The industrial district of Prato
An analysis of the textile industry 1991 - 2001

Bachelor’s thesis within Economics
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Sammanfattning


**Abstract**

The aim of this thesis has been to analyse the textile industry of Prato between the years 1991 and 2001. The district has been examined in terms of population, employment, firms and international trade and we have examined the industry in the region weighted against the whole Italy. Moreover, the Location quotation has been used to measure the degree of specialization. Theories about cluster and industrial districts have been utilized to give a background to agglomeration of firms.

The conclusions from our analysis are that Prato consists of a large group of firms acting in similar industry in a specific location. The district is highly dominated by small firms, which are engage in the production of a homogenous product through different stages. In terms of international trade, Prato has been able to increase its exports between the years 1995 to 2001. Furthermore, our examination of Prato shows a reduction of employment and number of firms operating within the textile sector, while the degree of specialization has increased. Our inference is that this contradiction is due to the decrease of the total textile industry in the whole country.
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1 Introduction

1.1 Background

During the post war period it was an intensive industrialism in Italy. During the 1970s and 1980s the development pattern in Italy started to diverge from the rest of Western Europe, mostly because they had a greater sector of small-size companies. It was the regions in northeast and central Italy, ‘The Third Italy’, that were most dynamic. Due to the oil crisis and international recessions the large companies experienced some problems with lower employment and lower production as an outcome. But the small-sized companies followed another economic pattern and developed so called industrial districts.

The North Central and North East parts of Italy have during decades drawn attention to their industrial districts, mostly due to two reasons: First, many of the districts demonstrated an extraordinary economic success, and this not only on the domestic market but also on the international market. Second, in contrast to other small firm organization, the districts appeared to offer the capability of providing good pay and satisfactory social conditions (Pyke et al., 1996).

In the early 1990s, the industrial districts in ‘Third Italy’ were characterised by its large amount of small firms with varying degrees of sectored specialization. These districts were dominated by the traditional sector such as textile, clothing, shoes and furniture industries. (Pyke et al., 1990).

One of the districts dominated by its traditional sector is Prato, situated in the Tuscany region fifteen kilometres from Florens. This district is an international leader in the production of woollen. The textile industry in Prato in 2001 employed more than 42000 people, which accounted for approximately 34 per cent of the local employment. The number of textile firms during the same year was around 7700, and they covered all stages of production from spinning to finishing fabrics.

Many terms have been used to explain the reasons behind geographic agglomeration of firms or related industries. Porter (1998) identified the benefits of agglomeration of industries, and came up with two types of clusters, a vertical cluster and a horizontal cluster. Furthermore, he stressed that competition is a driving force behind cluster development. Alfred Marshall provided in the late 19th century his theories of localized industries, where he identified three distinctive reasons for localization; labour market pooling, availability of specialized inputs and technological spillovers (Krugman, 1990). The dynamic development of ‘Third Italy’ encouraged Italian economists and sociologists to rediscover Marshall. Giaconda Becattini defined an industrial district as a socio-territorial entity which, in order to grow, had to merge the local population of firms with the people of the community in one naturally and historically bounded area (Alberti, 2002). Markusen (1996) identified four distinctive types of industrial districts; the Marshallien industrial district with the Italianate variant, the Hub-and-spoke industrial district, the Satellite industrial platforms and the State-anchored industrial district.

1.2 The global textile industry

The global textile industry has since 1st of January 1995 been going through vital changes under the transitional programme of the WTO’s Agreement on Textile and Clothing
Before this agreement was set, the quota of textile and clothing exports from developing countries to industrial countries was driven under a special system outside normal GATT rules. By 1st of January 2005 the WTO members had committed themselves to eliminate the quotas and assimilate the sector entirely into GATT rules (WTO, 2005).

The shift towards trade liberalisation has increased Chinas clothing exports extremely. Their sale of certain items to the EU has risen immensely because they are capable to produce large volumes of cheap clothes at a lower price than producers in Europe (The Economist, 2005). As part of the rules of the WTO’s Agreement on Textile and Clothing (ATC), Europe has the right to adapt to the new trading system by temporary placing limitations on textile imports from developing countries (WTO, 2005). This was the case in June 2005 when the EU and China agreed on quotas concerning ten categories of textile goods, with limitation in growth between 8 and 12, 5 per cent a year. The agreement runs to 2007 (The Economist, 2005).

1.3 Purpose

The aim of this thesis is to analyse the Prato textile industry in terms of population, employment, firms and international trade, between the years 1991 and 2001. We will also look at the degree of specialisation by calculating the location quotient. Theories about cluster and industrial districts will be utilized to give a background to agglomeration of firms.

1.4 Previous studies

The Industrial districts in Italy have become famous for their well-known success. The successes of these districts have been surprising due to the fact that the firms have been small and that they have been engaged in traditional sectors. The district of Prato has been analyzed by several economists, however, most of those studies covering periods until early 1990s. The following two studies made by Gabi Dei Ottati (1996) and Marco Bellandi and Marco Romagnoli (1994) presented below gives a background for the continuing study in this thesis.

The work done by Gabi Dei Ottati (1996) illustrates the development of the Tuscany industrial district. After many years of growth, some Italian districts underwent a period of change and restructuring during the 1980s. Ottati performed his study on these changes between the years 1981-1991. He found that the reduction in level of demand for products that Prato typically was producing was due to changes in consumers’ lifestyle. Prato was from the beginning specialized in producing heavy woollen fabrics. Furthermore he stated that the drop in the industrial employment was compensated by an expansion of the service sector, particularly manufacturing services. This shift was seen as an indicator of the capability of the district to reorganize and to adapt to external changes. Moreover he found that there was an increase of use of subcontractors outside the district, but this outsourcing was not found to be a sign of decline. On the contrary, this allowed local firms to focus on strategic activities, such as specialization on higher value-added production stages, such as finishing. The outsourcing has also speeded up the development of production diversification and innovation. Last but not least he stated that the sign of a “continuing economic viability” could be seen in the districts export performance.
Marco Bellandi and Marco Romagnoli (1994) reformed a study of the Prato textile district until 1991. They looked at the substantial amount of success that Prato experienced in the 1970s, where the number of employees between 1971 and 1981 increased by 23 per cent while the textile employment in other areas in Italy and Europe faced a large drop. They deemed that the reason was that the Prato wool industry rapidly increased its levels of quality and creativity, and oriented itself in the direction of more rich and sophisticated markets mostly in Western Europe and North America. In the 1980s, however, Prato was facing a permanent reduction in the demand for woollen products, mostly for the carded woollen products, with a fall in exports by approximately 60 per cent of the local production. This decrease in demand led to a great reduction in both employment and number of firms. Bellandi and Romagnoli thought that despite the decrease in export, Prato remained the leading centre for the carded wool production. They also thought that the quick differentiation of Prato textiles seemed to be a result of the fall in typically specialised production activities and of the raise of producers who specialised in new products and of diversified operators.

1.5 Outline

This thesis will be divided into five sections. It will start with an introduction covering background, the global textile industry, purpose and previous studies. Chapter two contains the theoretical framework, where theories about clusters and industrial districts are presented. Chapter three describes the region of Prato by giving a broad historical description and by presenting all the data. The fourth chapter contains a critical analysis of the district using the data from chapter three and the location quotient will be used as a measurement of specialisation. The thesis ends with a conclusion and suggestions for further research in chapter five.
2 Theoretical framework

Many terms have been used to describe geographic agglomeration of firms in an industry or linked industries. Thereby, there is a need for some more precise definitions. In this chapter different economists’ definitions will be presented.

2.1 Cluster theory

2.1.1 M. Porter

Michael Porter (1990) is one of the most recognized economists when it comes to Cluster theory. He identified the benefits of agglomeration of industries. According to Porter, a cluster improves the access to specialized inputs and information, and the rate and success of innovation. It also lowers the barriers to new business formation, which in turn improves the environment for productivity. He also emphasizes that traditional agglomeration economies were centred on cost minimization, where the today’s focus has shifted towards productivity.

Michael Porter defines a cluster as “a geographically proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities” (Porter 1998). He stressed that competition is the driving force behind cluster development. He meant that clustering is a dynamic process, where the growth of competitive firms generates demand for other related industries. Porter argues that in the cluster, the competition between firms gives rise to growth because it forces firms to be more innovative and to improve and create new technologies. This, in turn, will lead to new business spin-offs, stimulated R&D, and forced introductions of new skills and services. Porter provides a simple definition of two types of clusters, vertical clusters and horizontal clusters. The vertical clusters consist of industries that are linked through buyer-seller relationships, in other words, a cluster that consists of companies at different levels of the value chain and that are localized in the same region. The horizontal clusters on the other hand, include industries that share a common market for the end product, use a common technology or labour force skills, or require similar natural resources. Thus, this type of cluster consists of companies at the same level of the value chain and that are localized in the same region (Porter 1998).

2.1.2 P. Krugman

Krugman (1991) presents arguments for the perseverance of clusters over time, when a cluster is created, the persistence of it is due to a circular process. He states that creation and persistence of a cluster relies on the interaction of increasing returns, transportation costs and demand. Given economies of scale, each producer wants to serve the whole market from one single location. The producer chooses a location that has a large demand and a good infrastructure in order to minimize transportation costs. The local demand is large where the majority of producers have chosen to locate. Therefore, there is a circularity that keeps a created cluster in existence over time once it has been established.
2.1.3 S. Rosenfeld

According to Rosenfeld (1997), an industrial cluster is: “a geographically bounded concentration of similar, related or complementary businesses, with active channels for business transactions, communications and dialogue, that share specialized infrastructure, labour markets and services, and that are faced with common opportunities and threats.” (Rosenfeld, 1997, p 10). His definition clearly emphasizes the importance he places on the role of social interaction and firm cooperation in determining the dynamic nature of a cluster.

2.1.4 M. Enright

A regional cluster according to Enright (1996) is an industrial cluster in which member firms are in close geographic proximity to each other. Things that bind the cluster together are "buyer-supplier relationships, or common technologies, common buyers or distribution channels, or common labour pools" (Enright 1996, p. 191). Competitive firms make a competitive cluster, and, as Enright notes, economic self-interest is ultimately the glue that binds the cluster together.

2.2 Industrial districts

2.2.1 A. Marshall

The British economist Alfred Marshall is one of the greatest political economists of all times. Marshall argued that even small plants located in the same area could have the same benefits as the larger plants. He identified three reasons for localization.

First, industries localized in the same area get a great advantage by having a large pool of labour with specialized skills. This is something that both workers and firms benefit from, since having a constant market for skills reduce search costs for both parties. Second, an industrial centre allows the availability of specialized inputs and services. An area where similar firms are located, are an attractive region for other firms that manufacture intermediate inputs. This makes the industry more productive and gives greater opportunities for intensive specialization. Finally, similar firms localized near each other get an advantage since information tends flows better locally than over distance. This is called technological or knowledge spillovers (Krugman, 1991).

Marshall’s concept of industrial districts is based on the importance of external economies to understand the development of the agglomerated cluster of small and medium-sized firms. In his concept of an industrial district he visualized an area with a business structure consisted of small locally owned firms making the decisions of investment and production locally. In the Marshallian industrial district the scale economy is assumed to be relatively low. For the firms within the district, a substantial trade is transacted between buyers and sellers, which often entail long-term contracts or commitments. Linkages and co-operation with firms not localized within the district are assumed to be minimal. The local labour market is internal to the district and is also highly flexible. The employees moves between firms, and as they live in the same community the firms benefits from the “industrial atmosphere”, meaning that the secrets of the industry is circulating “in the air”. Marshall also assumed the out-migration of labour to be minimal, while the in-migration grows along with the industries. The district is seen as a rather stable community, which makes it possi-
able for a strong local cultural identity and shared industrial expertise. The Marshallian district consists of a relatively specialized set of services constructed to the unique products of the district. The services include technical expertise and repair services. They consist of local financial institutions that are willing to take longer-term risks, due to the fact that they have inside information and trust in the entrepreneurs of local firms (Krugman, 1991).

2.2.2 G. Becattini

Becattini (1990), inspired from Marshall’s early writing, defined an industrial district as: “…a socio-territorial entity which is characterised by the active presence of both a community of people and a population of firms in one naturally and historically bounded area. In the district, unlike in other environments, community and firms tend to merge” (Becattini, p.19, 1990). Furthermore he describes more precisely the distinctive characters of a community of people and of the population of firms.

According to Becattini the most important feature of the local community is its homogeneous system of values and views. With this he refers to boundaries such as; same values, behaviours, expectations, language, dialects etc. Parallel to this system of values it is important that there exist a system of institutions and rules. The market, firms, extended families, technical schools, churches, political parties, trade unions, and employers associations are some of these institutions. Through these institutions the values are supposed to be spread throughout the district to support and pass them on through generations. A population of firms that creates an industrial district is not an accidental gathering of firms. Every firm in the local population specialize in just one or a few segments of the production process. Moreover, Becattini states that the only industries that are suitable for the industrial district model are those whose production process are spatial and temporally separable, because they allow local network formations of specialized transactions on phase products (Becattini, 1990).

2.2.3 A. Markusen

Markusen (1996) identified four distinctive types of industrial districts; 1) the Marshallian industrial district with the Italianate variant, 2) the Hub- and- spoke industrial district, 3) the Satellite industrial platforms and 4) the State-anchored industrial district.

Marshallian industrial district restate what Marshall formerly envisioned, which are mentioned in the beginning of this chapter. According to Markusen (1996) all the features of the Marshallian district are included under the concept of agglomeration, which means that the stickiness of a place is not due to the existence of the individual local firms and workers, but rather in the external economics accessible to the single firm from its spatial connection with other suppliers of services and other firms. The Marshallian Industrial district is characterized by a large number of small and locally owned firms, located in the same area.

In Marshall’s formulation, there was no requirement that different actors should intentionally cooperate with each other in order for the district to exist. However, in the Italianate variant, which has come forward from research on Italian industrial districts, there is a high degree of co-operation among competitive firms and frequent personnel exchange between customers and suppliers. These are significant characters in the district in order to stabilize markets, share risk and innovation. Further differences between the Marshallian and the
Italianate variant are the strong trade relations that provide shared infrastructure, management training, technical and financial help. The role of the local and regional governments is important in regulating and promoting core industries.

The business structure of a Hub-and-spoke district is dominated by one or several large, vertically integrated firms with the smaller suppliers spread out around them. The district can have a strongly linked form, where the small firms are quite dependent of the large firms either from selling or buying from them. It can also have a weaker form, where the smaller firms benefit from the agglomerative externalities the larger firms’ existence generates, without having to buy or sell to them. The core firms are embedded non-locally, with significant relations with suppliers, competitors and customers not existing within the district. The scale economies are also relatively high, whilst the turnover of firms and personnel is fairly low.

In the Hub-and-Spoke districts, the investment decisions are made locally, but the outcome of them are spread out globally. It is often long-term contracts and commitments between dominant firms and suppliers, and it is a high degree of co-operation, where the linkages with external firms are both locally and externally. The exchange of workers between customers and suppliers are assumed to be mediocre. There is also a low extent of cooperation between the large firms when it comes to share risks, stabilize the market and to share innovations. The labour market in the district is internal to both large hub firms and to the district, but not in the same extent as in Marshallian and Italianate districts. Workers are first committed to the larger firms, then to the district and last to the smaller firm. Since the workers are willing to leave the smaller employers for jobs in hub firms, it makes it harder for the small firms to survive. On the other hand, there is a high rate of labour in-migration due to the fact that the hub firms attract new labour, while the rate of out-migration is low.

The hub-and-spoke district develops a unique local culture related to hub activities, like specialized source of finance and technical expertise. These business services are although dominated by the large firms. There is also an absence of trade associations that provides a shared infrastructure, like management, training, marketing and technical or financial help, mechanisms for sharing and stabilization.

The Satellite Platforms district is a business structure dominated by large, externally owned and headquartered firms. The scale economies are moderate to high while the rates of turnover of platform tenants are low to moderate. There is a minimal intra-district trade among the buyers and suppliers. Unlike the previous district types, the key investment decisions are made externally and there is an absence of long-term commitments to local suppliers. The district has a high level of co-operation and linkages with firms outside the district, especially with their parent company. It also has an occurrence of exchanges of personnel between customers and suppliers externally but not locally. It is not much cooperation among the rival firms in order to share risk, stabilize the market or share innovation. The labour market is external to the district and the workers are committed to a firm rather than to a district. There is a high level of both labour in- and out-migration. The main sources of finance, technical expertise and business services are external to the region.

The State-anchored industrial districts have a business structure dominated by one or several large, government institutions. The scale economies are quite high and the rates of turnover of local business are low. There is a substantial intra-district trade among the dominant institutions and suppliers, but not among others. The key decisions regarding in-
vestment are made both internal and external. In State-anchored districts, short-term contracts and commitments between the dominant institutions and suppliers/customers are most common. There is a high degree of co-operation and linkages with external firms. The occurrence of exchanges of personnel between suppliers and customers is moderate and the workers are committed to the large firms first, then to the district and last to the small firms. Even here we can find that the in-migration is high and the out-migration is low. The districts show a low co-operation among local private-sector firms in order to share risk, stabilize the market and to share innovation. There is no specialized source of finance, technical expertise or business services (Markusen, 1996). Figure 2.1 shows the different types of districts defined by Markusen.

Marshallian Industrial District

The Hub- and Spoke- District

The Satellite Platform District

![Diagram of industrial districts](image)

Figure 2.1 Types of industrial districts. Markusen (page 297, 1996)

2.2.4 **F. Pyke and W. Segenberger**

Pyke and Segenberger (1990) present a definition for industrial districts, where the characterisations of the definition mainly are made for Italian industrial districts. According to their literature the districts are geographically defined productive systems, with large amount of firms that are engaged in the production of a homogenous product through several stages and ways. Furthermore, most of these firms are small or very small. The Industrial district should be considered as a social and economical whole, which means that there are close inter-relationships between different social, political and economic fields. The function of one of these is formed by the function and organisation of the others. Moreover, the district is featured by its adaptability and innovativeness. There is also a communal capability to supply when there are rapid changes in the product demand. This
capability is heavily due to the flexible labour force and production networks that feature the industrial district. The significant character considered as the motor of success is that organisation and leadership has its foundation from small and often family owned businesses that are related to each other by an articulated division of specialization, rather than through benefits from economies of scale.

### 2.2.5 Summary of theories

In order to simplify the reading, a comprehensive summary of a cluster and an industrial district will be presented in table 2.1.

**Table 2.1 Main features of cluster and industrial districts.**

- A population of firms located in the same geographic area
- Production of similar products with firms operation at different stages of the production process.
- Prevalence of small and locally owned firms.
- Close interrelationship between different social, political and economical fields.
- A large pool of labour with specialized skills.
- Creativity and innovation as strategic behaviours.

*Source: The writers’ conclusion of theories presented in chapter two.*

The different types of industrial district defined by Markusen can more clearly be reviewed in table 2.2.

**Table 2.2 Markusen’s four identification of an industrial district.**

<table>
<thead>
<tr>
<th>Type of district</th>
<th>Characterization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marshallien Industrial district incl. the Italianate variant.</td>
<td>Large number of small locally owned firms located in the same area.</td>
</tr>
<tr>
<td>Hub-and-Spoke district</td>
<td>Small number of large vertical integrated firms with smaller suppliers spread out around them.</td>
</tr>
<tr>
<td>Satellite Platforms district</td>
<td>Large and externally owned firms.</td>
</tr>
<tr>
<td>State-anchored district</td>
<td>One or several large government institutions.</td>
</tr>
</tbody>
</table>

*Source: Markusen, 1996.*

In chapter two, industrial cluster and industrial district has been presented and summarised. The Prato region could be seen as an example of a Marshallien Industrial district.
3 The region of Prato

This section will start by giving a broad historical description of the district of Prato. It will also introduce all the data concerning population, labour force, employment, firms and international trade, which will be further analyzed in section four. The data is collected from ISTAT, Italy’s national statistics institute.

This thesis will examine the whole province of Prato which consists of seven municipalities; Cantagallo, Vernio, Montermurlo, Variano, Carmignano, Prato and Poggio a Caiano.

![Map of Tuscany and the province of Prato](image)

Figure 3.1 Map of Tuscany and the province of Prato.


3.1 History of Prato

The specialization of textiles in Prato goes back to the 12th century when the “Wool Guild” regulated the manufacturing of cloths. Italy faced in the 16th and 17th century a political and economical decline, which resulted in a drop of production in textiles. But in the late 18th century the production was taken up again by producing woollen fezzes that were later sold in the Arabic market. In the second half of the 19th century there was a time of industrialization. The first half of this century the local textile industry grew on the basis of military orders supported by strong tariff systems and as an effect of the autarchy policy. This made Prato one of the larger textile districts, but not as large as the then biggest Italian industrial districts such as Schio, Busto Arsizio, Biella and Como. After the World War II, during the period 1950-1981, the district of Prato had its real boom where the number of employees rose from 22 000 to 60 000 in the textile industry. This was a time when most places in Europe were facing a high unemployment rate. This region’s success and brilliant performance gave rise to doubts about the economic theories concerning that these kind of industries should be allocated or reallocated to countries with different cost factors (Union Digitale, 2005).

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1 Guild means an association off all the craftsmen within the same profession.
During the late 1980s the textile industry of Prato faced a depression, which lead experts to claim that a process of deindustrialisation soon would take place and the textile production would move away. The number of plants as well as the numbers of employees in the textile industry experienced a large drop (Helg, 2003).

### 3.2 Population

Looking at the population of the province will show the size of Prato weighted against the whole country. By comparing the data from 1991 and 2001 it is possible to examine how the population flow has changed.

Table 3.1 Population in the province of Prato, 1991-2001

<table>
<thead>
<tr>
<th>Population in Prato</th>
<th>District Prato</th>
<th>Prato’s share of Population in Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prato</td>
<td>217,244</td>
<td>277,886</td>
</tr>
<tr>
<td>Italy</td>
<td>57,114,000</td>
<td>57,348,000</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT.

From 1991 to 2001 both Italy and the district of Prato have experienced an increase in their population growth. The population of Prato represented 0.38 percent of Italy’s total population during the year 1991 and it had increased to 0.48 percent in 2001. There has been more people moving in or born in the district of Prato, than moving out. There is an increase in the population by 60,642, which represent an increase by 28 per cent within the district.
3.3 Labour force

Looking at the labour force will show the size of the textile industry in Prato compared to the whole country. It will also show how much of the total labour force that is dedicated to the textile industry.

Table 3.2 Total workforces in Prato and Italy and the total workforce in the textile industry in Prato and Italy, 1991-2001.

<table>
<thead>
<tr>
<th>Number of employees</th>
<th>1991</th>
<th>2001</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prato</td>
<td>115065</td>
<td>125126</td>
<td>9%</td>
</tr>
<tr>
<td>Italy</td>
<td>24245000</td>
<td>23901000</td>
<td>-1.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of employees in the textile industry</th>
<th>1991</th>
<th>2001</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prato</td>
<td>48689</td>
<td>42020</td>
<td>-13.7%</td>
</tr>
<tr>
<td>Italy</td>
<td>540130</td>
<td>396794</td>
<td>-26.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% share working in the textile industry</th>
<th>1991</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prato</td>
<td>42%</td>
<td>34%</td>
</tr>
<tr>
<td>Italy</td>
<td>2.2%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005

Table 3.2 shows that in 1991, 42 per cent of the total workforce in Prato was working within the textile industry. Looking at the data representing the year 2001, one can observe a decrease down to 34 per cent. Furthermore, the total workforce has increased by nearly 9 per cent in the province, while the total employment rate has decreased in the whole country by 1.4 per cent. Data for the whole textile industry in Italy shows that the country has faced a decrease in this sector with nearly 27 per cent between the years 1991-2001. Consequently, the reduction in employment in the textile industry had not only decreased in Prato, but one could also see an even larger decrease in the whole country.

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For a description of what is included in the textile industry, see appendix 1.
3.4 Plants and employment

Looking at the number of plants and employment in Prato will show which type of firms, small, medium or large, that is dominating the region, and how the employment is fragmented in each enterprise classification.

Table 3.3 Size of the textile firms in Prato district 1991

<table>
<thead>
<tr>
<th></th>
<th>Number of firms</th>
<th>%</th>
<th>Number of employees</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (1-9 emp.)</td>
<td>10 767</td>
<td>90.8%</td>
<td>26 732</td>
<td>54.9%</td>
</tr>
<tr>
<td>Medium (10-49 emp.)</td>
<td>1 030</td>
<td>8.7%</td>
<td>17 467</td>
<td>35.9%</td>
</tr>
<tr>
<td>Large (&gt;50 emp.)</td>
<td>62</td>
<td>0.5%</td>
<td>4 490</td>
<td>9.2%</td>
</tr>
<tr>
<td>Total</td>
<td>11 859</td>
<td>100.0%</td>
<td>48 689</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005

As shown in table 3.3, the textile industry in the Prato district in 1991 was highly dominated by small firms. Around 91 per cent of the firms had less than ten employees per company. 8.7 per cent of all textile firms were medium companies with a labour force between 10 and 49 employees per company. The existence of large sized firms was represented by only 0.5 per cent of the firms. On average, each company had in 1991 four employees.

Table 3.4 Size of the textile firms in Prato district 2001

<table>
<thead>
<tr>
<th></th>
<th>Number of firms</th>
<th>%</th>
<th>Number of employees</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (1-9 emp.)</td>
<td>6 615</td>
<td>85.8%</td>
<td>18 353</td>
<td>43.7%</td>
</tr>
<tr>
<td>Medium (10-49 emp.)</td>
<td>1 025</td>
<td>13.3%</td>
<td>17 974</td>
<td>42.8%</td>
</tr>
<tr>
<td>Large (&gt;50 emp.)</td>
<td>72</td>
<td>0.9%</td>
<td>5 693</td>
<td>13.5%</td>
</tr>
<tr>
<td>Total</td>
<td>7 712</td>
<td>100.0%</td>
<td>42 020</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005

In table 3.4, one can see that in 2001 the textile industry in Prato were still dominated by small firms and those accounted for 85.8 per cent of all firms. The medium firms accounted for 13.3 per cent and the large firms for 0.9 per cent. Between 1991 and 2001 the number of firms decreased from 11 859 to 7 712, a decline by almost 35 per cent. The small firm had the largest reduction, with a decrease by 38.6 per cent. That can also be seen with the number of employees in the small firms, which decreased by almost 31 per cent. The only type of firms who increased in numbers was the large sized firms. In 2001 each company had on average five and a half employees.

The reduction in number of firms has had a larger decrease than the reduction in employment, indicating a feasible modification of the firm structure.
In figure 3.2, one can see that Prato and Italy have similar structure of textile firms and are both highly dominated by small firms. However, one can also see that Prato had a larger percentage share of small firms and a smaller share of medium firms than Italy. Looking at the change between 1991 and 2001 shows a reduction of small firms and an increase in medium firms in both Prato and Italy.

Figure 3.2 The size and distribution of textile firms in Prato and Italy.

Source: The writers processing of data from ISTAT, 2005.

Within the district, the textile industry consists of firms who are specialized in just one or a few segments of the production process. They are in different stages of the production chain and are trading with each other. In that way, the district can produce products from the preparation stage until the finishing good, in other words, they stand for the whole production chain. This can be seen in the table 3.5.

Table 3.5 Number of firms in each stage of the production chain in Prato.

<table>
<thead>
<tr>
<th>Type of production</th>
<th>1991</th>
<th>% of firms</th>
<th>2001</th>
<th>% of firms</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation and spinning of textile fibres</td>
<td>4 103</td>
<td>34.6%</td>
<td>2 837</td>
<td>36.8%</td>
<td>-30.9%</td>
</tr>
<tr>
<td>Weaving of textile materials</td>
<td>4 861</td>
<td>41%</td>
<td>2 654</td>
<td>34.4%</td>
<td>-45.4%</td>
</tr>
<tr>
<td>Textiles finishing</td>
<td>758</td>
<td>6.4%</td>
<td>659</td>
<td>8.5%</td>
<td>-13.1%</td>
</tr>
<tr>
<td>Packaging of textiles, excluding clothes</td>
<td>222</td>
<td>1.9%</td>
<td>245</td>
<td>3.2%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Other textile industries</td>
<td>213</td>
<td>1.8%</td>
<td>380</td>
<td>5%</td>
<td>78.4%</td>
</tr>
<tr>
<td>Knitwear manufacturing</td>
<td>511</td>
<td>4.3%</td>
<td>573</td>
<td>7.4%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Manufacturing of knitwear articles</td>
<td>1 191</td>
<td>10%</td>
<td>364</td>
<td>4.7%</td>
<td>-69.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11 859</strong></td>
<td><strong>100%</strong></td>
<td><strong>7 712</strong></td>
<td><strong>100%</strong></td>
<td><strong>-35%</strong></td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005
A remarkable change between 1991 and 2001 is the decrease of firms in the early stage of the production, i.e. the Preparation and spinning of textile fibres and the Weaving of textile materials, with a reduction by 30.9 per cent respectively 45.4 per cent. The Manufacturing of knitwear articles stood for the largest decrease with 69.4 per cent. Other textile industries\(^3\) had the largest increase in firms, with 78.4 per cent.

Table 3.6 Number of employees in each stage of the production chain in Prato.

<table>
<thead>
<tr>
<th>Type of production</th>
<th>1991</th>
<th>% of employees</th>
<th>2001</th>
<th>% of employees</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation and spinning of textile fibres</td>
<td>15 747</td>
<td>32.4%</td>
<td>14 664</td>
<td>34.9%</td>
<td>-6.9%</td>
</tr>
<tr>
<td>Weaving of textile materials</td>
<td>15 395</td>
<td>31.6%</td>
<td>10 276</td>
<td>24.5%</td>
<td>-33.3%</td>
</tr>
<tr>
<td>Textiles finishing</td>
<td>8 347</td>
<td>17.1%</td>
<td>8 792</td>
<td>20.9%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Packaging of textiles, excluding clothes</td>
<td>1 176</td>
<td>2.4%</td>
<td>1 261</td>
<td>3%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other textile industries</td>
<td>1 453</td>
<td>3%</td>
<td>2 999</td>
<td>7.1%</td>
<td>106.4%</td>
</tr>
<tr>
<td>Knitwear manufacturing</td>
<td>1 933</td>
<td>4%</td>
<td>2 338</td>
<td>5.6%</td>
<td>21%</td>
</tr>
<tr>
<td>Manufacturing of knitwear articles</td>
<td>4 638</td>
<td>9.5%</td>
<td>1 690</td>
<td>4%</td>
<td>-63.6%</td>
</tr>
<tr>
<td>Total</td>
<td>48 689</td>
<td>100%</td>
<td>42020</td>
<td>100%</td>
<td>-13.7%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005.

In table 3.6 one can see that the changes in the number of employees in each stage of the production follows almost the same pattern as the changes in the number of firms presented in table 3.5. However, the decrease in employment in Preparation and spinning of textile fibres is considerable less compared to the reduction in number of firms within the same production stages. It is noteworthy to point out that while there has been a decrease in number of firms within the Textile finishing production stage, the employment in the same stage has increased.

3.5 International trade

The role of the firms’ activity of export has become increasingly important due to the increased globalization of trade. The number of firms who search outside their traditional domestic markets has increased, with the intention of becoming more competitive.

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\(^3\) For a more detailed classification of Other textile industries, see appendix 1.
An important aspect for the survival of the industrial districts in Italy has been the ability to compete on international level. In 1996, all industrial districts in Italy accounted for 43.3 per cent of the total manufacturing exports in Italy. Solely the export of textile and clothing contributed for more than 40 per cent of the Italian export from the industrial districts (Helg, 2003).

Measuring the export of Prato gives us a hint whether the district is still competitive and expanding on the international market, or if it is suffering from the outsourcing and increased competition from other countries. The table below shows the export in whole Italy and in Prato between 1991 and 2001. Due to lack of trustworthy data concerning Prato, it has only been possible to calculate the numbers from 1995 and forward.

Table 3.7 Export of textile industry, millions of euro

<table>
<thead>
<tr>
<th>Year</th>
<th>Italy</th>
<th>Prato</th>
<th>Prato % of export</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>13 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td>21 942.2</td>
<td>1 550.8</td>
<td>7.07%</td>
</tr>
<tr>
<td>2001</td>
<td>28 504.1</td>
<td>2 666.6</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data C.C.I.A.A, 2005

In table 3.7 the export of the textile industry is shown. In 1995, Prato stood for approximately 7 per cent of Italy’s total export of textile, compared to 9.4 per cent in 2001.

Figure 3.3 The export of textile in Italy and Prato.


In figure 3.3, an index of the export of textile in Italy and Prato is shown in a diagram. The export of textile in Italy has increased from 1991 to 2001 by 117 per cent, where the increase between 1995 and 2001 was 30 per cent. Looking solely at Prato’s export between 1995 and 2001, one can observe an increase in export by 72 per cent, which is more than twice the increase in Italy’s export.
### Table 3.8 Prato’s export to different continents

<table>
<thead>
<tr>
<th>Continent</th>
<th>1995</th>
<th>% of export</th>
<th>2001</th>
<th>% of export</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>1 176 973.4</td>
<td>75.9 %</td>
<td>193 3815</td>
<td>72.5 %</td>
</tr>
<tr>
<td>Africa</td>
<td>225 61.8</td>
<td>1.5 %</td>
<td>13 252</td>
<td>0.5 %</td>
</tr>
<tr>
<td>America</td>
<td>113 469.8</td>
<td>7.3 %</td>
<td>59 638</td>
<td>2.2 %</td>
</tr>
<tr>
<td>Asia</td>
<td>226 573.3</td>
<td>14.6 %</td>
<td>250 655</td>
<td>9.4 %</td>
</tr>
<tr>
<td>Oceania</td>
<td>11 239.9</td>
<td>0.7 %</td>
<td>40 872</td>
<td>15.4 %</td>
</tr>
<tr>
<td>Total</td>
<td>1 550 818.3</td>
<td>100 %</td>
<td>2 666 079</td>
<td>100 %</td>
</tr>
</tbody>
</table>


Most of the export from Prato goes to other countries in Europe, around 73 per cent of all export in 2001. One significant change in the export is to Oceania, where it had increased from 0.7 per cent in 1995 up to 15.4 per cent in 2001. The percentage amount of export to the Asian countries had decreased by 5.2 per cent.
4 Critical analysis

In this chapter the location quotient method will be used for identifying specialization. Furthermore the data from chapter three, such as firms, employment and population in the region will be analysed by using the cluster and industrial district theories. The chapter will also include an analysis of the export situation in Prato and the global textile industry.

4.1 Location quotient in Prato

Specialization arises when many firms are drawn to the same area producing similar goods and taking advantages of spillovers, thus becoming more competitive. The location quotient (LQ) measures the level of specialization of an industry in a region, compared to the concentration of the industry in a country. The LQ gives insight into regional employment dynamics. Even though a region has a large location quotient, it does not necessarily indicate that there will be job growth in the future. It simply implies that on a relative basis, this sector plays an important role in the region’s export base.

The location quotient is measured by the number of employees in a specific industry in a region, \( E_{ir} \), divided by the total workforce in that region, \( E_r \). This relation is then divided by the relation of the total number of employees in the industry in the country, \( E_i \), divided by the total workforce in the country, \( E \).

\[
LQ = \left[ \frac{(E_{ir}/E_r)}{(E_i/E)} \right] \quad (1)
\]

For an industry to be highly specialized, the location quotient should be higher than 1.4. A location quotient between 0.7 and 1.4 is considered as a medium concentration, whilst a location quotient below 0.7 is considered to have a low concentration (Forslund and Johansson, 1994). The location quotient in Prato is shown in table 4.1, and is calculated from the employment figures.

Table 4.1 Location quotient in Prato

<table>
<thead>
<tr>
<th></th>
<th>LQ 1991</th>
<th>LQ 2001</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prato</td>
<td>18.97</td>
<td>20.23</td>
<td>6.64%</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005
The location quotient in the Prato district in 1991 was 18.97, which obviously shows that it was extremely specialized in the textile sector. One can also observe that the district was more specialized in 2001 with a location quotient at 20.23, an increase from 1991 by 6.64 per cent.

To see what part of the textile production that was most specialized, the LQ in each industrial classification of the production has been calculated. This can be seen in table 4.2.

Table 4.2 Location quotient in each stage of the production chain in Prato.

<table>
<thead>
<tr>
<th>Type of production</th>
<th>LQ 1991</th>
<th>LQ 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation and spinning of textile fibres</td>
<td>6.14</td>
<td>7.06</td>
</tr>
<tr>
<td>Weaving of textile materials</td>
<td>6</td>
<td>4.95</td>
</tr>
<tr>
<td>Textiles finishing</td>
<td>3.24</td>
<td>4.23</td>
</tr>
<tr>
<td>Packaging of textiles, excluding clothes</td>
<td>0.46</td>
<td>0.61</td>
</tr>
<tr>
<td>Other textile industries</td>
<td>0.57</td>
<td>1.44</td>
</tr>
<tr>
<td>Knitwear manufacturing</td>
<td>0.75</td>
<td>1.13</td>
</tr>
<tr>
<td>Manufacturing of knitwear articles</td>
<td>1.81</td>
<td>0.81</td>
</tr>
<tr>
<td>Total</td>
<td>18.97</td>
<td>20.23</td>
</tr>
</tbody>
</table>

Source: The writers processing of data from ISTAT, 2005

From table 4.2, one can observe that Preparation and spinning of textile fibres, Weaving of textile materials and Textile finishing had the highest specialization, both in 1991 and 2001. One can also see that the Weaving of textile materials and manufacturing of knitwear articles were the only production types that had decreased in specialization during the period. One significant observation that is noteworthy to point out is the Other textile industries, which went from being non-specialized in 1991 to specialized in 2001.

4.2 Analysis of the district

In the theory section we presented among others Marshall’s definition of an industrial district. He pointed out, among other things, the existence of a large pool of labour with specialized skills, and highlighted the fact that industrial districts have a positive growth in labour force. Between 1991 and 2001 the province of Prato experienced a growth in its population with 28 per cent where the increase in total work force was approximately 9 per cent. This positive development verifies that the district overall faced a positive growth. Although, we could also see that the employment in the textile sector in Prato had decreased, this due to the reduction in number of firms. This implies that the employment had moved from the textile industry to other sectors, thus showing that the labour force is still working within the district. Furthermore, the average size of the firms had increased from four employees to five and a half employees per company. Consequently, a plausible modification
of the business structure has taken place during this time period. The firms have grown into larger entities, possibly in order to benefit from internal scale economies to become more efficient.

The decrease in the sector might at first sight appear as no prosperous. But, by looking at the textile industry on national level one can see that Italy’s drop in employment was larger than Prato’s. This indicates that the region did well compare to the rest of the country.

One significant character concerning an industrial district is the domination of small firms. According to Marshall’s definition of an industrial district, one main point is the prevalence of small and locally owned firms. In the case of Prato we can see a reduction of small firms by 35 per cent, although, this form of enterprises is still highly dominating the district. Markusen’s identification of the Marshallien industrial district, which includes the Italianate variant, also points out the existence of many small and locally owned firms representing the district. Prato can be seen as an obvious example of this type of district.

Becattini stated that every firm in the local population specialize in one or a few segments of the production process. In table 3.5 one can see the appearance of firms operation within the different production segments. One could also see that the Preparation and spinning of textile fibres and Weaving of textile materials (early stages of textile production), had the most significant reduction of firms, with around 30 and 45 per cent respectively. However, as shown in table 4.2, those segments of production represented the highest specialization quotients within the industry. One can also observe an increase in specialization in the firms in the Finishing stage of production. These two indications can be a sign of that the industry had started to move away from the low-skilled production of heavy textile fibres.

Porter identified a vertical cluster as an agglomeration of firms acting at different levels of the value chain, localized within the same region. The textile industry of Prato shows collaboration between local infrastructure suppliers and manufacturing firms within the district, and is therefore suitable as vertical cluster.

The international trade is, as we mentioned earlier, an important aspect to see whether the region can compete with low-cost countries. The export of textile from Italy had a large positive growth between 1991 and 2001. Prato had as well a large increase, with a growth in textile exports by 72 per cent from 1995 to 2001. They have also been able to capture a greater share of the textile export market in Italy. The fact that regions like Prato would vanish due to the increased competition from low-cost countries does not hold in this case. Even though export is not the only measurement of success it is still an indicator that Prato continues to follow a positive trend. This strengthens G.D. Ottati’s studies that the district’s export performance is a sign of a continuing economic viability.

Even though our analysis provides evidence that Prato has increased its specialization and shows a positive growth in export, one can speculate about its future performance. As textile can be considered as fashion, the demand for it will fluctuate as trends changes and those might be difficult to predict. The changes that can be foreseen are those depending on the macro trends, such as globalization, delocalization, new market operations or competition from other countries, in this case mostly from the Asian countries. In the beginning on this thesis, we explained how the global textile industry has and continues to change, due to the regulation made by WTO. Members of the southern countries such as France, Greece, Portugal, Spain and evidently Italy are threatened by the cheap Chinese
imports. The quotas in 2005, is important for Italy and Prato to be able to protect their market position. Prato has their largest export to other European countries and may have difficulties in competing with countries with low labour-cost production. For Prato, one important task is to continue to specialize and be innovative in order to remain as a strong industrial district.
5 Conclusion and suggestions to further research

The aim of this thesis was to analyze the Prato textile industry in terms of population, employment, firms and international trade, between the years 1991 and 2001.

Prato can be seen as a region consisting of a large group of firms acting in similar industries in a specific location. The district is highly dominated by small firms, which are engage in the production of a homogenous product through different stages. The availability of specialised input and services and a large pool of specialized labour in the same area, gives a great opportunity for intensive specialisation. A significant conclusion that can be drawn from the calculation of the location quotient shows that Prato is highly specialised in the textile sector, and has become more specialised in 2001 than in 1991. We have also demonstrated that Prato had the highest specialization within the Preparation and spinning of textile fibres, Weaving of textile materials and Textile finishing segments, and that the districts have been able to specialize in additional segments in 2001 compared to 1991.

The reduction in employment in the textile industry that Prato faced, along with the increased employment in the whole region, indicates that the labour force is still working within the district, but not necessarily within the textile sector. Moreover, we could observe an increase of population in the region. These factors indicates that Prato as a whole has faced a positive growth.

In terms of international trade, the export performance of Prato has between the years 1995 and 2001 faced a large increase. Our conclusion is that the firms in Prato, in spite of the reduction of enterprises and employment, had become more efficient.

Even though we have indicated that both employment and number of firms operating within the textile district have decreased, we have seen an increase in the specialization quotient, something that could be considered as a contradiction. However, we find the increased specialization to be a result from the decrease of the total textile industry in the whole country and not as a growth of the textile industry in Prato.

An interesting approach for further research can be to see how Prato would be affected by the elimination of quotas on textile and clothing export.
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Internet sources;

Person;
Catarina Falteri, < catarina.falteri@po.camcom.it >, contact person at Camera di Commercio, Industria Artigianato e Agricoltura di Prato (C.C.I.A.A), 2005-10-10.
### Appendix 1

The textile industry

<table>
<thead>
<tr>
<th>Codes</th>
<th>Industrial Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB</td>
<td>Manufacture of textiles and textile products</td>
</tr>
<tr>
<td>DB17</td>
<td>Manufacture of textiles</td>
</tr>
<tr>
<td>DB171</td>
<td>Preparation and spinning of textile fibres</td>
</tr>
<tr>
<td>DB1711</td>
<td>Preparation and spinning of cotton-type fibres</td>
</tr>
<tr>
<td>DB1712</td>
<td>Preparation and spinning of woollen-type fibres</td>
</tr>
<tr>
<td>DB1713</td>
<td>Preparation and spinning of worsted-type fibres</td>
</tr>
<tr>
<td>DB1714</td>
<td>Preparation and spinning of flax-type fibres</td>
</tr>
<tr>
<td>DB1715</td>
<td>Throwing and preparation of silk, including from noils, and throwing and texturing of synthetic or artificial filament yarns</td>
</tr>
<tr>
<td>DB172</td>
<td>Textile weaving</td>
</tr>
<tr>
<td>DB1721</td>
<td>Cotton-type weaving</td>
</tr>
<tr>
<td>DB1722</td>
<td>Woollen-type weaving</td>
</tr>
<tr>
<td>DB1723</td>
<td>Worsted-type weaving</td>
</tr>
<tr>
<td>DB1724</td>
<td>Silk-type weaving</td>
</tr>
<tr>
<td>DB1725</td>
<td>Other textile weaving</td>
</tr>
<tr>
<td>DB173</td>
<td>Finishing of textiles</td>
</tr>
<tr>
<td>DB1730</td>
<td>Finishing of textiles</td>
</tr>
<tr>
<td>DB174</td>
<td>Manufacture of made-up textile articles, except apparel</td>
</tr>
<tr>
<td>DB1740</td>
<td>Manufacture of made-up textile articles, except apparel</td>
</tr>
<tr>
<td>DB175</td>
<td>Manufacture of other textile articles</td>
</tr>
<tr>
<td>DB1751</td>
<td>Manufacture of carpet and rugs</td>
</tr>
</tbody>
</table>
DB1752  Manufacture of cordage, rope, twine and netting
DB1754  Manufacture of other textiles n.e.c.
DB176   Manufacture of knitted and crocheted fabrics
DB1760  Manufacture of knitted and crocheted fabrics
DB177   Manufacture of knitted and crocheted articles
DB1771  Manufacture of knitted and crocheted hosiery
DB1772  Manufacture of knitted and crocheted pullovers, cardigans and similar articles.

Source: ISTAT, 2005