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Statistics on the services sector – elements for a strategy[1]

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A*bstract*

The growth of the services sector in the last decades has confronted the statistical offices with a tremendious challenge which they till now have not been able to meet satisfactory. This article presents a framework for the development of statistics on the services serctor identifying 9 key areas; sectoral coverage and priorities, dynamics of the sector, employment in services, supply and demand interaction, globalisation, product information, innovation in services, producer prices for services and short term statistics. Examples of possible indicators and statistical variables to be collected under these themes are given from ad hoc surveys and analysis carried out by Statistics Denmark.

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Statistics on the services sector – elements for a strategy

Introduction

The services sector accounts for an increasing share of the economies in the Member States of the Europen Union. The majority of jobs created since 1970 has been created within the services sector. As a result, the future prosperity of the European countries is linked to the productivity gains and job creation of the services industries. As the services sector is a very heterogenious sector, from highly specialised, knowledge intensive activities as engineering services to low skilled jobs in industrial cleaning, growing demands not only for a larger, but also for a more detailed statistical coverage are frequently brought forward by users from governments, branch organisations, scientists, etc.

Since the nineties, statistical information have more and more frequently been used in political decision making, eg the EU summit in March 2000 in Lisboa concluding that the EU shall become the most competitive and dynamic knowledge based economy in the world. In order to monitor the progress a list of structural indicators are continously been decided upon. Another example is the eEuropa Action Plan with the aim of securing EU a faster, cheaper and more secure Internet also including a number of statistical indicators to be collected biannually. The above mentioned needs are examples of the importance of statistics for benchmarking exercises but also examples of shortcomings for official statistics, as private sources are often used for these kind of exercises. In order to secure that political decision-making is carried out based on a sufficient basis, the statistical coverage of especially the services sector has to be substantially increased in the years to come.

In 1970, employment in market services comprised a little more than one-third of total employment in the countries today constituting the European Union. Since then, employment in market services have risen in all Member States, and in 1997 employment in market services constituted nearly half of total employment within the European Union.

Need for a strategy

Especially during the nineties national and international statistical institutes began developing statistics on the services sector. An exampel is the adoption of EU regulations on statistical business registers, structural and short term business statistics, all encorporating services enterprises. Never the less, it is my argument, that at present, at the beginning of the third millenium, we must conclude that the development has not been sufficient and the gaps are larger and more profound than ever. There are several reasons for this situation;

First of all, services are difficult to define and thus to measure. The main characteristics of the services sector is that the output generally can be characterised

as being of immaterial nature. Although especially the introduction of information technology has changed this situation in the sense that services nowadays can be imbedded in physical products and thus delivered and stored via physical means, eg software on a CD-Rom. Secondly, a service contains a considerable element of personal contact between the producer and the client – a social inter action. Thirdly, this social interaction puts focus on the so-called "soft technology", being the qualifications of the employees in terms of level of knowledge, capability of presenting an communicating with the customer, etc[2]

Secondly, many statistical offices have been in a postion with severe budget cuts in the nineties, hampering the enlargement of the statistical programs. Also the political demand for reduction of the respondent burden has made new statistical surveys more difficult in many countries. Finally, the emergence of the Information Society has been a hard competitor to services statistics due to the before-mentioned scarcity of resources. An important element of Information Society statistics is IT services constituting a substantial part of business services, but due to the pervasive nature of information technology the statistics on this domain encompasses several other topics as well, eg usage of ICT in enterprises, households and public sector.

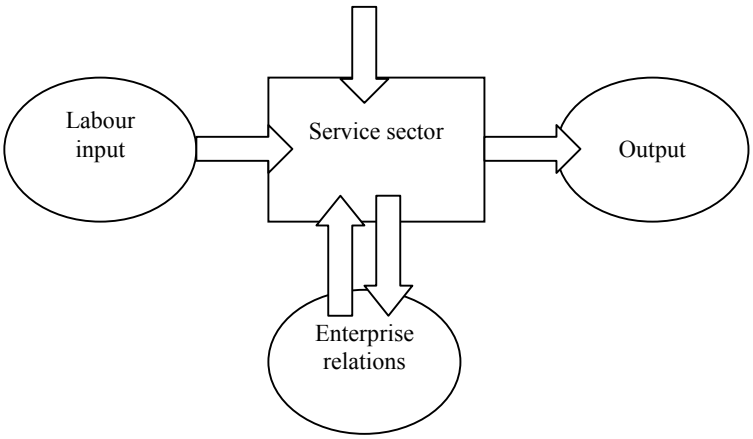
This article presents elements to a framework for the future development of services statistics and proposes a number of thematic areas to be given priority. To illustrate the different elements, examples are given from projects carried out by Statistics Denmark, as ad hoc surveys for Danish ministeries for policy formulating purposes, as part of joint Nordic projects or Eurostat pilot projects.

In order to operationalise the understanding of the services sector, the following framework has been identified a put into a framework model;

1) structur of the service sector (dynamics, location (urban vs rural), globalisation, (exports and imports, foreign direct investment)), **2) labor input** (employment qualifications, skills, education, hours worked, working hours), **3) demand for services** (outsourcing, purchases of services)**, 4) enterprise relations** (networking, strategic alliances, franchising, capital chains), **5**) **output** (products, prices).

Model: Framework of statistics on the services sector

[2] See for instance Bryson and Daniels, *Service Industries in the Global Economy*, vol. I (1998) for a characterisation of the services enterprises



This framework can be divided into a number of thematic areas;

Sectoral coverage and priorities. The traditional services industries as distributive trade, hotels and restaurants or transport are covered by statistics on the physical output as no. of nights spent or ton kilometers. The problem of poor statistical coverage is especially relevant for the business services which do not belong to the traditionel services activities. The business services consist of activities which are relatively new in their nature and thus not covered by the statistical production of the national statistical institutes, indicating that especially knowledge-based services are in the focus when discussing the development of services statistics.

2. Dynamics of the sector. By this indicator is not only meant the traditional indicators as growth in share of gross value added or employment but special emphasis should be put on the enterprise demographic data as births, deaths or growth of the individual enterprises. An illustration of the dynamics of the services sector is the sector's share of annual real births of enterprises in Denmark - constituting by far the largest share of all sectors in the Danish economy (85 per cent).

3. Employment in services. In understanding the job creation processes in the services sector, we can not only rely on basic statistical information as number of persons employed. We need much more detailed information on the qualifications of the employment as level of education, work experience, gender and age. But as the learning of the employees more and more get the character of a continously on-going process, the formal level of qualifications is not sufficient. It is necessary to collect information on training activities in order to supplement the information on the formal qualifications of the labour force.

4. Supply and demand interaction. For the understanding of the development of the services sector the measuring of the outsourcing process is of importance. The

statistics covering the services sector have been focused on the supply side but we need more information about the demand for services by the enterprises or households and how this demand influences the development of the services sector. To which extent are transport activities carried out as internal services and what is the reasoning for doing this? The outsourcing of it services is important for understanding the development of the computer services - does the recent development in software change this outsourcing process? As mentioned above the information technology is also extremely important for the way in which enterprises set up their organisations and enterprise relations . Information technology makes the process of work a mobile process and breaks the physical links between employees and their place of work. The increasing importance of teleworking needs to be reflected in the future enterprise statistics.

5. Globalisation. As the national economies are undergoing a rapid process of globalisation in these years, it is of high priority to cover this issue, also for the services sector, which for a number of activities are highly globalised. Under this heading information about traditonal variables as exports and imports of services products can be found, but also information about foreign direct investment and other cross border enterprise relations. Especially the last item seems to be of increasing importance in the form of joint ventures, license agreements or other forms of close co-operation across the national borders.

6. Product information. It is not sufficient information to know the total turnover of for instance computer services. In order to understand the development of the branch it is necessary to collect information about the detailed breakdown of the turnover of the it services. How large is the services part compared to the selling of goods as hardware? Which part of the turnover of the branch derives from the selling of services as education and how large a part from the selling of software or internet services?

7. Innovation. In many of the activities within the services sector, especially within the knowledge based activities as it-services or engineering services, but also within the transport activities, an intensive innovation process is ongoing. As a consequence of this process, the services sector has been included in the last two Community Innovation Surveys, but this area still needs profound methodological work.

8. Producer prices for services. Information on producer prices are essential for deflation of services turnover and the calculation of real output from the services sector. To measure the price of a services, it is essential to capture both the content and the quality of the service. Due to increased bundling of different services, not only the identification of the quality, but also the identification of many services offered are difficult.

9. Short term statistics. Especially after the adoption of the Economic Monetary Union, the European Central Bank (ECB) has repeatedly stressed the importance for

the purposes of economic and monetary policy to have relevant information in a timely fashion. ECB has especially required short term statistiscs covering the services sector.

Dynamics of the services sector

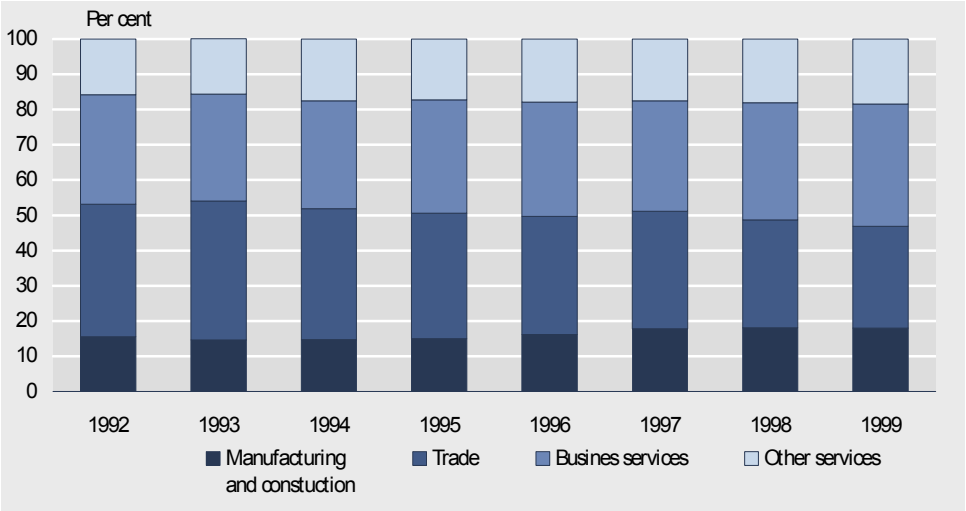
With the adoption of the Structural Business Statistics Regulation (SBSR)and its implementation in 2000 in all Member States the main tool for collection of harmonised statistics covering the global economy has been put into place. The SBSR covers a limited number of variables for all sectors in the economy as turnover, gross value added or no. of persons employed. But manufacturing and construction industries are covered by a larger amount of variables specific for these sectors. This chapter focusses on the most important missing variables for monitoring the dynamics of the services sector.

Entrepreneurship is one of the key elements in the new economy, and new enterprises are contributing to create a dynamic business environment through economic growth, the opening of new job opportunities and innovation of production processes and products. Questions concerning issues such as the magnitude, survival and job creation of new enterprises constitute an important part of the enterprise policy of European Commission as well as national governments in most Member States. Even if the contribution of new enterprises to economic and employment growth is limited in the start-up phase, new enterprises play a central part, as they contribute to increased flexibility and innovation in the economy.

If the population of new enterprises in Denmark is broken down by economic activity, it is obvious that the new enterprises reflect the general development towards a service and knowledge based economy; the share of manufacturing industry has declined from 9 (1990) to only 6 per cent of all new enterprises in 1998, cf. figure 1. Moreover, business services constitute around one-third of all new enterprises with IT consultancy services as the dominant single activity – growing from around 800 new enterprises in 1990 to around 1 400 in 1998.

In order to get a better idea of the dynamics of the different sectors, the number of new enterprises can be compared with the existing stock of enterprises. The highest share of new enterprises is found within business services with almost 10 per cent, followed by retail trade (8 per cent). The share of new enterprises within IT consultancy services was 12.5 per cent in 1992 raising to an impressive 21.8 per cent in 1998. At the other end, new enterprises in the manufacturing industry only account for around 4 per cent of the total stock.

Figure 1. New enterprises in Denmark 1990-1999



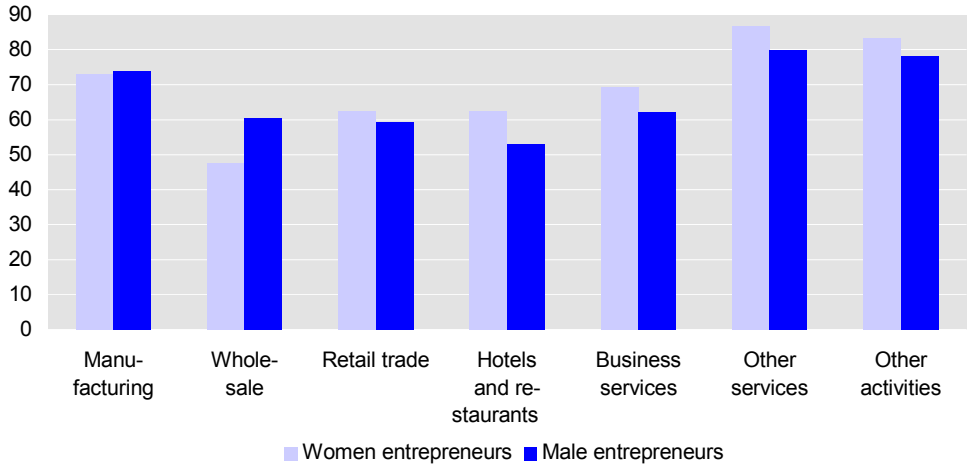
The interpretation of the performance of new enterprises cannot be carried out properly by only analysing traditional enterprise data. There is a strong coincidence between a new enterprise and the owner behind it – the entrepreneur, as the vast majority of new enterprises start up without any employees (around 80 per cent). If a policy for creating better framework conditions for new entrepreneurs is to be formulated on a sound basis, questions as to the gender and age of the new entrepreneurs, their education and other competencies of the new entrepreneurs should be answered by statistics as well. Statistics Denmark has therefore developed statistics integrating information about new enterprises and the personal qualifications of the new entrepreneurs.[3] The following indicators have been developed: age, gender, nationality, level of education, relation to labour market prior to business start-up, total work experience and previous branch experience.

The ultimate goal of a policy concerning creation of new enterprises is not only the creation, but also the survival of new enterprises in order to create new job possibilities and new products and services in the ever-changing economy. In order to judge the contribution to and the importance of the new enterprises for economic growth, it is necessary to follow enterprises for a longer period than just the initial year of start-up. Not all new activity is sustainable, and a share of new enterprises will close down again. The establishment of a new enterprise is not in itself a criterium of success. The decisive element is the contribution of the new enterprises to the creation of value added and employment. An analysis of the importance of new enterprises for the dynamics and development in the economy firstly demands knowledge about the survival rate, and secondly about the growth of the enterprises in the years after start-up.

[3] For a more detailed description of the Danish statistics on new entreprises and entrepreneurs, cf. Peter Bøegh Nielsen: *Statistics on new enterprises, entrepreneurs and survival of start-ups: The Danish experience*, OECD, STI working papers 2002/7

The longitudinal analysis of the 15 500 new enterprises that started in 1994 in Denmark show that after 3 years 55 per cent had survived. The analysis and the logistic regression model have shown that previous branch experience of the new entrepreneur is the crucial factor for raising the possibility of survival. New entrepreneurs starting up in a branch where he was employed the year prior to start-up, have a survival rate of 69 per cent compared with 51 per cent for entrepreneurs without previous branch experience.

Figure 2. Survival rates for new entrepreneurs with previous branch experience broken down by gender



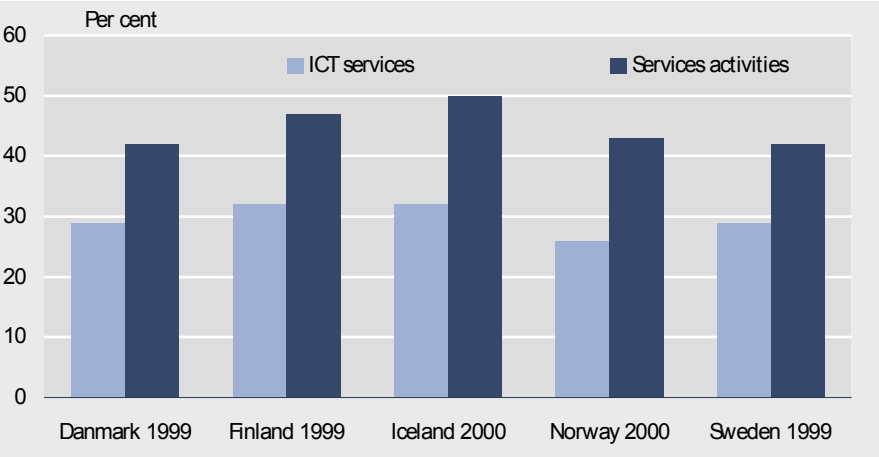
Labour inputs

As labour input is the key input factor in the services sector, statistical information about the employment is crucial. This chapter focusses on a selected number of variables in order to ilustrate the different types of information needed.

As the real output of some services is diffcult to measure, the employment information can be seen as a proxy for measuring real output of the services activities. The basic information is the volume of employment, ie no. of persons employed at a certain point in time. In order to arrive to a more precise measurement of the volume of production, information about full and part time employment is needed. Especially as part time imployment is of importance within the services sector, eg industrial cleaning. It should be noted that part time employemnt seems to be of growing importance in the services sector due to the large proportion of female employment.

The Nordic countries all have relatively large shares of women on the labour market, as the overall employment rates of women in the Nordic countries in 2000 ranges between 64% (Finland) as the lowest and 83% (Iceland) as the highest[4]. Generally the female share of employment is higher in the services activities than in the manufacturing industries in all Nordic countries. On the Nordic level the female share is 43% in the services activities and 28% in manufacturing industries.

Figure 4. Share of female employees in ICT services and in services activities in general in the Nordic countries 1999



To establish better tools for measuring the output value, the qualifications of the persons employed has to be established. A traditional proxy for identifying the qualifications of the labor force has been the description of the job contents, ie the occupation of the persons employed. In the services activities where the services offered by the individual person is the core of the activity carried out, the requirements of exact measurement are demanded. Educational attainment is seen as the proxy for the nature, and quality of the services produced.

Especially the issue of the requirements of educational qualifications has been in focus in relation to the ongoing discussions of the future growth possibilities of the knowledge producing services.

The Nordic statistical institutes are in a position of having access to and possibilities of utilizing administrative registers – amongst others educational registers which can be linked to the enterprise statistics – allowing for detailed analysis of the educational qualifications of the employees. The common Nordic

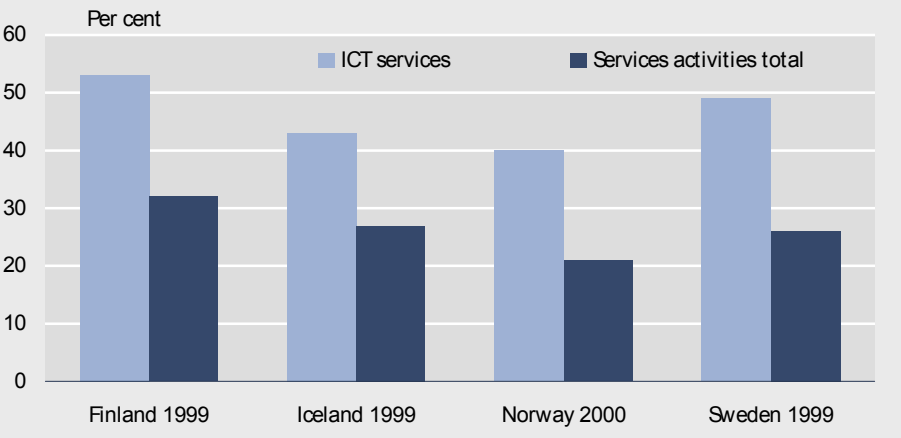
[4] Nordic Council of Ministers: *Nordic Statistical Yearbook 2001*

project on the ICT sector is used as an illustration of the possibilities of such detailed information about the employment.[5]

The demand for qualified persons with a high-level education is one of the main challenges for the ICT sector in recent years, and the educational structure of the employed persons is analysed in the Nordic publication. The common nomenclature used for this purpose is OECD: International Standard Classification of Education (ISCED). The educational levels refer to the public educational system, but it is important to notice that national differences in the educational systems complicate the comparability across the Nordic countries[6]. It is also important to notice that qualifications obtained by post-graduate education, courses, on-the-job-training or "learning-by-doing" is not captured in this exercise.

The share of persons employed with *third level education* is very high in the ICT services sector compared to the services sector in general, thus reflecting the knowledge-intensive character of this sector.

Figure 3. Share of persons employed in ICT services with third level education 1999/2000 in the Nordic countries



Information about the educational level cannot be seen as the ultimate information about the qualificatons of the persons employed. Information about educational attainment normally reflects the formal education attained by the individual and thus neglects both the skills and competencies acquired in the course of the employment through (in)formal education or training. For covering these issues, information about training (days and purpose), seniority and branch experience are required.

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[5] For more details, see Statistics Denmark, Statistics Finland, Statistics Iceland, Statistics Norway and Statistics Sweden: *The ICT Sector in the Nordic Countries* (2001)

[6] It has not been possible to provide educational data for Denmark on comparable basis.

Enterprises are altering their way of engaging labor, increasingly loosening the ties between the enterprise and the individuals in the labor force in order to increase flexibility and reduce costs and thus increase competitiveness. The type of contract between the enterprise and the labor input can be measured by information about the duration of the job contracts in the form of permanent and temporary employment.

Some of the information described above are already collected by the statistical offices from the Labour Force Survey or other supply side oriented surveys. Both I find it important to try and collect the data from the enterprises as detailed information about the activity class and economic performance of the enterprises are needed for analytical purposes.

Demand for services

During the nineties, the businesses have increasingly been subcontracting and outsourcing the operations they used to carry out internally. Increasing complexity of intermediate and final products and the expertise needed to cope with these developments have encouraged this development. A new kind of horizontal networks have emerged in order to improve business performance.

Typically when manufacturing enterprises subcontract their production, the supplier firm also is a manufacturer. This activity does not change the employment share of manufacturing indusstry, even if it might improve the productivity within the manufacturing sector.

However, outsourcing of services operations earlier carried out by the manufacturing enterprise, shifts the demand towards specialised business services enterprises, implying a flow in employment from manufacturing to the services sector.

If we look at the dynamic part of the services supply and demand interaction, the core is outsourcing. When taking outsourcing decisions (inhouse production or purchase from third party) in the enterprise, the decisions taken are generally strategic and long term and also of considerable value. The total purchases of services on demand side - and simultaneously total sales of services on the supply side - are thus significantly affected due to a possible outsourcing decision.

The SBS Regulation includes a variabel on Total purchases of goods and services, but no further breakdown for manufacturing nor services industries. In order to better understand the growth of the services sector, this variable is proposed to be broken down into a number of services categories.

Globalisation and Enterprise relations

In general, statistics covering the services sector are lacking behind the statistical coverage of agriculture or manufacturing industry. This is especially the case when looking at the globalisation aspects. There is a long tradition for production of external trade statistics, ie. statistics on the cross-border flow of goods.

Due to historic reasons, it has been argued that services cannot be stored and thus the production of services has to take place in proximity to the market, i.e. excluding almost by definition export of services. Consequently the internationalisation of services has to measured by statistics covering the FDI within services activities. Due to particularly the technological development of the new economy, the needs for measuring the globalisation of services have increased considerably. Services are now embedded in a large amount of products, for instance software products. Often the after sales services constitute a substantial amount of the price of the products sold. Thus there is an urgent need for developing statistics on external trade with services - also in a more classical sense, especially for the knowledge producing services within business services and IT services.

The importance of digital products and the growing e-commerce makes the measurement of a possible considerable part of the export of services products difficult. As an illustration, the Danish statistics on ICT usage in enterprises shows that more than one third of all enterprises with 5 or more employees have in 2001 downloaded digital products via the Internet.

The services activities are also characterised by the interrelations between enterprises. Globalisation of services can take place in other forms than traditional direct investments. Different forms of networking, also across borders - especially using the Internet - are emerging and becoming more and more significant. Within services, the concept of franchising is also a phenomenon becoming more frequently used, especially within retail trade.

Statistics Denmark has carried out an ad hoc survey on internationalisation and globalisation aspects[7]. The survey showed that that a little more than half the enterprises in 1995 carried out the “normal” international activity - direct export. About 20% had established own trade companies abroad and 5% had established production companies abroad, while 3% used the more complex forms of international co-operation such as joint ventures with companies abroad and 2% had licensing agreements.

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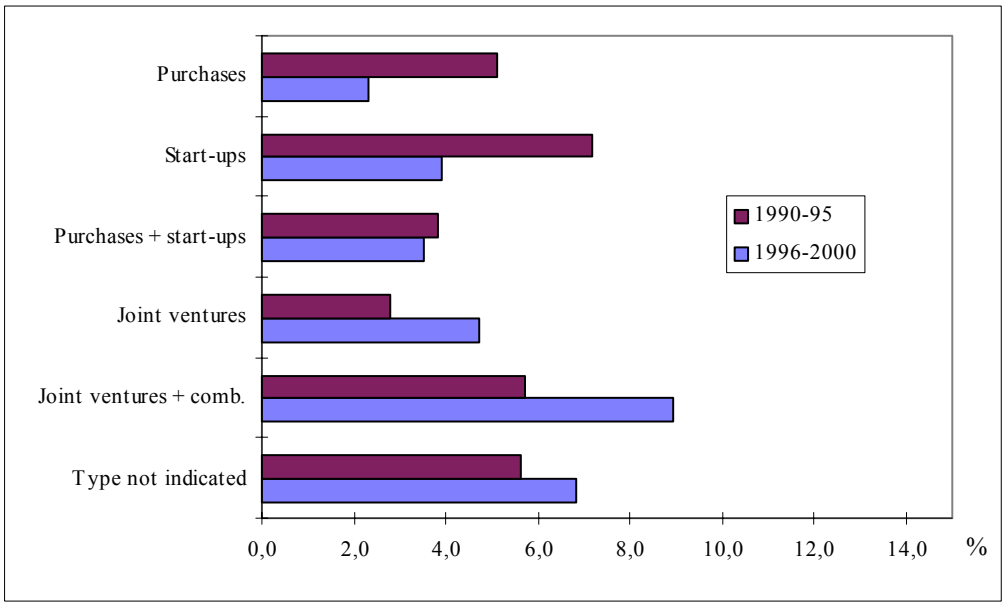
[7] Survey on business expectations on internationalisation carried out a survey for the Ministery of Trade and Industry in 1996. The survey included 3 000 Danish enterprises in all sectors except agriculture and finansial services with more than 20 employees. For more information about the survey in English, see Peter Bøegh Nielsen and Jan Plovsing: *Concepts used in Statistical Business Registers in view of globalisation and the information society*, in International Statistical Review 65:3 (1997)

The enterprises were also asked about their expected international activities in year 2000. What is of special interest is the trend towards a rising amount of international activities related to establishing own production companies abroad, making licensing agreements with companies abroad or setting up co-productions in the form of joint ventures. For each of these activities which constitute the real contents of the globalisation process an expected growth was foreseen. On the other hand the survey also shows that the traditional international activity - cross-border trade (direct export) was foreseen to decline. Thus the expected international activities have a more complex structure of cross-border relations implying increasing difficulties in measuring items as.

Figure 5. Investments abroad by Danish enterprises

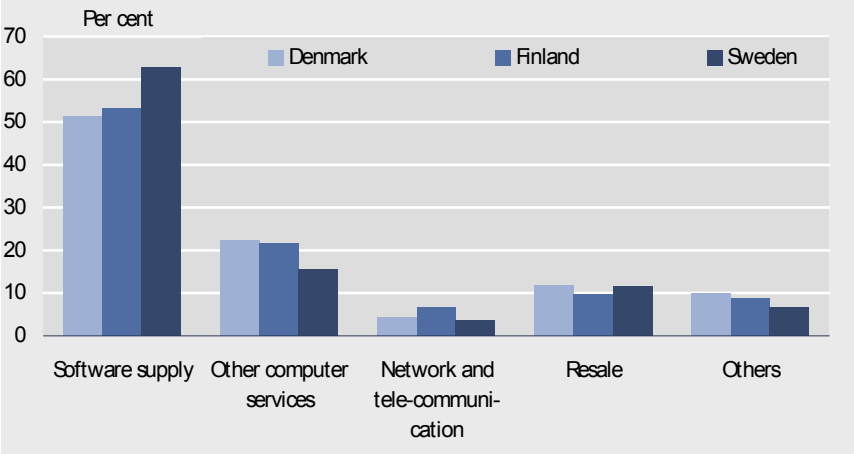


In the Danish survey on globalisation the companies were asked about their investments abroad. 30% of the enterprises reported that they had carried out investments abroad in the period 1990-95 and that they intended to carry out investments in the coming 5-years-period (1996-2000) as well, cf. figure 5. The survey shows an expected decline in the more traditional forms of investment like purchase/take-over of existing enterprises and start ups, and thus a trend towards more complex investments patterns as joint ventures - highligtening the problem of measuring the origin of control of enterprises.

Services output

This chapter focusses on a breakdown of the traditional turnover variable included in the SBSR into a number of product categories. Eurostat is currently running pilot surveys on the breakdown of business services outputs, and the analytical possibilities are shown by using the Nordic experiences for the computer services activities. The data material covers Denmark, Finland and Sweden; these countries have carried out comparable surveys for the year 2000 (Denmark and Finland) and 1999 (Sweden)[8].

Figure 6. Turnover of computer services distributed by product groups 2000 in Denamrk, Finland and Sweden



Software supply, a product group consisting of products as *Packaged software*, *Customized software* and *Computer consultancy services*, is by far the most important product group of the ICT consultancy services, representing 51% of the total turnover of the sub-sector in Denmark, 53% in Finland and 63% in Sweden.

In Denmark the most important product within Software supply is *Customized software*, accounting for 32% of the turnover, followed by *Computer consultancy services* (11%). In Finland *Customized software* is also the most important product, representing 25% of the total turnover of the ICT consultancy services, whereas the second-largest product is *Packaged software* (18%). Sweden differs from the two other countries by the importance of *Packaged and customised software*, which constitutes nearly half (49%) of the total turnover.

The second largest product group in the three countries represented is Other computer services, which account for 22% of the total turnover in Denmark and

[8] The list of products related to ICT consultancy services is developed by Eurostat. The base of the list is United Nation's Central Product Classification (CPC). For more details, see Statistics Denmark, Statistics Finland, Statistics Iceland, Statistics Norway and Statistics Sweden: *The ICT Sector in the Nordic Countries* (2001)

Finland and 15% in Sweden. The product group consists of *Computer facilities management and data processing*, *Database services*, *Systems maintenance services* and *Computer hardware services, repair and maintenance of computing machinery and equipment*.

In all three countries the largest single product within this cathegory is *Computer facilities management and data processing*, which accounts for 13% of turnover in Denmark, whereas the corresponding figures for Finland and Sweden are 8%.

Conclusion

The complexity of services - both in measuring the output itself and in the different forms of interactions between service providers and/or consumers - is an immense future challenge for the statistical system. But if official statistics shall keep its position as the major source of statistical information for policy makers, branch organisations, scientists, enterprises and the democratic society as such, they have to meet this challenge.

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