

The structure of the ICT sector in the Øresund Region

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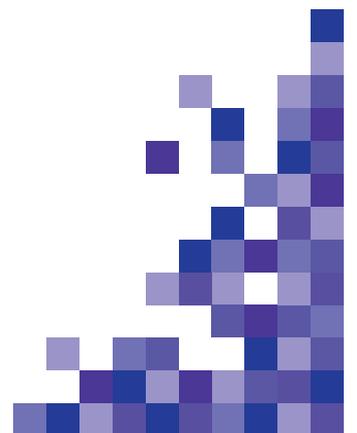
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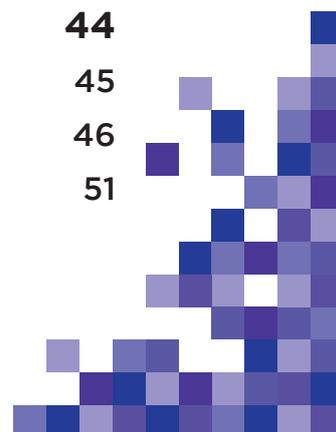
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Introduction

Currently, there is a significant cross-border integration process taking place along the Danish/Swedish border across the Øresund, the narrow channel of water separating the Danish island of Zealand where the capital of Copenhagen is located, from the southernmost Swedish region of Scania. Over the past 15 years, there has been a conscious effort by regional and national authorities on both sides of the Øresund to extend and broaden the integration process. The integration initiative was conceived as a way of not only establishing a clear identity for this new cross-border region, but also as part of both Denmark and Sweden's overall regional and national development strategies.

As a part of the cross-border region, business platforms have been established in the form of a triple helix organisation under the umbrella of The Øresund Science Region, which is an alliance between four regional and transnational network organisations: Øresund IT, Øresund Environment, Øresund Logistics and Øresund Food, together with the participation of local business interests in various fields, universities and local authorities on both sides of the Øresund. The main purpose of the Øresund Science Region is to promote innovation and growth through transnational cooperation. What all of the above mentioned organisations have in common is that they have all been developed from below in which local actors such as local authorities, business and universities have been the prompters.

1. The ICT sector and competitiveness in Denmark and Sweden

As has been pointed out by an OECD investigation in 2008, the ICT sector is responsible for more than 8% of industrial GDP in the OECD countries and employs more than 15 million people on an international basis. The 250 leading ICT companies (representing approx. 70% of ICT employment in the OECD in 2007) increased their revenue by 12% in current terms, and their global revenue reached USD 3.8 trillion. OECD countries which specialise in ICT production such as Korea, Finland, Japan and Hungary have maintained their competitiveness and trade balance surplus in ICT goods, and will continue to do so.¹

Global competition puts a great strain on development activities in the ICT sector, where technological development and implementation of new ICT solutions will be key competitive factors.

The ICT industry in the OECD countries spends about two and a half times more on research and development (USD 130 billion in 2000 prices) than the automobile industry and more than three times as much as the pharmaceutical sector. Spending on research and development is particularly important within services and software, as these areas have expanded rapidly.²

Although the growth rates are highest within service and software, ICT manufacturing is by far the sector within ICT with the highest R&D expenditure.³ As a result, the ICT sector has a great influence on the framework conditions of other sectors, industries and firms.

To start, there are demands for ICT solutions within these sectors and industries. This is one of the most important factors behind the development of the ICT sector, as pointed out by an OECD investigation:

1. OECD: OECD Information Technology Outlook 2008

2. OECD: Information Technology Outlook 2008.



*“Public use of ICT is... a major driver of innovation in the ICT sector. The use of ICT in public administration, and the demands placed on functionality and interfaces to be able to serve very different users and to ensure effective pro-innovation impact, also benefits other business”.*⁴

Through demand, not least the quality of demand, the public sector is an important partner for the ICT sector and exerts a strong influence on its development conditions. In this context, a great number of large and small projects have been established in which the innovation achieved also benefits the rest of businesses that use ICT, particularly the ICT business itself. Therefore, a strong public sector demand for ICT solutions is a key requirement, thereby becoming an important framework condition. On both sides of the sound, these conditions are present.

On the private business side, there has been a development in which the technological development in the ICT sector has implied a reduction in transaction costs, which in combination with deregulation of international trade in services has helped to foster growing international trade in ICT services in other sectors, and this growth has resulted in an increased complexity and specialisation in the ICT field.⁵

2. Agglomeration of ICT firms and employment in the area of the Øresund Region

There has been a growing amount of interest in investigating how and under what conditions the localisation process takes place in the ICT sector. This is especially important since the ICT industry is one of the sectors that is located in agglomerations or clusters on a worldwide basis. There is also an interest in how the internal structure develops in the ICT industry and how this changes over time. This is important not only for attracting other ICT firms to the region, but also for industrial policy in terms of developing framework conditions. These conditions are important for the ICT sector in order to strengthen its development conditions, both in interaction with other parts of the ICT industry and for competing internationally. In this way, the framework conditions have been developed by the industry itself, by its internal structure, by users and by public institutions, all of which are conditions for the industry's development.

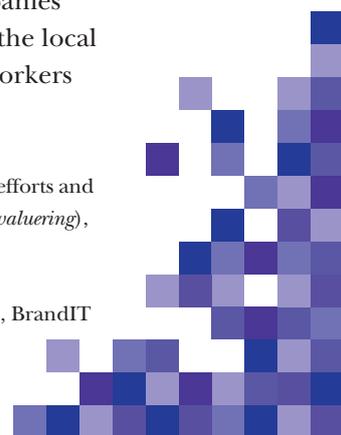
A previous study of ICT clusters in Europe⁶ revealed that the Øresund Region is the 12th largest ICT cluster in Europe measured by employment. The Øresund Region ICT cluster is larger than neighbouring ICT clusters such as, e.g. Berlin, Hamburg, Helsinki and Oslo, although slightly smaller than Stockholm.

The ICT sector plays a decisive role in technological development and, through competitive forces, in other parts of business as well. The transformation in recent years of the industrial structure has largely been associated with the development in the ICT sector. At the same time, the ICT sector has some unique characteristics. Transport costs are extremely limited, as is the importance of physical distance. Urban agglomerations, especially their proximity to other ICT companies, play an important role in how ICT companies locate. The localisation of the ICT sector is also dependent in relation to links to the local labour market and to the geographical areas where these often highly qualified workers prefer to live (Barrios et al., 2008).

4. Council for Technology and Innovation (*Rådet for Teknologi og Innovation* (2008): *Innovation in ICT – efforts and effects, Innovation: analysis and evaluation, (Innovation i IKT – indsatser og effekter, Innovation: Analyse og evaluering)*, report no 17, Research and Innovation Agency (*Forskning og Innovationstyrelsen*).

5. *Ibid.*

6. See: Hansen and Serin: *The European ICT clusters - an overview of selected ICT clusters in Europe*, BrandIT 2010.



Basically, the discussion of the agglomeration economy goes back to Marshall, who highlights three basic elements: First, demand and market power (backward and forward linkage), in which “backward linkage” means good access to a large market and to economies of scale, and “forward linkage”, which is access to a large local market support. Second, access to the labour market and special skills, in which employers and employees match each other, and thirdly, external economies in which a special spillover created by proximity gives an agglomeration advantage (Krugman, 1998).

Proximity to other firms in the same industry is not only based on size, which may be defined by the number of companies. As Saxenian shows in her study of the difference between Massachusetts’ Route 128 (Boston) and Silicon Valley, the local business climate and type of businesses, as well as firms’ organisations, play a major role in the development of the cluster (Saxenian, 1994).

From the Saxenian position, we are in the centre of a discussion about the role of clusters versus agglomeration. Regional clusters refer to geographically bounded concentrations of interdependent firms or group of firms (OECD, 2001), though the most central definition is by Porter, who defined clusters in contrast to agglomerations as a geographic concentration of interconnected companies and institutions in a specific field. Here, we find one of the key problems, in which companies are not limited in their level of activity by institutional and structural boundaries, which institutions particularly are. This matter is a requirement of cross-border cooperation for the establishment of clusters. Furthermore, there is also the requirement of institutional collaboration and networking in one form or another since different clusters or cross-border agglomerations do not have the same strict requirements for supportive institutional structures and interconnection between firms (Porter, 1990).

The longer-term development of the ICT sector is dependent on whether businesses and consumers continue to invest in new ICT goods and services at a relatively high rate, in addition to the development environment in the ICT sector in the form of innovations in new equipment and software solutions. Much of the ICT sector’s activities are related to human capital inputs and are therefore highly dependent on the inflow of skilled labour and not least on an innovative and supportive business environment. This development takes place in an interaction between internal processes in the sector and the firms, especially in connection to the environment in the form of demand and framework conditions.

The increasing interest in clusters is closely related to the increasing geographical extension of the value chain, which implies that the separate parts of the value chain which are the result of increasing specialisation seek the most optimal localisation. This is compensated for by an increased cooperation between firms and the development of supporting institutions. Localisation, in the form of a horizontal integration that contributes to the establishment of economies of scale and the possibility of knowledge spill over in a geographically split up and extended localisation, therefore comes in focus. Consequently, localisation can have different effects on a firm’s competitive power. Some type of localisation implies a cost reduction for the firm such as lower transaction costs.



However, the main driving force for localisation in clusters is not cost reduction, but mainly to strengthen the innovative capabilities of firms by facilitating close contact between firms, and between firms and public R&D and education institutions, thus facilitating the transfer of knowledge between various actors in the system. A survey of ICT industry locations in Europe shows that the ICT sector's location is greatly influenced by specialisation – specifically that ICT services are more concentrated than ICT manufacturing (Barrios et al., 2007), which may suggest that ICT services are more reliant on urban agglomeration conditions than on other parts of the ICT sector.

3. Methodical basis for the analysis of the ICT sector in the Øresund Region

The methodological basis for this report is grounded on international classifications, including definitions of the ICT sector based on the OECD ISIC classifications and their translation to NACE classifications (the NACE code is a pan-European classification system which groups organisations according to their business activities and assigns a unique 5 or 6 digit code to each industry sector). These classifications and their translation into national standards are developed and coordinated in cooperation with the national statistical authorities of Denmark and Sweden. NUTS codes (The Nomenclature of Territorial Units for Statistics) are used for the delineation of geographical areas based on the EU NUTS classification in the form of lists and maps. For more information about the classification and calculation basis, see Appendix I.

4. The Øresund ICT sector and the BrandIT program

This report is an analysis of the ICT sector in the cross-border Øresund Region for the BrandIT project. Lead Partner, Øresund IT, is an organization dedicated to the strengthening of framework conditions and networking across the Øresund border for the ICT sector, particularly for branding the ICT sector internationally by use of the BrandIT program.

In this report “The structure of the ICT sector in the Øresund Region”, there will be an investigation on the development of employment, number of local units, turnover, number of foreign firms and newly established firms within the ICT sector. The statistics are based on special extracts from public statistical bureaus in Denmark and Sweden, and based on the definition of the ICT sector by the OECD. To the extent possible, the ICT sector will be divided into different sub sectors and industries in order to provide a picture of the ICT industry's internal structure.

The reports will be focused on the following areas:

- Report I: Survey of European clusters in the ICT sector⁷
- Report II: Research and development resources within the ICT sector in the private and public sector and ICT education in the Øresund Region
- Report III: The structure of the ICT sector in the Øresund Region

7. See: Hansen and Serin: The European ICT clusters an overview of selected ICT clusters in Europe BrandIT 2010



Chapter 1

The employment structure in the Øresund ICT sector

Introduction

In this chapter, there will be an analysis of the structure of the ICT sector in the Øresund Region with a point of departure in employment and based on OECD definitions of the ICT sector. It is important to identify the specific structure of the ICT sector in the region. This structure will influence and determine the competitive conditions of the sector from a global perspective. To analyse the structure of the ICT sector is important because different ICT structures demand different framework conditions and different industrial policies. The analysis of the ICT structure will also yield a framework for a further and deeper analysis of the position of the Øresund Region's strength concerning the ICT sector.

We will start our analysis with a focus on the development of employment, the distribution of employment between sub sectors and the growth rate of the various ICT sectors. It will be an analysis of both the ICT sector in the Øresund Region as a whole and of the ICT sector in two national areas. This will allow us to determine if the region is characterised by a common ICT structure or whether the ICT structure is different in the two national areas and how this may influence the region's competitive position. The number of local units in the ICT sector will also be analysed in a following chapter on both the Øresund Region as a whole and the two national areas. In later chapters, the analysis will be expanded and deepened by analysing turnover, new establishments in the sector and the number of foreign local units in the region.⁸

There will also be a comparison performed for all of these issues with the ICT sector in Stockholm County, which is often regarded as the closest competitor to the ICT sector in the Øresund Region.

1.1 The employment in the ICT sector in the Øresund Region

In 2008, there were 73,476 persons employed in the ICT sector in the Øresund Region. Of these, 57,393 were employed in Zealand and 16,083 in Scania.

8. Concerning employment, the analysis will be carried out with a point of departure in DB03 in Zealand and SNI02 in Scania for the period from 2004-2007, both of which are based on NACE Rev. 1.1 DB03 was not available for Zealand in 2008, thereby forcing us to change the codes to DB07 for Denmark and SNI07 for Sweden in the period from 2007-2008, which are based on NACE Rev. 2. Concerning turnover, the entire analysis is based on DB03 and SNI02. For specific information about the codes, see Appendix I.

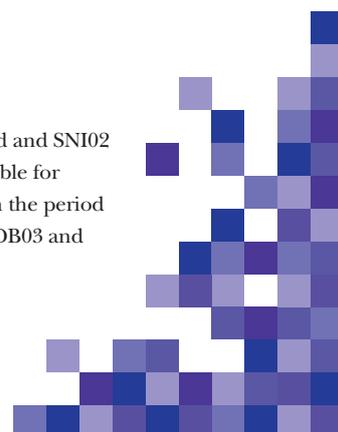
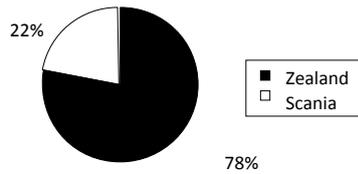


Figure 1.1

Employment in the ICT sector in the Øresund Region divided between Zealand and Scania



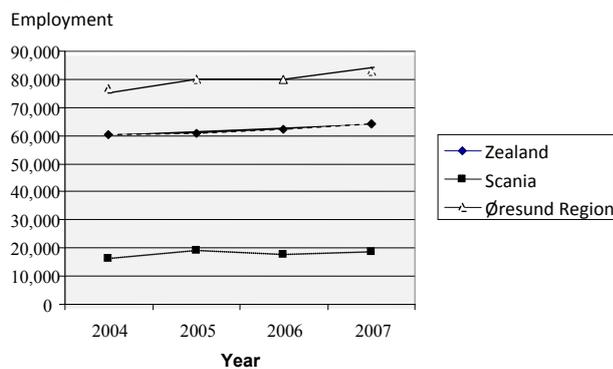
Source: Statistics Denmark and Statistics Sweden special extracts. The definition of the ICT sector is based OECD 2006-2007, which is translated into DB07 and SNI07

This tells us that 78% of those employed in the ICT sector in the region were employed in Zealand and 22% in Scania. If we compare this with total employment, Zealand's share of total employment in the region was 70.7%, while Scania's share was 29.3%. As a result, Zealand's share of ICT employment is larger than its share of total employment in the region, which means there is a large concentration of ICT employment in Zealand.

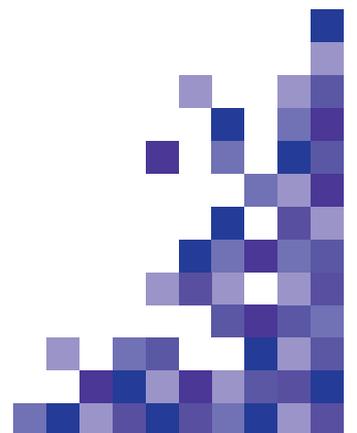
If we look at the growth of employment in the ICT sector in the Øresund Region in the period from 2004-2007, we obtain the following picture:

Figure 1.2

Number of people employed in the ICT sector in the Øresund Region from 2004-2007



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03 and SNI02

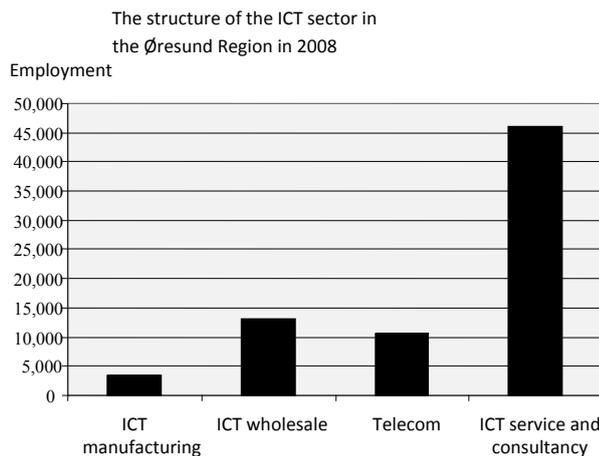


The figure demonstrates a growth in employment for the period from 2004-2007, amounting to 7.8% and an employment of 82,644 in the Øresund Region in 2007 based on DB03 and SNI 02 classifications. In both national areas, there has been growth, though it has been considerably higher in Scania than in Zealand. In Scania, the growth was 13.3% compared to 6.3% in Zealand. If we look at development from 2007-2008 based on DB07/SNI07, we find a different story in the Øresund Region, with a decrease from 74,329 to 73,476 (-1.1%). In Zealand, employment was stable with a decrease of only 2 persons from 57,395 to 57,393, whereas the decrease in Scania was larger, with a decrease 16,934 to 16,083 (-5%).

The structure of the ICT sector in the Øresund Region

If we look at the structure of the ICT sector in the Øresund Region measured in the share of employment of the different sub sectors, the following structure appears:

Figure 1.3



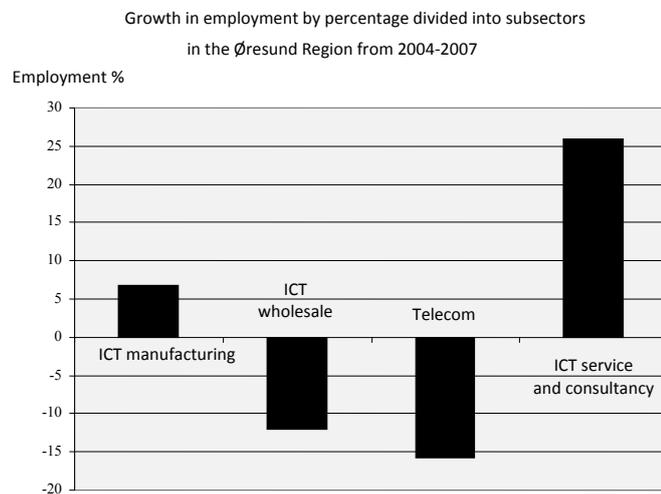
Source: Statistics Denmark and Sweden's Statistics, special extracts based on DB07 and SNI07

The figure shows the traditional picture of a large ICT service and consultancy sector. This sector employed 46,176, which constituted 62.8% of total employment in the ICT sector in the Øresund Region in 2008. Within this sector, computer programming was the largest industry, with 41.8% of the employment within ICT service and consultancy, followed by computer consultancy and computer facilities management activities at 30.2%.

ICT service and consultancy was followed by ICT wholesale with 13,162 employed, which constituted 17.9% of total employment in the ICT sector. Nearly two-thirds of these employees were within the wholesale computer industry, computer peripheral equipment and software. Telecom was the third largest sector in the Øresund Region, with 10,704 employed (14.6%), with wired telecommunications activities being the largest industry in this sector at nearly 60%. The smallest sector was ICT manufacturing, with 3,434 employed (4.7%). Here, the manufacture of communications equipment constituted the largest industry within that sector at 38.3% employed.



Figure 1.4



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03 and SNI02

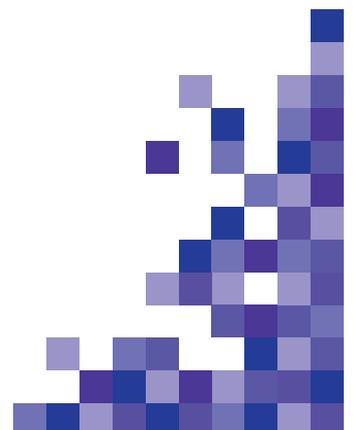
The growth of employment in the ICT sub sectors in the Øresund Region

If we look at the development of the structure of the ICT sector in the Øresund Region from an employment point of view, we can see some clear tendencies in the period from 2004-2007. The sector with the strongest growth, in both absolute terms and by percentage, is ICT service and consultancy. This sector's growth was 25.9% (9,620 persons). In this sector, the industry with the strongest growth by percentage was the development of standard software (33.8%). In absolute numbers, however, the largest growth was in the development of customer specific software and consultancy regarding software, in which there was an increase amounting to 6,590 persons (30.8%).

Another sector which experienced a rise in employment was ICT manufacturing, in which employment increased by 6.8% (589 persons). Within this sector, the fastest growing industry in both absolute terms and percentage was in the manufacturing of telephones, systems and telefax machines.

Two sectors experienced a negative growth in employment during the period. The sector with the largest negative growth was telecom, with a decline of 15.7% (2,119 persons), while the largest overall decline was found in other telecommunication equipment at 56.5% (1,430 persons).

Employment in the wholesale sector also declined in the period by 12% (2,088 persons), primarily due to a large decline in the wholesale of computers, computer peripheral equipment and software, which declined by 21.9% (2,017 persons).

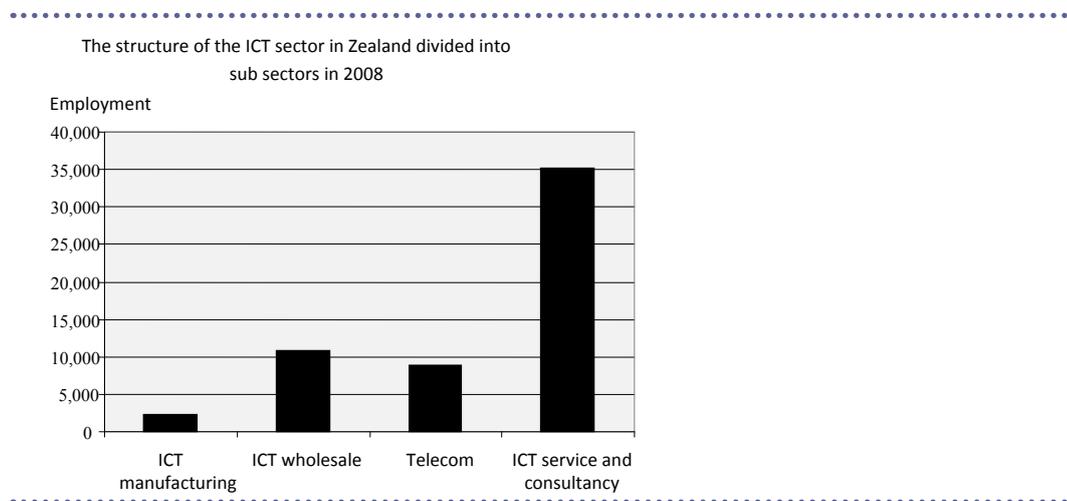


Based on DB07 and SNI07 for the period from 2007-2008, the largest change in employment in the Øresund region was found in ICT manufacturing, with a decrease of -8.2% (a total of 3,434 employed in 2008). Over the same period, the telecom sector had a decrease of -5.1% (10,704 employed in 2008). In the largest sector, which was ICT service and consultancy, employment was basically stagnant (a decrease of -0.1%, with 46,176 employed in 2008). The only ICT sector with a growth in employment for this period was ICT wholesale, with an increase of 0.6% (13,162 employed in 2008).

1.2. Employment in the ICT sector in Zealand

If we look at the development of employment on the Danish side of the Øresund Region, we will find trends similar to those identified for the Øresund Region as a whole. This is due to the large share of total ICT employment in the region in Zealand, which amounted to 78% in 2008. The growth in employment for the period from 2004-2007 was somewhat less than that for the entire Øresund Region – 6.3% compared to 7.8% for the entire Øresund Region. If we look at the period from 2007-2008 based on DB07, the employment in the ICT sector was stagnant in Zealand, with 57,395⁹ employed in 2007 and 57,393 in 2008 (a decrease of only 2 persons).

Figure 1.5



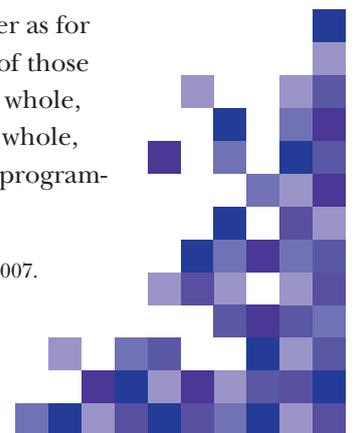
Source: Statistics Denmark special extracts, based on DB07

The structure of the ICT sector in Zealand

If we look at the structure of the ICT sector as measured by employment in the various sectors, we find an ICT structure on Zealand that strongly reminds us of the structure of the ICT sector in the Øresund Region as a whole.

We can see here that the size of the ICT sectors in Zealand follow the same order as for the region as a whole. The largest sector is ICT service and consultancy at 61.4% of those employed (35,205) in 2008. This is slightly less than for the Øresund Region as a whole, where this sector constituted 62.8% of those employed. Just as for the region as a whole, the largest industry within ICT service and consultancy in Zealand was computer programming, with a 40.3% share.

9. Based on the OECD's ICT definition DB03, employment in the ICT sector in Zealand was 63,987 in 2007.



Employment is more equally distributed among the three other sectors. The second largest sector is ICT wholesale, which employed 10,919 people (19%). The largest industry within that sector is the wholesale of computers, computer peripheral equipment and software, with a 66.2 share of those employed.

The third largest sector is telecommunications with 8,975 employed, which constitutes 15.6% of the ICT sector in Zealand. The largest industry in that sector was wired telecommunications activities, with a 57.2% share in 2008.

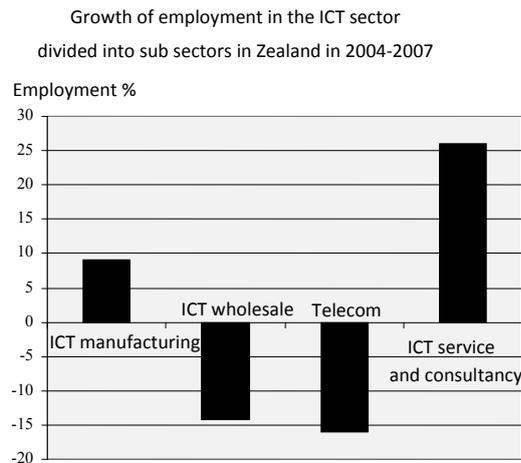
The smallest sector in Zealand is ICT manufacturing, with only 4% (2,294 employed in 2008), while the largest industry in this sector was in the manufacture of communication equipment with 41.3% in 2008.

We can therefore conclude that it is possible to identify one or two industries in all four sectors that strongly dominate the percentage of those employed in the sector.

The growth of employment in the ICT sub sectors in Zealand

If we instead of measuring the employment focus on the growth of employment of the ICT sector in Zealand divided into sub-sectors the following picture emerges:

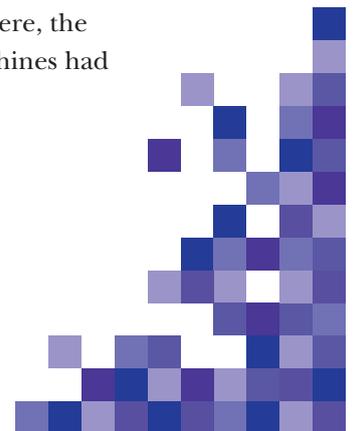
Figure 1.6



Source: Statistics Denmark, special extracts based on DB03

As shown by the figure above, not only is ICT service and consultancy the largest ICT sector in Zealand, but it is also the sector with the largest growth in employment in the period from 2004-2007, with a growth rate of 26%. The industry with the largest growth within that sector is hardware consultancy, which is a small industry with 1,148 employed (a growth rate of 42.3%).

The only other sector besides ICT service and consultancy with a positive growth in employment was ICT manufacturing, which grew by 9.1% for the same period. Here, the small industry for the manufacture of telephone appliances, systems and fax machines had 585 employed, which is an explosive growth rate of 631.5%.



The other two sectors experienced negative growth. The sector with the strongest negative growth was telecommunications, in which employment decreased by 16.1% primarily because of a large decrease in other telecommunications where employment decreased by 56.5%. The other sector with negative growth was ICT wholesale, in which employment decreased by 14.2%. The decrease here was almost exclusively caused by a decrease in the wholesale of computers, computer peripheral and software, which decreased by 21.7% (1994 persons).

If we look at the growth rates for the period from 2007-2008 based on DB07, the growth pattern in the ICT sector was different. Instead of an increase, there was a decrease of -14.4% in ICT manufacturing in Zealand. Instead of a decrease in ICT wholesale, there was a small increase in employment of 0.4%. The decrease in employment in telecom also continued, with a decrease of -4.4%. Just as in the period from 2004-2007, the sector with the largest increase was ICT service and consultancy, with an increase of 2.2%.

We can conclude that the employment pattern in Zealand strongly follows that of the Øresund Region as a whole, with a strong domination by ICT service and consultancy, which is also the sector with the strongest growth. Nevertheless, the share in Zealand was slightly lower than for the region as a whole, whereas the growth rate was almost the same as for the Øresund Region as whole in the period from 2004-2007.

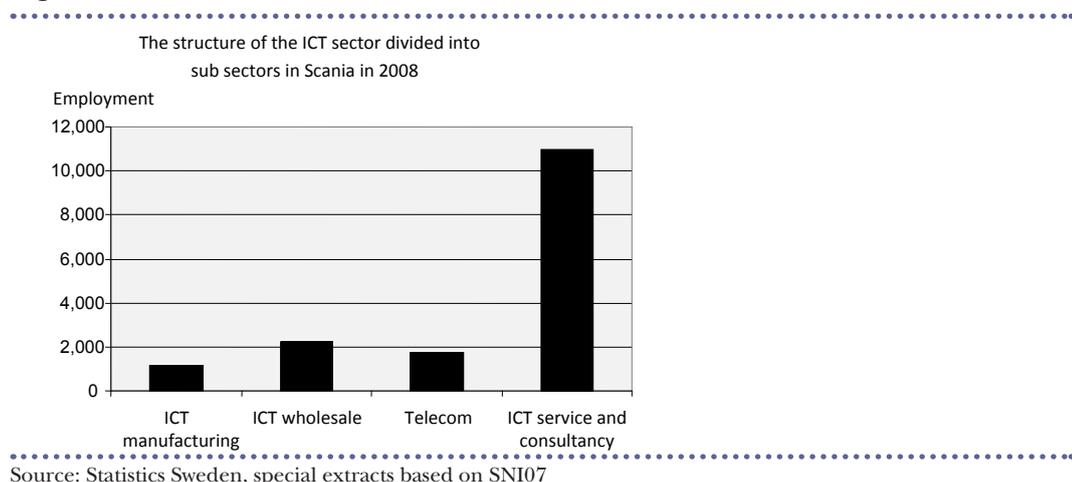
1.3. Employment in the ICT sector in Scania

The employment pattern in Scania differs from that of the Øresund Region as a whole and from that in Zealand. As shown in Figure 1.2, the growth rate in employment for the period from 2004-2007 was considerably higher than that in Zealand and the Øresund Region, with an increase from 16,469 in 2004 to 18,657 in 2007, which was a growth of 13.3%, compared to Zealand's 6.3% and the Øresund Region's 7.8%. If we look at the period from 2007-2008 based on SNI07, there was a decrease from 16,934 to 16,083 employed (5%) in comparison to stable employment in Zealand for the same period.

The structure of the ICT sector in Scania

If we look at the structure of ICT, we find some differences between the two national areas:

Figure 1.7



As was the case with Zealand, ICT services and consultancy is without doubt the largest sub sector in Scania, with 10,971 employed (68.2%) in 2008, which is a larger share than in Zealand, while the largest industry within ICT service and consultancy is computer programming, with a 46.5% share. Also as was the case in Zealand, the second largest sector in Scania was ICT wholesale, with an employment share amounting to 13.9% (2,243). The largest industry within ICT wholesale was the wholesale of computers, computer peripheral equipment and software, with a 61.8% share.

After ICT wholesale, telecommunications had 1,729 persons employed (10.8%), while the largest industry was wired telecommunications activities, with 73.2% of those employed within telecom.

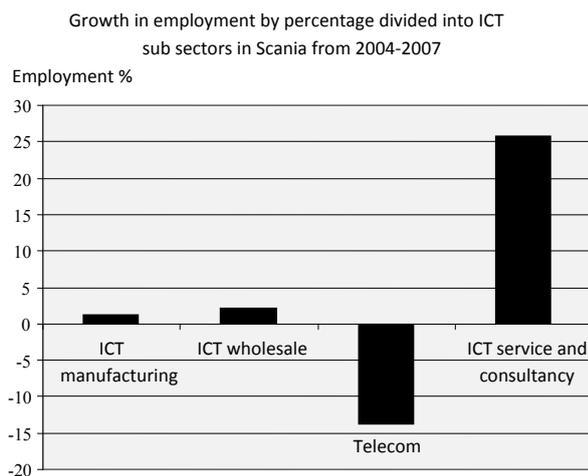
The smallest sector within ICT in Scania was ICT manufacturing, with 1,140 employed (7.1%). The largest industry was the manufacture of electronic components, with a 41.1% share.

Thus, we can see that the structure of the ICT industry as measured by employment is roughly the same in Zealand and Scania, where the sequence measured in employment is the same in the two parts of the region, with ICT service and consultancy at the top and ICT manufacturing at the bottom. It is worth noticing that the share of telecom and ICT wholesale is larger in Zealand, while the share of ICT service and consultancy and ICT manufacturing is larger in Scania.

The growth of employment in the ICT sub sectors in Scania

If we take a look at the growth rates of the sub sectors in the ICT sector in Scania, the following picture emerges:

Figure 1.8



Source: Statistics Sweden, special extract based on SNI02

Again, we can find some similarities between the two parts of the region for the period from 2004-2007. As in Zealand, the strongest growth in Scania was in ICT service and consultancy, with a growth rate of 25.7%. The strongest growth was in the largest industry in the sector, other systems and programme consultancy, with growth amounting to 37.7%.



ICT manufacturing was another sector in which there was growth in both national areas in the region for the period from 2004-2007. In Scania, this growth was 1.2%, with the largest growth coming from the manufacture of computing machinery, in which the employment rate in 2007 was nearly three times as large as in 2004, although it was a small sector with only 298 employed.

Contrary to Zealand, there was also growth in ICT wholesale in Scania, but the growth was not very large, amounting to just 2.1%. The industry with the largest growth in this sector was the small industry of the wholesale of tele-products, with a growth rate of 20.2%.

Telecommunications was a sector which experienced a large decline in employment in both Zealand and Scania. In Scania, this sector declined by 13.8% in the period from 2004-2007 compared to 16.1% in Zealand for the same period. In Scania, this decline was almost solely caused by a decline in wired telecommunications activities.

If we look at the growth pattern for the period from 2007-2008 based on SNI07, the growth pattern differs from that for the period from 2004-2007, in addition to that which took place in Zealand during the same period. Most notable is the decline in ICT services and consultancy, which in the prior period was the sector that experienced the largest growth in employment, but now decreased by -6.7%. This is the opposite of the development in Zealand for the same period. The sharp decline in employment in the telecom sector continued in 2007-2008, with a decline of -8.9%. Contrary to Zealand, there was a strong increase in employment in ICT manufacturing at 7.5%. Likewise with Zealand, there was also a modest growth of 1.4% in ICT wholesale in Scania from 2007-2008.

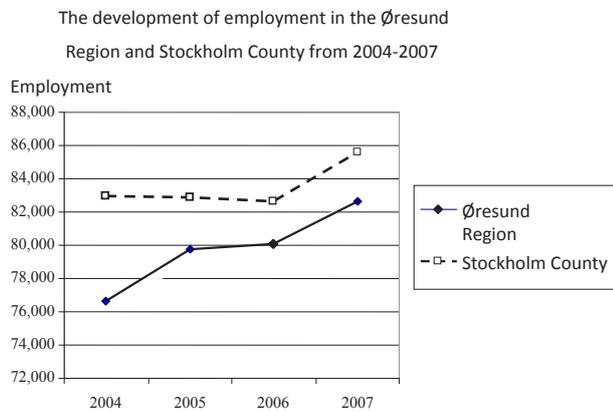
1.4. A comparison of the employment structure in the ICT sector in the Øresund Region and Stockholm County

As a neighbouring Scandinavian ICT cluster, Stockholm County is often considered the most important competitor to the Øresund ICT cluster. For that reason, it is important to look more closely at the structure of the Stockholm ICT cluster and compare it with that of the Øresund Region in order to see to what extent the structure of the two clusters resemble each other. The more the resemblance, the more likely it will be that the competition will become more intense.

If we first look at the employment, we will find that Stockholm County is somewhat larger, when measured in accordance with the NACE Rev. 2 (DB07/SNI07) OECD definition of the ICT sector (see Appendix I). According to this definition, the ICT sector was 82,283 in Stockholm County and 73,476 in the Øresund Region.



Figure 1.9



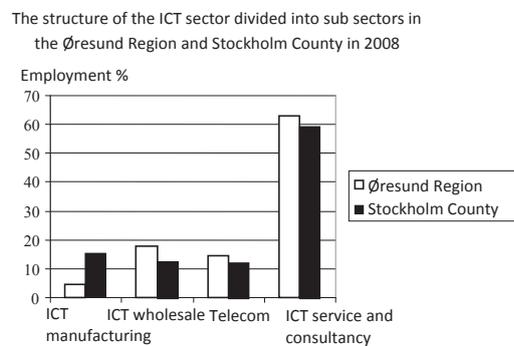
Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

If we look at the development of employment in the two regions for the period from 2004-2007, this is measured according to NACE Rev. 1.1 (DB03/SNI02) OECD definition of the ICT sector, which yields a higher number of those employed in ICT. As per this definition, there was 82,664 employed in the Øresund Region in 2007, while there was 85,631 employed in Stockholm County, and the growth of employment in the period from 2004-2007 was stronger in the Øresund Region than in Stockholm County, 7.8% compared to only 3.2%, respectively. If we look at the development of employment in the period from 2007-2008 based on DB07/SNI07, we get another picture. In the Øresund Region there was a decline in employment of -1.1%, while in Stockholm County there was an increase in the same period of 1.8%.

The structure of the ICT sector in the Øresund Region and Stockholm County

If we focus on the employment structure of the ICT sector in the two clusters, it is possible to identify some differences:

Figure 1.10



Source: Statistics Denmark and Statistics Sweden, based on DB07/SNI07



As demonstrated in the figure above, ICT service and consultancy is the largest sector in both the Øresund Region and Stockholm County, though the share is somewhat larger in the Øresund Region than in Stockholm County at 62.8% compared to 59.6%. Computer programming activities followed by computer consultancy and computer facilities management activities are without doubt the largest industries in the sector in both clusters.

A clear difference between the ICT sector in Stockholm County and the Øresund Region is the stronger position of ICT manufacturing in the former. In Stockholm County, ICT manufacturing is the second largest sector with 15.2% of employment, whereas it is the smallest sector in the Øresund Region at 4.7%. In Stockholm, ICT manufacturing is totally dominated by the manufacture of communication equipment with an 87.3% share, and even though this industry was also the largest in the Øresund Region, its share was only 38.3%.

ICT wholesale was the second largest sector in the Øresund Region at 17.9%, while only being number three in Stockholm County with 12.7% in 2008. In both the Øresund Region and Stockholm County, this sector was strongly dominated by the wholesale of computer equipment, computer peripheral and software, with a share of nearly two-thirds of employment in the Øresund Region and over 60% in Stockholm County.

Telecommunications was the smallest sector in Stockholm County, with a share of 12.5% of the employment in the ICT sector, while it was third in the Øresund Region with 14.6%. In both regions, wired telecommunications activities dominated this sector with a share of close to 60% in 2008.

We can therefore conclude that there are no dramatic differences in the employment structure of the ICT sector between the two regions. The biggest difference between them is a stronger ICT manufacturing in Stockholm County, which manifests itself as the second largest ICT sector, with a stronger ICT wholesale sector in the Øresund Region, which occupies the second position in the Øresund Region. Concerning the largest sector in the two regions, ICT service and consultancy, the Øresund Region is relatively stronger, although in absolute terms Stockholm County is somewhat larger.

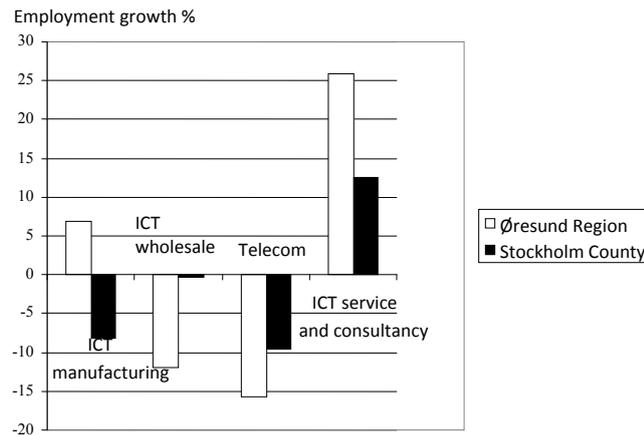
The growth of employment in the ICT sub sectors in the Øresund Region and Stockholm County

We concluded above that the growth of employment in the ICT sector had been stronger in the Øresund Region than in Stockholm County from 2004-2007. If this growth is divided into sub sectors, it is also possible to identify some clearly different growth patterns, as shown in the figure below:



Figure 1.11

Employment growth by percentage in the ICT sector
divided into subsectors in the Øresund Region and
Stockholm County from 2004-2007



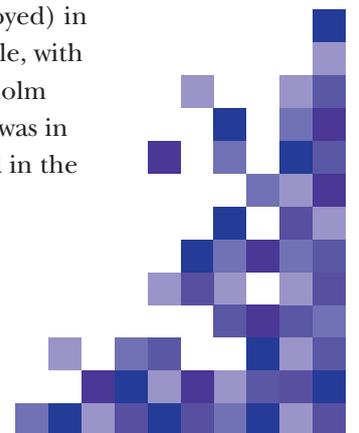
Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

The most obvious difference is within ICT manufacturing, where there was an 6.8% growth in employment in the Øresund Region, whereas Stockholm County declined by 8.2%.

In the other sectors there was a similar growth pattern, though growth rates differed between the two regions. In both the Øresund Region and Stockholm County, the strongest growth rate was found in the largest sector, ICT service and consultancy, but the growth rate was considerably stronger in the Øresund Region at 25.9% compared to Stockholm County's 12.6%. The absolute increase in both regions was strongest in the largest industry within ICT service and consultancy, which is the development of customer specific software and consultancy concerning software.

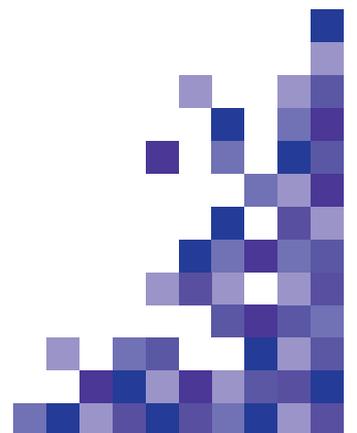
In both ICT wholesale and telecommunications both, the Øresund Region and Stockholm County experienced a decline in employment for the period from 2004-2007. In both sectors, the decline was stronger in the Øresund Region. In ICT wholesale, there was a decline of only 0.3% in Stockholm County, while the Øresund Region experienced a decline of 12%. The decline in telecommunications was stronger in both regions at 15.7% and 9.6%, respectively, for the Øresund Region and Stockholm County.

In the period from 2007-2008, we can find some clear differences within the structural growth pattern in the two clusters based on DB07/SNI07. In the largest sector in the two regions, ICT service and consultancy, there was a decrease in employment of -0.1%, with 46,176 employed in 2008 in the Øresund Region, while Stockholm County had an increase of 5.8% (49,081 employed). The Øresund Region had a decline of -8.2% (3,434 employed) in ICT manufacturing, while Stockholm County increased by 1.4% (12,469 employed) in 2008. There was also a divergent development trend in 2007-2008 in ICT wholesale, with a small increase of 0.6% (13,162 employed) in the Øresund Region, while Stockholm County decreased by -11% with 10,480 employed in 2008. The only similar trend was in telecom, where there was a decrease in both regions: -5.1% with 10,704 employed in the Øresund Region and -1.2% with 10,253 employed in Stockholm County.



Conclusion

To summarise, the ICT sector in Stockholm County was somewhat larger than in the Øresund Region as measured by employment in 2008. The growth rate in employment in the latter was stronger in the period from 2004-2007, while the opposite was the case in 2007-2008. If we look at the employment structure, there are no dramatic differences between the two regions, as shown in Figure 1.10, with the most notable difference being a larger ICT manufacturing sector in Stockholm. The Øresund Region was relatively stronger in ICT service and consultancy, ICT wholesale and telecommunications. It was only in ICT wholesale and telecommunications that the employment was larger in absolute terms in the Øresund Region than in Stockholm County.



Chapter 2

Number of local units in the ICT sector in the Øresund Region

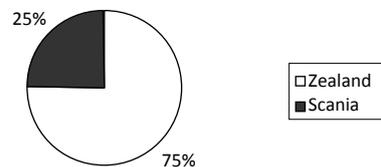
Another way to measure the size and structure of the ICT sector in the Øresund Region is to register the number of local units within ICT. In the following we will look at the number of local units in the Øresund Region as well as in the two national areas.

2.1. Local units in the Øresund Region

If we look at the Øresund Region as a whole, there were 8,386 local units. Of these, 6,319 were located in Zealand and 2,067 in Scania, which means that 75.4% of the local units were located in Zealand and 24.6% in Scania.

Figure 2.1

Number of local units in the ICT sector in the Øresund Region divided between Zealand and Scania in 2008



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB07/SNI07

We can see that if we compare the number of local units with employment, the share for Scania is larger in 2008.

If we look instead at the distribution of local units between the various sub sectors of the ICT sector, the following picture emerges:

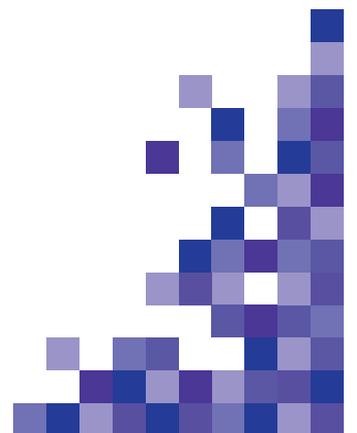
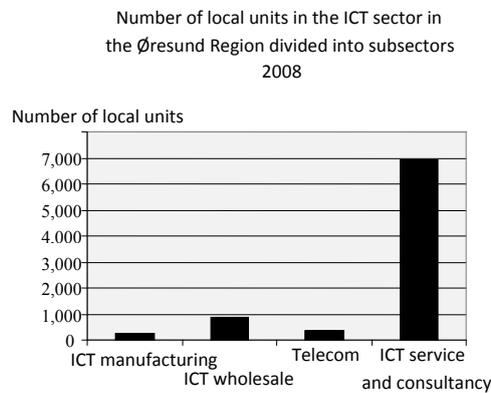


Figure 2.2



Source: Statistics Denmark and Statistics Sweden, special extracts, based on DB07/SNI07

We can see here that the vast majority of local units are within the ICT service and consultancy sector, which is where we find 82.5% of them in the Øresund Region. ICT wholesale comes in at a distant second at 10.5%, while telecom and ICT manufacturing are even farther behind at 4.2% and 2.8%, respectively.

This vast difference in the number of local units between ICT service and consultancy and the other sub sectors is primarily caused by the fact that this sector is by far the largest ICT sector in the Øresund Region, as well as by the fact that the share of one-man units and units which employ 2-4 persons within ICT service and consultancy is larger than in the ICT sector as a whole, which is shown in the figure below:

Figure 2.3 - Number of local units divided into the number of employed and ICT sub sectors

	1	2-4	5-9	10-19	20-49	50-99	100+	Total
ICT manufacturing	95	34	33	30	22	10	7	231
ICT wholesale	258	246	159	115	67	20	19	884
Telecom	89	78	61	37	44	20	20	349
ICT service and consultancy	4,422	1,228	508	371	247	82	64	6,922
Total	4,864	1,586	761	553	380	132	110	8,386

Source; Statistics Denmark and Statistics Sweden, special extracts based on DB07/SNI07

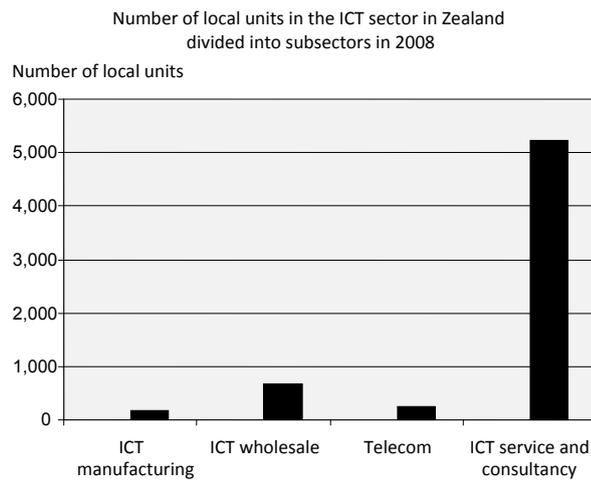
The figure shows that 58% of the local units within the ICT sector are one-man units; if we add units which employ 2-4 persons, the share rises to 76.9%. Units with more 100 or more employees accounted for only 1.3% of the local units. As a result, the ICT sector in the Øresund Region is strongly dominated by small units.



2.2 Local units in Zealand

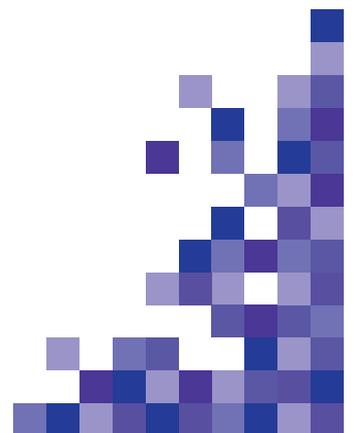
In Zealand, there were 6,319 local units within the ICT sector. These local units were distributed in the various sub sectors in the following way:

Figure 2.4



Source: Statistics Denmark, special extracts based on DB07

We can see that the distribution of local units follows the same pattern as in the Øresund region as a whole, which is in accordance with the fact that Zealand strongly dominated the ICT sector in the Øresund Region. The ICT service and consultancy share of the number of local units was 82.9% in Zealand in 2008. This is nearly the same as in the Øresund Region as a whole, where the share was 82.5%. For the other sub sectors, the share of local units was very close to that of the Øresund Region as a whole, with a 10.5% share for ICT wholesale, 4% for telecommunications and 2.6% for ICT manufacturing.

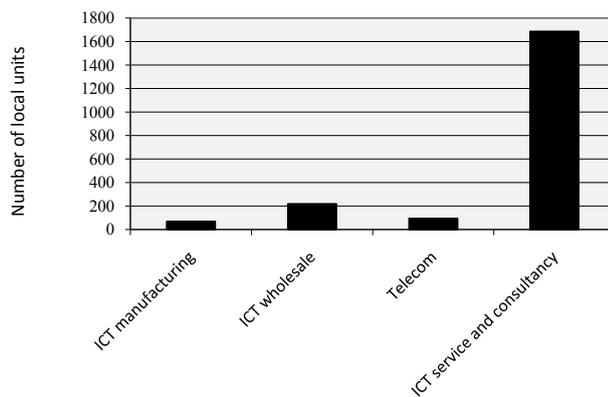


2.3 Local units in Scania

The number of local units in Scania was 2,067 in 2008. These were distributed between the various sub sectors in the following way:

Figure 2.5

Number of local units in the ICT sector in Scania divided into subsectors 2008



Source: Statistics Sweden, special extracts based on SNI07

If we look at the distribution of local units in the ICT sector in Scania in 2008, we can see that it closely follows the same pattern as in Zealand and in the Øresund Region as a whole, in which the share of ICT service and consultancy in the number of local units was 81.6% in Scania. The corresponding share was 10.5% for ICT wholesale, 4.6% for telecommunications and 3.3% for ICT manufacturing. We can therefore conclude that the distribution of local units between sub sectors was very similar in the Øresund Region.

2.4 A comparison of local units in the Øresund Region and Stockholm County

If we compare the number of local units in the Øresund Region with that of Stockholm County, we find that there were 8,386 and 7,552, respectively, which was contrary to employment which was larger in Stockholm County.

If we look at the distribution of local units between the various sub sectors, we see a common pattern in both the Øresund Region and Stockholm County in 2008:

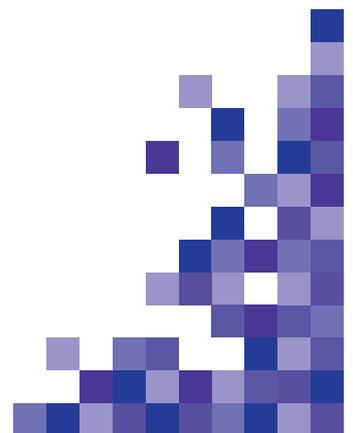
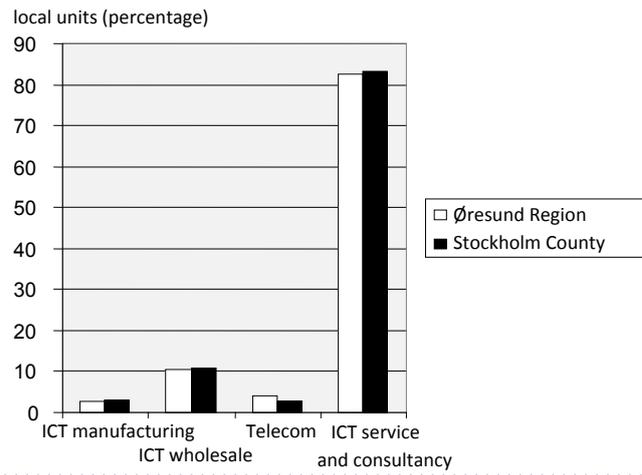


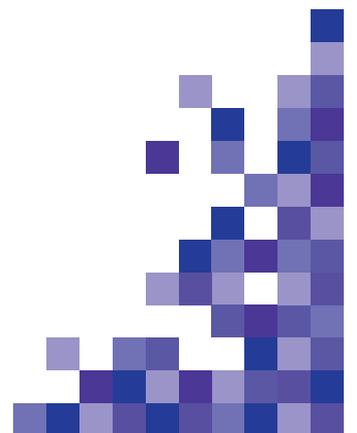
Figure 2.6

Number of local units in the ICT sector in the Øresund Region and Stockholm County divided into sub sectors in 2008 (percentage)



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB07/SNI07

By percentage, we can see very small differences in the number of units distributed in the various sub sectors in the Øresund Region and Stockholm.



Chapter 3

The structure of turnover in the ICT sector in the Øresund Region

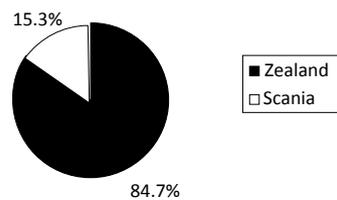
In the last two chapters, we analysed the structure of the ICT sector with employment and the number of local units in the sector as a point of departure. In this chapter, we will once again analyse the structure of the ICT sector in the region, but now using turnover as a point of departure to see if the results may differ. In this way, it is possible to conduct a deeper and wider analysis of the ICT structure in the Øresund Region, as a framework will be built to determine the sector's position of strength and global competitiveness, as well as a basis for the development of an industrial policy for the sector. For that reason, the structure of the analysis and the chapter will be the same as in the preceding chapters.

3.1. The turnover in the ICT sector in the Øresund Region

In 2008, there was a turnover of EUR 21,678 million, which was an increase of 9.4% compared to 2004. This turnover was divided between EUR 18,377 million in Zealand and EUR 3,301 million in Scania:

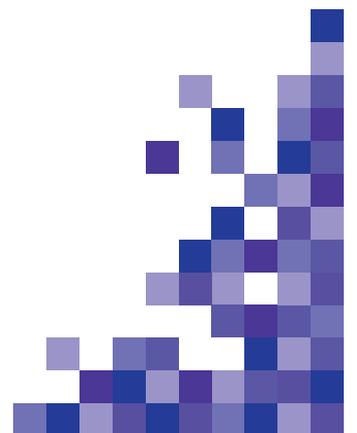
Figure 3.1

Turnover in the ICT sector in the Øresund
Region divided between Zealand and Scania
by percentage in 2008



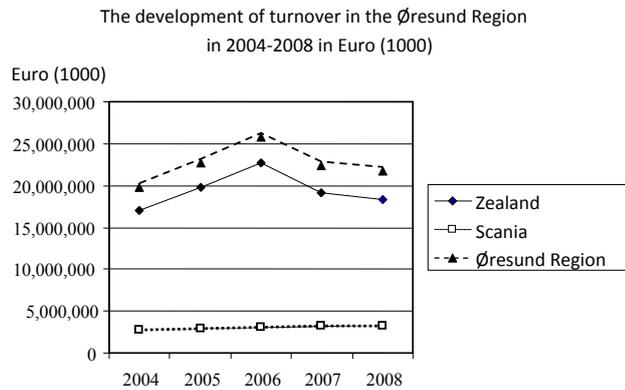
Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

When we look at the turnover, we can see that Zealand strongly dominates the ICT sector in the Øresund Region with an 84.7% share compared to Scania's 15.3%. The domination is even larger than in employment, where the share for Zealand and Scania was 78% and 22%, respectively.



If we look at the growth of turnover in the Øresund Region, the following picture emerges:

Figure 3.2



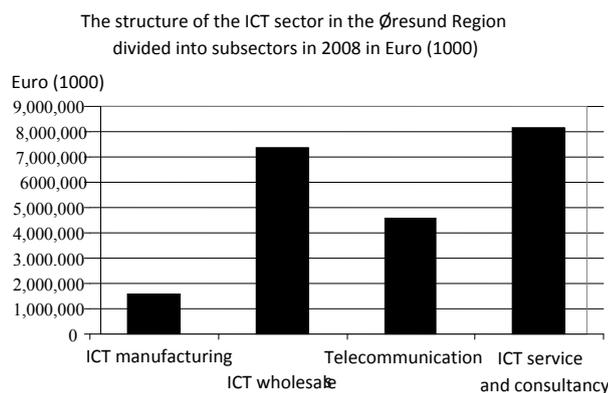
Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

Turnover grew from 2004 to 2006 but declined afterward as a result of a large decline in the ICT wholesale sector in Zealand, resulting in 9.4% growth in the Øresund Region period from 2004-2008. We find the largest growth rate in Scania, with growth of 17.6% compared to Zealand's 8% for the same period. Because of this, we find the same growth pattern as in employment, with the largest growth in Scania.

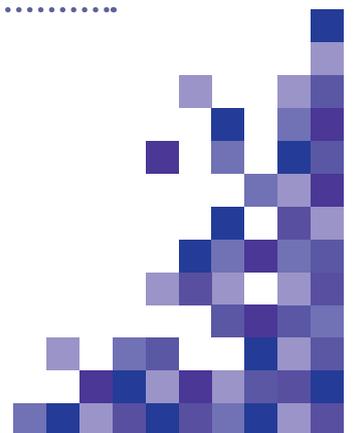
The structure of the ICT sector in the Øresund Region

If we analyse the structure of the ICT sector in the Øresund Region using turnover as a point of departure, we obtain the following structure:

Figure 3.3



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02



The figure above shows the same structure as for employment, meaning that the succession of the ICT sectors follows the same pattern, with ICT service and consultancy being the largest, followed by ICT wholesale, telecommunications and ICT manufacturing. The most significant difference is that ICT service and consultancy does not dominate the ICT sector in the same way as it did for employment. When it comes to turnover, ICT service and consultancy is only slightly larger than ICT wholesale. The ICT service and consultancy sub sector had a turnover in 2008 of EUR 8,170 million, which was a 37.7% share of the ICT sector's total turnover. As was the case for employment, over half of turnover in ICT service and consultancy came from the industry for the development of customer specific software and consultancy assistance related to software.

Nearly as large as ICT service and consultancy is ICT wholesale, with a turnover of EUR 7,347 million (a 33.9% share of the ICT sector), which is a considerably larger share than that of employment. The largest industry here was the wholesale of computers, computer peripheral and software, with more than half the turnover in the wholesale sector.

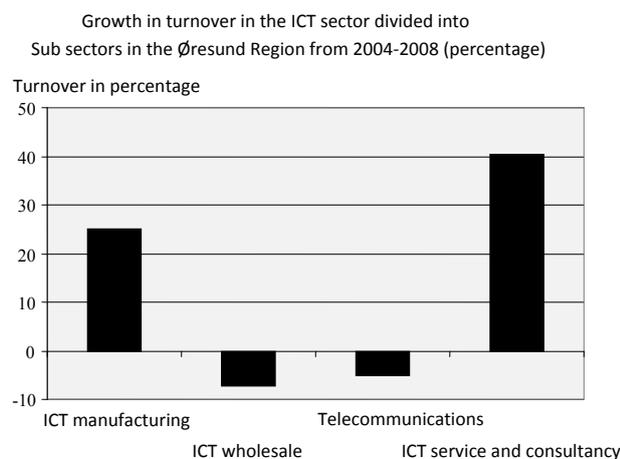
The third largest sector in the Øresund Region was telecommunications, with a turnover of EUR 4,593 million in 2008 (a 21.2% share of the ICT sector). As with employment, the largest industry within telecommunications was wired telecommunications activities.

Without question, the smallest sub sector of the ICT sector measured in turnover in the Øresund region in 2008 was ICT manufacturing, with a turnover amounting to EUR 1,567 million, which was 7.2% of the ICT sector. The largest industry within ICT manufacturing in 2008 was the manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, with the exception of industrial process control.

Growth of turnover in the ICT sub sectors in the Øresund Region

If we measure the growth of turnover in the different sub sectors of the ICT sector in the Øresund Region, the following growth pattern emerges:

Figure 3.4



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02



It is interesting to note that the strongest growth in percentage occurred in the smallest and largest sub sectors, i.e. ICT manufacturing and ICT service and consultancy. The strongest growth was found in ICT service and consultancy, in which growth was 40.5%. ICT manufacturing came in second, with a growth in turnover amounting to 25.2% for the period from 2004-2008. Two sectors experienced a decrease in turnover. The strongest decrease was in ICT wholesale, where the decrease was -7.2% due to a large decrease on the Zealand side, while the turnover in telecommunication decreased by -5%. If we compare the growth of turnover with that of employment for the period from 2004-2007, in which both employment and turnover are based on DB03/SNI02, we can identify a similar pattern with ICT manufacturing and ICT service and consultancy increasing, and ICT wholesale and telecommunication decreasing. The most important difference in relation to turnover was that ICT manufacturing was the fastest growing sector, whereas for employment, the ICT service and consultancy was the fastest growing sector.

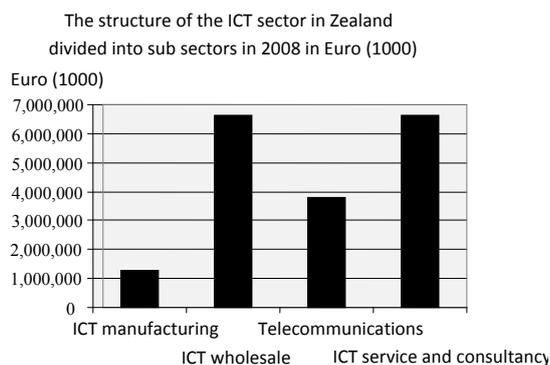
3.2. Turnover of the ICT sector in Zealand

In Zealand, there was a turnover of EUR 18,377 million in the ICT sector in 2008. This was an increase of 8% for the period from 2004-2008, which was slightly lower than for the ICT sector in the Øresund Region as a whole, where the increase in the same period was 9.4%.

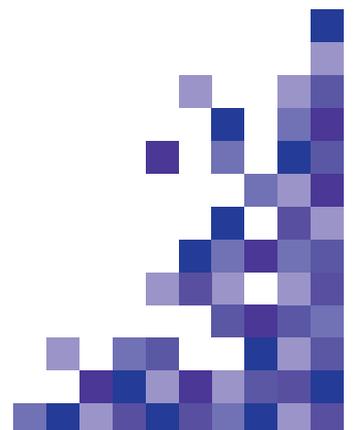
The structure of the ICT sector in Zealand

If we analyse the structure of the ICT sector divided into sub sectors in Zealand, the following picture emerges:

Figure 3.5



Source: Statistics Denmark, special extracts based on DB03



The structure of the ICT sector in Zealand strongly resembles that of the Øresund Region as a whole, which accounts for the dominant position of Zealand in the Øresund Region's ICT structure. There are two sectors that can be distinguished as the largest sectors in Zealand in terms of turnover. These are ICT wholesale, with a turnover of EUR 6,641 million and ICT service and consultancy, with a turnover of EUR 6,632 million. This reveals a share of 36.1% of the ICT structure respectively for the two sectors. Even so, we can see that the ICT service and consultancy sector was somewhat larger than the ICT wholesale in the Øresund Region as a whole.

The ICT wholesale sector is totally dominated by the wholesale of computers, computer peripheral and software, with a 58.5% share of the sector's turnover in 2008. In the ICT service and consultancy sector, the dominant industry is the development of customer specific software and consultancy in relation to software, with a 60.1% share of the sector's turnover.

Telecommunication comes in third in Zealand with a turnover of EUR 3,806 million (a share of 20.7% of the ICT sector), whereas wired telecommunications activities constitute the largest industry in the sector with a 39.2% share, followed closely by wireless communication with a 34.9% share.

ICT manufacturing constitutes the smallest sector in the ICT structure in Zealand with a 7.1% share and a turnover of EUR 1,297 million. The manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except for industrial process control equipment, is the largest industry.

The largest difference compared to the employment analysis is that ICT wholesale and ICT service and consultancy have roughly the same size in terms of turnover, while ICT service and consultancy were by far the largest sector in the employment analysis.

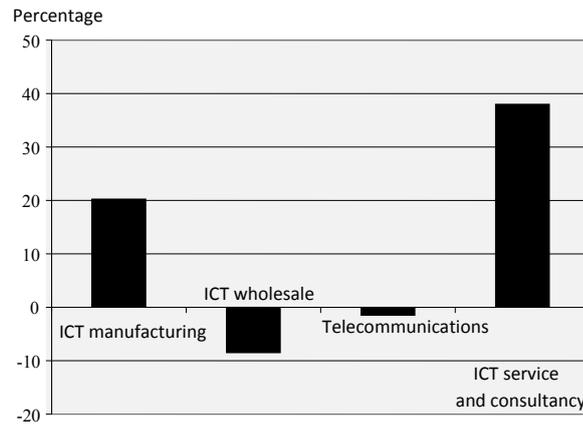
Growth of turnover in the ICT sub sectors in Zealand

Lastly, if we look at the growth rates of the four sectors in Zealand, the following is revealed in the figure below:



Figure 3.6

The growth of turnover in the ICT sector in Zealand divided into sub sectors from 2004-2008 (percentage)



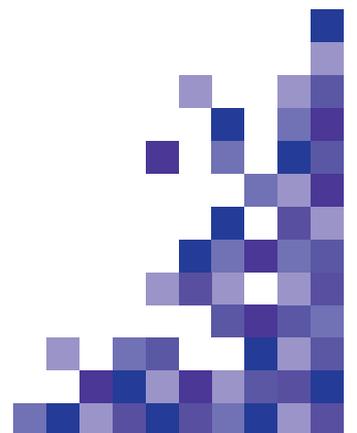
Source: Statistics Denmark, special extracts based on DB03

Again, we can identify two sectors with growth. The largest growth in turnover in the period from 2004-2008 was within ICT service and consultancy, with a growth rate of 38.1%. The other sector with a positive growth rate was ICT manufacturing, which grew by 20.3%. These growth rates were slightly lower than for the Øresund Region as a whole. Telecommunications had a decrease in turnover in the period from 2004-2008 amounting to -1.4%. The strongest decrease in turnover in this period was found in ICT wholesale, which experienced a decline in growth of -8.6%.

If we compare the turnover analysis with the employment analysis for the period from 2004-2007, in which both are based on DB03, we see a somewhat divergent growth pattern with a negative growth both in ICT wholesale and telecommunications within employment, while only ICT wholesale experienced a decrease in this period in regard to turnover. However, measured in the period from 2004-2008, telecommunications also had a negative growth in turnover.

3.3. Turnover of the ICT sector in Scania

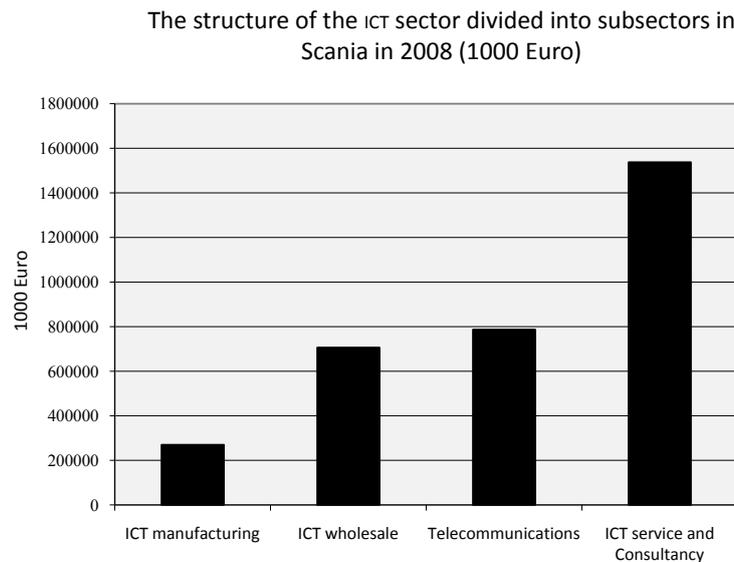
In 2008, there was a turnover in the ICT sector in Scania of EUR 3,301 million, while the growth rate in the period from 2004-2008 was 17.6%. This was a stronger growth rate than Zealand's 8% and the Øresund Region as a whole, where the increase in turnover was 9.4%.



The structure of the ICT sector in Scania

If we look at the structure of the ICT sector divided into sub sectors measured in Euro (1000), the structure is as follows:

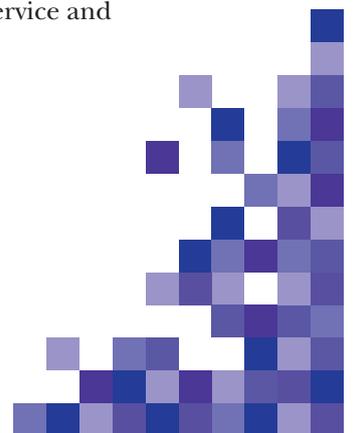
Figure 3.7



Source: Statistics Sweden, special extracts based on SNI02

Measured by turnover, ICT service and consultancy dominates the ICT sector in Scania in 2008. This sub sector had a turnover of EUR 1,538 million (a 46.6% share of the ICT sector). The second largest sector was telecommunications with a turnover of EUR 787 million (a 23.8% share of the sector). The third largest sector was ICT wholesale with a turnover of EUR 706 million (a 21.4% share), while ICT manufacturing was the smallest sector with a turnover of EUR 270 million (an 8.2%). This can be compared with employment in which ICT manufacturing was the second largest sector, with the striking difference being the much more dominant position of ICT service and consultancy in the employment analysis.

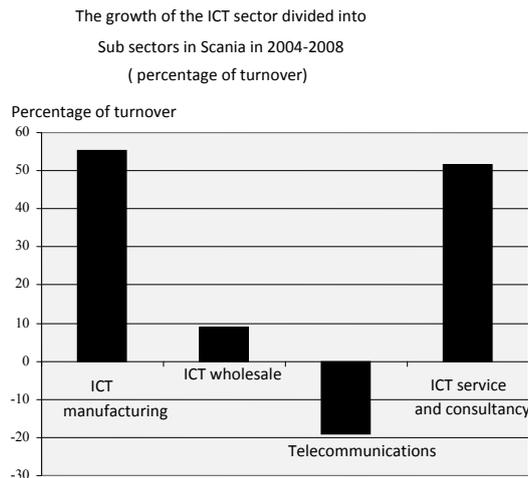
If we compare the Scanian ICT structure measured in turnover with that of Zealand, the biggest difference is that ICT wholesale and ICT service and consultancy are almost in parity in Zealand, while the importance of ICT service and consultancy is larger in Scania. In both Scania and Zealand, ICT manufacturing is the smallest sector with an 8.2% and 7.1% share, respectively, in 2008. In telecommunications there is no large difference in the sub sector's share of the ICT sector in Scania and Zealand, with shares in turnover of 23.8% and 20.7%, respectively. Where the structure of the ICT sector differs between the two parts of the region is in the difference in importance of ICT wholesale and ICT service and consultancy.



Growth of turnover in the ICT sub sectors in Scania

Lastly, if we look at the growth of turnover of the four sub sectors, we will see the following growth pattern:

Figure 3.8



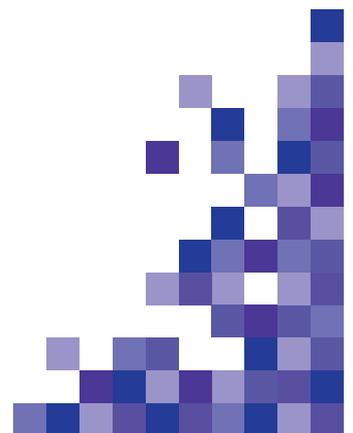
Source: Statistics Sweden, special extracts based on SNI02

Concerning the growth of turnover, there are two sectors which particularly distinguish themselves by their high growth rates in Scania for the period from 2004-2008, i.e. ICT manufacturing and ICT services and consultancy, with growth rates amounting to 55.2% and 51.7%, respectively. The growth in these sectors has been offset by a moderate growth of only 8.9% in wholesale, while there was a large decrease of -19% in turnover in telecommunications.

If we compare the development of turnover with that in Zealand, we can see both similarities and differences. In both parts, we see strong growth in ICT manufacturing and ICT service and consultancy. Where they differ is in ICT wholesale, in which there is growth in Scania and decline in Zealand. Concerning telecommunications, the decrease in turnover was rather modest in Zealand, while there was a large decline in Scania.

3.4. A comparison of the structure of turnover in the ICT sector in the Øresund Region and Stockholm County

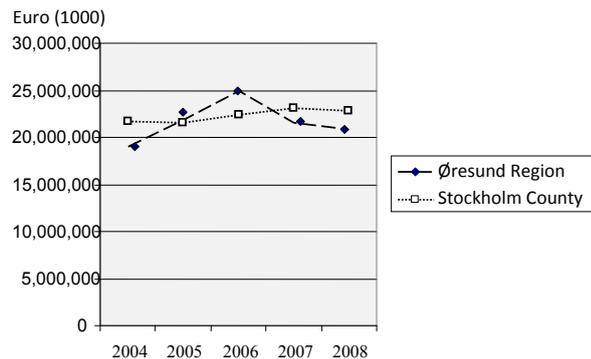
As was the case with the employment analysis in the preceding chapter, we will end the turnover analysis in this chapter by comparing the Øresund Region with its closest competitor, Stockholm County, to discern if there are any major differences and similarities when the comparison uses turnover instead of employment as its point of departure.



Like employment, the two regions are also rather similar in size when the point of departure is turnover, which follows from the figure below:

Figure 3.9

The development of turnover in the ICT sector in the Øresund Region and Stockholm County from 2004-2008 in Euro (1000)



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

Measured in turnover, the ICT sector was slightly larger in Stockholm County than in the Øresund Region in 2008 at EUR 22,782 million and 21,678 million, respectively. The fact that Stockholm County is larger is due to a sharp decline in the Øresund Region in 2007 caused by a large decrease in ICT wholesale in Zealand. This decrease continued at a slower pace in the following year. If we look at the growth of turnover for the entire period from 2004-2008, the increase was larger in the Øresund Region than in Stockholm County, where the former had a growth rate of 9.4% compared to 5.3% for the latter.

The structure of the ICT sector in the Øresund Region and Stockholm County

When analysing the ICT structure divided into sub sectors and measured in turnover, it is possible to identify some similarities between the two regions, which was also the case with the employment analysis:

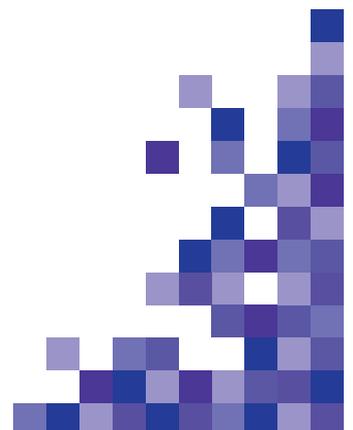
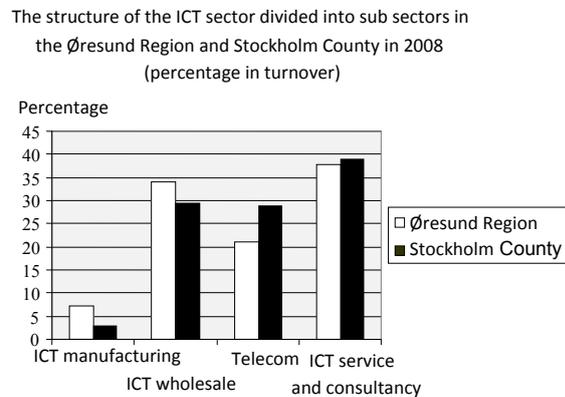


Figure 3.10



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

From the figure above, we can see that the ICT structure is rather similar in the Øresund Region and Stockholm County if the analysis takes its point of departure in turnover. The ranking of the sectors according to turnover is the same in both regions, with ICT service and consultancy on top in both regions at 37.7% in the Øresund Region and 38.9% in Stockholm County, followed closely by ICT wholesale at 33.9% and 29.3%, respectively. We find the largest differences calculated by percentage in the telecommunication and ICT manufacturing sector, both of which are ranked as numbers three and four, respectively, in both regions. Telecommunication's share of the ICT sector's turnover was 28.8% in Stockholm County and 21.2% in the Øresund Region. For ICT manufacturing, the share was 3% in Stockholm County and 7.2% in the Øresund Region, thereby demonstrating that where the two regions primarily differ in turnover is in telecommunications and ICT manufacturing.

If we compare the turnover analysis with the employment analysis the striking difference is that the dominance of ICT services and consultancy is much stronger in both regions in relation to the other sectors when point of departure is taken in employment. Another difference is, contrary to the turnover analysis, that Stockholm County is relatively stronger in ICT manufacturing than the Øresund Region when measured in employment while the opposite is the case with telecommunications

Growth of turnover in the ICT sub sectors in the Øresund Region and Stockholm County

If the analysis instead focuses on the growth rates of turnover in the sub sectors, some clear differences between the Øresund Region and Stockholm County emerge:

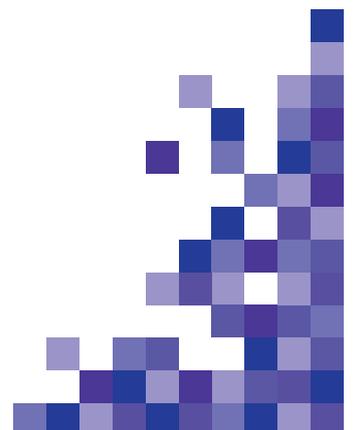
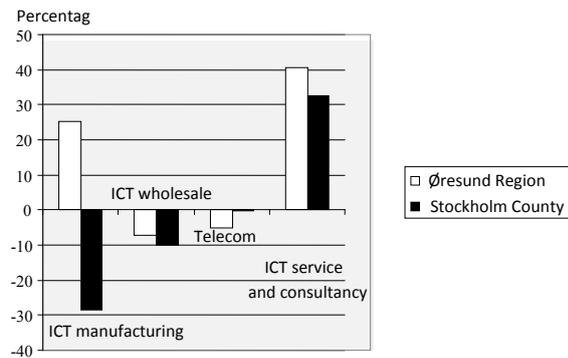


Figure 3.11

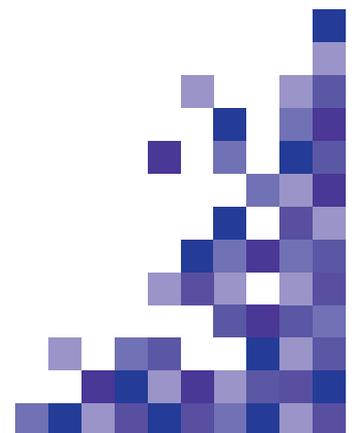
The growth of turnover in the ICT sector divided into sub sectors in the Øresund Region and Stockholm County from 2004-2008 (percentage)



Source: Statistics Denmark and Statistics Sweden, special extracts based on DB03/SNI02

The most striking difference is within ICT manufacturing, in which the Øresund Region experienced a strong growth of 25.2% in the period from 2004-2008, while the development in Stockholm County was quite the opposite, with a decline of -28.5%. This is also in accordance with the employment analysis, although the difference is larger in terms of turnover. In ICT services and consultancy, there has been a growth in both regions although the growth in the Øresund Region has been stronger than in Stockholm County at 40.5% compared to 32.5%, respectively. Within ICT wholesale, Stockholm County experienced a larger decrease in turnover compared to the Øresund Region, with a decrease of -10% compared to the Øresund Region's -7.2% for the same period. The opposite was the case in telecom, in which Stockholm County had a small decrease of -0.4%, while the Øresund Region decreased by -5%.

What can be concluded from the comparison of the two ICT regions with turnover as a point of departure is that there are some clear similarities. Firstly, the two regions are very close when it comes to turnover in the ICT sector, though Stockholm County is slightly larger. Secondly, the two regions are also rather similar in the structure of the ICT sector, though there are only small differences in the relative shares of the different sub sectors, as ICT manufacturing and ICT wholesale are somewhat larger in the Øresund Region and telecommunications the same in Stockholm County. The biggest differences are found in growth rates, in which the growth of the ICT sector has been stronger in the Øresund Region. Another very obvious difference is the divergence in growth rates in ICT manufacturing, where the Øresund Region has experienced a strong growth, while Stockholm County has experienced a sharp decline.

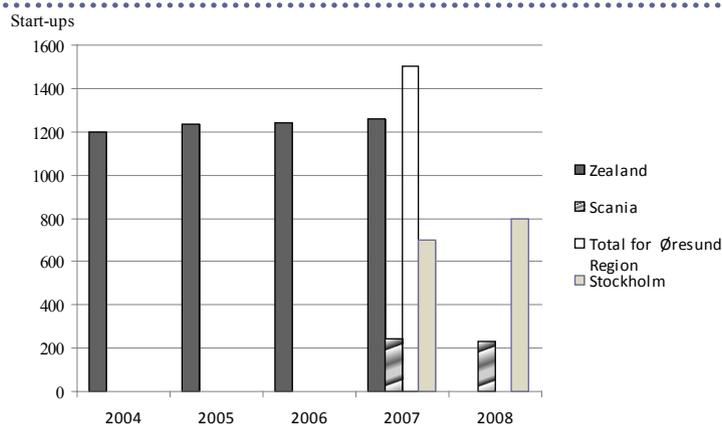


Chapter 4

Start-up firms in the ICT sector in the Øresund Region

A very important factor in the development of the ICT sector is the number of start-up firms as it pertains to the renewal of the ICT industry. An analysis of start-up firms can also tell us something about the direction in which the ICT industry is moving as well as where new types of business can be found, though there are factors other than the actual trends within the industry that affect the number of start-up firms such as general business conditions, changes in local demand, etc. In the following, we will look at the development of start-up firms in the two parts of the Øresund Region and Stockholm County.

Figure 4.1 - Number of start-up firms in the Øresund Region and Stockholm County from 2004 - 2008



Source: Statistic Denmark and Statistics Sweden, special extracts

It has not been possible to obtain data for the entire period from 2004-2008 for all regions. For Denmark, there is data for the period from 2004-2007. For Scania, there is only data for 2007 and 2008, with the same for Stockholm. As the graph shows, there are nearly twice as many start-ups in the Øresund region compared to Stockholm. It is also worth noting that there is such a high level of start-ups in Zealand in relation to the two geographical areas in Sweden. The number of start-ups in 2007 was 1258 in Zealand and 245 in Scania, yielding a total of 1,503 for the Øresund Region compared to Stockholm where there were 701 start-ups.

In relation to Scania, the number of start-ups was larger in Zealand. Of the start-ups in the Øresund Region, 83.7% took place in Zealand, while 16.3% took place in Scania, which is close to ICT shares of Zealand and Scania in the Øresund Region.



Figure 4.2 - Percentage of start-up firms in the ICT sector divided into sub sectors in the Øresund Region and Stockholm County in 2007

	Zealand	Scania	Stockholm County	Øresund region
ICT manufacturing	2.2	0	1.2	1.9
ICT wholesale	7.0	4.2	1.5	6.4
Telecommunications	1.9	1.8	1.4	1.9
ICT service and consultancy	88.9	94.1	95.9	89.8

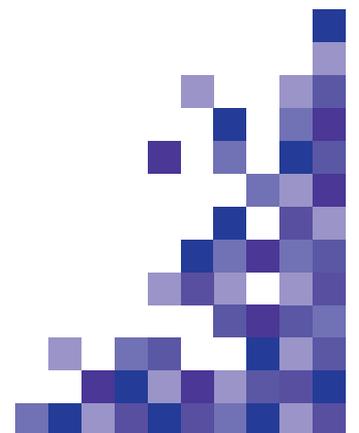
Source: Statistics Denmark and Statistics Sweden, special extracts

In Scania, the start-up firms are primarily within ICT service and consultancy, but there is also a relatively large amount of start-ups in wholesale, where new firms are important. Within ICT service and consultancy, the start-ups occur within game developers, although the developers of web portals are an industry in which start-up firms are also prominent.

The picture is the same in Stockholm, but here start-up firms are also important within the industries of *computer service bureaus* and *hosting companies*. The small amount of start-up firms within ICT manufacturing in Stockholm County compared to Zealand are also worth noting.

On the whole, the start-up pattern in Zealand is the same. One difference is that the role of start-up firms within ICT manufacturing is more important than in the other two regions, though the total number of ICT manufacturing start-ups in Zealand was 28 in 2007 compared to only eight in Stockholm. The capital region surrounding Copenhagen is very dominant in regard to start-ups in the ICT sector and is where 82% of start-ups on Zealand occur. This differs from the general picture for start-ups, in which only 70% of the total start-ups in Zealand take place in the Copenhagen area, and the picture is the same if we compare Zealand with the rest of Denmark. Here, the ICT share of total start-ups in Zealand is 6.9%, while only being 3.8% for the rest of Denmark. Unfortunately, it has not been possible to obtain comparable figures for Sweden.

We can therefore conclude that the Øresund Region stands strong in terms of ICT start-ups compared to Stockholm. It is primarily a city/region phenomenon taking place in the ICT service and consultancy sector, although the importance of start-ups in ICT manufacturing on Zealand cannot be neglected.

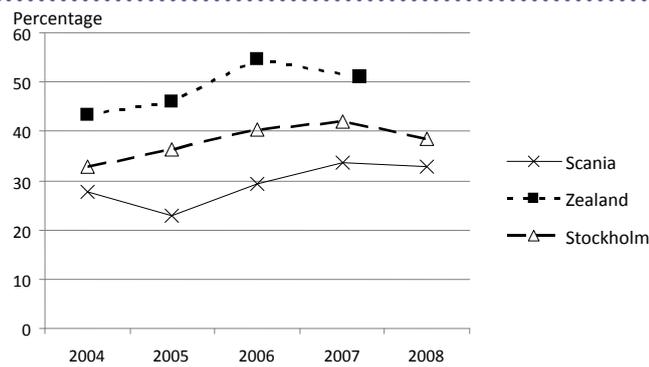


Chapter 5

Foreign investments in the ICT industry in the Øresund Region

Along with start-ups, foreign investment in the ICT industry is an important factor for innovation and development within the industry. This is an instrument by which capital is provided, new knowledge is created and market access is given. For that reason, attracting foreign firms and capital to the region is an important strategy for developing the ICT industry. If we look at the development in recent years of staff in foreign-owned firms, an interesting picture emerges:

Figure 5.1 - Percentage of ICT staff who work in foreign-owned firms in Zealand, Scania and Stockholm County from 2004 - 2008



Source: Statistics Denmark and Statistics Sweden, special extracts

The figure above clearly shows that over half of those employed in the ICT industry in Zealand are employed in foreign-owned companies. This percentage is slightly lower in Stockholm and significantly lower in Scania, although contrary to the other regions, the share in Scania has been increasing in recent years. If we look at which sub sector of the ICT industry foreign investments are being made, it is possible to identify some interesting differences between Stockholm County and Zealand, as well as between Scania and Stockholm County.

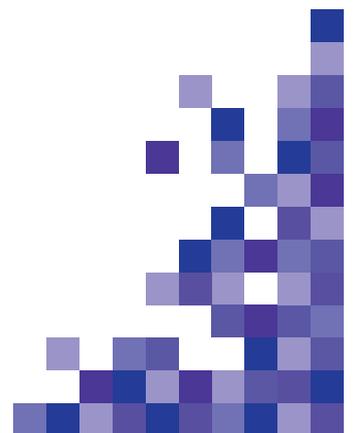


Figure 5.2 - The distribution of employment in foreign-owned firms divided into ICT sub sectors in Zealand, Scania, the Øresund Region and Stockholm by number of staff and percentage in 2007

	Zealand	%	Scania	%	Stockholm	%	Øresund	%
	staff		staff		staff		Region	
							staff	
ICT Wholesale	5,438	18.8	673	12.5	4,372	21	6,111	17.8
ICT Manufacturing	4,518	15.6	814	15.1	2,419	7.4	5,332	15.5
ICT Service and Consultancy	17,923	61.8	3,353	62.1	19,169	58.3	21,276	61.9
Telecommunications	1,107	3.8	560	10.4	4,372	13.3	1,667	4.8
Total	28,986		5,400		32,856		34,386	

Source: Statistics Denmark and Statistics Sweden, special extracts

As is evident from the figure above, there are large differences in how important foreign-owned firms are in various parts of the ICT industry. It is within ICT service and consultancy service that we find the largest employment in foreign-owned firms. More than half of the staff of foreign-owned companies is employed in this sector. Looking at the sub sector of ICT manufacturing, more than 15% of those employed in foreign-owned firms in Zealand and Scania are employed in this sector, while this share is lower in Stockholm County. The ICT wholesale sector's share of employment in foreign-firms is lower in Scania than in Stockholm County and Zealand. The telecommunication sector's share of employment in foreign-owned firms is lower in Zealand than in Stockholm County and Scania.

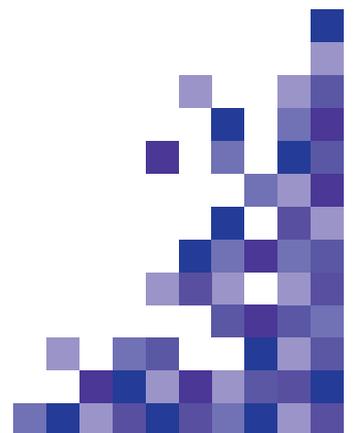


Figure 5.3 - Number of foreign-owned local units and number of staff in the ICT sector in Scania and Zealand by country of origin

Zealand 2007			Scania 2008		
Country of origin	Number of local units	Staff	Country of origin	Number of local units	Staff
USA	119	10,484	UK	30	1,181
The United Kingdom	124	7,099	Norway	25	580
Sweden	116	2,973	France	13	442
Germany	35	2,201	Jersey_Chan._Islands	17	405
Finland	14	1,573	USA	24	362
Norway	47	1,473	Denmark	25	318
France	26	1,098	Finland	7	288
The Netherlands	39	1,059	The Netherlands	16	287
Japan	11	1,010	Germany	10	284
Singapore	3	542	Switzerland	6	79
Total		28,986	Total		5,400

Source: Statistics Denmark and Statistics Sweden, special extracts

Looking instead at the number of foreign investments in the ICT sector in Zealand and Scania in the period from 2007-2009, a picture emerges which roughly resembles that shown above in relation to the number of foreign-owned local units and staff employed in foreign local units in the ICT sector. In Zealand, it is clear that the US is the dominant investor with the most people employed in foreign-owned companies, followed by the United Kingdom. It is clear that for the United States, there are a few large companies which affect this picture. The investment pattern is slightly different in Scania, where the UK and then Norway are the large investor countries.



Figure 5.4 - The development of foreign investment in the ICT sector by country from 2007-2009

Zealand					Scania				
Country	2007	2008	2009	Total	Country	2007	2008	2009	Total
USA	2	1	2	5	Denmark	0	1		1
Sweden	2		2	4	Norway	0		1	1
Netherlands			2	2	USA	0	1		1
UK	2			2	Finland		1		1
China	1	1		2	Germany	0		1	1
Finland	1			1	China	0		1	1
South Korea			1	1					
Taiwan		1		1					
Australia		1		1					
Germany	1			1					
Japan			1	1					
Philippines		1		1					
Overall	9	5	8	22	Overall	0	3	3	6
Total					Total				

Source: Copenhagen Capacity/FDI Markets Cross-border Investment Monitor Database

It is noteworthy that in Scania, where the UK has the largest share of foreign employment in the ICT sector, no investments have been made from the UK in the period from 2007-2009, with the same applying to France. On the Zealand side, there is a more clear correlation between the two largest foreign investor countries and employment in foreign-owned local units by country, although Sweden has moved up on this list.

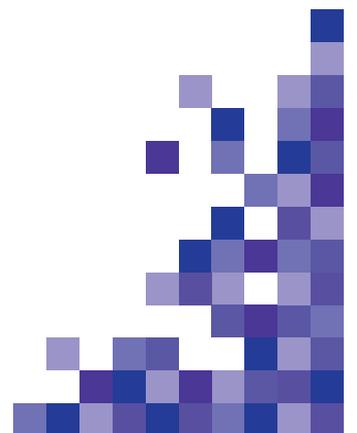


Figure 5.5 - Number of foreign-owned local units and number of staff in the ICT sector in Stockholm by country of origin in 2008

Country	Numbers of local units	Staff
USA	195	9,098
Norway	116	4,017
Netherlands	71	3,859
United Kingdom	105	3,153
France	27	1,620
Denmark	43	1,309
Germany	50	1,037
Jersey_Channel_Islands	17	768
Finland	42	752
Bermuda	8	700
Total	26,313	

Source: Statistics Sweden, special extracts

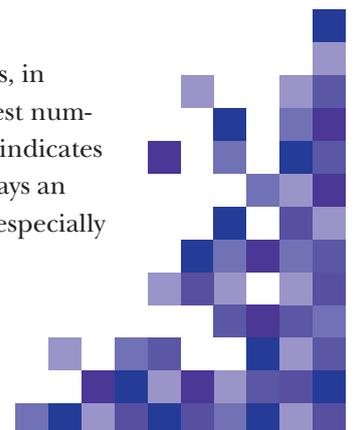
Looking at foreign-owned local units and staff within the ICT sector, we can see that in Stockholm County the USA is on top, followed by Norway. The Netherlands and the UK also play an important role for the ICT industry in Stockholm County. The question is whether there is a relationship between the firms that is already established and whether new investments are being made in Stockholm.

Figure 5.6 - Number of foreign investments by country from 2007-2009 in Stockholm County

Country	2007	2008	2009	Total
USA	1	3	4	8
Norway		2		2
Finland	1		1	2
UK	1	1		2
China	1		1	2
Denmark		1		1
Germany			1	1
Russia	1			1
Ireland		1		1
Overall Total	5	8	7	20

Source: Copenhagen Capacity/FDI Markets Cross-border Investment Monitor Database

Here, we can see a clear correlation in Stockholm County between the two figures, in which the United States is both the largest investor and the country with the largest number of foreign-owned units and staff. Norway is also at no. 2 in both tables, which indicates an important investor position. For all of the studied areas, foreign investment plays an important role in the ICT sector for both development and employment. This is especially true for the USA, UK, Sweden and Norway.



Summary

Employment is one of the important indicators for the structure of the ICT sector in the Øresund Region, with 73,476 employed in the ICT sector there in 2008. Of these, 57,393 were employed in Zealand and 16,083 in Scania (78% on Zealand and 22% in Scania). The growth in employment in the period from 2004-2007 was 7.8% in the Øresund Region, and both of the national areas experienced growth. The growth rate was higher in Scania at 13.3% compared to Zealand's 6.3%. The development pattern has changed in the period from 2007-2008. In this last period, employment in Zealand was stable, while the decrease in Scania was -5%. The ICT structure in the Øresund Region is strongly dominated on both sides of the sound by ICT service and consultancy.

If we compare the Øresund Region with Stockholm County in 2008, there were 82,283 employed in Stockholm County and 73,476 in the Øresund Region. The growth rate was higher in the Øresund region in the period from 2004-2007 at 7.8% compared to Stockholm County's 3.2%. This development was reversed in 2007 - 2008, in which there was a decline of -1.1% in the Øresund Region and an increase in Stockholm County of 1.8%. For the period from 2004-2007, there has been a strong decrease in employment in telecom in both regions, as well as for the Øresund Region in wholesale. On the other hand, there has been growth, particularly in ICT service and consultancy, in both Stockholm and the Øresund Region, in addition to ICT manufacturing in the Øresund Region.

In 2008, the number of local units in the Øresund Region was 8,386 compared to 7,552 in Stockholm County. In the Øresund Region, 75.4% of these were located in Zealand and 24.6% in Scania. Most of the local units in Øresund Region were within ICT service and consultancy, with 6,319 local units.

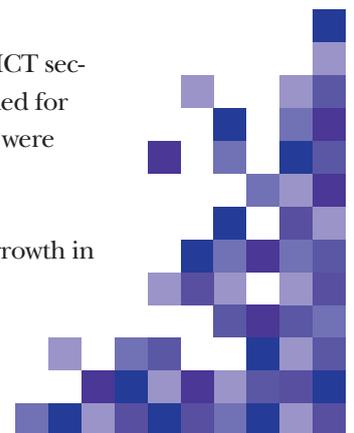
Another important structural indicator for development in the ICT sector is turnover. In relation to this indicator, Stockholm County was larger than the Øresund Region, with a turnover of EUR 22,782 million in 2008 compared to EUR 21,678 million in the Øresund Region. If we look instead at the growth rates for the period from 2004-2007, growth was stronger in the Øresund Region at 9.4% compared to Stockholm, where the growth turnover was only 5.3%. Measured in turnover, ICT wholesale was nearly as large as ICT service and consultancy in the Øresund Region in 2008.

A very important factor in the development of the ICT sector is the number of start-up firms, which are an important factor in the renewal of the ICT industry. In 2007, the number of start-ups was 1,258 in Zealand and 245 in Scania, which gives a total of 1,503 for the Øresund Region.

This can be compared to Stockholm, where the number of start-ups was 701. In relation to Scania, the numbers of start-ups is larger in Zealand at 83.7% as opposed to only 16.3% in Scania, which is close to the employment shares of the ICT sector of the two national areas.

Foreign investment plays a significant and important role in the development of the ICT sector in both Sweden and Denmark. In Zealand, more than half of the employees worked for foreign-owned companies, which was higher than in Stockholm. In Scania, only 33% were employed in foreign-owned enterprises.

The general picture is that the ICT sector in the Øresund region has experienced a growth in the period from 2004-2007, with a slight decline in the period from 2007- 2008.



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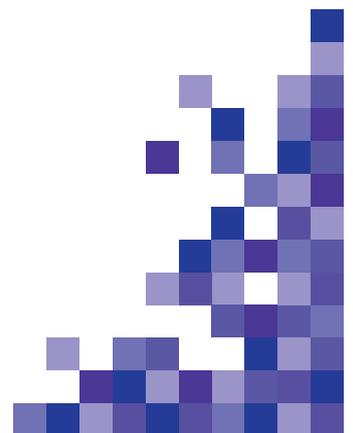
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Vedtægt for Øresundskommiten 1/1-07

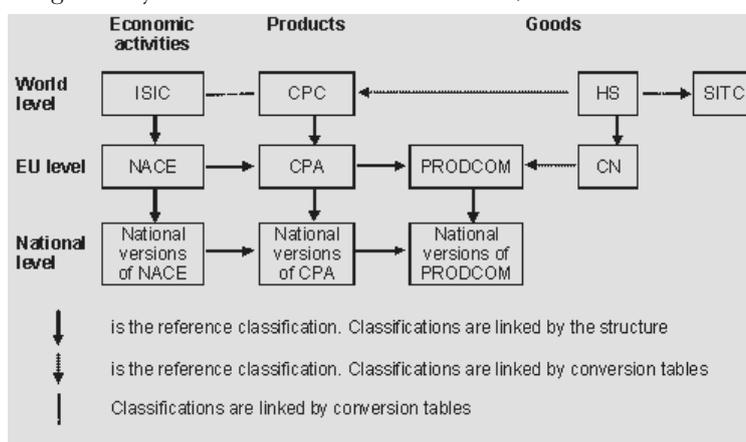


Appendix I

Classification and methodological considerations

The NACE classification system is used in this project as a standard for the collection and structure of statistics information. Both the national statistical authorities and Eurostat use this standard for the structuring and classification of business and economic activities.

NACE: The statistical Classification of Economic Activities (NACE) and the statistical Classification of Products by Activity (CPA) in the European Community are part of the integrated system of statistical classifications, as illustrated in the following scheme:



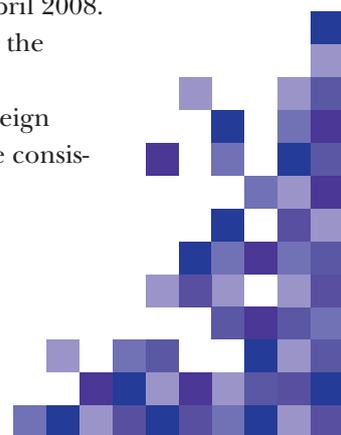
Sources: circa.europa.eu: Workplace for EU institutions

A major revision of international and European classifications of economic activities and products known as “Operation 2007” was finalized in early 2009.

This revision concerned:

ISIC and CPC: the UN statistical classifications of activities (ISIC) adopted by the UN Statistical Commission in March 2006. CPC, the UN classification of products was finalised in January 2009.

- NACE: the European statistical classification of economic activities. Regulation (EC) No. 1893/2006 of the European Parliament and of the Council, establishing the statistical classification of economic activities NACE Revision 2 was adopted on 19 December 2006.
- CPA: the European statistical classification of products by economic activities. Regulation (EC) No. 451/2008 of the European Parliament and of the Council, establishing a new statistical classification of products by activity (CPA) was adopted on 23 April 2008.
- HS: the Harmonized Commodity Description and Coding System managed by the World Custom Organisation was finalised in 2007.
- CN: the European statistical classification of goods used for the purpose of foreign trade statistics, which is revised annually. The 2007, 2008 and 2009 versions are consistent with HS 2007.



Other regional classifications of products and industries that were revised: NAICS: the North American Industry Classification System.

The OECD definition of the ICT sector is defined with a point of departure in the ISIC codes, and it is used as a basic classification of the ICT sector.¹⁰ In the period which has been investigated, there has been a reclassification of industries in relation to NACE codes. In the years from 2004-2007, NACE Rev. 1.1 has been used for employment and the number of unit statistics, while for the period from 2007- 2008, NACE Rev. 2 has been used. For the other statistics, NACE Rev. 1.1 has been used.

The definition of the ICT industry according to ISIC Rev. 3.1 is the following:

Box 4. The 2002 OECD ICT sector definition (based on ISIC Rev. 3.1)

ICT Manufacturing

- 3000 Manufacture of office, accounting and computing machinery
- 3130 Manufacture of insulated wire and cable
- 3210 Manufacture of electronic valves and tubes and other electronic components
- 3220 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated good
- 3312 Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
- 3313 Manufacture of industrial process control equipment

ICT Services

- 5151 Wholesale of computers, computer peripheral equipment and software
- 5152 Wholesale of electronic and telecommunications parts and equipment
- 6420 Telecommunications
- 7123 Renting of office machinery and equipment (including computers)
- 72 Computer and related activities

Source: OECD: Guide to measuring the information society 2009

10. OECD: GUIDE TO MEASURING THE INFORMATION SOCIETY, 2009, OECD 2009



These ISIC codes are translated into the following EU NACE Rev. 1.1 codes:

Definition of the information and communication technology (ICT) sector

Basis: NACE, Rev. 1.1 Level of definition: 4-digit

NACE, Rev. 1.1 Description

ICT manufacturing:

- 3001 Manufacture of office and accounting machinery
- 3002 Manufacture of computing machinery
- 3130 Manufacture of insulated wire and cable
- 3210 Manufacture of electronic valves, tubes and other electronic components
- 3220 Manufacture of television and radio transmitters and apparatus for telephony and line telegraphy
- 3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods
- 3320 Manufacture of instruments and appliances for measuring, checking, testing and navigating
- 3330 Manufacture of industrial process control equipment

ICT wholesale:

- 5143 Wholesale of electrical household appliances and radio and television goods*
- 5184 Wholesale of computers, computer peripheral equipment and software
- 5186 Wholesale of other electronic parts and equipment
- 5187** Wholesale of other machinery for use in industry, trade and navigation

Telecommunications:

- 6420 Telecommunications

ICT consultancy services:

- 7133 Renting of office machinery and equipment, including computers
- 7210 Hardware consultancy
- 7220 Software consultancy and supply
- 7230 Data processing
- 7240 Data base activities
- 7250 Maintenance and repair of office, accounting and computing machinery
- 7260 Other computer-related activities

Source: United Nations Statistics Division: Correspondence tables between ISIC Rev 3.1 and NACE Rev. 1.1.

* Here, Danish Statistics and Swedish Statistics have used a fifth digit to specify ICT-51432 Wholesale of radio and television

** Here, Danish Statistics and Swedish Statistics have used a fifth digit to specify ICT. In Denmark, it is 51871 Wholesale of electrical-installation material and in Sweden 51872 Wholesale of computerized material equipment and 51873 Wholesale of tele-products



In connection with the introduction of the ISIC Rev. 4, there was a new OECD definition of the ICT sector:

Box 5. The 2006-07 OECD ICT sector definition (based on ISIC Rev. 4) 95

ICT manufacturing industries

- 2610 Manufacture of electronic components and boards
- 2620 Manufacture of computers and peripheral equipment
- 2630 Manufacture of communication equipment
- 2640 Manufacture of consumer electronics
- 2680 Manufacture of magnetic and optical media

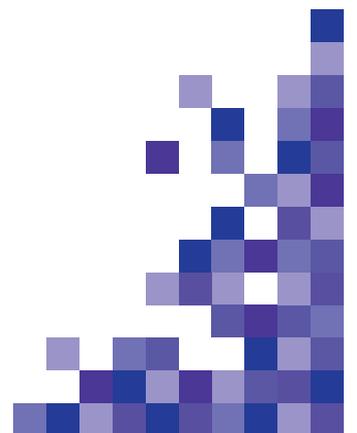
ICT trade industries

- 4651 Wholesale of computers, computer peripheral equipment and software
- 4652 Wholesale of electronic and telecommunications equipment and parts

ICT services industries

- 5820 Software publishing
- 6110 Wired telecommunications activities
- 6120 Wireless telecommunications activities
- 6130 Satellite telecommunications activities
- 6190 Other telecommunications activities
- 6201 Computer programming activities
- 6202 Computer consultancy and computer facilities management activities
- 6209 Other information technology and computer service activities
- 6311 Data processing, hosting and related activities
- 6312 Web portals
- 9511 Repair of computers and peripheral equipment
- 9512 Repair of communication equipment

Source: OECD: Guide to Measuring the Information Society, 2009



These ISIC codes were translated into the following EU NACE Rev. 2 codes.

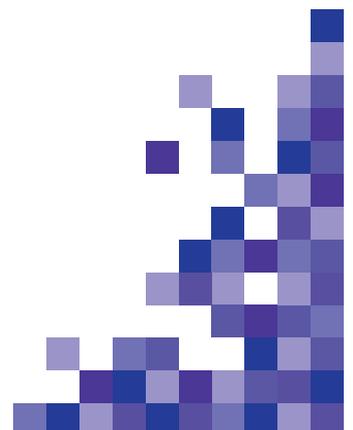
Definition of the information and communication technology (ICT) sector

Basis: NACE, Rev. 2. Level of definition: 4-digit

2611	Manufacture of electronic components
2612	Manufacture of loaded electronic boards
2620	Manufacture of computers and peripheral equipment
2630	Manufacture of communication equipment
2640	Manufacture of consumer electronics
2680	Manufacture of magnetic and optical media
4651	Wholesale of computers, computer peripheral equipment and software
4652	Wholesale of electronic and telecommunications equipment and parts
5821	Publishing of computer games
5829	Other software publishing
6110	Wired telecommunication activities
6120	Wireless telecommunication activities
6130	Satellite telecommunication activities
6190	Other telecommunication activities
6201	Computer programming activities
6202	Information consultancy activities
6203	Computer facilities management activities
6203	Other information technology service activities
6311	Data processing, hosting and related activities
6312	Web portals
9511	Repair of computers and peripheral equipment
9512	Repair of communication equipment.

Source: United Nations Statistics Division: Correspondence tables between ISIC Rev. 4 and NACE 2

These two different NACE codes (NACE Rev. 1.1 and NACE Rev. 2) have been transferred to the national codes DB03 and DB07 on the Danish side of the sound and SNI02 and SNI07 on the Swedish side of the sound, in which it is important to secure that the national statistical bureaus make the same interpretation of the OECD definition of the ICT sector in order to make comparisons across the Øresund Region possible. This has been necessary for establishing a basis for the special extracts that have been made by Statistics Denmark and Statistics Sweden in their statistical databases.



Principles of NUTS codes in projects

The NUTS code (Nomenclature of Territorial Units for Statistics) was established by Eurostat in order to provide a single uniform breakdown of territorial units for the production of regional statistics for the European Union.¹¹ To compare the ICT sector in the Øresund Region with the ICT sector in other regions, it is important that the comparison is conducted on the same NUTS level. Eurostat's Regional structural business statistics are conducted on the NUTS 2 level.¹² These statistics will also be used for the statistical analysis of European regions which the ICT sector in the Øresund Region is competing with.

Here, the analysis runs into a problem because the Øresund Region is a cross-border region, and the NUTS nomenclature is nationally based and divided into three levels:

NUTS 1: 3 million – 7 million
NUTS 2: 800,000 – 3 million
NUTS 3: 150,000 – 800,000. ¹³

We have solved the problem by constructing a region - the Øresund Region - which is not part of the Eurostat NUTS classification. The Øresund Region includes the following geographical areas: Region Scania, the Capital Region of Copenhagen and Region Zealand.¹⁴ In Sweden, Region Scania is defined as a NUTS 3 level. On the Danish side, both the Capital Region and Region Zealand are classified as NUTS 2 regions.¹⁵ This tells us that the Øresund Region, with its 3.6 million inhabitants, is slightly larger than the other European NUTS 2 regions it is compared with.

11. Based on: Regulation (EC) No. 176/2008 of the European Parliament and of the Council of 20 February 2008 amending Regulation (EC) No. 1059/2003 on the establishment of a common classification of territorial units for statistics (NUTS) by reason of the accession of Bulgaria and Romania to the European Union.

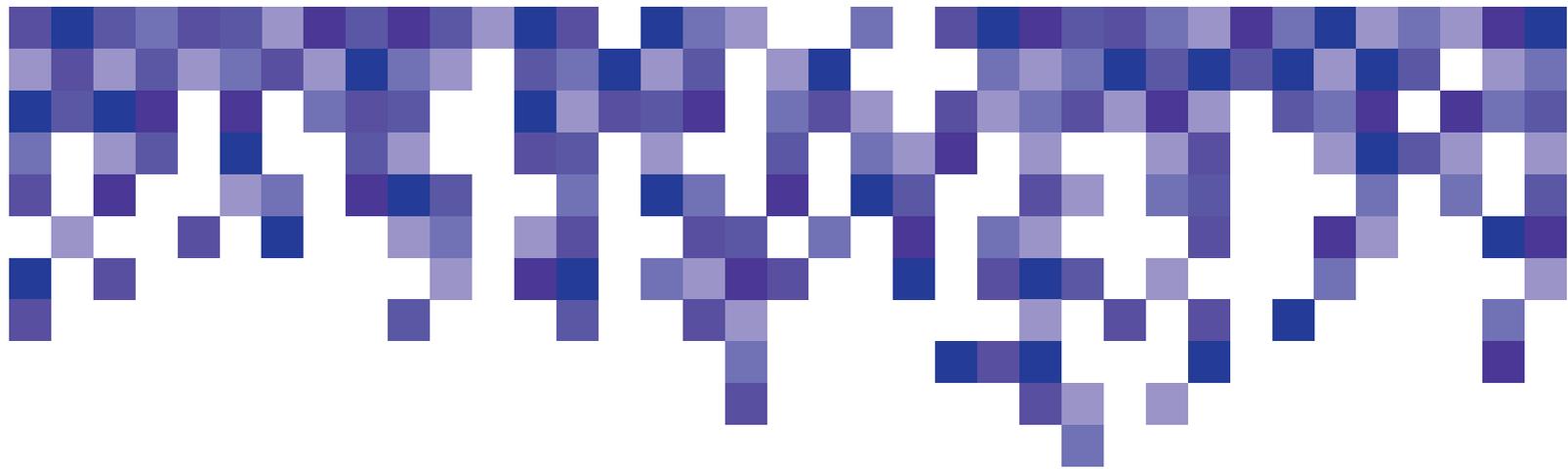
12. Eurostat: Regional Yearbook 2009

13. Eurostat: European Regional and Urban Statistics Reference Guide

14. Vedtægt for Øresundskomiteen 1/1-07

15. According to NUTS, these changes are valid since 1st January 2008. Eurostat: European and Urban Statistics Reference Guide





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