

gen af industribeskæftigelsen fra de gamle centre er under krisen ikke nået ud til de perifere dele af EF.

Der tales i EF's organer meget om, at en formindskelse af de regionale uligheder er en nødvendig betingelse for fortsat integration. Resultaterne i denne artikel viser imidlertid, at der foregår en regional udvikling, der leder til stadig større forskelle i EF.

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Changes in regional employment in Denmark in the seventies

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The paper deals with regional development in employment in Denmark in the 1970's. It uses shift-share analysis to isolate elements and activities responsible for the regional dispersion experienced. In that context the paper discusses the interrelationship between manufacturing industries and public services.

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During the 1970's Denmark witnessed a reversal of the trend towards a centralization of population and employment which had characterized previous decades. The purpose of the paper is to deliver a short description of the changes in occupational structure involved in this decentralization.

DATA

In this analysis we use data from the Employment Surveys for the years 1972 and 1978.¹ Changes in the methods of registration² and in the classification of occupations³ in the surveys since then prevent any meaningful investigation into the changes of employment in later years.

The Employment Surveys are based on samples of people aged 15-74 and record the development of the labour force. An assessment of the development of the employment based on these data might thus be disturbed by differing developments in the regional distribution of unemployment. It can be shown, however, that for the period studied this is not the case. The development described in this paper concerning the labour force can without further qualifications be regarded as valid for the development of the employment as well.

The classification of activities used here is more detailed than that published by Danmarks Statistik. This might, dependent on the size of the sample, influence the results for minor industries in small regions (e.g. Bornholm) for which some reservation thus should be taken.

Table 1. The labour force by counties, 1972 and 1978.
 Tabel 1. Arbejdsstyrken fordelt på amter, 1972 og 1978.

County	1972	1978	change %
København, Frederiksberg, City	356 558	313 375	-12.1
København	328 067	355 614	8.4
Frederiksborg	139 707	176 437	26.3
Roskilde	85 685	107 549	25.5
Nordøstsjælland	910 017	952 965	4.7
Vestsjælland	125 525	139 976	11.5
Storstrøm	121 323	130 429	7.5
Bornholm	21 586	24 086	11.6
Fyn	207 906	226 153	8.8
Sønderjylland	110 095	124 099	12.7
Ribe	93 841	107 599	14.7
Vejle	145 538	164 238	12.8
Ringkøbing	118 810	136 178	14.6
Århus	253 841	283 773	11.8
Viborg	102 846	115 686	12.5
Nordjylland	212 854	240 004	12.8
Danmark	2 424 181	2 645 185	9.1

GENERAL DEVELOPMENT

The total labour force in Denmark showed a moderate growth of 9% in the years 1972-78. Table 1 gives the figures for the regional growth rates to each side of this average.

The labour force grew in all counties, Central Copenhagen excluded, brought about by the recruitment of the labour market. The growth in northeastern Zealand, however, was notably below the average, whereas the other counties, except Fyn and Storstrøm, showed growth rates well above.

The growth rates in the 14 activity groups are shown in table 2. The structure of activities changed markedly in the period. Agriculture and Other Services witnessed a

Table 2. The labour force by activities, 1972 and 1978.
 Tabel 2. Arbejdsstyrken fordelt på erhverv, 1972 og 1978.

Activity	1972	1978	change %
Agriculture	234 620	216 938	-7.5
Manufacturing	653 851	651 259	-0.4
Construction	206 146	212 513	3.1
Wholesale trade	118 801	130 324	9.7
Retail trade	184 246	179 508	-2.6
Financing	73 431	88 535	20.6
Transport	160 483	170 782	6.4
Public administration	122 059	141 036	15.5
Education	161 618	212 483	31.5
Social and health	259 342	362 164	39.6
Professional service	64 864	83 589	28.9
Restaurant and hotel	65 806	73 951	12.4
Other service	77 220	71 133	-7.9
Industry not stated	41 695	50 970	22.2
All activities	2 424 181	2 645 185	9.1

decline of 8% whereas the labour force in public activities, e.g. Administration, Education, and Social & Health Services, and in some private ones, e.g. Professional Services and Financing, all grew between 15-40%.

The proportion of the labour force in the different activities in northeastern Zealand is shown in table 3. Generally in 1972 northeastern Zealand had proportions above the average in those activities showing high growth rates 1972-78, proportions below the average in declining activities. Taking the structure of activities as a basis for evaluating the growth in northeastern Zealand would lead to the conclusion that the region's labour force would grow faster than the average. As mentioned, the opposite is the case. In the following, we will use a shift-share analysis to qualify this contradiction.

Table 3. Northeastern Zealand's share of the labour force by activities, 1972 and 1978.

Tabel 3. Nordostsjællands andel af arbejdsstyrken i erhvervene, 1972 og 1978.

Activity	%			Specific re-distribution
	1972	1978	Change	
Agriculture	6.5	6.5	0.0	152
Manufacturing	36.3	31.6	-4.7	-30 273
Construction	31.7	28.9	-2.8	-5 922
Wholesale trade	47.4	44.4	-3.0	-3 881
Retail trade	37.9	36.1	-1.8	-3 107
Financing	53.3	51.1	-2.2	-1 970
Transport	46.1	44.0	-2.1	-3 633
Public administration	51.6	48.4	-3.2	-4 446
Education	43.0	41.6	-1.4	-3 074
Social and health	42.6	39.7	-2.9	-10 726
Professional service	57.3	53.3	-4.0	-3 341
Restaurant and hotel	46.1	43.5	-2.6	-1 965
Other service	35.7	39.2	3.5	2 551
Industry not stated	36.0	45.8	9.8	5 022
All activities	37.5	36.0	-1.5	-64 611

Shift-share analysis

Shift-share analysis is used in different versions. In this paper we divide the growth in an activity in a county in the period 1972-78 into three components, called general, structural, and specific.

The general growth is the growth in the labour force in a county's activity which is proportional to the total growth in the labour force in Denmark 1972-78. The structural growth is that part of the growth in an activity which contributes to the total growth in a county, and results from a greater growth rate in that activity than that of the total labour force in Denmark.

The specific growth is the growth in the labour force in an activity caused by changing regional distribution of the labour force in that activity. The mathematical equations are:

$$g_{ij} = (T_2/T_1 - 1) \times t_{ij}$$

$$st_{ij} = (T_{i2}/T_{i1} - T_2/T_1) \times t_{ij}$$

$$sp_{ij} = t_{ij2} - (T_{i2}/T_{i1}) \times t_{ij} \text{ where,}$$

Table 4. General, structural, and specific growth in the counties, 1972-1978.

Tabel 4. Almen, strukturel og specifik vækst i amterne, 1972-1978. Den specifikke fejl på -12 skyldes afrundinger i datamaterialet.

County	General	Structural	Specific	Sum
København, Frederiksberg, City	32 506	10 155	-85 845	-43 190
København	29 909	10 017	-12 379	27 547
Frederiksborg	12 737	3 085	20 897	36 719
Roskilde	7 811	1 336	12 715	21 863
Nordøstsjælland	82 963	24 593	-64 611	42 945
Vestsjælland	11 444	-1 327	4 333	14 450
Storstrøm	11 061	-2 075	120	9 105
Bornholm	1 968	-462	992	2 498
Fyn	18 954	-3 500	2 794	18 248
Sønderjylland	10 037	-2 315	6 280	14 002
Ribe	8 555	-2 195	7 398	13 758
Vejle	13 268	-2 444	7 876	18 700
Ringkøbing	10 831	-3 976	10 510	17 366
Århus	23 142	846	5 944	29 932
Viborg	9 376	-2 769	6 234	12 841
Nordjylland	19 405	-4 375	12 118	27 148
Danmark	221 004	0	-12	220 992
Error	0	0	-12	-12

Note: The specific error is caused by rounding off in the data.

g_{ij} , st_{ij} , and sp_{ij} are general, structural and specific growth in activity i in region j 1972-78, respectively, t_{ij1} and t_{ij2} are employment in activity i in region j in 1972 and 1978, respectively, T_{i1} and T_{i2} are employment in activity i in Denmark in 1972 and 1978, respectively. T_1 and T_2 are the total employment in Denmark 1972 and 1978, respectively. We are not going to examine and criticize the various methodological possibilities in the shift-share analysis.⁴ It can be shown that the greatest problems in the use of the method are associated with the classification of activities.⁵ This problem is all the more crucial when activity groups - as here - are not theoretically defined, but determined by official statistics. However, for our purpose - a description based on over-average occurrences of growth activities and solely this - the method is fully justified.

RESULTS

The main results of the shift-share analysis are shown in table 4. The figures for northeastern Zealand show that the growth of this area stems from the activity structure, whereas within each activity a regional redistribution away from northeastern Zealand has occurred.

In contrast, the other counties show: an activity structure dominated by slowly growing activities, but the specific component is positive. There is only one exception: the county of Århus, where the structure of activities itself

yields a small positive contribution to the growth. It can be remarked too that the county of Storstrøm only receives a very modest share of the regional redistribution from northeastern Zealand.

The counties of Ribe and Ringkøbing have extremely high specific gains. (That this does not apply to Viborg is due to the development in agriculture). The specific gains are especially marked in Manufacturing and Public Services, and in the county of Ribe, in Transport as well.

Differences in dispersion

The general pattern of dispersion from northeastern Zealand to the rest of the country, especially Jutland, applies to most of the 14 activity groups. But some deviations deserve attention. The dispersion from northeastern Zealand was intense in Manufacturing, but was noticeable in other activities too, private as well as public ones, cf. table 3. On the other hand, the group of Other Services concentrates to northeastern Zealand, even to the Central Copenhagen area. But generally it is not the case that the white-collar occupations remain in Copenhagen. Professional Services are, in fact, second only to Manufacturing in declining percentage in northeastern Zealand.

Disparities between peripheral counties

As mentioned the county of Storstrøm deviates from the peripheral counties of Jutland by showing a falling per-

Table 5. The share of the specific redistribution of labour force from northeastern Zealand for some selected activities.

Tabel 5. Udkantsamternes andele af den specifikke omfordeling fra Nordostsjælland 1972-78, udvalgte erhverv.

Activity	County of Storstrøm	5 peripheral counties in Jutland
Manufacturing	-0.5 %	71.0 %
Public administration	3.8 %	54.8 %
Education	-3.7 %	56.2 %
Social and health services	8.3 %	56.3 %
Financing	17.4 %	40.5 %
Professional services	10.3 %	28.4 %

centage of the labour force, even though the growth markedly exceeded that of northeastern Zealand. This fact is not caused by a different structure of activities in Storstrøm. On the contrary, Storstrøm received only a tiny fraction of the specific redistribution of employment from northeastern Zealand. The development in Manufacturing, where the redistribution did not reach the county, is mainly responsible for this. But the public sector added to this deviating behaviour as well. On the other hand, the county received reasonable shares of activities, such as Financing and Professional Services, cf. table 5. The small gains of the peripheral counties in Jutland in those private activities might indicate the existence of some hesitation concerning too remote locations in these activities where some contact to a metropolis is necessary.

Explanations

In Denmark and in other countries as well much effort has been made to develop theories concerning regional development in the 1970's.⁶ The theories have mainly dealt with the development of the manufacturing industries including aspects of location.⁷

Also migration data have been used as basis for a theory formation.⁸ This development of theory has too often focused on single parameters and thus hindered a more total understanding of the regional development process. Our stance is that the connection between manufacturing industries and the public sector is central for an understanding of the regional development as described in this paper. These activities show the most marked regional redistributions and seem to be interconnected in the pattern of development.

A marked dispersion of manufacturing industries from Copenhagen to the peripheral counties took place already in the 1960's.⁹ This tendency continued in the 1970's as shown in this paper. This growth of manufacturing employment (excluding handicraft) in the periphery did in the 1970's occur especially in the smaller towns, as shown in fig. 1. With a single exception, growth in manufacturing

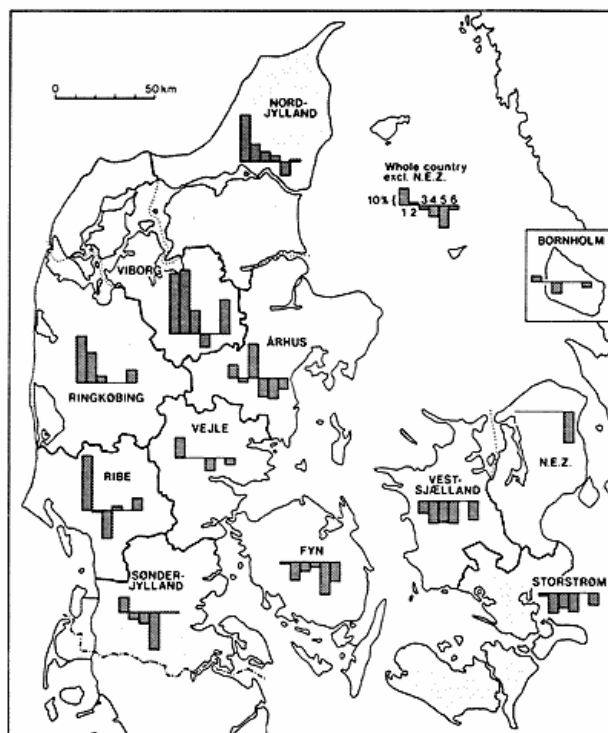


Fig. 1. The relative industrial employment for different town sizes, 1972-78.

Fig. 1. Den relative beskæftigelse for forskellige bystørrelser, 1972-78.

Peripheral counties are shown in grey. Size of column indicates industrial employment by municipalities with biggest town: 1. less than 5,000 inhab. 2. between 5-10,000 inhab. 3. between 10-20,000 inhab. 4. between 20-100,000 inhab. 5. more than 100,000 inhab. 6. the whole county.

Source: Danmarks Statistik, Industristatistikken.

in the peripheral counties is characterized by gains in the smaller towns compensating losses in the larger cities. In the more central counties the growth in the small towns did not counterbalance the decline in the cities. Furthermore, it can be shown that only few of the towns in the peripheral counties experience any noteworthy growth in manufacturing.¹⁰ Most of them actually stagnated or declined in manufacturing employment. The growth was localized to a few towns.

The regional redistribution of employment in manufacturing is influenced by a long range of factors such as regional disparities in wages, trade-union attitudes, qualifications of the labour force, regional subsidies ground rent, environmental regulations and so forth. There are also regional differences in the amount of labour power that can be recruited from agriculture and other small-scale production. Former self-employed and assisting housewives are generally an extremely stable and loyal labour force and constitute the hard core of the labour force in most firms in the small towns, a fact that deserves

more attention in the discussion of regional development. And too, the dissolution of local ties in sales and purchases has facilitated the relocation of industry from the larger markets.

The regional redistribution of manufacturing employment has been determined by a marked rise in the level of public service.¹¹ This concerns possibilities for care of children and retired people – a function of the family badly concordant to wage labour; recreation, such as sport facilities and libraries; better general education and health services. Unlike ten years ago, regional disparities in these functions are now only minor. This development has led to an extraordinary growth in the employment in the public sector. The growth has been tremendous in the peripheral counties, where the dispersion of industry created a large demand for public service. The development in the regional distribution of public employment can thus by and large be explained by the already existing redistribution of manufacturing employment.

CONCLUSIONS

This paper has shown that the labour force in most regions outside northeastern Zealand in the 1970's grew at a higher rate than the average rate for Denmark. This growth cannot be explained by the structure of activities in single regions. Instead specific regional redistribution within the activities away from northeastern Zealand was responsible.

Manufacturing, where employment generally stagnated, showed large redistributions from northeastern Zealand to the 5 peripheral counties in Jutland, as did the public sector. The explanation of the new regional pattern of manufacturing is to be found in changed conditions of production and location, while the regional redistribution in the public activities is connected to the development in manufacturing industry.

Notes

1. cf. *Statistiske Efterretninger*, 1973, nr. 61 and 1980, nr. A4, Danmarks Statistik.
2. *Statistiske Efterretninger*, 1983, nr. 7, Arbejdsmarked, yield further details.
3. *The Employment Surveys* use ISIC 58 until 1978; since then they have used ISIC 68 as a base for classification.
4. cf. *Nielsen & Sørensen*: (forthcoming) where several methods of shift-share analysis are discussed.
5. cf. *Vipond & Forward*: A critique of Shift and Share Analyses of Australian Urban and Regional Growth. *Australian Geographer*, vol. 14, 1979, Sydney, p. 228-236.
6. e.g. Anders Skonhoft: Noen momenter om tilpasningen i regionale arbejdsmarkeder, in: *Nordisk Symposium for Kritisk Samfunnsgeografi*, Finland 1982, discussing tendencies towards a new regional development in Norway. Doreen Massey: In what Sense a Regional Problem? *Regional Studies* vol. 13, 1979. Roger Andersson et al: Mot en ny regional industristruktur? *Industriisysselsättningens utveckling i Sveriges kommuner 1974-1980*, Forskningsrapport nr. 80, Uppsala 1983.
7. e.g. *Peter Maskell*: *Industriens regionale omlokalisering 1970-80*, Copenhagen 1982. Peter Hartoft-Nielsen: *Den regionale erhvervsstruktur- og beskæftigelsesudvikling*, Lavindkomstkommissionens arbejdsnotat 8, 1980. Chresten Storgaard: *Teknologi og regional brancheutvikling*, Copenhagen 1981.
8. e.g. *P. O. Pedersen*: *Vandringerne og den regionale udvikling*, Esbjerg 1983.
9. *Ruth H. Jensen*: *Changes in the Geographical Distribution of Danish Industry*, *Geografisk Tidsskrift*, vol. 70, Copenhagen 1971, and *R. Guttesen et al*: *Regional Development in Denmark*, with special reference to the postwar period, *Geografisk Tidsskrift*, vol. 75, 1976.
10. *Peder M. Sørensen*: *Den teknologiske udviklings betydning for den regionale industriudvikling*, in: *Teknik och utveckling*, ERU-rapport nr. 18, Stockholm 1982.

Resumé

I Danmark er der igennem 1970'erne sket en fortsat stigning i arbejdsstyrken. Arbejdsstyrkens stigning har været undergennemsnitlig i Nordøstsjælland mens resten af landet – med undtagelse af Storstrøms amt og Fyns amt – har haft en overgennemsnitlig udvikling.

Erhvervsstrukturen har i samme periode undergået markante ændringer. Den offentlige sektor og erhvervsgruppen Pengeinstitutter & Forsikring er vokset meget kraftigt, mens der har været tilbagegang for Landbrug, Anden Service og Detailhandel.

Selv om væksterhvervene var overrepræsenteret i Nordøstsjælland vises det ved hjælp af en shift/share analyse, at der gennem 1970'erne er sket en kraftig omfordeling til de øvrige regioner. Det er specielt de jyske udkantsamter, der har fået størst andel i denne omfordeling, mens Storstrøms amt ikke har fået andel heri. Udviklingstendenserne i de danske udkantsregioner kan derfor ikke siges at være entydige.

Den regionale omfordeling har først og fremmest fundet sted inden for Fremstillingsvirksomhed og de offentlige erhvervsgrupper, mens de private væksterhverv kun i mindre udstrækning omfordeles. Således sker der en koncentration af erhvervsgruppen Anden Service til Nordøstsjælland.

Grundlaget for industriens og dermed Fremstillingsvirksomheds regionale omfordeling søges forklaret ud fra følgende forhold. Regionale forskelle eksisterer stadig inden for en række områder, f.eks. er muligheden for at få en stabil og loyal arbejdskraft større i udkantsamterne end i Nordøstsjælland på grund af den stadige frisættelse af arbejdskraft fra småproduktionen.

For at frigøre arbejdskraft til lønarbejde og dermed muliggøre en industrialisering af udkantsamterne, har det været nødvendigt med en statslig udbygning af en række servicefunktioner (børnepasning, ældreomsorg, efteruddannelse etc.). Den offentlige sektors regionale omfordeling skal derfor ses i sammenhæng med udviklingen inden for erhvervsgruppen Fremstillingsvirksomhed.