STATISTICS SWEDEN
Enterprise statistics

SERVICES IN MANUFACTURING

by

Göthe Isacsson

Paper for presentation at the forth meeting with the Voorburg Group in Ottawa 2 - 4 October 1989

September 1989

SERVICES IN MANUFACTURING

1 INTRODUCTION

Today, services in manufacturing are not clearly specified in our production censuses. Only "services" closely related to the physical production of goods are specified, namely repairs, job processing and assembly work. Furthermore, the value of these "services" are included in the estimates of industrial production. Historically, our census of production has been strictly limited to industrial production, i.e. production of goods only. Establishment units that provide services for e.g. trade, storage, transport etc. were excluded from the censuses. Recently there has been a change in this policy and the changes are outlined on pages 3 and 4.

We still do not have detailed plans to expand the census of manufacturing towards better specification of services. The purpose of this paper is then to discuss some questions which have to be dealt with before committing resources into production and dissemination of data concerning better coverage of services. Furthermore, we are not certain on how to improve the statistics on services in manufacturing. For instance, we can not allocate resources to collecting data on those kinds of services which only have a marginal share of an industry's total output/sales.

The increasing "services" content of many industrial activities seem to have a strong bearing on structural changes that take place in modern economies. The growth of the information industry is a classic example. Our users of statistics often ask us how we manage to separate goods from services in these new industries. This, of course, we can not do.

2. DEFINITION OF SERVICES IN MANUFACTURING

What do we mean by services in manufacturing or industrial services? There are three choices:

a) industrial services are those services which are input items of the units of manufacturing industry. Thus, there are:

   a1) services purchased from other companies and

   a2) own account (in-house) production of services

b) industrial services are services (as we define them) that are produced by the manufacturing industry and that are sold on the market.

Production of services can be called primary if it is produced by a separate unit. Otherwise, it can be referred to as secondary production. In-house production of services may be called factor services. Sales or deliveries between units of a company are considered to be included in b).

The present classification systems treat a good as a good even if a major part of its production costs is services. We categorise output in goods and services, but the production may be a mix of both or, the services production may dominate although the output is goods. Maybe it would be desirable in this case to classify the activity, not the output, in an alternative way, i e. to create branches which have some service production by definition.

It is often stated that the "pure" manufacturing costs compared to value added is decreasing in modern enterprises. This is mainly due to the high growth of knowledge intensive service production in existing manufacturing companies and a high growth rate of knowledge service production per se. Industries in which simple machinery and uneducated labour dominate are said to be retarding in this respect.

3. THE PRESENT TREATMENT OF SERVICES PRODUCTION WITHIN THE MANUFACTURING INDUSTRY

3.1 Coverage

The Swedish census of production covers ISIC 2 and 3. Apart from that we have the production statistics for construction and a special production survey has been launched for the service sector (non-financial enterprises in ISIC 6 - 9).

The Swedish census of production has recently been expanded. Previously, only goods producing units were included, i.e. the census did not cover those establishment units classified as service producing and belonging to the goods producing enterprises. From 1987 onwards, however, the census covers all establishment units belonging to the enterprises classified as the industrial goods producers. This enlargement was justified for two reasons. Firstly, we will cover services production and , secondly, we are now able to compile data covering all activities of the manufacturing enterprises. It is then possible to compare the industries' totals gathered in this way with other data collected at the enterprise level like for e.g. the financial statistics. In contrast, the census has always included establishment units that belong to the service industry companies but produce goods. Thus, if an enterprise is classified as belonging to the service sector, for e.g. wholesale trade, and has an establishment unit that produces goods, then the goods producing unit is included in the census of manufacturing. The service production in this particular enterprise and similar enterprises will be

covered, partially so far, by the newly introduced survey of service production.

3.2 The specification of services

The specification of goods in the industry census should include the following "service" items:

1) repairs except for the work on buildings, plants, cars etc., which the establishment unit has supplied to other units within the company or for outside buyers

2) all job processing made for other units within the company or for outside buyers

3) all assembly and installation work the establishment unit has made outside of its premises. By these kinds of work are understood the mounting and fitting of products which are entirely or to a large extent produced by the reporting establishment.

For these three categories only values are collected. They may be looked upon as services directly related to production.

All other services, if produced for sale, should be reported by the establishment unit, and should be specified by kind of activities. A list of the Swedish standard classification of activity is provided for use as a manual of instructions to the respondents. Figures on turnover should be reported. We do not request data which allow us to distinguish between internal services sales and sales to outside buyers.

3.3 The definition of industrial production

By industrial production we mean the output of those establishments whose main activity is in goods production. Repairs, job processing and assembly work are regarded as industrial production. If any of these establishments produces other services for others on a fee or on a contract basis, it would be considered as secondary production and the value of output is not included in what is considered to be industrial production.

The production value of the other units belonging to enterprises classified as manufacturing whose main or only activity is non-industrial - their business may be trade, storage transport, research and development etc. - are not regarded as industrial but as services production. If they have goods production, then the value of goods production will of course be counted as industrial production.

3.4 Specification of costs and employment

As far as the breakdowns of costs are concerned, no questions are asked about the purchase of services with the exception of:

- -transport
- -maintenance and repair, including buildings, machinery and cars
- -purchase of goods for resale only (wholesale trade), and
- -job processing

Figures for research and development costs are collected through our financial statistics and they are specified within given intervals.

Other kinds of services like for e. g. producer services are not specified in the production census. It may be added that we request the service producers belonging to the service industries to specify their sales by class of customers. The manufacturing industry is one such class.

Employment figures in the production census are gathered with specification by the following categories:

Industrial production

- -Owners (not valid for corporate entities)
- -Employees
- -Assembly and installation workers
- -Maintenance workers
- -Other workers

Other activities

- -Employees and workers

4. SOME PROBLEMS IN ANALYSING SERVICES

The system of classification, by activity and by product, will determine what we observe and disseminate. It would be natural to try to specify service production by products as is done with goods. We think that it is urgent to specify services in the case of activities related to information technology. The data on services have to be collected irrespective of where they are produced. The best way to make such a collection useful for analytical purposes is to use the make matrix of input-output (IO) tables, which show for each service group, how much is produced by the manufacturing industry and how much is produced or delivered by the service industries.

This approach may be necessary or desired by national accountants. However, the problems in analysing services do only not concern the specification per se, but the insufficiency of our classification systems in measuring services, in particular the services imbedded in goods. It is in this sense, invisible in statistics, we probably have the fastest growth of services in manufacturing. This is one important structural change that takes place in modern economies. If for instance, we would like to analyse software systems we may find suppliers in ISIC 72 as well as in some manufacturing industries if these systems are sold separately on the market. However, if the software are imbedded in goods, our present systems of classification offer little help.

Another problem we face i that the increased service content in manufacturing results in changes in the location of the production - in Sweden it is in the direction of increased contracting out and unbundling. The development of the manufacturing industry, as we can observe it will then to some extent be a question of terminology. This is far from satisfactory. The questions are:

- how do we trace the practice of unbundling and contracting out in the central register of enterprises and in the surveys?

- how do we keep together the statistics of manufacturing, uninfluenced by locational and organisational changes of the production process?

5. SOME EVIDENCE OF UNBUNDLING AND CONTRACTING OUT IN SWEDEN

In Sweden we have experienced a lot of re-organisations in the manufacturing industry that have resulted in separations of services production from goods production.

This trend has led to a debate on the "real" growth of the service sector - the producer services industries - in Sweden. The National Industrial Board tried a few years ago to estimate the transfer of employment from the industry to the service sector that was a mere result of the re-classification of the establishment units. The Board found that during the period 1977 to 1982 the goods producing industries had "lost" about 20 000 employees due to such transfers. This figure corresponds to about 25 percent of the recorded decrease in industrial employment during that period. Something like 40 - 60 percent of the employment expansion in the producer service industries could also be explained by such transfers.

A private research institute has re-grouped the production figures from the Swedish national accounts to achieve a measure of the total goods production that included the complementary service production sector. The results showed that the re-grouped sector contribution to the GDP was almost 50 percent instead of the official figure of 25 per cent. From 1950 onwards, this share has increased. There is reason to believe that the process of transfer as mentioned above has continued during the 1980s. For instance, the employment in the industry computer related services, ISIC-Rev division 72, has increased by 36 % from 1985 to 1987 and the number of enterprises from 2 600 to 5 100.

There are various reasons why re-classifications of units occur. Two conceptions can be used to describe these events, unbundling and contracting out. Strictly speaking, unbundling implies that the location of producer services activities has changed for the total economy without any change in the volume. Increased contracting out implies that manufacturing industries purchase more from the producer services industries, and that the increased purchases could result from unbundling or from new needs for producer service-type activities, or from both.

Is it then possible to reduce the uncertainty about what has happened in reality - what is the genuine increase of producer services production? To answer this question would require regular collection of data on the in-house production and purchases of producer services by the manufacturing industries. This is far beyond what we can afford at present.

6. WAYS AND MEANS OF IMPROVING STATISTICS ON SERVICES IN MANUFACTURING

a. A better specification of services

We may need to specify services by product instead of by activity as practised now. Since we do not have a system of classification available at present, there are no plans to implement the changes. We do not think either that this will be given priority number one. The need of a better service specification is, we think, most urgent in the case of the computer industry (ISIC, Rev.3 class 3000). In this class we would find services such as repairs and maintenance, supply of software products, trade services and training.

b. Breakdown of costs which include producer services

This method would strongly increase the possibility to analyse the amount of contracting out. The national accountants would also benefit from better cost

readable from the annual enterprise accounts, it is doubtful whether this will be undertaken.

c. The specifications of in-house services

It seems to be appropriate to delimit services production to the services that are provided via markets or by public funds. The size of the services production then will be dependent on the extent of integration. For e. g. a tax consultant who works in a consulting company and supplies the manufacturing enterprise with a service is classified as a producer of services. If, instead, he is employed by the manufacturing enterprise his work will then become a factor service. Statistically he then produces goods.

Still, there is strong evidence of the need for better information on in-house services, i.e. for services imbedded in the goods. We do not think that the problem is to specify services as opposed to goods in this case. Instead, the problem is to find instruments to chose those enterprises or establishment units that have services as the dominant costs. Maybe, the specification of the labour force in a particular way can be used as one such instrument.

There are many users of industrial statistics who want us to specify the labour force in a better and different way to the present one in operation. To be exact, they need a specification by occupation and by levels of education. These proposals have not advanced far enough that they could have been included in our future plans. However, an extended specification of the labour force by occupations and by levels of education would strongly support the analyses of how industrial production changes. Perhaps it would then be possible to assemble the service dominant industries under for e. g. the headings "the knowledge sector" and the "research and development sector" (the K-sector and the R-sector).

d. Systems specification instead of goods or services

An important observation to be made is that some enterprises sell systems instead of goods or services. Systems deliveries mean that the enterprises do not sell only a good but a complete project which may include preparatory studies, evaluations of preparatory studies, systems analysis and design, presentation of systems proposals, project realisations, systems production, documentation, installation, testing and starting-up and maintenance services etc. These systems may, furthermore, be "tailor-made" services.

System deliveries may include services which are imbedded in goods (but they may as well be a separate part of the output) and, thus, at least some services may be included in our surveys. If they are now reported as goods and included in the goods value, we could request a separate specification.

The service industry could also produce systems. In the service statistics now in operation we plan and try to separate system sales by goods and services. A security producing enterprise (class 7492 in ISIC-Rev) may, for instance, sell security systems covering deliveries of alarm equipment, installation and maintenance of equipment and control, patrolling, etc by the personnel of the enterprise. We face large problems with this type of specification. There is a tendency by the respondents to print the value of these systems sales on the line reserved for sales of "other" services.

e. Do we have to accept unbundling?

We still have no strategy regarding the treatment of unbundling in our surveys. However, it is our ambition to prevent a shift in the classification when a new company is formed with the purpose of serving the parent company with services. If the production was previously classified as industrial, then the classification should not be altered just as a result of a change in the business practice. In reality, corrections of this sort are carried out only in very obvious cases.

There are users of industrial statistics who want to have figures on industrial production both in a narrow and in a wider sense. At present, those who demand data according to the wider definition are unsatisfied with our policy in this context. They are looking for a much broader industry concept - a concept in which manufacturing and producer service industries more or less are added together.

7. SOME CONCLUDING COMMENTS

The present system of specification of services, by kind of activity instead of by kind of products, will not be altered at least for some years from now. The new system of classification of services by activity that will be introduced in a few year from now is far more detailed than the present one. This means that the services specification in manufacturing will then be improved without depending on product specification.

We think it is unlikely that we will be able to satisfy the demand for specified data from the actors on the markets, which seems to be data that allow breakdowns of markets between competing suppliers.

Improving the statistics on services in manufacturing is not only a question of the degree of specification of output but also a question of how to define the manufacturing industry looking at it from a macro level. We would like to raise the following questions:

Will there be a distortion in the international comparability of data due to different practices in defining the manufacturing industry?

- -with respect to the boundaries towards "services" like repairs, job processing and so forth, which are closely integrated with physical production
- -with respect to the boundaries towards trade services
- -with respect to contracting out and unbundling

We have previously commented on defining the manufacturing industry in a more broader sense than the present definition. One reason for this is based on a wish to have the statistical data on manufacturing un-influenced by contracting out and unbundling. Another reason is, perhaps, that this may be a way to improve the international comparability of data.