employees from the textile production mainly happening among the youngest and oldest workers. A larger fraction of the 'job to no job' flow from the clothing sector ends in education compared to both textiles and manufacturing in general, which also supports earlier findings (i.e. the outflow of younger people is bigger in the clothing industry).

6.2. An Optimistic Story, Yet Surprising!

As noted above, there is some support for the optimistic hypothesis, yet since neither the textile nor the clothing sector show particular large *between*-industry job transitions compared to the average manufacturing industry, this support is not very strong. However, if one looks more closely at the decomposition of the 'job to job' and 'job to no job' transitions we observe some surprising elements. The most startling is perhaps a very high fraction of *within*-industry job transitions in both the textile and clothing sector in the first period compared to the manufacturing industries in general. Even if taking the larger within-firm movements (same firm, other plant) in the manufacturing industries into account, *within*-industry transitions are still much higher in the T&C industry. Hence, despite rather low within-firm transitions in the textile and clothing sector, which possibly reflects the declining nature of the T&C industry. A person who, for some reason or another, leaves employment in the T&C industry is more likely to be rehired within the same industry than is a person who separates from a job in an average manufacturing industry. Given the decline of the T&C industry, this is a highly surprising result. Yet, it also seems that because of the very decline of the T&C industry this property does not last, as people are being rehired within the industry to a lesser and lesser extent. This change, however, happens somewhat abruptly. In fact, even though the magnitude of *within*-industry transitions is quite stable across the two periods, we observe a sudden fall in this fraction of around 50% in both sectors between the two periods. One is tempted to think of this point as a take-off in the industry's decline but apart from a temporary negative increase in the net inflow of young people this does not seem to be the case. Also, since the change coincides with the introduction of the New Labor Policy one can hypothesize that the leave scheme- and activation programs raise the reservation wage beyond the level of what the industry has the means to

respond to, causing more people to seek work elsewhere than being reemployment within the industry. However, since transitions out of employment remains quite constant between the two periods, the pull effect of the NLP in this connection seems weak⁸. Moreover, it is not clear if the average wage increase, received by the people who transit from T&C employment to employment in other industries, is higher after the introduction of the NLP than before as one, in this case, would expect.

In connection with the sudden shift downwards in both sectors' within-industry transitions, it must be emphasized that the fraction of separations ending in employment remains almost constant. As such, *within*-industry transitions are more or less directed into *between* industry transitions, and they even exceed that of the average manufacturing industry if one takes both the private and public sector into account. Hence, although the fraction of separations that end in unemployment at all times is lower than the manufacturing industry average, the optimistic hypothesis fares a great deal better in the second period than it does in the first. The first period, it seems, is driven more by the surprisingly optimistic fact that workers separating from the T&C industry, not only are absorbed into other industries, but are, to an equally high extent, rehired within the industry from whence they came.

6.3. Clustering the Facts?

One of the major forces behind the surprising development is most likely to be found in the location of firms. Contrary to the general picture of the European T&C industry, there has been a fairly high concentration of such industries in Denmark, as well as other manufacturing industries, in the same geographical areas. As such, it might well have been the case that as plants downsized or closed, a large fraction of people were likely to find new jobs within some of the other T&C firms in the same geographical area. In this process, older workers left the labor force for good, while a large fraction of the younger people entered education. Because of the timely and gradual character of this process, alongside with a gradual halt of recruitment into the industry, the industry's decline seems to resemble a surprisingly smooth natural phase out rather than an actual problematic decline. The fraction of people who flow from job to job within the industry could also add to the explanation of the increasing productivity mentioned in

⁸ It should be noted that whereas transitions to 'no job' is quite constant for the textile sector, it is somewhat higher in the clothing sector in the second period. Combined, however, transitions to 'unemployment' and 'NLP' in the second period do not differ substantially in magnitude from 'unemployment' in the first period. Instead, transitions to 'pension' and 'out of labor force' account for most of the increase, which simply may reveal an increasing average age in the sector as a result of the large outflow of young people.

section 5.1, and indicated in figure 2.2, in the sense that the hiring firms recruit the most productive workers from the downsizing or closing firms. As firms continued to downsize or close, however, the *within*-industry ‘job to job’ flows naturally also declined, and were instead, and with relative ease, channeled into *between*-industry flows instead. The latter process was of course helped by the increasing demand for labor due to the general upswing in the economy after 1994.

The question of increasing unemployment in the face of the decline, however, must also be considered from the point of view of the thousands of potential young entrants who, to an increasing extent, have been faced with one less option for employment, and thereby a greater risk of entering unemployment. Focusing on one particular large cluster of T&C firms (the Herning-Ikast region) we found that young potential entrants, in most years, did not enter unemployment in any particular increasing degree. In fact, transitions into employment elsewhere relative to entering the T&C industry, but especially into education, dominated that of unemployment.

6.4. Determining the Factors of the Transitions

We have now shown that despite the heavy decline in the T&C industry, the transitions into employment of people, who experience a job separation in this industry, have been quite constant throughout the period, and have even been somewhat higher than the manufacturing industries in general from 1980 to 1993. In terms of overall ‘job to job’ and ‘job to no job’ transitions, therefore, the T&C industry does not differ substantially from the manufacturing industry average. We do, however, observe rather large differences when decomposing these transitions, and to counter the cluster explanation given above, we raise the question whether the remarkable development in the T&C industry might be explained by the composition of the industry’s workforce, individual characteristics, or the industry structure. In this connection, we therefore conducted an analysis on the level of individuals in order to determine the factors behind the observed transitions. This was done by employing a multinomial logit model explaining all end states after a job separation for the T&C industry, for the manufacturing industries, as well as for the entire private sector. The results of the model, which was carried out over the entire period (1980-2000), are in the Appendix and only briefly covered here⁹.

⁹ NB: Only the results for the T&C industry and the manufacturing sector are presented. Please refer to the Appendix for detail. Also, we realize that the introduction of NLP in 1993 may alter people’s behavior due the availability of a new possible transfer state, which may distort coefficient estimates of the model. Because of this,

What seems to be the most interesting issue with respect to the three models is the fact that there are hardly any differences between them. That is, the coefficient signs (and their statistical significance) are all in line, and where they are not, questions of significance are typical an issue. This admittedly rough result is interesting because it means that even if we control for various issues, such as age, educational compositions and unemployment insurance, across industries, we find similar impacts with respect to the different transition states. Hence, the overall interpretation of the estimation results supports all prior findings and gives thereby indirect support to the hypothesis that the geography of firms may function as a major underlying force explaining the development in the T&C industry.

There are, however, some significant differences between the T&C industry and manufacturing in general which could be mentioned. For instance, when looking at people aged 55 or above in the T&C industry, there is a negative effect (relative to people who stay in employment within the industry) on entering self-employment as well as leaving the labor force, whereas the contrary is true for the manufacturing sector in general.

7. Conclusion

The Danish T&C industry has in the last couple of decades gone through a dramatic change, and despite the industry's massive decline, the majority of the people who have left their jobs have been able to find employment elsewhere. Indeed, until the early/mid 1990s a very large proportion of the people separating from a job have even found new jobs *within* the declining industry. From that point on, the majority of the workers who have left a job in the T&C industry have entered employment in other industries – in particular the service sector and other manufacturing industries. Moreover, the number of employees separating from their job without being re-employed is surprisingly small – and until 1993 even smaller than what we observe for the manufacturing industries on average. In this connection, comparing the textile sector to the manufacturing industries in general, we notice a higher concentration of people leaving the labor force, whereas the clothing sector reveals a higher concentration of people entering education. The T&C industry as a whole shows a higher concentration of people going on pension. Compared to the manufacturing industry in general, people are, on the other hand,

we tried to split the model into the two periods as used in table 6.1 and 6.2. This exercise did reveal differences in some of the coefficient estimates between the two periods, but so far we have been unable to explain these in a framework related to the introduction of the NLP. Hence, the results presented in the Appendix are obtained by using the entire period.

not concentrated in unemployment. Hence, the masses of people expected to enter unemployment as direct results of the increased international competition and pursued outsourcing strategies seem as nothing but a mirage founded by loose ideas about the evil of globalization. True; many people have probably been suffering economically and socially in the face of the declining industry, but the great numbers of unemployed doomed to follow in its wake has simply not happened. Moreover, despite a concurrent fall in domestic production, the industry has managed to increase its GDP per employee significantly. These findings supports the explanation of a natural phase out of the industry, in which older employees enter some form of retirement program, while younger employees enter education. It cannot be ruled out, however, that the introduction of NLP has actually sped up the industry's contraction process, because it has offered better alternatives to continuing working in the T&C industry.

The remarkable development in the T&C industry probably rests on the underlying explanation of a cluster of T&C firms within the same geographical area. As such, when plants have downsized or closed, employees have to a large extent (until the early 1990s) been re-employed in other T&C firms located in the same region due to their possession of relevant skills along with the availability of jobs. In the timely and gradual process of plant downsizing or closure in such a cluster, a substantial fraction of employees have either entered retirement or education thereby causing what we may call a 'natural phase out' of the industry. Two other factors have in this connection influenced the lack of mass unemployment. First, in the areas with a high concentration of T&C firms there have often been large clusters of other manufacturing industries employing unskilled workers. And second, the T&C industry has declined at the same time as the service sector has expanded. Both factors have clearly helped the process of re-employing the unskilled labor freed up from the decline. We must, however, emphasize that this explanation is merely hypothetical, and that we have left further investigations into this issue for future analysis. The concluding remark must be that while the Danish T&C industry has gone through a rough decline causing the termination of tens of thousands of jobs, its story looks far more like a fairytale than a fact.

8. References

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Appendix (1/2)

Multinomial logit explaining the probability that a person changes to a given state, given that he/she was employed in, and separated from, a job in the T&C industry. Transitions are explained by person characteristics and work place characteristics of the last workplace before transition.

Job Transitions in the Textile and Clothing Industries (1980-2000)

All states relative to staying in the Industry	Other industry, private sector	Public sector	Self-employed	No physical workplace	Unemployed	Education	Pension	Post employment wage	New labor policy	Out of labor force	Unknown
Personal Characteristics											
women (=1)	-0.362 *** (0.041)	0.620 *** (0.086)	-1.046 *** (0.083)	-0.132 (0.106)	0.456 *** (0.054)	-0.079 (0.134)	0.100 (0.125)	0.089 (0.104)	1.232 *** (0.228)	0.625 *** (0.083)	-0.524 *** (0.131)
age [18-25]	0.992 *** (0.037)	1.061 *** (0.063)	-0.863 *** (0.118)	0.985 *** (0.096)	0.594 *** (0.047)	2.711 *** (0.147)	-2.923 *** (0.585)	dropped	-0.177 (0.251)	0.373 *** (0.069)	0.670 *** (0.142)
age [25-55]	-	-	-	-	-	-	-	-	-	-	-
age [55,max]	-1.270 *** (0.089)	-1.388 *** (0.188)	-0.400 *** (0.105)	-0.625 *** (0.180)	-0.159 ** (0.066)	dropped	2.186 *** (0.105)	23.619 *** (0.560)	-0.915 *** (0.313)	-0.369 *** (0.102)	1.063 *** (0.136)
Basic education	-	-	-	-	-	-	-	-	-	-	-
High School	0.314 *** (0.052)	0.838 *** (0.081)	0.605 *** (0.107)	0.066 (0.148)	-0.444 *** (0.083)	1.003 *** (0.119)	-0.222 (0.218)	-0.634 ** (0.270)	0.380 * (0.195)	-0.343 *** (0.108)	0.561 *** (0.163)
Apprentice	0.176 *** (0.040)	-0.117 (0.082)	0.259 *** (0.078)	-0.035 (0.106)	-0.300 *** (0.049)	-0.095 (0.194)	-0.619 *** (0.142)	-0.266 ** (0.113)	0.041 (0.161)	-0.383 *** (0.079)	0.112 (0.142)
College	0.260 *** (0.072)	0.328 ** (0.141)	0.137 (0.148)	0.237 (0.183)	-0.442 *** (0.108)	-0.081 (0.369)	-0.518 ** (0.238)	-0.681 *** (0.248)	-0.037 (0.309)	-0.231 (0.147)	0.428 ** (0.214)
Not unemp insured (=1)	0.412 *** (0.048)	0.573 *** (0.078)	1.243 *** (0.086)	0.373 *** (0.125)	-0.518 *** (0.074)	2.020 *** (0.127)	1.815 *** (0.121)	0.378 *** (0.127)	-1.546 *** (0.534)	1.335 *** (0.073)	1.472 *** (0.132)
Workplace Characteristics											
Closing workplace	1.754 *** (0.059)	1.504 *** (0.106)	1.515 *** (0.112)	3.439 *** (0.122)	1.906 *** (0.066)	1.400 *** (0.203)	1.638 *** (0.169)	1.891 *** (0.142)	1.413 *** (0.254)	1.673 *** (0.097)	0.674 *** (0.259)
Reducing workplace	0.622 *** (0.039)	0.663 *** (0.070)	0.463 *** (0.083)	1.133 *** (0.120)	0.993 *** (0.046)	0.520 *** (0.126)	0.754 *** (0.116)	0.614 *** (0.103)	0.699 *** (0.159)	0.565 *** (0.067)	0.443 *** (0.128)
No change in workplace	-	-	-	-	-	-	-	-	-	-	-
Expanding workplace	-0.096 * (0.050)	-0.073 (0.088)	0.006 (0.097)	0.125 (0.159)	-0.137 ** (0.063)	-0.389 ** (0.166)	-0.252 (0.167)	-0.298 ** (0.148)	0.071 (0.232)	-0.290 *** (0.092)	-0.175 (0.162)
Plant size [1,20]	0.147 *** (0.048)	0.339 *** (0.082)	0.582 *** (0.085)	-0.245 * (0.133)	0.267 *** (0.052)	0.264 * (0.159)	0.188 (0.136)	-0.015 (0.130)	-0.140 (0.190)	-0.023 (0.082)	0.066 (0.165)
Plant size [20-50]	-	-	-	-	-	-	-	-	-	-	-
Plant size [50,100]	-0.072 (0.047)	-0.052 (0.082)	-0.376 *** (0.104)	0.078 (0.125)	-0.228 *** (0.054)	-0.077 (0.155)	0.042 (0.146)	-0.033 (0.131)	0.038 (0.179)	-0.035 (0.079)	-0.048 (0.160)
Plant size [100,500]	-0.180 *** (0.048)	-0.131 (0.087)	-0.726 *** (0.114)	0.190 (0.125)	-0.215 *** (0.055)	0.024 (0.159)	0.010 (0.149)	0.062 (0.124)	-0.262 (0.200)	-0.065 (0.083)	-0.036 (0.161)
Plant size [500, max]	0.115 (0.080)	-0.190 (0.178)	-0.228 (0.203)	1.013 *** (0.176)	0.127 (0.104)	0.137 (0.259)	-0.109 (0.400)	0.177 (0.278)	0.235 (0.313)	0.234 (0.153)	0.290 (0.277)
Plant fraction women	-0.012 (0.076)	0.102 (0.142)	0.913 *** (0.149)	-0.394 ** (0.196)	-0.088 (0.092)	0.631 ** (0.254)	0.382 * (0.223)	-0.132 (0.191)	1.111 *** (0.387)	0.187 (0.140)	0.315 (0.248)
Plant fraction low wage	-0.284 (0.175)	-0.443 (0.289)	-0.111 (0.298)	-0.143 (0.458)	-0.184 (0.192)	-1.005 * (0.563)	-0.826 (0.530)	-0.118 (0.556)	0.031 (0.622)	-0.308 (0.276)	0.010 (0.594)
Plant unionization	0.089 (0.122)	0.082 (0.202)	-0.034 (0.199)	0.540 * (0.323)	0.991 *** (0.156)	0.442 (0.345)	-0.850 *** (0.250)	1.750 *** (0.342)	-0.840 (0.636)	-0.303 * (0.182)	0.362 (0.377)
Other Explanatory Variables											
National unemployment	0.110 *** (0.020)	-0.055 (0.035)	-0.048 (0.041)	-0.062 (0.054)	-0.084 *** (0.021)	0.060 (0.078)	0.193 *** (0.060)	0.028 (0.049)	13.566 *** (0.058)	0.055 * (0.032)	0.058 (0.075)
Constant	-3.501 *** (0.234)	-4.959 *** (0.390)	-2.796 *** (0.421)	-5.034 *** (0.590)	-3.571 *** (0.242)	-8.728 *** (0.876)	-7.653 *** (0.648)	-27.778 #VALUE!	-173.961 #VALUE!	-5.385 *** (0.372)	-6.345 *** (0.806)

Note: Standard errors are in parentheses, and the reference group is persons who stay within the industry (27 grouping)
Year dummies have been included

Number of observations: 58,806
Pseudo R2 = 0.1286

Appendix (2/2)

Multinomial logit explaining the probability that a person changes to a given state, given that he/she was employed in, and separated from, a job in a manufacturing industry. Transitions are explained by person characteristics and work place characteristics of the last workplace before transition.

Job Transitions in all Manufacturing Industries (1980-2000)

<i>All states relative to staying in the Industry</i>	Other industry, private sector	Public sector	Self-employed	No physical workplace	Unemployed	Education	Pension	Post employment wage	New labor policy	Out of labor force	Unknown
Personal Characteristics											
women (=1)	-0.193 *** (0.010)	0.615 *** (0.019)	-0.556 *** (0.025)	-0.059 ** (0.026)	0.422 *** (0.010)	-0.092 *** (0.025)	0.142 *** (0.031)	-0.092 *** (0.023)	1.283 *** (0.042)	0.604 *** (0.018)	-0.319 *** (0.033)
age [18-25)	1.072 *** (0.009)	1.343 *** (0.019)	-1.044 *** (0.034)	1.255 *** (0.024)	0.786 *** (0.011)	2.780 *** (0.030)	-2.881 *** (0.149)	dropped	0.266 *** (0.058)	0.538 *** (0.020)	0.380 *** (0.036)
age [25-55)	-	-	-	-	-	-	-	-	-	-	-
age [55,max)	-1.190 *** (0.021)	-1.079 *** (0.052)	0.061 ** (0.027)	-0.502 *** (0.047)	0.003 (0.015)	dropped	2.556 *** (0.028)	23.761 *** (0.115)	-1.253 *** (0.109)	0.048 * (0.027)	1.110 *** (0.031)
Basic education	-	-	-	-	-	-	-	-	-	-	-
High School	0.356 *** (0.012)	0.653 *** (0.021)	0.471 *** (0.028)	0.007 (0.033)	-0.511 *** (0.016)	1.669 *** (0.024)	-0.465 *** (0.047)	-0.806 *** (0.043)	-0.038 (0.052)	-0.438 *** (0.025)	0.476 *** (0.036)
Apprentice	0.072 *** (0.009)	-0.266 *** (0.023)	0.043 * (0.023)	-0.214 *** (0.026)	-0.492 *** (0.010)	0.243 *** (0.038)	-0.729 *** (0.034)	-0.414 *** (0.020)	-0.168 *** (0.042)	-0.585 *** (0.021)	-0.238 *** (0.034)
College	0.024 * (0.013)	-0.038 (0.032)	0.235 *** (0.029)	-0.228 *** (0.040)	-0.703 *** (0.017)	0.131 ** (0.059)	-0.713 *** (0.046)	-0.698 *** (0.031)	-0.188 *** (0.062)	-0.673 *** (0.033)	0.222 *** (0.040)
Not unemp insured (=1)	0.178 *** (0.011)	0.615 *** (0.021)	1.464 *** (0.023)	0.561 *** (0.028)	-0.544 *** (0.015)	1.864 *** (0.027)	1.705 *** (0.032)	-0.036 (0.028)	-0.864 *** (0.097)	1.475 *** (0.020)	1.255 *** (0.032)
Workplace Characteristics											
Closing workplace	1.728 *** (0.015)	1.340 *** (0.035)	1.364 *** (0.034)	2.905 *** (0.031)	1.367 *** (0.019)	1.208 *** (0.051)	1.273 *** (0.052)	0.859 *** (0.041)	1.161 *** (0.083)	1.356 *** (0.033)	0.889 *** (0.061)
Reducing workplace	0.787 *** (0.009)	0.629 *** (0.019)	0.414 *** (0.022)	0.918 *** (0.026)	0.813 *** (0.010)	0.436 *** (0.026)	0.487 *** (0.031)	0.337 *** (0.020)	0.568 *** (0.042)	0.617 *** (0.019)	0.396 *** (0.031)
No change in workplace	-	-	-	-	-	-	-	-	-	-	-
Expanding workplace	-0.047 *** (0.011)	-0.076 *** (0.023)	-0.040 (0.025)	-0.081 ** (0.034)	-0.064 *** (0.012)	-0.079 *** (0.029)	-0.103 *** (0.038)	0.008 (0.024)	-0.035 (0.049)	-0.032 (0.022)	-0.044 (0.036)
Plant size [1,20)	0.016 (0.012)	0.119 *** (0.027)	0.447 *** (0.027)	-0.240 *** (0.037)	0.118 *** (0.014)	-0.095 ** (0.038)	0.108 ** (0.043)	0.006 (0.031)	-0.082 (0.067)	-0.051 * (0.026)	-0.020 (0.045)
Plant size [20-50)	-	-	-	-	-	-	-	-	-	-	-
Plant size [50,100)	-0.034 *** (0.013)	0.006 (0.029)	-0.251 *** (0.033)	0.128 *** (0.037)	-0.070 *** (0.015)	0.083 ** (0.040)	-0.078 (0.049)	0.011 (0.032)	0.056 (0.064)	-0.038 (0.027)	-0.014 (0.048)
Plant size [100,500)	-0.193 *** (0.011)	-0.070 *** (0.025)	-0.425 *** (0.029)	0.210 *** (0.032)	-0.144 *** (0.013)	0.235 *** (0.034)	-0.066 (0.041)	-0.019 (0.027)	-0.001 (0.055)	-0.123 *** (0.024)	-0.028 (0.041)
Plant size [500, max)	-0.581 *** (0.014)	-0.251 *** (0.030)	-0.692 *** (0.034)	-0.050 (0.038)	-0.341 *** (0.015)	0.117 *** (0.039)	-0.027 (0.046)	0.002 (0.029)	-0.102 (0.063)	-0.281 *** (0.028)	0.073 * (0.044)
Plant fraction women	-0.001 (0.019)	0.316 *** (0.038)	0.422 *** (0.043)	0.126 ** (0.050)	0.019 (0.020)	0.406 *** (0.053)	0.300 *** (0.061)	0.077 * (0.043)	0.657 *** (0.084)	0.299 *** (0.036)	0.229 *** (0.064)
Plant fraction low wage	-0.571 *** (0.047)	-1.017 *** (0.099)	-0.483 *** (0.098)	-0.066 (0.117)	-0.574 *** (0.058)	-1.847 *** (0.140)	-0.452 *** (0.156)	-0.225 * (0.129)	0.330 (0.246)	-1.348 *** (0.099)	-0.711 *** (0.166)
Plant unionization	0.008 (0.028)	-0.296 *** (0.053)	-0.111 ** (0.056)	-0.257 *** (0.070)	0.566 *** (0.034)	-0.278 *** (0.067)	-0.429 *** (0.078)	1.117 *** (0.073)	0.266 * (0.154)	-0.125 ** (0.050)	-0.255 *** (0.087)
Other Explanatory Variables											
National unemployment	0.068 *** (0.005)	-0.026 *** (0.010)	0.018 * (0.011)	-0.153 *** (0.013)	-0.082 *** (0.005)	0.024 * (0.014)	0.152 *** (0.015)	0.017 * (0.010)	13.302 *** (0.014)	-0.009 (0.009)	0.022 (0.015)
Constant	-3.035 *** (0.056)	-4.835 *** (0.110)	-3.832 *** (0.121)	-3.422 *** (0.135)	-2.464 *** (0.054)	-6.993 *** (0.158)	-7.065 *** (0.169)	-26.106 (-)	-171.289 (-)	-4.685 *** (0.102)	-4.990 *** (0.169)

Note: Standard errors are in parentheses, and the reference group is persons who stay within the industry (27 grouping)
Year dummies have been included

Number of observations: 953,145
Pseudo R2 = 0.1345