

Trade-flow Based Industrial Clusters in the Finnish Economy - Growth Through National Synergies

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1. Introduction

Clusters are topical objectives in technological decision-making and policies. However, there is still a lack of empirical understanding of what clusters practically are and what is their impact on economic growth. Obviously, they are value-adding networks of knowledge and goods. Obviously, they are networks of horizontally and/or vertically integrated organisations. And nearly as obviously we may state that any industrial network or cluster has at least two dimensions of interest. I.e., what is the amount of inter-organisation links, and what is the relative importance of these links when compared to the total activity of the organisations? The existing network or cluster methodology does not give appropriate tools to study these features.

It is also not clear whether networking is connected with productivity, growth or other measures of performance. Or whether the causality is reverse; i.e., whether growth or productivity are causal factors for networking. Probably the causality is simultaneous. In practice, these are topical empirical questions that require much new attention.

Economic studies have shown that technology is the single most important determinant of long-term economic growth. At the firm level the technology for producing goods can be acquired in several ways. A firm can obtain the necessary knowledge directly by performing its own R&D or purchasing disembodied technology developed elsewhere¹. Indirect ways include the external acquisition of technology embodied in intermediate goods and disembodied spillovers. Disembodied spillovers arise because of the imperfect appropriability of R&D results, so an industry may gain access and apply technology developed in another industry (Virtaharju & Åkerblom 1993).

¹ External R&D, patents, licenses, training

The firm that has developed a new technology can still utilise the innovation through the monopoly offered by patents and selling products to the other firms. This implies that the productivity and growth of individual production sectors may be affected by R&D proceeded by other sectors that supply or buy from them intermediate goods. Once an innovation is introduced to the market the imitating companies may create added value for the economy through spillovers. The growth of intermediate trade flows affects also the growth through increasing economies of scale (Romer 1987).

The value chain is a linked set of production sectors that convert raw materials into components and finally to products and services. The value chain can be treated as a main part of the cluster concept, defined by Porter (1990). Clusters are further the core of the national innovation system. Innovation in one sector in a value chain does affect vertically and horizontally linked businesses. For example continual innovation in mobile phones is dependent on technological advance in semiconductor components, while innovation in teleservices creates demand for mobile phones. It can though be assumed that trade flows described in the input/output statistics describe both the embodied and disembodied technology diffusion between production sectors.

Value chains and clusters are major objectives in industrial and technological decision-making and policies. Well-functioning networks are natural outcomes of rational behaviour of self-interested firms, raw-material producers, employers, research organisations and consumers. However, it is generally understood that markets alone fail to facilitate appropriate and sufficient networking. On the contrary, it is understood that there is need for public intervention. Examples of this intervention are public R&D subsidies, loans and risk sharing programmes, as well as public initiatives to improve technology diffusion.

The main benefits of publicly improved networking are believed to arise from better efficiency due to decreased transaction costs, increased diffusion of spillovers, and economies of scale. These benefits may include growth, increased productivity, improved competitiveness and profitability, better employment, and new innovations and spin-offs.

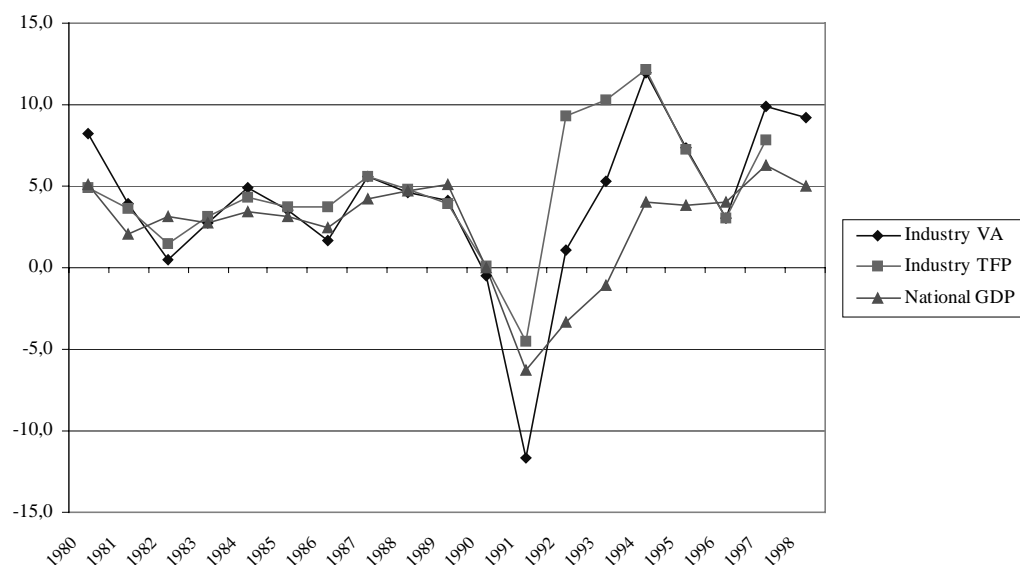
The synergies between *domestic* production sectors are crucial especially for a small country like Finland, which has a limited amount of R&D resources. Clusters are important tools in analysing the technology diffusion, but also in understanding how different sectors are interconnected to each other. The change of the production in a core sector of the cluster is closely linked to the growth of several other sectors. The Finnish clusters have been analysed using qualitative case methodologies based on Porter's framework (Hernesniemi et al. 1996).

The goal of this study is threefold. First, we derive a domestic trade-flow based indicator of industrial networking. Second, we identify the Finnish industrial clusters based on a quantitative value chain analysis. Third we study statistically the dynamics of networking and its connection to industrial growth.

The sections 2 and 4 of this paper are written by Sakari Luukkainen and section 3 by Tuomo Pentikäinen.

2. Economic development of the Finnish industries

The growth of industrial value added has followed TFP² quite accurately in the last decades (Figure 1.). The associated correlation is 0.81. It has been studied that 1975-1993 industrial production-sectors internal R&D stock explained 14%, economies of scale 44%, price changes of the inputs 2%, and technical change 40% of the growth of the TFP (Niininen 2000). The networking in the clusters may contribute to the TFP via two mechanisms. It may create economies of scale through outsourcing or it may increase technology diffusion between production sectors.³



Source: Statistics Finland 1998, 1999a

Figure 1. The annual growth of the value added and the TFP of the Finnish industries in the timeperiod 1980-1998.

The Finnish industry's relative share of the national GDP has stayed in the timeperiod 1980-1998 between 25-27% (Luukkainen & Niininen 2000). Only during a period of a strong depression in the early 90's it declined to 20%. The growth after depression was clearly driven by industrial sectors, whose production growth preceded the growth of GDP (Figure 1.). There has although been a major structural change between production sectors. In the 80's the growth was driven equally by the pulp and paper, machinery and electronics industries, while in the 90's it was dominantly driven by electronics and especially companies belonging to the telecommunications cluster⁴ (Mäenpää & Luukkainen 1994). Machinery, equipment and wood industries faced a very strong decline during the depression, due to its cyclical nature (Table 1.). The textiles and leather industries have declined during the whole follow-up period. They accounted with above mentioned strongly cyclical industries 53% of the total decline during the depression. The opportunities for industrial growth are promising also in the future, because the fastly renewing sectors⁵, machinery, equipments and electronics,

² Total factor productivity

³ The main sources of embodied technology are machinery and equipment and electronics (Vuori 1997)

⁴ Later ICT cluster

⁵ New products more than 25%

constituted 32 % of the industrial production. The relative share of the R&D intensive sectors⁶ was even bigger 38 %.

Table 1. Growth of industrial production sectors, their share (contribution) of whole industrial growth and decline, relative input (R&D) and output (new products) innovation indicators (%).

	1980-89 growth	share of growth	1989-91 growth	share of decline	1991-98 growth	share of growth	1998 R&D ⁷	New pro- ducts ⁸
Food	17,3	6,5	-1,2	1,0	14,3	3,2	2,8	8
Textiles, leather	-27,5	-5,1	-44,5	12,4	-10,2	-0,6	2,0	8
Wood	14,3	3,4	-40,3	14,8	38,5	5,5	0,6	5
Pulp, paper	26,0	17,4	-1,8	2,6	30,5	15,0	1,7	9
Publishing and printing	36,5	11,4	-12,4	7,5	10,8	1,7	0,4	9
Petroleum	10,1	0,3	20,0	-1,8	27,0	0,8	5,3	3
Chemical	32,8	8,0	-7,8	3,9	26,4	4,2	10	14
Rubber and plastic	35,0	4,0	-18,4	3,9	28,9	2,0	1,7	16
Glass	29,5	4,7	-21,0	6,1	9,4	0,7		
Basic metal	30,2	5,6	-0,4	0,2	38,1	6,0	3,0	22
Fabricated metal	47,4	9,5	-17,8	6,6	38,5	5,5	1,7	6
Machinery and equipment	31,7	14,8	-33,3	25,4	37,3	10,8	8,0	25
Electronics	54,0	14,8	-10,0	5,4	76,7	42,6	22	73
Transport equipment	10,1	1,9	-20,2	6,9	18,7	1,9	2,7	15
Other man. and recycling	21,4	2,7	-23,1	5,1	10,8	0,6	1,7	13
Industry total	26,5	100	-13,8	100	36,8	100	7,3	25

Source: Statistics Finland 1999a, 1999c

It seems that Finland does not suffer from deindustrialisation, which refers to the contraction of the industrial sector, which although has been a notable feature of many other advanced economies. Manufacturing is still the engine of national GDP growth, because its ability to extend export markets, to increase TFP, to renew the structure of the production sectors towards high tech products and to generate technological innovations.

The interaction between manufacturing and services is extremely synergistic, so on industrialised nation's growth policy, including policies affecting R&D, will although have to address to the crosscutting issues of these sectors. For example, the ICT value chain consists of a number of electronics-related manufacturing industries and even larger number of service industries that integrate this hardware with software into systems (Tassef 1997).

The innovation statistics show also that the main collaboration associated with innovation development has been done in the domestic value chains with customers and subcontractors (VTT Sfinno database). However, a growing economy must have a large and diversified endogenous R&D capability because internal transfers of knowledge are generally regarded as more efficient than transfers from external sources. Companies must also conduct R&D in order to receive R&D results from external sources.

In the following sections we turn the consideration to the input-output statistics based analysis of networking and industrial clusters and its applicability to the technology policy decision making.

⁶ R&D intensity more than 8 %

⁷ The share of R&D expenditures from value added in year 1998

⁸ The share of new products from sales in year 1998

3. Trade-flow based networking and its connection to economic growth

Networking has two dimensions that are of special interest. Inter-industry trade as a proportion of industry's total factor usage or production reveals how deeply each industry is linked to other industries. The values of off-diagonal elements of I/O matrix have this information. It seems obvious that sensible networking indices should be increasing with increased intra-industry trade.

It is of interest to know what is the distribution of inter-industry trade. Simple sum-indices are neutral to distribution. A straightforward way to overcome this problem would be to define the clustering index as a sum function of squared trade-flow values. The index developed in this study is a sum-function of squared trade-flow values. Such an index incorporates information of both volume and distribution of inter-industry networking. The derived index is principally analogous with Herfindahl-Hirschman index of market shares, and it gets positive (or zero) values between 0 and 1. (Figure 2.)

	intermediate outputs			Sum of interm		production
				use	end use	
intermediate inputs	x(1,1)	..... x(1,j)	... x(1,68)	x1.	y1	x1

	x(i,1)	... x(i,j)	... x(i,68)	xi.	yi	xi

	x(68,1)	..... x(68,j)	..... x(68,68)	x68.	y68	x68
sum of interm. factor use	x.1	..... x.j	..... x.68	x..		
basic factors of production						
use of inputs at basic price	z1	..... zj	..... z68			
value added						
production	x1	..... xj	..... x68			

$$FWN_i = \left(\frac{1}{x_i + y_i} \right)^2 \left(\sum_{j=1}^n x(i, j)^2 \right) \quad BWN_i = \left(\frac{1}{x_i + z_i} \right)^2 \left(\sum_{j=1}^n x(j, i)^2 \right) \quad INTN_i = \left(\frac{1}{x_i + z_i + x_i + y_i} \right)^2 (2x(i, i)^2)$$

FWN = forward networking, BWN = backward networking, INTN = intra-industry networking

Figure 2. Calculation of trade-flow based networking indicators from input/output statistics.

The networking indices were calculated for 51 Finnish industries and for years 1992 and 1995. In the Figure 3 there are index values for each industry for year 1995.

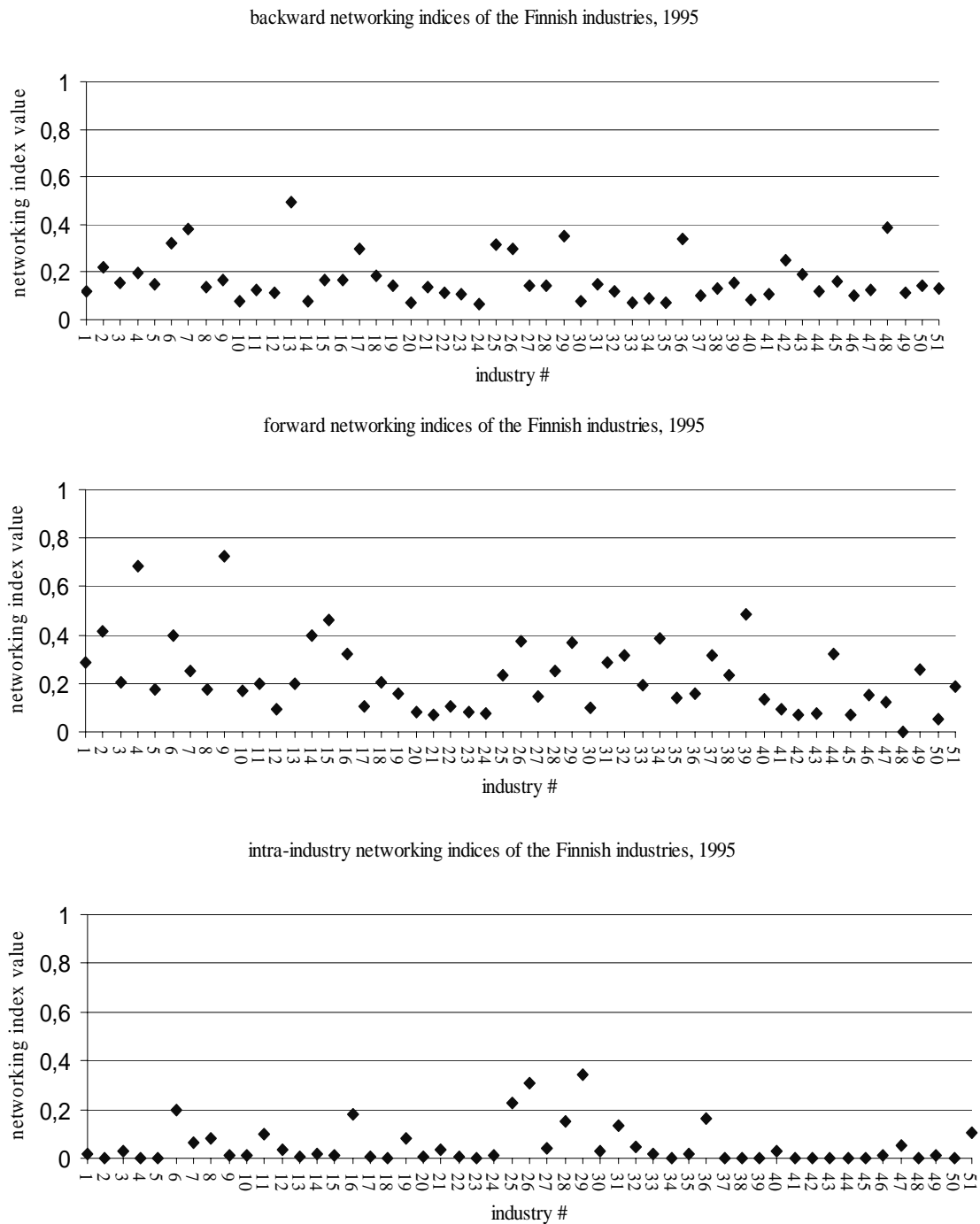


Figure 3. Trade-flow based networking indices for 51 Finnish industries in 1995.

Networking indices between the two cross sections were statistically very significantly ($p < 0.001$ in most comparisons) and highly positively correlated. Interestingly, however, there was a very significant negative correlation between industries' initial networking in 1992 and the proportional change in networking over our follow-up. So it seemed that industries that were less networked (i.e. got lower index values) in 1992 tended to catch up the more networked ones.

In the Figure 4 there is a scatter plot of forward networking index values in 1992 and absolute change in index values over the period 1992-95. The pattern was similar for backward and intra-industry indices.

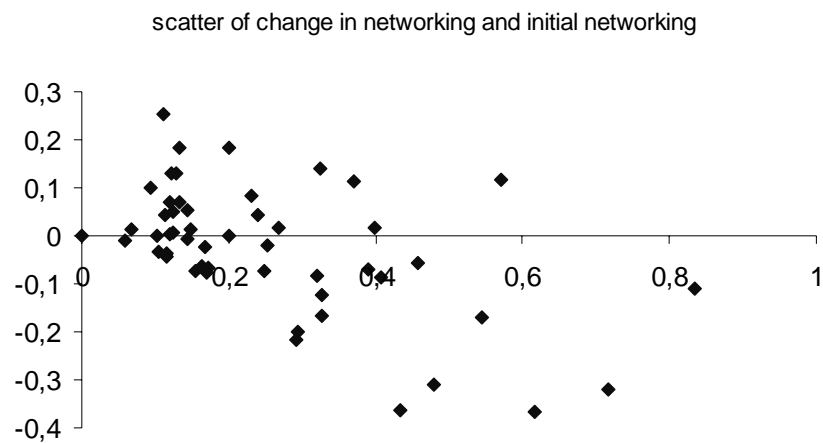


Figure 4. Scatter plot of initial forward networking in 1992 (x-axis) and change in forward networking index over the period 1992-95.

Furthermore, industries that were highly networked backward tended to be highly networked internally. And industries that were highly networked forward were typically highly networked internally. However, connection between backward and forward networking was not so clear, even though even that was significant.

Two basic questions concerning the impacts of networking were studied. First we looked for straightforward correlations between networking and industries' characteristics. It appeared that there was no statistically significant correlation between value added and any of the networking indices. Not in the cross-sections of either 1992 or 1995, nor in a lagged manner. This result was expected. A likely explanation is that industries have a natural size which is independent of any of our networking indices. Scatter plot of industrial value added and industries forward networking indices from year 1995 are presented in Figure 5. Pattern was similar for other indices, too.

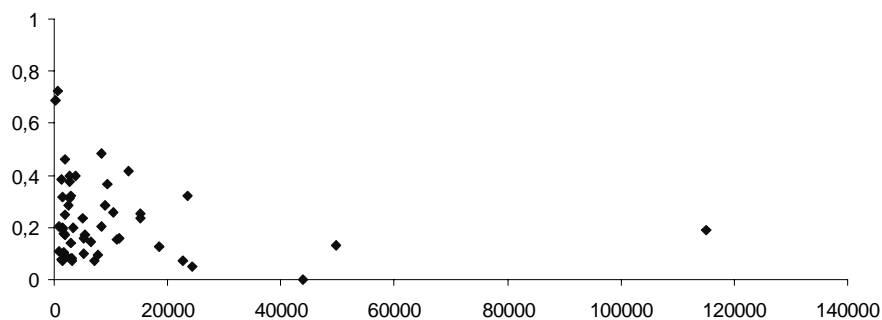


Figure 5. Scatter plot of industrial value added and forward networking index value (1995).

Probably a more interesting hypothesis concerns growth or dynamic change of industries, and its link with networking. I.e., whether increased (or decreased) networking is correlated with growth. The theoretical rationale behind this hypothesis is two-fold. Either networking may be a growth factor or growing industries may tend to require a changed networking strategy. However, no clear-cut connections were found. Figure 6 shows a scatter plot of proportional changes in networking indices and proportional changes in deflated value added by industries. There is a positive correlation, but it is significant ($p < 0.05$) only in the case of intra-industry networking.

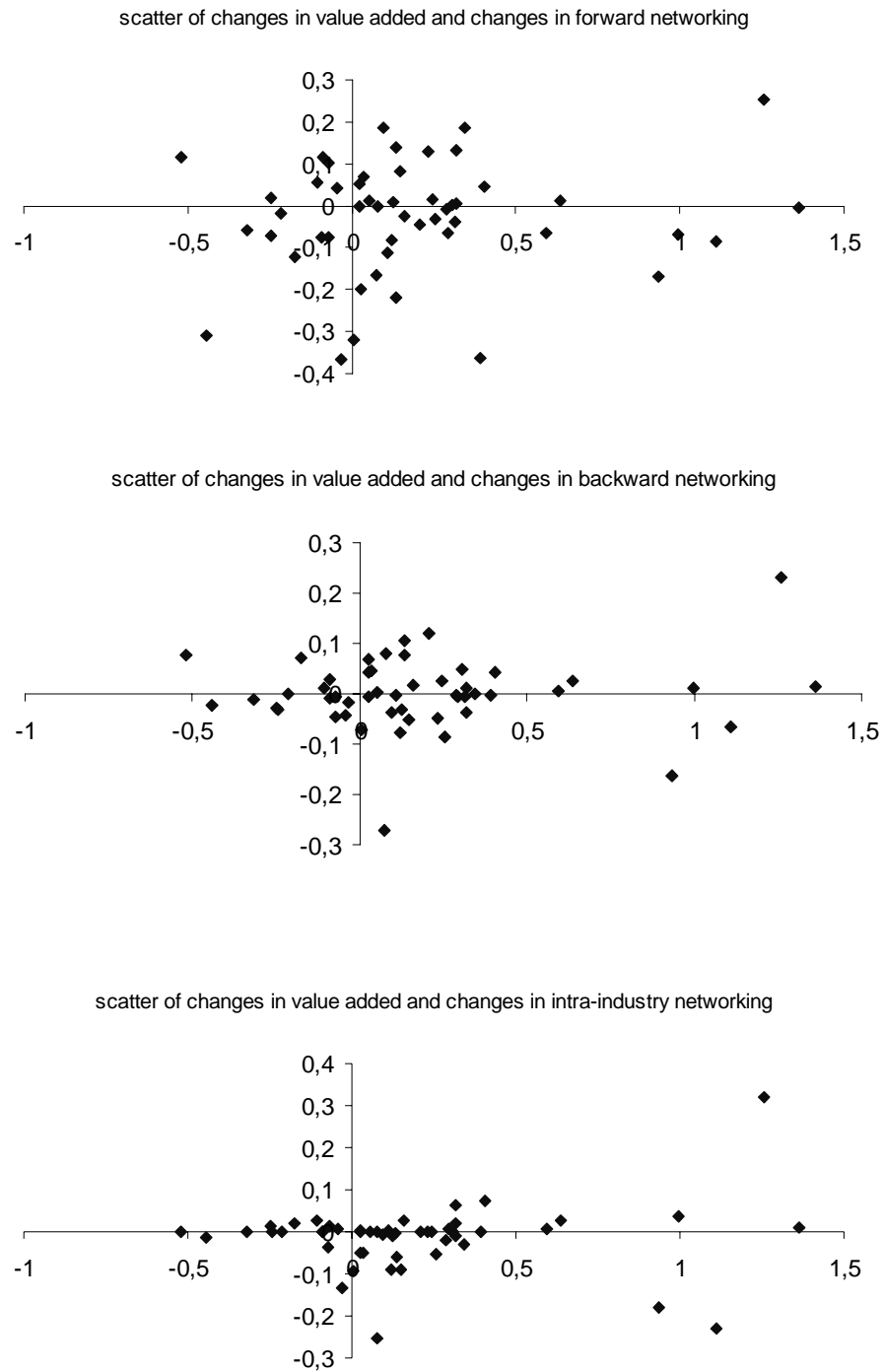


Figure 6. Scatter plot of relative growth in value added (x-axis) and change in networking indices.

4. Clusters and their economic profiles

Five clusters (foodstuffs, ICT, metal, construction, forest) were identified by trade links that were at least 8 % of associated production sectors deliveries or supplies. The cluster maps and related production sectors are described in the Annex 1-5. One sector can belong to a several clusters. The weight of a sector belonging to a cluster has been calculated as a ratio between the sum of deliveries and supplies to the cluster and total deliveries and supplies. The minimisation of trade flows between clusters was quite successful and the resulting clusters explained major part of the intermediate trade (Table 2.).

Table 2. Intra, inter and extra deliveries and supplies of clusters (%).

	1	2	3	4	5	6	Total deliveries
Foodstuff (1)	74,5 ⁹	1,6	2,8	0,9	6,6	13,7	11,7 ¹⁰
	58,7 ¹¹	3,4	2,1	0,7	3,1	6,2	
ICT (2)	2,5	38,7	7,5	2,2	10,4	38,7	6,9
	1,1	49,3	3,4	1,1	2,9	10,2	
Metal (3)	3,4	3,7	70,8	9,4	7,6	5,0	12,8
	3,0	8,8	59,5	8,7	3,9	2,5	
Construction (4)	7,6	1,8	4,6	63,4	6,1	16,5	10,5
	5,4	3,6	3,2	48,1	2,6	6,7	
Forest (5)	6,3	1,7	4,6	8,8	61,0	17,5	27,1
	11,5	8,5	8,2	17,2	66,9	18,2	
Other (6)	9,7	4,6	11,5	10,8	16,3	47,0	31,1
	20,4	26,5	23,5	24,2	20,6	56,2	
Total supplies	14,8	5,4	15,2	13,9	24,7	26,0	100,0

Source: Statistics Finland 1999b

The biggest cluster, forest, generated also the biggest part of the export (Figure 7.). Its production is also very heavily based on domestic rawmaterials while metal cluster is the main importer. On the other hand foodstuff cluster employs most. The construction cluster is very domestic oriented, because its import and export are on very low level.

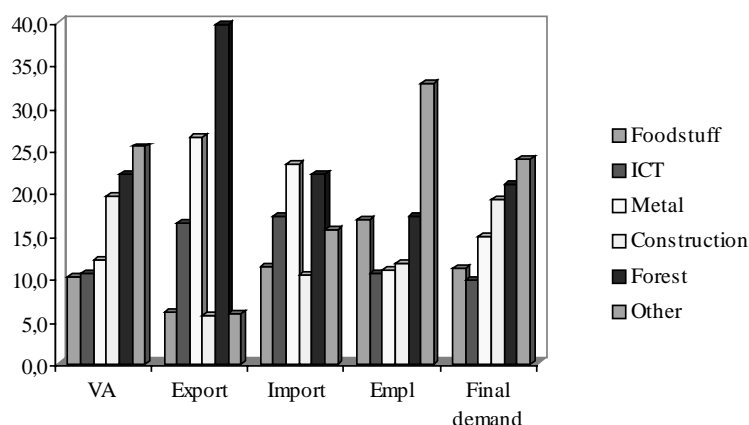


Figure 7. Relative economic profiles of clusters in year 1995 (%).

Source: Statistics Finland 1999b

⁹ Relative share of clusters total deliveries

¹⁰ Relative share of total intermediate trade

¹¹ Relative share of clusters total supplies

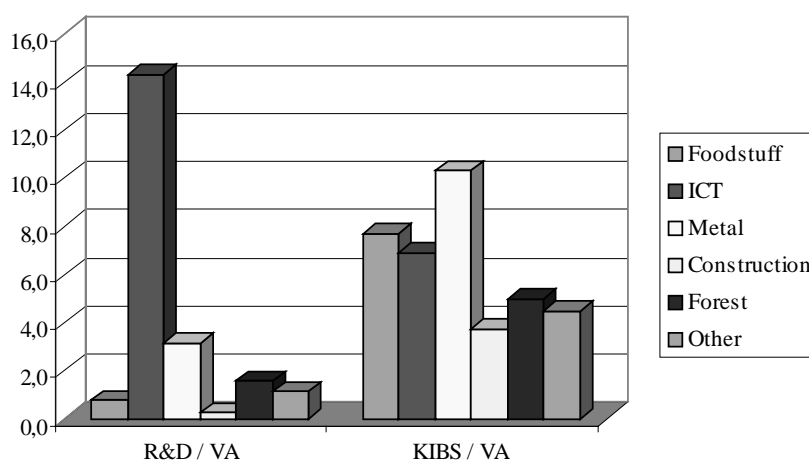
The relative share and growth of clusters between 1990-98 is shown in Table 3. There has been assumed that the weight belonging to a cluster of a single production sector remains constant over time. The share of metal, construction, forest clusters and non cluster related sectors has been quite stable while the growth of ICT has compensated the decline of foodstuff cluster.

Table 3. Growth of clusters in the timeperiod 1990-1998.

	1990	1998	Growth
Foodstuff	12,7	9,4	-3,4
ICT	10,0	13,2	3,2
Metal	11,7	11,9	0,2
Construction	20,7	21,5	0,9
Forest	22,3	21,9	-0,3
Other	22,7	22,1	-0,5

Source: Statistics Finland 1999a

KIBS¹² are the major source of the external R&D and they have a very important role as external knowledge transfer mechanism in all clusters (production sector 61 in cluster maps). The R&D intensities describe the structural change of the Finnish industries towards high tech products, while the ICT cluster conducts the major part of the R&D (Figure 8.). It is although less KIBS intensive, while metal cluster uses most of business services and is still R&D intensive. Although foodstuff cluster has a very low R&D intensity it has second high KIBS intensity. Both dimensions are on a very low level in construction cluster.



Source: Statistics Finland 1999b, 1999c

Figure 8. R&D and KIBS intensities of clusters (%).

5. Future development of this paper

This paper was prepared for the OECD Cluster Focus Group workshop 8-9.5.2000 in Utrecht. It is a first report of our methodology and preliminary results. Conclusions must be considered preliminary. Data sets, algorithms and computer programmes has not been double checked. Results are not to be quoted. This outline version will be developed as a ready article for the coming second OECD cluster book.

¹² Knowledge intensive business services

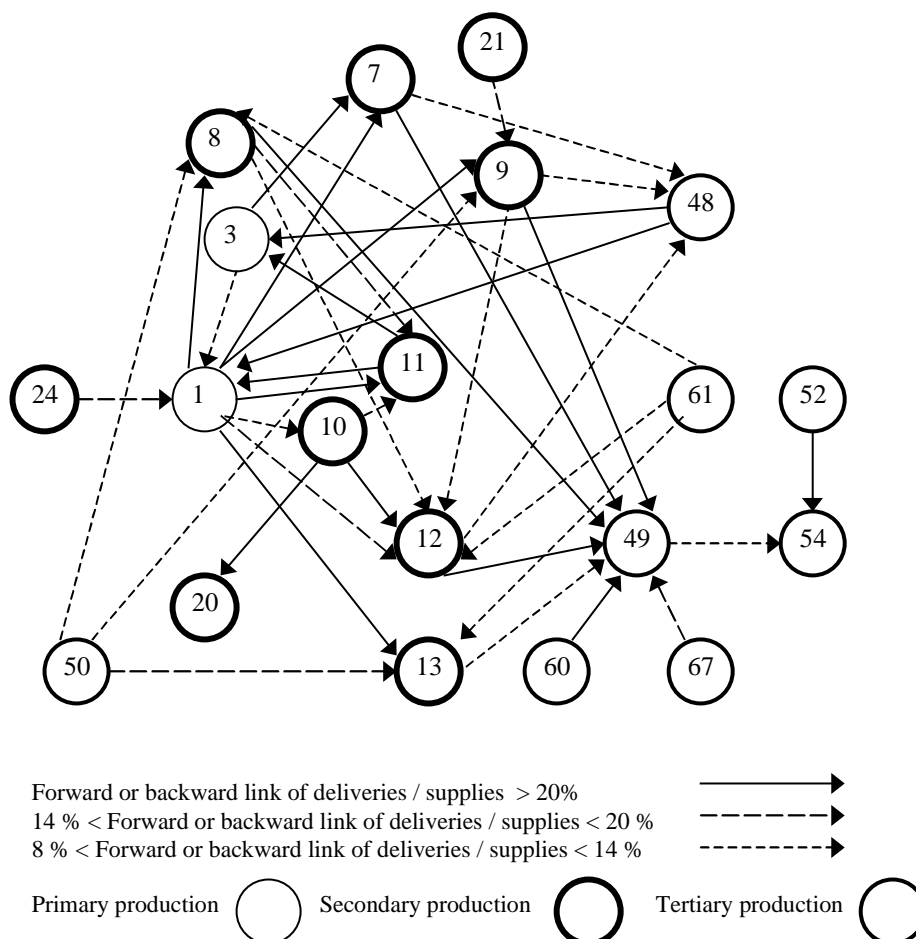
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The foodstuffs cluster

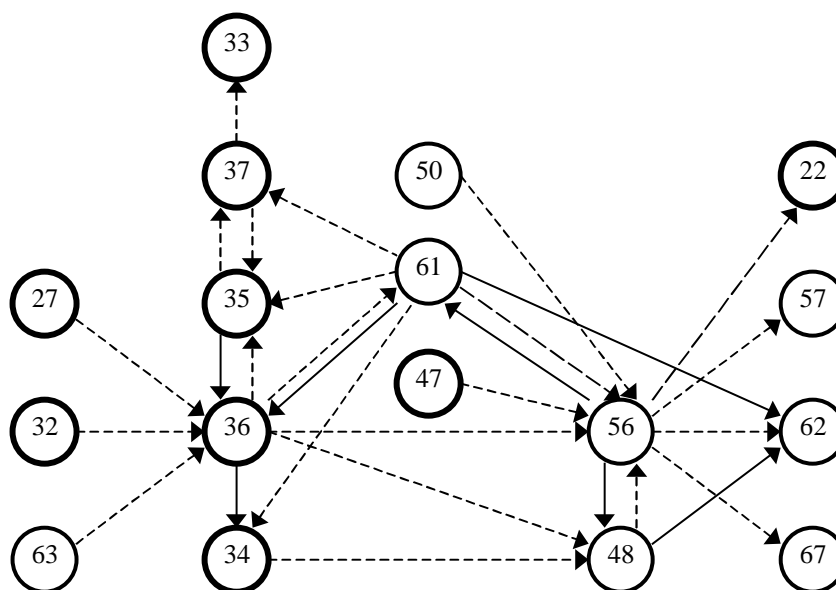
	Description	NACE classification	Weight ¹	VA ²
1	Agriculture and related service activities	011-014	1	8930
3	Hunting and fishing	015, 05	1	837
7	Produc., processing, preserving of meat, fish, prods thereof	151, 152	1	2790
8	Processing and preserving of fruit and vegetables	153, 154	1	1004
9	Manufacture of dairy products	155	0,95	1732
10	Man. of grain mill products, starches and starch products	156	0,79	352
11	Manufacture of prepared animal feeds	157	1	674
12	Manufacture of other food products	158	1	3938
13	Manufacture of beverages and tobacco products	159, 16	1	1811
20	Manufacture of pulp, paper and paperboard	211	0,01	289
21	Manufacture of articles of paper and paperboard	212	0,16	286
24	Manufacture of basic chemicals	241	0,17	851
48	Wholesale and retail trade	50,51,52	0,18	8957
49	Hotels and restaurants	55	1	7706
50	Land transport; transport via pipelines	60	0,11	2058
52	Air transport	62	1	3005
54	Activ. of travel agencies and tour operators; tourist assist. act.	633	1	773
60	Other real estate activities	701,7022,7031	0,5	3250
61	Business activities	71-74	0,05	1139
67	Recreational, cultural and sporting activities	92	0,1	858
	Total			51240

¹ Describes how strong trade link sector has to cluster ² Weighted value added, 1 000 000 FIM, year 1995



The ICT cluster

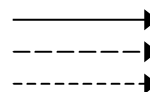
	Description	NACE classification	Weight	VA
22	Publishing and printing	22	0,09	760
27	Manufacture of plastic products	252	0,12	344
32	Manufacture of fabricated metal products	28	0,02	158
33	Manufacture of machinery and equipment n.e.c.	29	0,02	275
34	Manufacture of office machinery and computers	30	1	886
35	Manufacture of electrical machinery and apparatus n.e.c.	31	0,6	2578
36	Man. of radio, television and communication equipment and apparatus	32	1	9360
37	Manufacture of medical and precision products	33	0,72	1728
47	Civil engineering	4502	0,06	458
48	Wholesale and retail trade	50,51,52	0,26	12764
50	Land transport; transport via pipelines	60	0,02	412
56	Post and telecommunications	641,642	1	11048
57	Financial intermediation and insurance	65,66,67	0,02	335
61	Business activities	71-74	0,4	9683
62	Public administration and defence; compulsory social security	75	0,05	1342
63	Education	80	0,01	267
67	Recreational, cultural and sporting activities	92	0,08	717
	Total			53114



Forward or backward link of deliveries / supplies > 20%

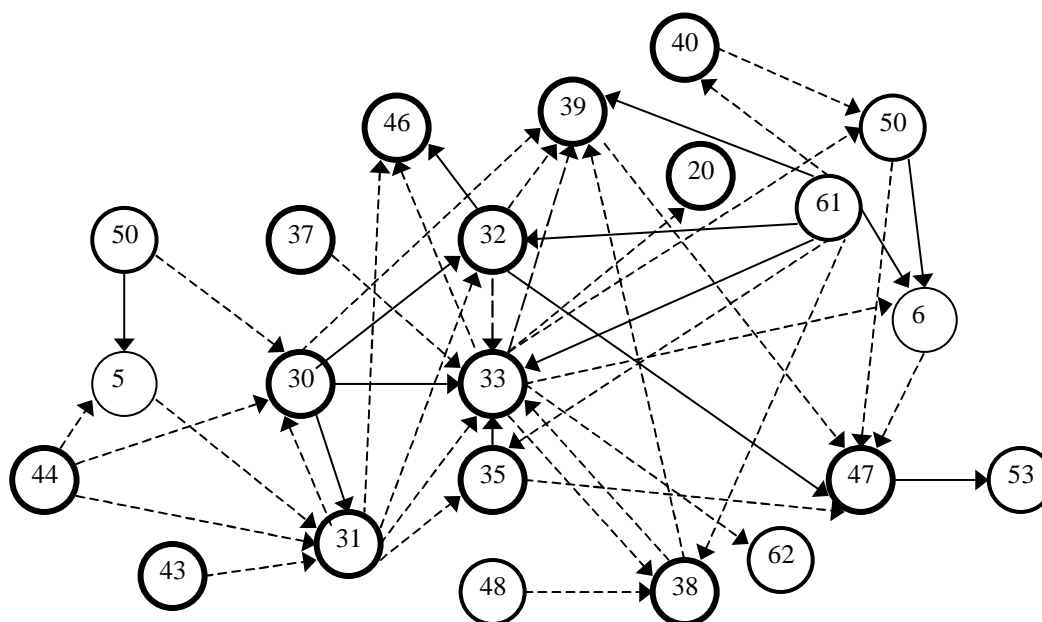
14 % < Forward or backward link of deliveries / supplies < 20 %

8 % < Forward or backward link of deliveries / supplies < 14 %

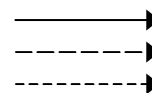


The metal cluster

	Description	NACE classification	Weight	VA
5	Mining of metal ores	13	1	184
6	Other mining and quarrying	14	0,45	440
20	Manufacture of pulp, paper and paperboard	211	0,02	578
30	Manufacture of basic iron and steel and ferro-alloys	271	1	4967
31	Manufacture of basic metals n.e.c.	272-275	1	2709
32	Manufacture of fabricated metal products	28	0,79	5044
33	Manufacture of machinery and equipment n.e.c.	29	0,84	12645
35	Manufacture of electrical machinery and apparatus n.e.c.	31	0,4	1701
37	Manufacture of medical and precision products	33	0,1	230
38	Manufacture of motor vehicles, trailers and semi-trailers	34	1	1508
39	Building and repairing of ships and boats	351	1	2784
40	Manufacture of other transport equipment n.e.c.	352-355	1	1177
43	Recycling	37	1	116
44	Electricity, gas, steam and water supply	40	0,07	748
46	Building of complete constructions or parts thereof, service activ.	4501,4509	0,07	1126
47	Civil engineering	4502	0,94	7783
48	Wholesale and retail trade	50,51,52	0,01	224
50	Land transport; transport via pipelines	60	0,28	5352
53	Road and railway maintenance	630	1	3768
61	Business activities	71-74	0,3	7405
62	Public administration and defence; compulsory social security	75	0,02	565
	Total			61054

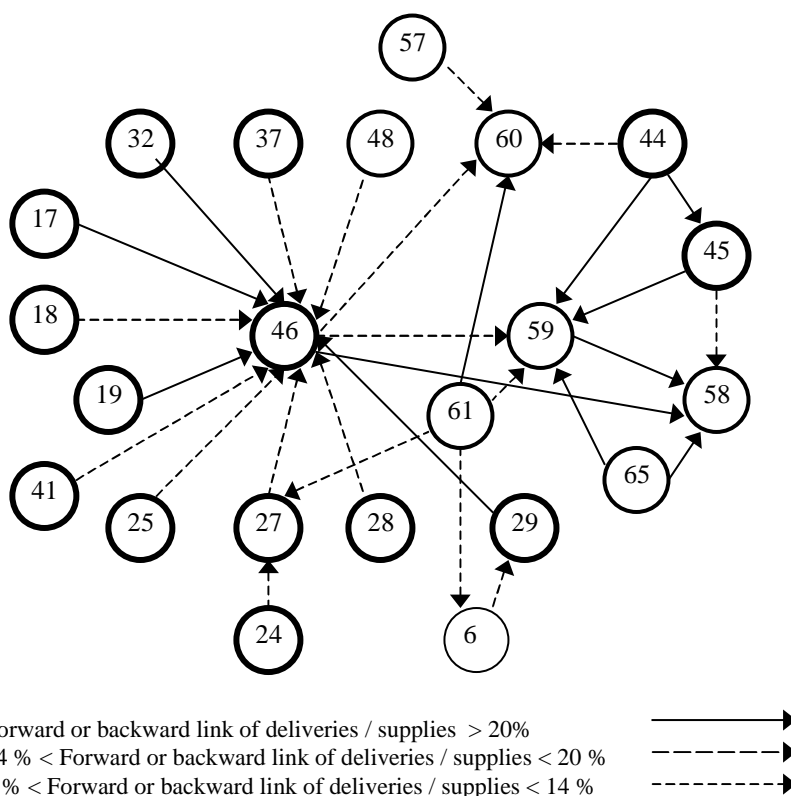


Forward or backward link of deliveries / supplies > 20%
 14 % < Forward or backward link of deliveries / supplies < 20 %
 8 % < Forward or backward link of deliveries / supplies < 14 %



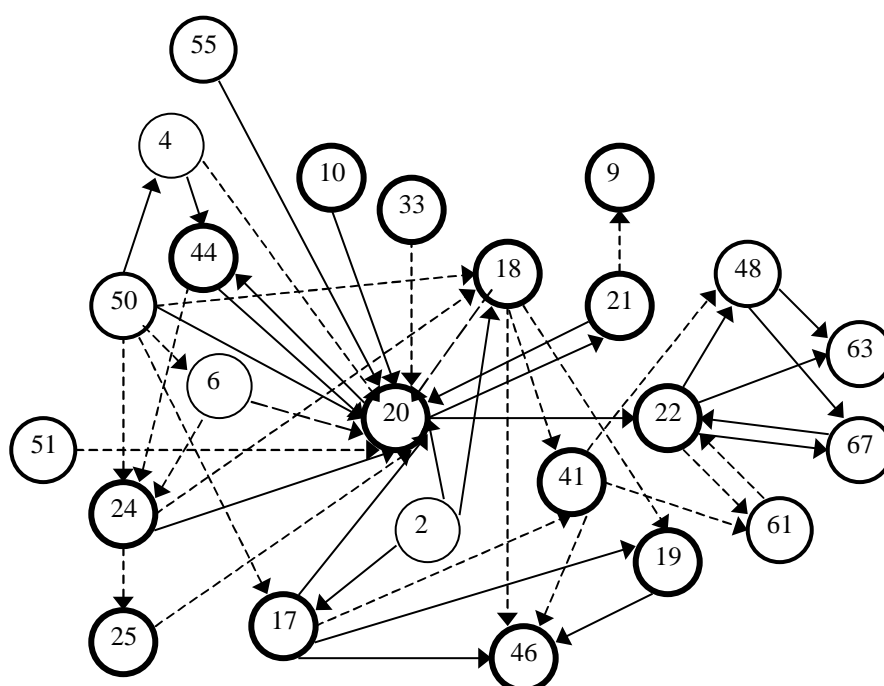
The construction cluster

	Description	NACE classification	Weight	VA
6	Other mining and quarrying	14	0,22	220
17	Sawmilling and planing of wood, impregnation of wood	201	0,11	365
18	Manufacturing of veneer sheets, plywood, laminboard, particle board	202	0,08	114
19	Manufacture of other products of wood	203,204,205	0,63	1162
24	Manufacture of basic chemicals	241	0,1	510
25	Manufacture of other chemical products and man made fibres	241-247	0,49	1545
27	Manufacture of plastic products	252	0,41	1151
28	Manufacture of glass and glass prods, non-refractory ceramic goods	261,262	1	1183
29	Manufacture of ceramic tiles and bricks, cement, articles of concrete	263-268	1	2324
32	Manufacture of fabricated metal products	28	0,19	1214
37	Manufacture of medical and precision products	33	0,19	451
41	Manufacture of furniture	361	0,39	799
44	Electricity, gas, steam and water supply	40	0,21	2430
45	Collection, purification and distribution of water	41	1	1495
46	Building of complete constructions or parts thereof, service activ.	4501,4509	0,69	10475
48	Wholesale and retail trade	50,51,52	0,38	18810
57	Financial intermediation and insurance	65,66,67	0,02	446
58	Letting and operation of dwellings	7021	1	43805
59	Management of real estate on a fee or contract basis	7032	1	3859
60	Other real estate activities	701,7022,7031	0,5	3250
61	Business activities	71-74	0,12	2848
65	Sewage and refuse disposal, sanitation	90	0,38	992
	Total			99449

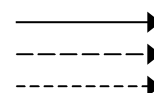


The forest cluster

	Description	NACE classification	Weight	VA
2	Forestry, logging and related service activities	02	1	13044
4	Mining and quarrying of energy producing materials	10	1	634
6	Other mining and quarrying	14	0,33	320
9	Manufacture of dairy products	155	0,05	83
10	Manufacture of grain mill products, starches and starch products	156	0,21	93
17	Sawmilling and planing of wood, impregnation of wood	201	0,89	3008
18	Manufacturing of veneer sheets, plywood, laminboard, particle board	202	0,92	1383
19	Manufacture of other products of wood	203,204,205	0,37	672
20	Manufacture of pulp, paper and paperboard	211	0,96	22540
21	Manufacture of articles of paper and paperboard	212	0,84	1471
22	Publishing and printing	22	0,91	7598
24	Manufacture of basic chemicals	241	0,73	3743
25	Manufacture of other chemical products and man made fibres	241-247	0,51	1613
27	Manufacture of plastic products	252	0,47	1331
33	Manufacture of machinery and equipment n.e.c.	29	0,15	2199
41	Manufacture of furniture	361	0,61	1255
44	Electricity, gas, steam and water supply	40	0,72	8223
46	Building of complete constructions or parts thereof, service activ.	4501,4509	0,23	3535
48	Wholesale and retail trade	50,51,52	0,18	8957
50	Land transport; transport via pipelines	60	0,59	11116
51	Water transport	61	1	3156
55	Other supporting transport and auxiliary activities	631,632,634	0,12	764
61	Business activities	71-74	0,14	3304
63	Education	80	0,17	4544
67	Recreational, cultural and sporting activities	92	0,82	7177
	Total			111763



Forward or backward link of deliveries / supplies > 20%
 14 % < Forward or backward link of deliveries / supplies < 20 %
 8 % < Forward or backward link of deliveries / supplies < 14 %



Non cluster related production sectors

	Description	NACE classification	Weight	VA
14	Manufacture of textiles	17	1	1458
15	Manufacture of wearing apparel; dressing and dyeing of fur	18	1	1370
16	Manufacture of leather and leather products	19	1	567
23	Manufacture of refined petroleum products, coke, nuclear fuel	23	1	1457
26	Manufacture of rubber products	251	1	740
42	Manufacturing n.e.c.	362-366	1	940
55	Other supporting transport and auxiliary activities	631,632,634	0,88	5600
57	Financial intermediation and insurance	65,66,67	0,96	17817
62	Public administration and defence; compulsory social security	75	0,93	24938
63	Education	80	0,82	21919
64	Health and social work	85	1	42190
65	Sewage and refuse disposal, sanitation	90	0,62	1618
66	Activities of membership organizations n.e.c.	91	1	5266
68	Other service activities	93	1	2466
	Total			128346