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SOME ASPECTS OF SUB-CONTRACTING
IN THE SWEDISH ENGINEERING INDUSTRY ✓

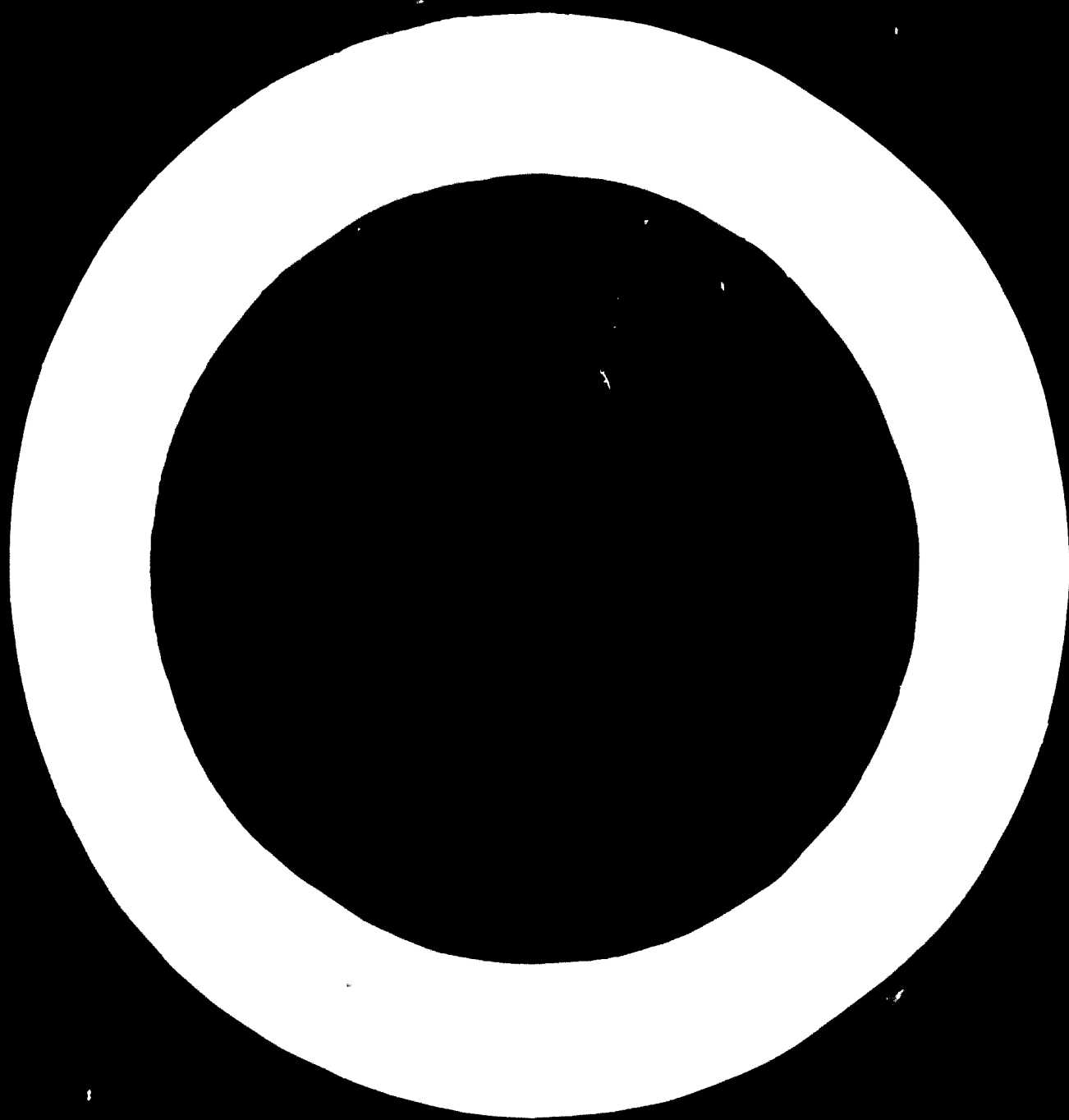
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SOME ASPECTS ON SUB-CONTRACTING
IN THE SWEDISH ENGINEERING INDUSTRY

The efficiency and competitive strength of the Swedish engineering industry has benefited substantially from the degree of specialisation, which it has been able to reach thanks to the sub-contracting system and other forms of co-operation between firms. The sub-contractor system, when correctly organised, leads to a better utilisation of productive resources as account is taken of the competitive advantages of different firms. It is a situation similar to the one of pin-making described by Adam Smith applied in an industrial sector as a whole.

Definitions

A few points ought to be mentioned to clarify the language. A sub-contractor may provide:

1. Materials; semi-manufactures, parts, components, etc. for further processing by the purchasing firm or for incorporation in its end-product.
2. Functions; a processing technique, whereby the purchaser hires know-how and production facilities from the sub-contractor.

We will in this paper confine ourselves to talk about products and services provided by one engineering firm to another - there are of course other sectors of industry, supplying engineering firms e.g., the rubber, plastics and chemical industries.

The duration of the co-operation between main and sub-contractor is a very important aspect.

The short-term co-operation can also be labelled co-operation between competitors. When an engineering firm meets demand for its products and services in excess of its own resources it will seek to buy production facilities similar to its own. If the excess of demand is purely temporary the main contractor will not expand his own resources or will not be able to do so. When the demand falls back to its "normal" level the main contractor will no longer seek to buy facilities from a sub-contractor. This is not satisfactory from the sub-contractor's point of view, since it makes his long term planning impossible.

If, however, the excess of demand is protracted, the main contractor will have to decide whether to continue to buy production facilities from sub-contractors or to invest in his own plant and machinery. The direction of his decision will depend on the outcome of a make-or-buy calculus.

When an analysis shows the merits of buying facilities from a sub-contractor the main contractor will refrain from investing in his own resources for the work in question. The co-operation between main and sub-contractor becomes long-term. Their combined resources result in the desired end product and both have the opportunity to specialise in their own fields.

Volume of sub-contracting in Swedish engineering industry

An input-output analysis of the Swedish engineering industry shows that about 25 per cent of its total production recirculates within the sector as sub-contracting items, that is semi-manufactures, parts and components (cfr diagram 1). In 1967 the total production of the engineering industry amounted to 29,400 millions SKr (5,400 mill. \$). The same year sub-deliveries amounted to 7,500 mill. SKr (1,500 mill. \$). The share of sub-deliveries in total production has increased over the years.

In the same year the short-term type of sub-contracting amounted to some 400 mill. SKr (80 mill. \$). As could be expected this type of sub-contracting is more or less marginal and subject to rather strong fluctuations depending on the level of demand for end-products. This is an illustration to the theory of derived demand. We have made a small study of the behaviour of the demand for short-term sub-contracting during boom and slack periods in the engineering industry (cfr diagram 2). During the sixties up to 1966 the level of production in the Swedish engineering industry increased by 7.5 per cent per year. There was a considerable lack of capacity. In 1967 the level of production remained stationary compared to 1966 but at the same time there was an increase in capacity when earlier investments ripened. The utilisation of capacity within the sector as a whole diminished. In 1966 main contractors bought capacity from sub-contractors for 456 mill. SKr, while the figure for 1967 was 405 mill. SKr. This is a decrease by 11 per cent from 1966 to 1967 and this single observation indicates that short-term sub-contracting puts the sub-contractor in a role as shock absorber.

Sizes of main and sub-contractor firms

A couple of years ago the Swedish Association of Metal-working Industries, Sveriges Metallförbund, made a study of the size of firms engaged in sub-contracting as purchasers or vendors. Table 1 shows sub-contract purchases by main contractors. It will be seen from the table that 34 per cent of the respondent firms bought 25 per cent or more of their total invoiced sales from sub-contractors, that is semi-manufactures, parts and components. There are important differences between the various firm size groups.

In table 2 you see sales by sub-contractors. No less than 45 per cent of the answering firms report that 25 per cent or more of their total sales is sub-contract work for other engineering

firms. Here again it is possible to discern a difference in the engagement in sub-contracting by firms in various size groups. It is quite clear that smaller firms work to a far greater degree as sub-contractors than their larger colleagues. 57 per cent of the firms in the smallest size group (less than 25 employees) sell more than half their output in the form of sub-contract deliveries to other engineering firms.

When you put the two tables together you see that sellers of sub-contract work are mostly small firms, while the purchasers, main contractors, are to a large extent big firms. This indicates that sub-contracting agreements differ from other types of sales agreements.

Improving the functioning of sub-contractor markets

When the merits of the sub-contractor system are clear one may wish to improve its functioning. The main point is of course to bring main and sub-contractor in touch with each other. This is highly practical in its character and concerns the facilities for prospective employers of sub-contractors to establish contacts with suitable firms and also, of course, facilities for the sub-contractor to reach his prospective customers with information about what he is able to perform. There are many ways to establish these contacts. In many cases the personal knowledge of the buyers about likely suppliers and their abilities to supply products or services is enough. Conventional advertising is also employed by both suppliers and purchasers of sub-contracting work. Many companies have prepared registers of potential manufacturers of various components. Most firms do, however, find it necessary to examine the market afresh each time they are considering the employment of a sub-contractor.

Registers of sub-contractors

As far back as 1957 the Mekanförbund issued its first register of sub-contractors to supplement the existing and less systematic sources of information. The register has subsequently been revised every two years. It indicates which firms are technically equipped to undertake various kinds of processing. The register contains information about some 400 firms.

Since 1963 the engineering industry associations in the other Nordic countries have issued the same kind of registers. The national registers are arranged in the same way and the same type of processing operations are covered in all four. The registers are exchanged between the national associations and distributed to all member firms. The aim of this being to widen the opportunities of main and sub-contractors in all four countries to get in touch with each other. The register has become a valuable tool for firms seeking new suppliers.

Sub-contractors' exchange

The register of sub-contractors has one fault - it is not always up-to-date. A company that is registered as having capacity for certain types of work might turn up to be fully booked when it receives a request from a purchaser. It was for this and other reasons that the Mekanförbund found it appropriate to institute a sub-contractors' exchange in the beginning of 1965. The aim was to create a medium for member firms to advertise free capacity or the need for sub-contractors. It was decided to publish the information once a month.

The procedure is very simple. Once a month each member firm get a form on which they can list the types of capacities they are looking for. This information is gathered, edited and published by the Mekanförbund. When an advertisement attracts interest, the interested purchaser or seller contacts the Mekanförbund to have the name of the firm behind the advertisement.

The advertisements are published under code. The main reason for that is that it is felt that the firms wish to have them published so. It also gives the Mekanförbund a chance to register the effect of the sub-contractors' exchange.

In practice it has turned out to be mainly firms seeking work, that use the medium. One reason for that may be that the purchasing departments are advised too late to be able to wait for a new issue of the exchange but have to make direct approaches to possible sub-contractors.

Nordic sub-contractors' exchange

On the basis of the ideas developed by the Swedish Association of the Metalworking Industries in its sub-contractors' exchange, the four Nordic countries entered into co-operation. This resulted in the Nordic sub-contractors' exchange in effect since early 1966. It is operated in the same way as the original Swedish one. Advertisements are exchanged between the national associations.

From the Swedish point of view the Nordic sub-contractors' exchange is more or less a one-sided affair, that is interest in the other Nordic countries is confined to selling goods and services to Sweden. Even if advertisements about free capacity in Sweden are published in the other countries resulting enquiries are rather few. This can be seen from table 3, which also indicates the effects of the slack demand in 1967.

The experiences of the Nordic sub-contractors' exchange seem to indicate that sub-contractors are sought as near the main contractor's plant and offices as is possible. This is certainly

true about the short-term type of sub-contracting, where materials are sent from the main contractor to the sub-contractor for processing. But when the sub-contractor has a specialised know-how he is less dependent on the geographical distance to the purchaser.

Other aspects of stimulating sub-contractor system

The Mekanförbund has taken a great interest in improving the functioning of the sub-contracting system. Various check-lists have been worked out for the assessment of sub-contractors for the formulation of enquiries, etc.

One important aspect of sub-contracting is how to reduce risks of delayed deliveries and other troubles. In all cases the advantages of risk distribution must be weighed against optimising production runs. The sub-contractor also runs a risk if the demand for a main contractor's product is falling abruptly. In some cases it may be wise to put all eggs in one basket but it is more likely that it is not.

Studies made by the Mekanförbund has indicated that there are only a very few cases where there exists an undesirable dependence. It can be taken as a rule-of-thumb not to rely on less than two sub-contractors for one's supply and not to rely on less than two main contractors, preferably in different end-product lines, for one's sub-contract work.

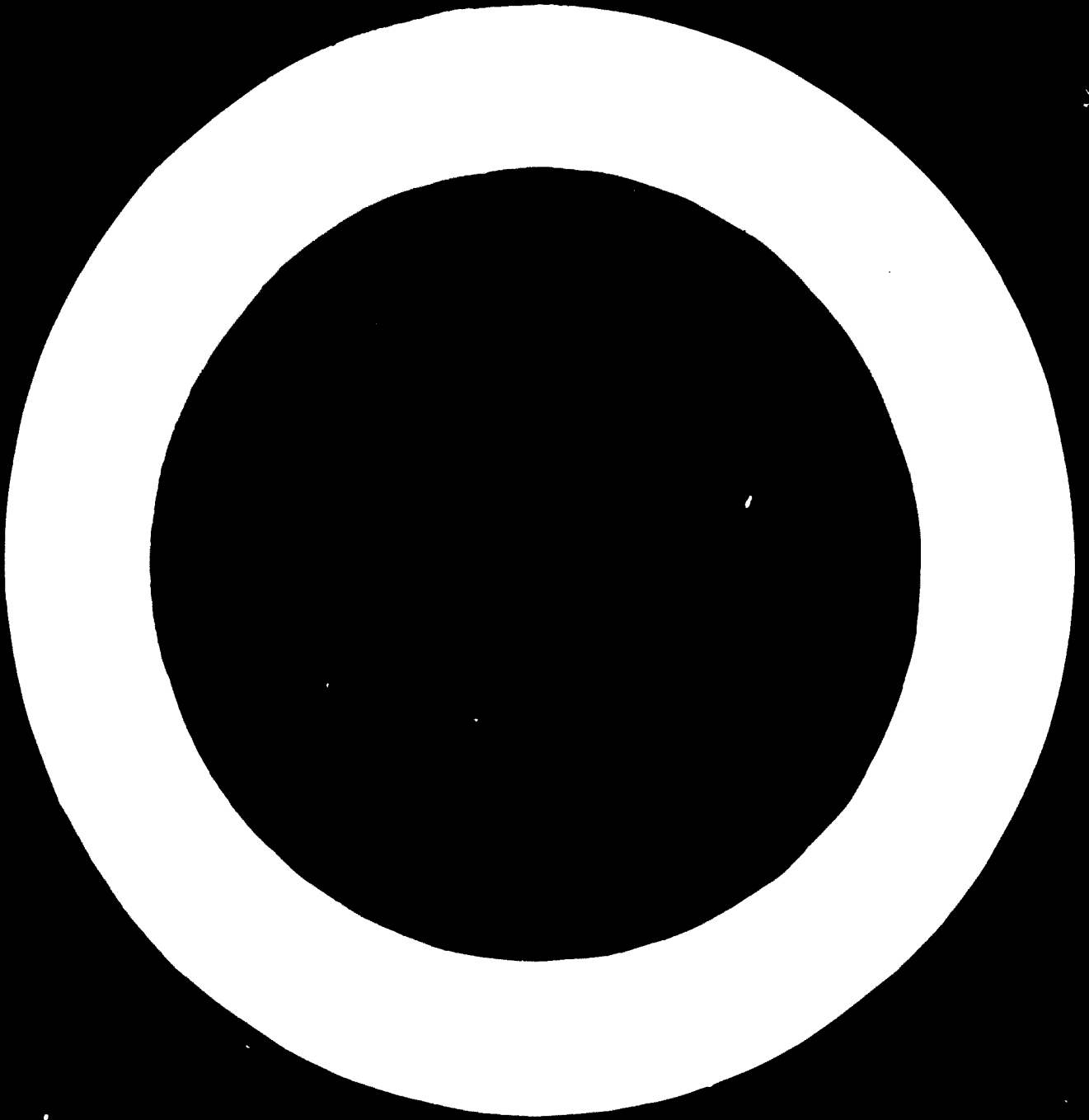


Diagram 1

THE FLOW OF PRODUCTION IN THE SWEDISH INDUSTRY

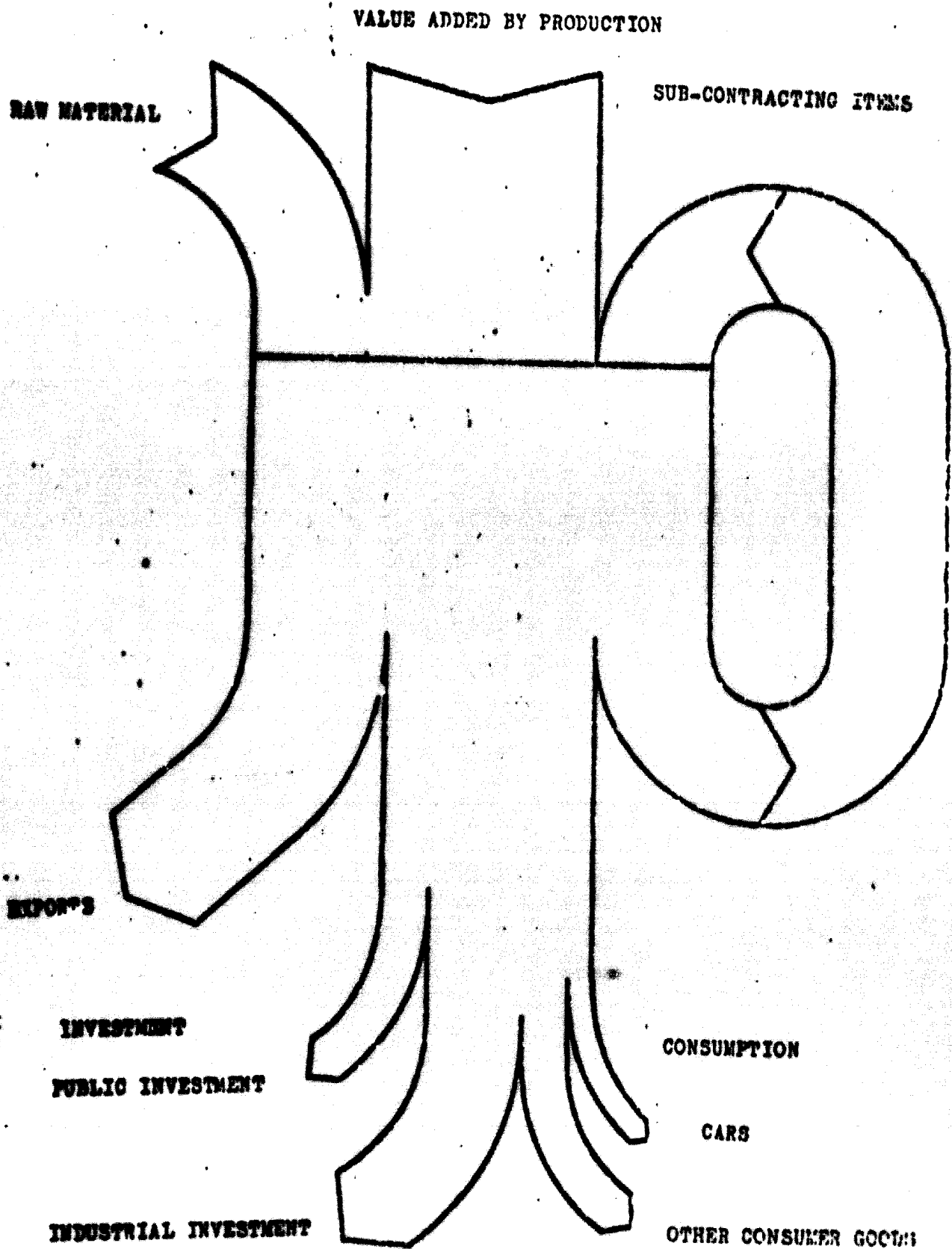


Diagram 2

Relations between short-term sub-contracting and development of engineering production.

- - - - - Short-term sub-contracting work
————— Total engineering production

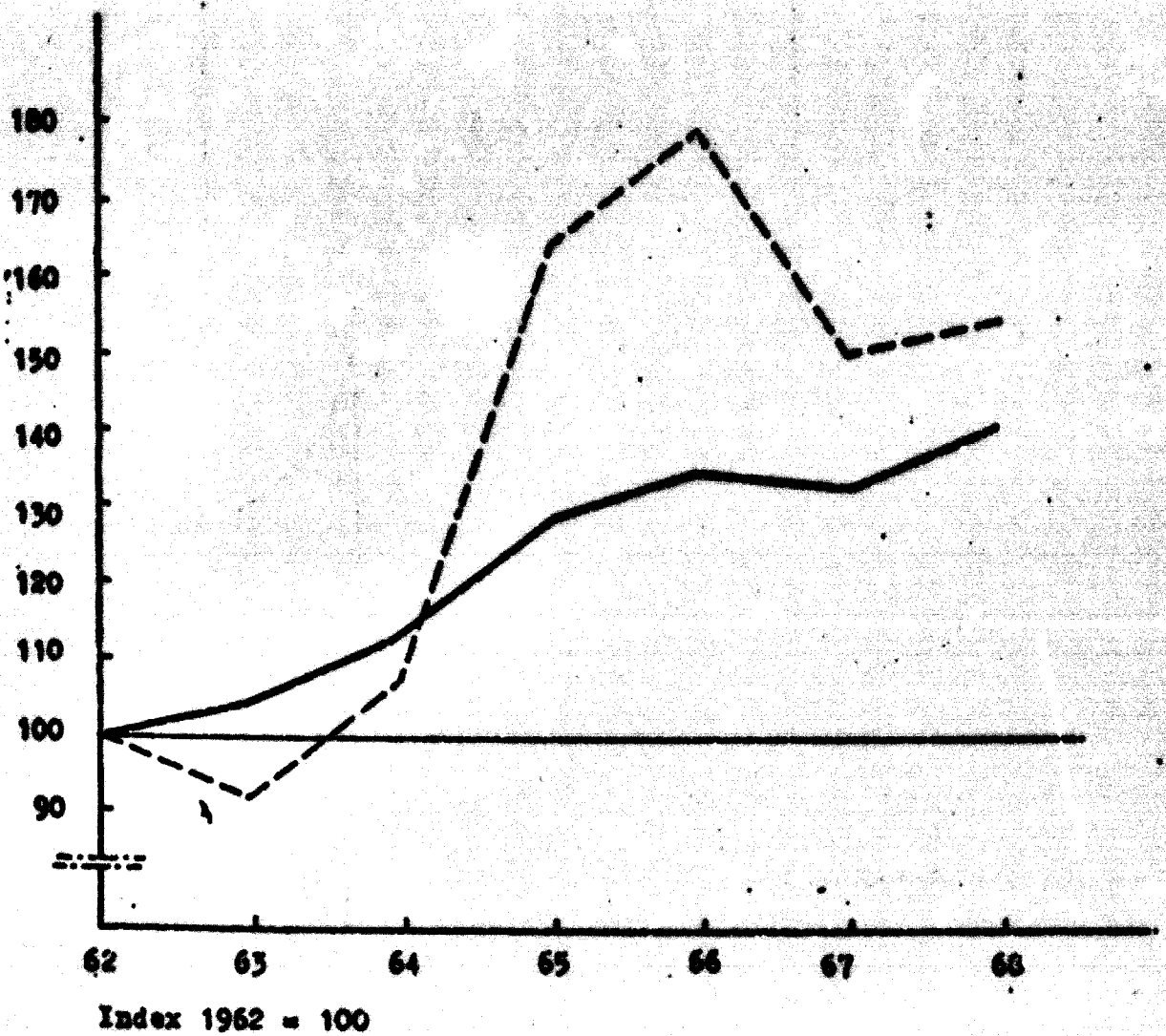


TABLE 1. Outside purchases by main contractors in proportion to their total value of production

Outside purchases as percentage of total production	Size of main contractor, No. of employees								Totals	
	1 - 25		26 - 100		101 - 500		Over 500		No.	%
	No.	%	No.	%	No.	%	No.	%		
- 10	16	76	32	47	36	43	23	32	107	44
11 - 25	2	10	14	20	19	23	19	27	54	22
26 - 50	2	10	18	26	24	29	23	32	67	28
51 - 100	1	4	5	7	4	5	6	9	16	6
Totals	21	100	69	100	83	100	71	100	274	100

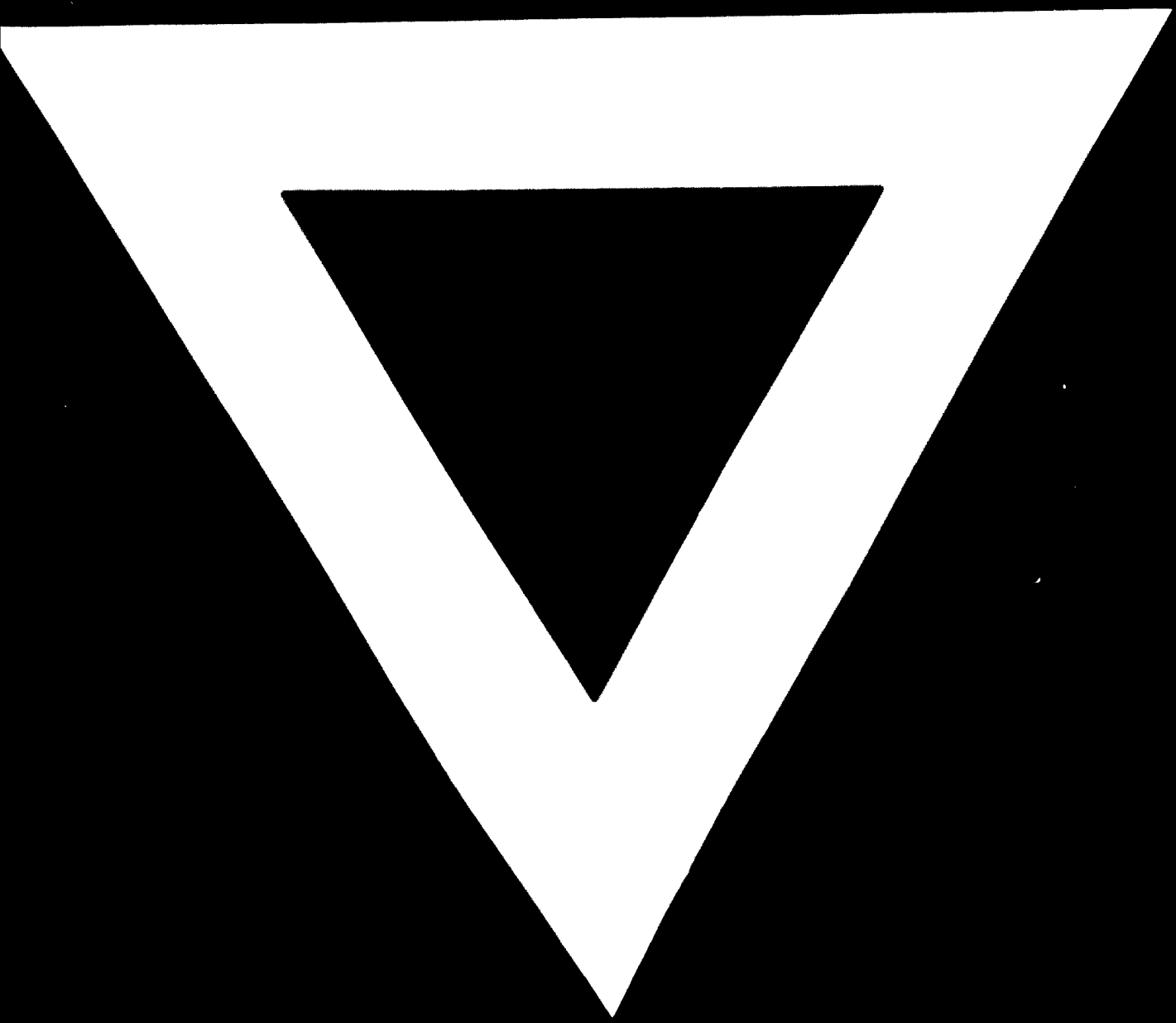
TABLE 2. Sales under subcontract in proportion to total value of subcontractor's sales

Subcontract sales as percentage of total sales value	Size of subcontractor, No. of employees								Totals	
	1 - 25		26 - 100		101 - 500		Over 500		No.	%
	No.	%	No.	%	No.	%	No.	%		
- 10	4	14	25	33	32	41	27	62	88	39
11 - 25	2	7	16	22	13	17	4	9	35	16
26 - 50	6	22	8	11	9	12	4	9	27	12
51 - 100	16	57	25	34	23	30	9	20	73	33
Totals	28	100	74	100	77	100	44	100	223	100

TABLE 3 UTILIZATION OF THE NORDIC SUB-CONTRACTORS' EXCHANGE

	Swedish advt.		Danish advt.		Finnish advt.		Norwegian advt.	
	Number of advt.	Number of enquiries	Number of advt.	Number of enquiries	Number of advt.	Number of enquiries	Number of advt.	Number of enquiries
1966	156 (14)	231 (109)	178 (15)	34 (20)	91	45	60 (3)	10
	123 (6)	115 (22)	184 (4)	22 (6)	60 (1)	16 (2)	63 (2)	74 (4)
1967	207	59	166 (1)	3	49 (1)	6 (1)	62	4
	136 (1)	56 (7)	128 (1)	3 (1)	42 (1)	6 (1)	94	5
1968	128 (3)	49 (3)	101 (2)	2 (2)	49	7	107	9
	133	101	103	5	35 (2)	12 (4)	101	11
1969 Jan.- April	81 (2)	80 (9)	58	4	25 (1)	3	71	6

() thereof "sub-contractor required"



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