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Needs and Possibilities of Statistical Information on Employment in the Services Industries.

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1. In the times of recession which the western economies are facing at the moment, more and more focus are put on the service industries as the job creating sector in the future. There are several reasons for this focusing, amongst others

   - in manufacturing industry we see a growing productivity which implies that in the future less employees are needed

   - it is expected that the growing income from households will to a great extent be directed towards services

2. The above mentioned expectations to the job creating function of the services industries are also supported by the factual development of the employment, see table 1. The table shows that there has been an increase in the total number of persons employed in Denmark in the period 1966 - 1988 of 368.000 persons - or an annual growth rate of 0,7 per cent. But this net growth covers over big differences as some service sectors have experienced a major increase in the employment, for instance business services which have nearly tripled the employment in this period. Other sectors of great importance for the employment and with a considerable high growth are financial services and the public sector. On the other hand, agriculture, retail trade and house keepers have experienced a considerable decrease in the number of persons employed.

   In Finland the number of persons employed increased with more than 200.000 persons in the period 1970-1990, equalling an annual average growth of 0,5 per cent. In this period the services sector in Finland had a net increase of 470.000 persons. In the same period the number of persons employed decreased in agriculture and forestry, manufacturing and construction. One of the fastest growing services sectors have been business services employing less than 20.000 persons in 1970, and in 1990 the employment figure has risen to more than 90.000 persons. Only in social care and "other services" the same level of expansion in employment were experienced.

   In Sweden the total net growth in the employment in the period 1970-1990 has with 1 per cent average annual growth been a little higher than in Denmark and Finland. In total the number of persons employed increased with about 600 000 persons. Also in Sweden the sectors show a different development. Domestic services has decreased to a minimum and agriculture, forestry and fishing and mining show big decreases. Industries with important employment increases are real estate, business services and sanatory and similar services with an annual growth of about 5 percent.

3. As stated in the paragraph above the services sectors have counted for an increasing part of the employment and are expected to even further increase the proportion of the employment in the 90'es. On the other hand the growing importance of the services sector is not reflected satisfactorily in the statistical production of the statistical institutes. There are more reasons for this - amongst others:

   - inertia in statistical production
   - budgetary problems
   - finally a more sector specific reason shall be mentioned. Severe measurement problems are encountered if we want to measure the output of many service industries.

TABLE 1a

Employment in Denmark by industry, 1000 persons

		av. annual growth %		av. annual growth %	
	1966	1966-1977	1977	1977-1988	1988
Agriculture, forestry and fishing	328,1	-4,0	208,5	-2,5	157,6
Mining and quarrying	3,2	-4,6	1,9	2,5	2,5
Manufacturing	578,9	-1,3	502,8	1,6	597,3
Electricity, gas and water	13,3	1,1	15,0	0,9	16,5
Constructing	196,5	0,1	199,2	-0,6	186,0
Wholesale trade	110,3	1,5	130,2	0,2	132,9
Retail trade	210,7	-1,3	182,1	-1,5	154,3
Hotels and restaurants	45,0	0,7	48,4	0,7	52,4
Transport	121,6	0,0	121,5	1,1	137,2
Post and telecommunication	35,9	1,8	43,7	1,3	50,4
Financial services	29,9	6,1	57,5	3,7	86,1
Insurance	14,9	1,3	17,1	2,3	22,0
Real estate	6,2	5,1	10,7	0,8	11,7
Business services	50,6	5,3	89,3	4,2	140,2
Private education	3,1	-2,7	2,3	-1,7	1,9
Private health care	19,8	3,2	28,0	1,2	31,8
Recreational and cultural services	12,7	3,5	18,5	1,2	21,2
Automobile repairing	32,6	1,9	40,3	-1,3	34,8
Household services	60,0	-1,2	52,8	-0,1	52,1
House keepers	66,7	-10,2	20,5	-5,2	11,4
Private wellfare, associations etc.	4,3	8,2	10,2	3,9	15,5
Public services	296,1	7,0	624,4	1,9	765,8
Total	2237,2	0,7	2424,1	0,7	2604,8

TABLE 1b

Employment in Finland by industries, 1000 persons

		av. annual growth %		av. annual growth %	
	1970	1970-1980	1980	1980-1990	1990
Agriculture, forestry and fishing	429,0	-4,2	279,2	-3,4	197,6
Mining and quarring	7,0	3,7	10,1	-6,6	5,1
Manufacturing	524,1	0,5	549,8	-1,4	478,5
Electricity, gas and water	18,4	3,0	24,7	-0,1	24,5
Construction	176,8	-1,2	156,7	0,8	168,9
Wholesale trade	72,0	1,1	80,1	1,2	90,4
Retail trade	188,1	-0,9	172,7	0,5	181,4
Hotels and restaurants	68,1	-2,2	54,4	1,8	65,0
Transport	110,4	1,6	128,8	-1,2	114,1
Post and telecommunication	39,8	1,7	46,9	0,7	50,5
Financial services	29,4	4,1	43,9	2,7	57,5
Insurance	9,7	1,9	11,7	5,6	20,2
Real estate	12,7	3,5	18,0	6,8	34,8
Business services	19,7	8,4	44,2	7,5	91,2
Public administration, security	81,8	3,9	119,9	0,7	128,5
Education, research	81,2	4,8	130,3	1,0	144,4
Health care	75,4	4,4	116,2	2,4	148,6
Social care	23,6	10,9	66,7	5,8	116,7
Recreational and cultural services	15,2	5,5	25,9	9,6	36,8
Household services	84,0	-5,4	48,2	-9,1	18,6
Other services	22,9	6,7	43,6	9,5	108,3
Unknown	29,0	5,6	50,1	0,5	52,7
Total	2118,3	0,5	2222,1	0,5	2332,3

TABLE 1c

Table 1: Employment in Sweden by industry, 1000 persons

		av. annual growth %		av. annual growth %	
	1970	1970-1980	1980	1980-1990	1990
Agriculture, forestry and fishing	276,5	-2,2	222,4	-3,1	162,9
Mining and quarring	19,6	-1,9	16,1	-3,5	11,3
Manufacturing	995,4	-0,4	956,2	-0,6	902,8
Electricity, gas and water	26,5	2,6	34,3	-0,3	33,4
Constructing	332,5	-2,1	267,9	1,4	306,4
Wholesale trade	157	1,5	181,6	1,8	217,6
Retail trade	278,2	1,0	305,8	-0,1	303,2
Hotels and restaurants	54,6	1,0	60,3	5,1	98,9
Transport	178	0,3	184,2	1,7	218
Post- and telecommunications	69,1	2,5	88,4	1,2	99,9
Financial services	37,7	3,1	51,3	3,7	73,7
Insurance	27,4	3,6	39	0,9	42,7
Real estate	25,4	9,7	64,2	0,2	65,8
Business services	78,5	4,8	125,1	4,9	201
Public administration and defence	164,4	1,4	189,6	0,6	200,8
Sanitary and similar services	23,4	3,2	32,1	7,0	62,9
Education and research					
private	16,7	4,2	25,1	2,3	31,6
public	159	5,0	258,8	-0,1	257,3
Health care and veterinary services					
private	23	2,9	30,6	1,0	33,9
public	188,3	6,4	349,4	1,8	418,8
Welfare					
private	4,2	4,0	6,2	4,9	10
public	91,4	11,7	276,1	3,7	398,1
Associations and organisations					
private	20	3,4	28	1,2	31,7
public	6,2	13,5	22	0,4	23
Recreation and culture services					
private	22,8	5,4	38,5	0,4	40,1
public	11,6	9,9	29,8	0,7	31,8
Repair services	53,5	-4,3	34,3	-1,7	29
Laundries and personal services	42,7	-2,4	33,6	-0,7	31,2
Domestic services	20,3	-20,7	2	-20,6	0,2
Public services, detail missing					63,6
Not specified	187,5	-32,8	3,5	35,2	71,6
Total	3591,4	1,0	3956,5	1,2	4473,3

Note: The figures of 1970 are not quite comparable with those of 1990 due to different methods.

4. Even if the statistical coverage of the services sectors is not at a satisfactory level, many programs for development of service statistics are launched on both a national and an international level. One of the most important is Eurostats statistical program for the service sector.

5. Eurostats program is to a great extent based on the collection of more traditional economic information as turnover, value added or investments. But especially for the service sectors we find it of great importance also to focus on the aspects of employment. The reasons are:

   - the identity of enterprises within the services sector is to a great extent created by the employees and their individual qualifications.

   - the above mentioned focusing on the service sector as the future job creating sector

6. The draft Methodological Manual on Service Statistics by the Eurostat includes **code 22: "Number of persons employed"** which again is broken down into **22A: " Number of wage and salary earners", 22B: "Number of persons employed on a part-time basis"** and **22C: "Number of female persons employed"**. The manual also includes one code for variables relating to personnel qualification levels and gives a definition: " Wage and salary earners are differentiated in terms of executives and managers, on the one hand, and employees and service personnel on the other; for non-wage and salary earners, a distinction is made between company heads (self-employed persons, employers) and family workers."

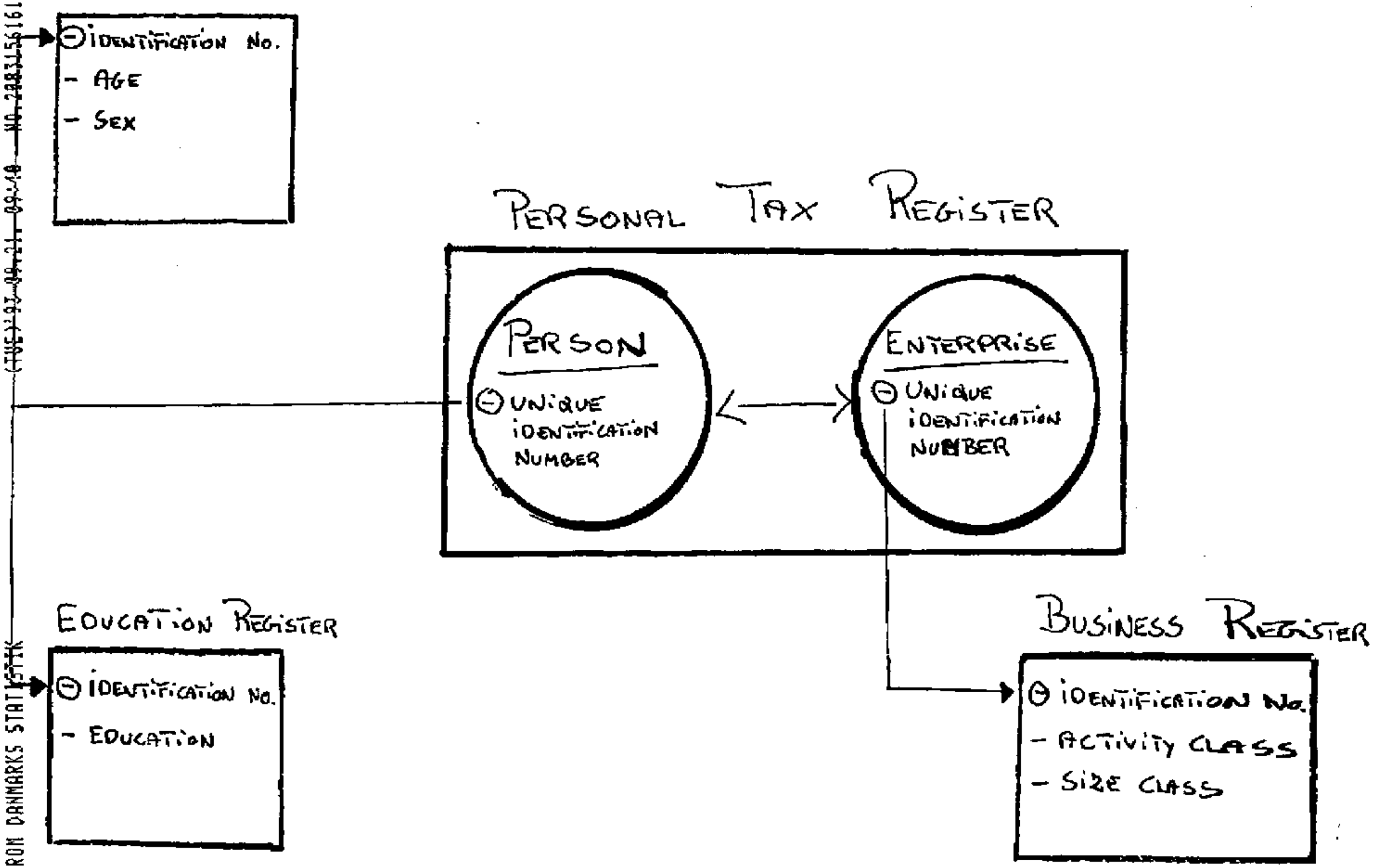
7. In its earlier work, the Voorburg Group has also paid some attention to the statistics on employment qualifications. So far, the Group has discussed four Model Surveys on services. Common to all these Model Surveys is, that one module in each Survey has been devoted to the questions on employment qualifications. All these four Models propose a cross-tabulation of employment numbers by sex and by **category (full time/part-time).**

   In addition, two other types of breakdown has been proposed. A Model Survey for Computer Services and for Audiovisual Services include **a breakdown by status (" working proprietors and partners" and "paid employees")**. A Model Survey for Insurance Services will make a difference between **" paid employees " and " agents & brokers "** (own staff)

   A Model Survey for Telecommunication Sector clearly proposes a breakdown by **broad categories of occupation** (management; engineering; computer science; repair, maintenance and installation; sales and marketing; clerical support, other). These categories refer to the ISCO-88 Classification. The occupational dimension is also presented for Computer Services, but in a more general level (computing personnel; other).

8. In this paper we shall argue that more variables concerning employment than mentioned in paragraph 6 shall be included in Eurostats Methodological manual - general framework or sectoral -, even if the employment variables as education and age have not been included in either the methodological manual or the model surveys. However, in order to make a proper analysis of competitive ability of different service branches, more information is needed, especially from the " intellectual capital intensive service sectors". The level of education is one and perhaps the most important in this respect. In addition to this, the Swedish study " Den osynliga balansrækningen " (The invisible

FIGURE 1. FUNDAMENTAL INFRASTRUCTURE OF ADMINISTRATIVE REGISTERS IN DENMARK, FINLAND AND SWEDEN.



balance accounting)[1] suggest to include additional labour force qualifications, like age distribution, lenght of experience in the branch and in the business in question. Moreover, the study stresses the importance of data on research, development and training costs deriving an analogy to the meaning of capital depreciation in capital intensive industries.

9. Bearing in mind the general level of statistical coverage of the services sector, it is understandable that there has been only little focus on the employment variables in the pilot surveys of Eurostat or the model surveys initiated by the Voorburg Group. Also the aspects of the respondent burden of the enterprises must be taken into account, as some of the employment variables as educational qualifications of the employees can probably be given by the enterprise itself only with a very considerable workload. The basic idea of this paper is to describe the possibilities of collecting statistical information on the employment in the services sector by utilizing the existing administrative registers and thus not increasing the respondent burden of the enterprises. As the use of administrative registers are getting more frequent in the European countries, we find this description of the possibilities of using administrative registers in Denmark, Finland and Sweden relevant for the Voorburg Group as such.

10. It is a common feature for both Denmark, Finland and Sweden that the use of administrative sources plays a major part in the production of business statistics. The statistical systems in the three countries of utilization of administrative registers are based on a well developed infrastructure of unique and uniform identification numbers of persons and enterprises in the different registers, cf, figure 1. This system enables the possibilities of linking data from different administrative registers. The main administrative sources used are the tax register, population register and educational register concerning the demographic variables and the business register concerning the enterprise variables. The registers in question comprise a number of variables, but for this description only a few variables are taken into consideration as education, sex, age, industry and size class of the enterprise.

11. Due to the descriptive purpose of this paper we have chosen not to harmonize - at this early stage - the different national nomenclatures for educational level or activity classification, because the important findings of this paper are the possibilities implemented and the basic trends in the relations between education and activity, size classes, sex or age in the three countries.

12. In Denmark the breakdown of employment by level of education clearly shows some sectoral differencies, cf. table 2). In general 5 per cent of the persons employed have an academic education. The highest level of educational qualifications is mainly concentrated in financial and other business services (10 per cent) and public services (9 per cent) . On the other hand the agricultural sector, manufacturing and also some services sectors as hotels and restaurants and retail trade are characterized by employing only 1-2 per cent with an academic education. A second observation is that in agriculture and hotels and restaurants 70 per cent or more of the persons employed only have compulsory school education. Financial and other business services have the lowest percentage (35) of personnel without any vocational or longer education.

[1] Affärsvärlden/Ledarskap: Anneel, Axelman et al.

TABLE 2a

The breakdown of employment by the level of education, Denmark 1990

	No vocational education	Vocational education	Short/medium length non university type education	Academic education	Total
	%	%	%	%	1000 pers.
Agriculture and fishing	72,0	22,0	5,0	1,0	182,9
Manufacturing	51,0	39,0	8,0	2,0	559,8
Constructing	40,0	51,0	7,0	1,0	175,0
Transport	40,0	48,0	9,0	2,0	207,8
Wholesale trade	40,1	48,4	8,8	2,4	182,7
Retail trade	52,5	42,9	3,5	1,1	217,6
Hotels and restaurants	70,0	26,0	2,9	1,0	80,5
Financial and other business services	35,0	41,0	14,0	10,0	275,7
Public administration, education, social and health care	38,0	26,0	27,0	9,0	906,6
Other private services	52,0	36,0	7,0	5,0	167,3
Other	56,0	25,0	14,0	6,0	3,4
Total	46,6	35,0	13,5	5,0	2959,4

TABLE 2b

The breakdown of employment by level of education, Finland 31.12.1990

FSCED level	Second level first stage 2	Second level second stage 3	4	Third level first stage not univ. 5	Third level first stage university degree 6	7	Third level post graduate 8	Total
	%	%	%	%	%	%	%	%
Agriculture, fishing and trapping	51,1	38,5	6,8	2,2	0,5	1,0	0,0	100,0
Forestry and logging	45,3	27,4	15,2	8,5	0,7	2,8	0,1	100,0
Mining and quarring	45,0	38,0	12,4	1,9	0,4	2,1	0,1	100,0
Manufacturing	39,1	36,9	15,7	3,9	1,2	3,0	0,2	100,0
Energy and water supply	32,6	35,4	23,2	4,7	0,7	3,2	0,2	100,0
Construction	40,2	39,4	14,9	4,1	0,4	1,0	0,0	100,0
Wholesale and retail trade	42,1	28,9	22,0	3,7	1,7	2,1	0,1	100,0
Hotels and restaurants	34,6	42,5	20,4	1,8	0,4	0,4	0,0	100,0
Transport	48,6	29,8	17,4	1,6	1,6	0,9	0,0	100,0
Communication	47,0	26,9	21,6	2,1	0,7	1,7	0,1	100,0
Finance and insurance	26,9	15,2	43,3	2,5	4,0	7,9	0,2	100,0
Real estate, cleaning and rental serv.	50,5	31,0	14,6	1,8	0,8	1,2	0,0	100,0
Technical and business services	17,9	16,6	34,3	12,7	4,4	13,5	0,6	100,0
Public administration and defense	21,2	25,2	29,9	4,9	4,8	12,8	1,2	100,0
Education and research	15,8	15,1	16,1	12,3	14,2	22,5	4,1	100,0
Health and social welfare services	20,7	39,2	20,0	10,6	2,4	6,2	0,9	100,0
Recreational and cultural services	30,7	20,7	29,8	4,0	6,6	7,7	0,4	100,0
Organizational and religious activitie	26,3	21,0	26,2	6,1	4,0	15,4	1,0	100,0
Other services	28,6	51,9	15,0	1,6	1,0	1,7	0,2	100,0
Unknown	39,3	28,7	18,4	5,2	3,0	4,9	0,6	100,0
Total	35,2	31,6	19,5	5,2	2,6	5,3	0,5	100,0

TABLE 2c

The breakdown of employment by level of education, Sweden 1991, age 16-64

	Compulsory school	Upper secondary school not more than 2 years	Upper secondary school more than 2 years	University not more than 3 years	University more than 3 years	Data not available	Total
	%	%	%	%	%	%	%
Agriculture, forestry and fishing	47,8	35,4	8,0	6,0	2,5	0,3	100,0
Manufacturing, mining, electr.	38,3	34,8	13,5	8,0	4,8	0,6	100,0
Construction	35,7	46,1	11,2	4,9	1,7	0,5	100,0
Wholesale trade	29,3	32,1	19,5	11,6	6,8	0,6	100,0
Retail trade	43,7	35,3	13,2	5,5	1,9	0,4	100,0
Hotels and restaurants	38,2	37,6	15,4	4,6	2,0	2,2	100,0
Transport and communications	30,2	42,3	16,1	6,8	4,0	0,6	100,0
Finance and other business services	20,0	26,5	22,4	14,4	16,3	0,4	100,0
Public administr. and other services	19,5	35,2	8,9	17,0	18,9	0,4	100,0
Not specified	34,0	28,6	15,2	9,0	11,3	1,8	100,0
Total	29,1	35,5	12,8	11,5	10,7	0,5	100,0

TABLE 3

Level of education of personnel in Finland, 1988, %

	upper tertiary	lower tertiary	upper secondary	other	total
Technical services	18,1	26,0	44,6	11,4	100,0
Data processing services	22,0	11,6	53,1	13,2	100,0
Management and adm. services	26,1	6,2	46,1	21,7	100,0
Bookkeeping services	12,9	1,1	73,6	12,4	100,0
Legal services	54,6	2,1	34,2	9,2	100,0
Guard and security services	2,3	1,0	56,4	40,3	100,0

According to the Finnish data, 8,4 per cent of the total number of persons employed had at the end of 1990 an upper tertiary or higher education[2] (ISCED classification, level 6). This level equals to a university degree with at last 15 years of education. However, 18,5 per cent of the persons employed in business services had this degree which exceded the national average more than twice. Moreover, the main activity class M in Finnish SIC included also services as guard and security where the personnel are expected to have a very low educational level.

In the manufacturing industry only 4,4 per cent of the persons employed had an education at upper tertiary level. Also some other services showed low share of university education; for instance the corresponding figure for wholesale and retail trade was only 3,9 per cent, less than a quarter of the share of business services.

In addition, almost 13 per cent of the personnel in business services had lower tertiary education, when the national average equalled to 5 per cent. Finally, only 18 per cent of personnel in business services recorded a low degree of education (lower secondary or below in ISCED classification), which was about a half of national average.

In Sweden the highest level of education is found in the sectors of finance and other business services where 30 per cent of the employment had an university education and in public administration and other services where 36 per cent of the persons employed had an university education. Sectors characterised by low educational level are agriculture, forestry and fishing with only 9 per cent at university level and nearly half of the employment (48 per cent) with only a compulsory school education. Also retail trade has a high percentage (44 per cent) of the employment at compulsory school level, and only 8 per cent at university level.

13. The analysis of the general educational level in Denmark, Finland and Sweden showed that the business services sector is characterized by a considerable higher percentage of persons employed with an academic education. But business services is a heterogeneous subsector which covers a wide range of services. It is therefore of interest to break down the information on educational qualifications by more detailed activity classification.

As shown in table 3 concerning Finland, there exists big educational differencies within the business services sector. In legal services the qualifications of personnel are exceptionally high in terms of education. More than half of the personnel had upper tertiary or higher education. This suggests that the qualifications of labour force form a precondition of business activity in legal services. The subsector guard and security services is presented as an opposite example. These services are typically produced by labour force at a low educational level and show a pattern similar to hotels and restaurants.

14. The enterprise approach to the level of qualifications of the persons employed is shown for Denmark in table 4. For the total population of local units a correlation between the level of education and the size class of the local unit can be stated. The smallest local units are characterised by the dominance of persons with no vocational education (53 per cent) and more than 7 per cent of the persons employed in the largest local units have an academic education. The fact that the smallest group of local units has a relatively higher proportion of persons

[2]Defined according to ISCED codification level 6: Education at the third level, first stage, university of equivalent and level 7: Third level, postgraduate degree or equivalent. Finish data is roughly transformed to match ISCED classification.

employed with academic education, than the following size classes up to 50 persons might be related to the many small enterprises within the business services sector.

TABLE 4

Educational level broken down by size classes, Denmark 1990 (in per cent).

Size class Persons empl.	No vocational education	Vocational education	Short/medium term education	Academic education	Total
1-5	52,8	34,9	8,0	4,3	100,0
6-19	49,0	36,5	11,2	3,3	100,0
20-49	45,7	36,4	14,4	3,6	100,0
50-99	42,1	33,3	19,4	5,3	100,0
100-199	44,1	36,0	13,4	6,5	100,0
200-499	46,3	34,5	13,6	5,5	100,0
500+	42,4	32,9	17,4	7,3	100,0
Total	46,6	35,0	13,5	4,9	100,0

15. A combination of the variables education and sex for Finland states, that men on the average have a higher education than females. The proportion of male persons employed with upper tertiary (academic) education exceeds that of females in all of the business services in Finland, cf. table 5. The difference is of special magnitude in legal services, where almost 90 per cent of all men workers had academic education, while the corresponding figure for females was only 27 per cent. However, in legal services the females with academic education showed the highest percentage (26,7), since in all the other services the share of female persons employed was considerably lower, below 20 per cent.

The difference between male and female persons with academic (upper tertiary) education appeared to be moderate in data processing services and especially in guard and security services, where the education plays no major role and furthermore the number of observations in these classes were small.

On the other hand, the female persons employed has a higher percentage in the lowest education class than male persons employed. This pattern is found for all subsectors below within the business services.

TABLE 5

Level of education and sex. Finland 1988, %

	upper tertiary		lower tertiary		upper secondary		other		total	
	male	female	male	female	male	female	male	female	male	female
Technical services	20,3	13,1	35,2	9,7	37,2	59,8	8,6	17,5	100,0	100,0
Data processing services	23,7	19,1	12,1	10,7	54,4	51,0	9,8	19,2	100,0	100,0
Management and adm. services	38,3	17,1	8,4	4,5	37,7	52,2	15,7	26,2	100,0	100,0
Bookkeeping services	34,4	6,8	2,5	0,7	56,5	78,5	6,6	14,1	100,0	100,0
Legal services	89,2	26,7	0,7	3,2	8,8	54,6	1,3	15,5	100,0	100,0
Guard and security services	2,4	1,4	1,0	1,2	57,1	52,2	39,4	45,2	100,0	100,0

A breakdown of education by sex for the business services sector in Sweden shows a higher level of education for male persons employed but the difference between male and female is not so striking as in Finland. In 1991 22 per cent of the male persons had an university education of three years or more compared with only 13 per cent for female persons. More than half of the female persons employed in the business services sector (54 per cent) had only a compulsory school education compared with 39 per cent of the male persons employed.

Table 6: Enterprises costs for external education, costs in per cent of turnover, value added and gross investments, Sweden

Activity	Educational costs in per cent of		
	turnover	value added	gross investments
Retail trade	0,07	0,36	2,40
Wholesale trade	0,06	0,49	3,48
Legal services	1,14	1,90	23,40
Accounting services	0,15	2,92	27,82
Computer services	0,92	2,26	10,65
Technical services	0,69	1,58	8,75
Advertising	0,18	0,93	5,14
Other business serv.	0,65	1,53	7,69

16. As the variables sex and age are more traditional variables in demographic analysis, and also information which can be directly extracted form the personal identification numbers in Denmark, Finland and Sweden, we have not included these variables in this paper for futher description. As illustration of the possiblities 3 tables with breakdown by age or sex are shown in the annex.

17. As stated in paragraph 15 the high educational level is a characteristicum for the business services sector. We put forward the hypothesis that employment of high educational level implies relatively high investments in maintaining the qualifications of the personnal for the enterprises within the business services sector. This hypothesis has been tested by statistics Sweden. In table 6 the relations between costs for external education and turnover, value added and gross investments are shown for some activity classes. For all three indicators there is a clear pattern. The business services show a very high proportion of educational costs compared to the retail and wholesale trade. As the indicators turnover and gross investment are not comparable between activity classes due to the nature of the different activities within the business services sector, the relation between educational costs and value added is used for illustrating the differencies between the activities. First all business services activity classes show a higher proportion of educational costs than the trade sectors secondly within the business services especially accounting services and also computer services have a considerably higher proportion of educational costs.

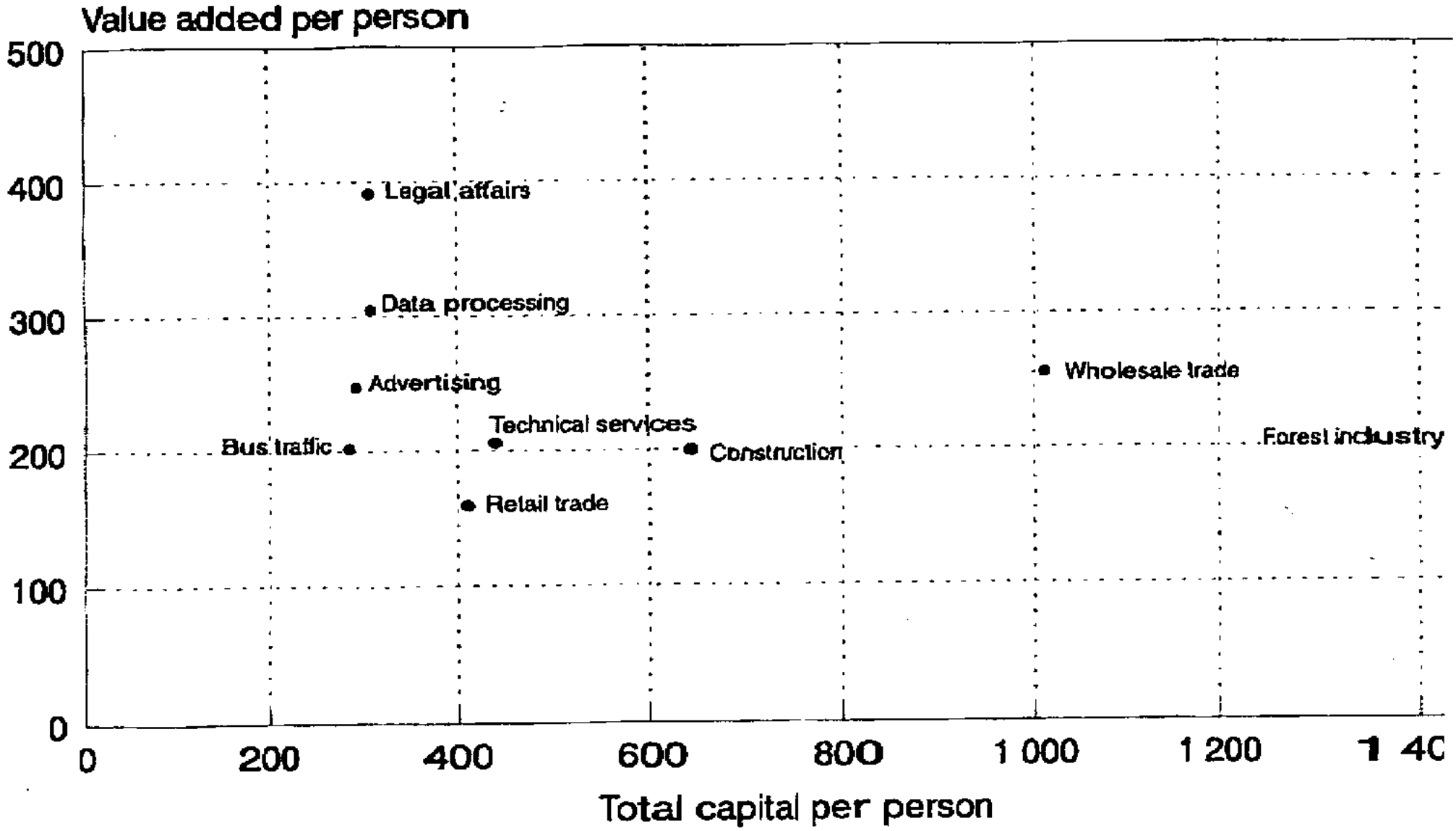
18. For industries having the highest average level of education of the employees, the value added per person ratio is also very high even if the ratio of total capital per person is moderate. Figure 2 and 3 illustrate this condition in Finland and Sweden. The relations are similiar for the two countries with high ratios of value added per person for legal services and computer services and low ratio

19. In our opinion, this kind of illustration of ratios between variables directs the attention back to the relevance of available statistical data on different activities E.g. for forest industry or water transport, having very high figures of total capital per person, it is important to provide detailed statistical data on aquisition, use and depreciation of total capital. For the description of business services activities, on the contrary, it is more important to provide detailed data on labour input, employment qualifications and flows of intellectual capital. This is the reason for our argumentation for inclusion of more variables in Eurostats Methodological Manual and in one of the modules of the model survey.

Variables as sex, age and education are variables often connected to administrative registers. By more frequent use of registers and by building up statistical systems for the use of administrative data, variables as sex, age and education can be complied without increasing the respondent burden of the enterprises. On the other hand also information about the external and internal costs for the additional education of the persons employed ought to be included in the Methodological Manual and tested in the pilot or model surveys, even if this information only is available through direct contact to the enterprises.

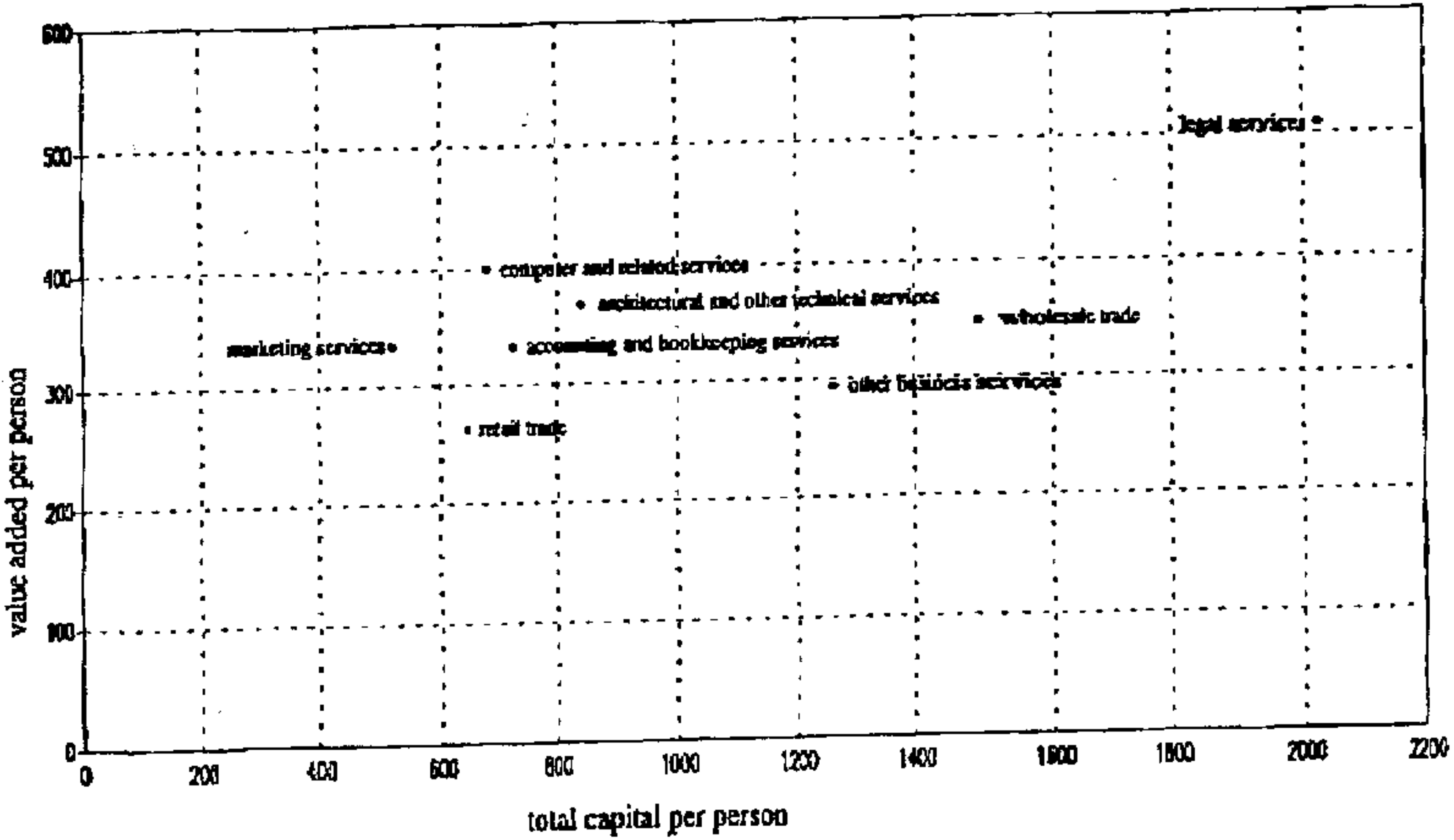
Figure 2: Total capital and value added per person, 1000 FIM

Finland 1991



Statistics Finland

Figure 3:
Total capital and value added per person in Sweden 1991



Source: Financial accounts, Statistics Sweden

ANNEX

ANNEX TABLE 1:

Breakdown of employment by sex in selected business services

Finland (1988)

	males	females	total
Technical services	69,3	30,7	100,0
Data processing services	63,3	36,7	100,0
Management and adm. services	42,4	57,6	100,0
Bookkeeping services	22,2	77,8	100,0
Legal services	44,6	55,4	100,0
Guard and security services	85,4	14,6	100,0
Advertising services	n.a.	n.a.	n.a

Denmark (1990)

	males	females	total
Technical services	65,8	34,2	100,0
Data processing services	70,5	29,5	100,0
Management and adm. services	n.a.	n.a.	n.a.
Bookkeeping services	53,2	46,8	100,0
Legal services	30,9	69,1	100,0
Guard and security services	n.a.	n.a.	n.a
Advertising services	n.a.	n.a.	n.a

Sweden (1991)

	males	females	total
Technical services	72,5	27,5	100,0
Data processing services	65,6	34,4	100,0
Management and adm. services	58,9	41,1	100,0
Bookkeeping services	43,2	56,8	100,0
Legal services	46,1	53,9	100,0
Guard and security services	71,2	28,8	100,0
Advertising services	53,2	46,8	100,0

ANNEX TABLE 2:

Breakdown of employment by sex, Denmark 1990

	males	females	total
Agriculture	76,5	23,5	100,0
Manufacturing	68,0	32,0	100,0
Construction	87,6	12,4	100,0
Retail trade	69,2	30,8	100,0
Wholesale trade	47,6	52,4	100,0
Restaurants, hotels	38,4	61,6	100,0
Transport	73,5	26,5	100,0
Financial, business serv.	55,5	44,5	100,0
Public sector	33,5	66,5	100,0
Total	55,2	44,8	100,0

Annex Table 3

Employment in Denmark by age and industry, % share

	Less than 25 years	25-39	40-59	60+
Agriculture	16,7	23,1	38,3	21,7
Manufacturing	23,0	35,1	37,0	5,0
Construction	21,2	35,1	38,6	5,1
Retail trade	18,8	36,4	38,2	6,6
Wholesale trade	41,0	24,0	29,4	5,7
Restaurants, Hotels	45,9	26,5	24,1	3,5
Financing and business services	14,4	39,7	38,7	7,2
Public sector	11,3	37,7	45,6	5,6
Total	19,1	34,6	39,4	6,9

Employment in Finland by age and industry, % share

	Less than 25 years	25-39	40-59	60+
Agriculture	5,7	30,9	54,3	9,0
Manufacturing	11,0	42,2	45,0	1,7
Construction	12,4	43,5	41,9	2,2
Trade	17,4	39,3	41,0	2,3
Restaurants, Hotels	24,2	42,7	31,5	1,6
Technical and other business serv.	11,5	52,2	34,5	1,7