Fifth Meeting of the Voorburg Group on Service Statistics
Paris, 1-5 October 1990

TECHNICAL CONSULTING SERVICES IN FINLAND

By Pekka Rytkönen
Central Statistical Office of Finland

Helsinki, September 1990

TECHNICAL CONSULTING SERVICES IN FINLAND

1. Introduction

The purpose of this paper is to describe technical consulting services and their statistical description in Finland. Chapter 2 provides a survey of administrative registers of technical consulting services and of statistics compiled by the professional organisation in the field. The deficiencies in the registers and the statistics are also addressed. Chapters 3 and 4 describe the statistical development work and the survey of enterprises conducted this year, with special reference to the product classification employed in the survey. Chapter 5 discusses Finland's technical consulting firms from the point of view of their history, internationalization, production, exports and financial position.

2. Finnish statistics of technical consulting services

The administrative registers and statistics describing technical consulting services in Finland comprise the Register of Enterprises and Establishments (REE), the national accounts, and the regional employment statistics based on data from registers and administrative records - all compiled by the Central Statistical Office of Finland - and the Register of Business Taxation (RBT) operated by the National Board of Taxation. Additional information is provided by the statistics compiled by the Finnish Association of Consulting Firms (FACF). On the whole, the level of data on technical consulting services is better on average than that on other business services.

The REE contains data on the turnover, personnel size and geographical location of enterprises and establishments by province (county) and municipality. In addition, it contains data on the payroll, legal form, ownership, and dates of establishment and closure of enterprises.

From 1984 on, the level of REE data on technical consulting services is satisfactory. In earlier years, the register only covered firms subject to turnover tax. The majority of technical consulting firms were not among these. In 1988, Finland adopted a new standard of industrial classification, with an exceptionally high level of detail in technical consulting services (see ANNEX 1). Statistics compiled in accordance with the new standard are available from 1986 on. One deficiency of the REE is that it does not cover the self-

employed, nor groups of companies or subsidiaries and affiliates abroad.

National accounts provide information on the total output, intermediate consumption and value added of technical consulting services. Additionally, they provide information on the employed labour force, hours worked, and gross fixed capital formation and stock. The problem in compiling national accounts data on technical consulting services is the inadequacy of basic data. The basic data are gathered from FACF statistics. Some data derive from the REE and the regional employment statistics. As the level of enterprise statistics in the technical consulting services sector improves, however, the level of the national accounts basic data files will also improve.

The FACF is the national professional organisation of technical consulting firms in Finland. It was established in 1967. The organisation is also a member of the Federation Internationale des Ingenieurs-Conseils. The FACF uses questionnaires to collect data from its member firms. FACF statistics provide information on the invoicing, order stock, personnel size, and cost structure of the member firms. The problem with FACF statistics is that they do not cover small firms. Only five per cent of technical consulting firms with less than twenty employees are members of the FACF. Even a few large firms are non-members.

The RBT contains the financial statements data of all enterprises and self-employed persons subject to business tax. It also contains other data serving the needs of taxation. The coverage of the RBT is complete from 1987 on. RBT data are accurate to the level of income statement and balance sheet subtotals. Detailed financial statement items on the other hand contain many irregularities. Furthermore, the level of data on corporate enterprises is higher than that on partnerships. Partnerships in Finland comprise general partnerships, limited partnerships and sole proprietorships.

3. Statistical development work and the survey of enterprises

In 1988, the Central Statistical Office of Finland set out to prepare plans for a system of regular, comprehensive financial statements and production statistics on business services, including technical consulting services.

The basic surveys of business services were carried out in 1989. They were based exclusively on administrative registers and trade organisation statistics. In 1990, a voluntary survey was carried out of the biggest enterprises in the business services sector. Of technical consulting firms, the survey

covered those with twenty or more employees. The enterprises were asked to supply their financial statements data for 1988 and 1989, together with data on their total invoicing and exports invoicing by type of service and customer category. The enterprises in the sample accounted for 60 per cent of the turnover of technical consulting services as a whole and the enterprises responding to the survey for 40 per cent.

By 1991, regular statistics will be compiled on Finnish business services, including technical consulting services. It is intended to produce financial statements statistics each year. Statistics on customers and on the distribution of output by product are to be produced at longer intervals.

4. The CPC and technical consulting services

In the voluntary survey of business service enterprises carried out in 1990, the respondents were asked to supply their production and exports data according to the UN *Central Product Classification* (CPC) 1). With a few exceptions (see ANNEX 2), the four-digit level (subdivisions 8671-8676) of the CPC was used in technical consulting services. The questionnaire and the product classification to be used were discussed with FACF experts. At the suggestion of the experts, as representatives of the responding firms, the CPC was modified on a few points.

The biggest departures from the CPC concerned subdivision 8672, "Engineering services", which was subdivided into building construction, civil engineering, and plant and process design services.

Subdivision 8673, "Integrated engineering services", was not used at all. It was intended that integrated services be broken down into their components and the component services be allocated to their respective categories. However, separating services proper from integrated engineering services, such as production processes, turned out extremely difficult. In addition, the designation of subdivision 8675, "Related scientific and technical consulting services", was altered. The other four-digit-level subdivisions were the same as in the CPC.

On the whole, the CPC served the needs of the enterprise survey quite well. Production and exports data on technical consulting services are easily available in Finland at the four-digit level of the CPC, with the exception of subdivision 8673, "Integrated engineering services". In part, even more detailed data are available, but constructing price indices,

---

1) The final draft of *Central Product Classification* (CPC), United Nations, 31 August 1988

for instance, from data below the four-digit level would be questionable.

5. Technical consulting firms in Finland

5.1. The oldest firm 80 years old

Econo Oy, a company specializing in energy technology, is the oldest technical consulting firm in Finland. A number of large industrial companies established it in Helsinki in 1911. The next oldest technical consulting firms still in operation are the architectural firms Frosterus & Gripenberg, established in 1918, and the Siren firm, established in 1928. The engineering firms Magnus Malmberg Oy and IPT Pohjatutkimus Oy were established in the 1930s.

Private engineering firms became common only in the late 1940s or early '50s. This was due to the increased importance of technical planning and design in building construction and civil engineering. At the same time, technical consulting services expanded to new activities. Cases in point include regional planning and water supply and sanitation engineering. The importance of traffic engineering was increased by the massive development of the highway network beginning in the 1950s.

The number of technical consulting firms grew rapidly during the 1960s and '70s. The main reason was that both the private and the public sector changed over to hired services in technical planning and design. In the process, their planning departments were closed or were split off into new companies. This trend was also accelerated by the fact that hired services were not subject to turnover taxation.

An increasing number of consulting firms were established during the 1980s; according to the REE, an estimated 70 per cent of consulting firms in operation at present were established during the past decade. The net increase in 1989 was 400 firms. It should, however, be pointed out that the figures include not only new establishments proper but also firms that have undergone changes in ownership or in legal form.

All in all, the REE contained more than 2,600 consulting firms with close to 2,900 establishments in 1988. Not all firms limit their activities to planning and design. In addition to engaging in planning and design, some firms also sell machinery, equipment and production processes. Separating planning and design from integrated services is difficult in such firms. Further, the RBT of the National Board of Taxation contained an estimated 800 self-employed technical consultants not included in the REE.

5.2. Increasingly international

The internationalization of Finland's technical consulting firms began in the 1960s, when large-scale project exports to the Soviet Union were launched. In the Soviet Union, planning and design offices served as subcontractors to construction and manufacturing companies. Under the provisions of bilateral trade, exports of technical and other construction services grew as a result of the oil crisis in 1974. The oil crisis caused the price of Soviet oil imports to Finland to rise, resulting in a need for additional exports. Subsequently, as additional exports were needed, large construction projects were launched in the Soviet Union near the Finnish border. At the same time, the increasingly affluent oil countries in the Middle East and in North Africa became important export countries.

The importance of Soviet trade increased until the beginning of the 1980s, when exports of technical construction services to the Soviet Union fell. The Soviet Union continues, however, to be an important export market. Exports to the Middle East on the other hand slumped in the 1980s.

Western Europe and certain developing countries make up other important markets. Exports to Western Europe consist mainly of plant and process engineering services for the forest industries. An important group of customers in Western Europe is constituted by the subsidiaries of Finnish manufacturing companies. A proportion of the exports are accounted for by integrated services, such as turn-key deliveries of plants and production processes.

Projects in the developing countries mainly involve silvicultural planning and design, civil engineering and urban planning services. In these countries, projects usually depend on outside financing. Today, the Finnish International Development Agency FINNIDA finances more than 60 per cent of the Finnish planning and design offices' projects in the developing countries.

The biggest firms engaging in exports have set up subsidiaries and establishments in foreign countries. The FACF reports that there were about 50 such units in 1989. The vast majority of them were situated in Western Europe, with the greatest concentration in Sweden.

On the other hand, there were about twenty "foreign" technical consulting firms operating in Finland in 1988 in which direct foreign ownership exceeded ten per cent of the share capital. Virtually all foreign investments originate from EC or EFTA countries. Sweden is the most important investor country. It should be noted that the investor country is not necessarily the country in which the parent company is located.

5.3. Personnel - the most important asset

According to the REE, technical consulting firms had 21,400 employees in 1988. This represents an increase of about nine per cent on 1986. Technical consulting services accounted for about one per cent of the entire employed labour force. The figure is one of the highest in the world.

Despite the advances in information technology and electronic data transmission, a qualified staff is a technical consulting firm's most important asset. This also appears from the fact that, in consulting firms, payroll expenditure as a percentage of turnover is about twice as high as in manufacturing companies. Payroll expenditure per person is also higher on average than in many other fields.

During the first half of 1990, technical consulting firms suffered from a labour shortage. This has led to an increased labour turnover and wage drifts. According to the Finnish Employers' Confederation, the size of the labour deficit is eight to nine per cent.

The level of education of persons engaged in technical consulting services is quite high. In FACF member firms, those with a university or institute education account for 60 per cent of the staff on average. According to regional employment statistics compiled by the Central Statistical Office of Finland, 70 per cent of employees in the technical consulting services sector are men and half are under 35 years of age.

5.4. A turnover of FIM 6.6 billion

According to the REE, the aggregate turnover of Finland's technical consulting firms in 1988 was over FIM 6.6 billion. This represents an increase of 40 per cent on 1986. Firms with twenty employees or more accounted for about 60 per cent of the aggregate turnover.

In 1989, the biggest consulting firm in terms of total invoicing was Jaakko Pöyry Oy, specialists in the know-how on forestry and the forest industries. The next largest firms were Ekono Oy, Finnmap Oy and Teollisuussuunnittelu Oy. Of groups of companies in Finland, the ETY group was the biggest, followed by the Jaakko Pöyry group. Ekono Oy and Teollisuussuunnittelu Oy belong to the ETY group. Together with its foreign subsidiaries, however, the Jaakko Pöyry group is one of the biggest engineering firms in the world.

5.5. The greater part of invoicing generated by technical construction services

According to the Central Statistical Office's survey of technical consulting firms with twenty or more employees, nearly 55 per cent of the domestic invoicing of these firms in 1989 was accounted for by technical construction services. Technical construction services cover architectural, building construction, and civil engineering services, building construction services playing the most important part. Plant and process design services covered 30 per cent of invoicing and other technical consulting services ten per cent. Other technical consulting services include urban planning and research, cartographic, soil-mechanical and hydrological services, and technical testing and analysis. Unspecified invoicing accounted for a good five per cent of total invoicing. It should be noted that the enterprise survey does not give a fully accurate picture of the industry as a whole. The importance of technical construction services in general and architectural services in particular would increase further if firms with less than twenty employees were also taken into account.

The demand for technical construction services increased rapidly during the late 1980s. This was due to the rapid expansion in the building of shops and offices, an activity in which planning and design play a more important part than in the building of dwellings. According to the FACF, neither the investment tax imposed on the Greater Helsinki area, nor the construction tax covering the whole country caused the demand for technical construction services to decline in 1989.

Furthermore, the demand for environmental pollution control engineering services in plant and process design and in urban planning has increased considerably.

The distribution of domestic invoicing by customer category in 1989 was as follows: manufacturing over 45 per cent, central and local government 25 per cent, construction companies 15 per cent, and other customers 15 per cent. According to the FACF, time rates accounted for almost two-thirds of invoicing.

5.6 Value of exports nearly FIM 900 million

According to the enterprise survey, the exports invoicing of technical consulting firms in 1989 amounted to FIM 870 million. Of this, an estimated FIM 700 million was accounted for by pure planning and design exports and the remainder by integrated services. About 60 firms in all reported exports. The value of exports does not include the invoicing of subsidiaries and affiliates abroad, which the FACF estimates at FIM 400 million.

The exports of technical consulting firms accounted for just under one per cent of Finland's total exports and for five per cent of the exports of the services sector in 1989.

Of the exports, 60 per cent were accounted for by plant and process design services for manufacturing industries and just under one-fifth by technical construction services. Technical consulting firms also export, on a small scale, management consulting services.

Half of the exports went to EC and EFTA countries and one-fifth to Africa. The vast majority of exports to Africa were linked to development co-operation projects. The proportion of exports to the Soviet Union and to the other East-European countries has diminished, to less than 15 per cent.

The biggest single export countries were the Soviet Union, Sweden, Portugal, Kenya, France and the United States. Exports to developing countries went mainly to Kenya, Libya, Tanzania, Egypt, Zambia and Mozambique in Africa and to Sri Lanka and Bangladesh in Asia.

5.7 Profitability and the cost structure 2)

According to the survey of enterprises with twenty or more employees, payroll expenditure amounted to 62 per cent of turnover on average in 1989. The payroll expenditure of technical consulting firms consists of three items: chargeable and non-chargeable wages and salaries, and statutory contributions to social security schemes. Chargeable wages and salaries account for one half of payroll expenditure and statutory contributions to social security schemes for one-third.

According to a study of cost structures conducted by the FACF, the payroll expenditure of planning and design offices contracted in relative terms during the 1980s, while depreciations increased. In 1989 depreciations amounted to four per cent of turnover. They resulted from the preceding years' sizable investments in data processing equipment and office space. In addition, the industry has become slightly more capital-intensive.

The materials and supplies expenses of a typical consulting firm amounted to less than one per cent of turnover. In firms providing integrated services the figure was more than half of turnover. The materials and supplies expenses of these firms consisted of subcontracting services provided by manufacturers

---

2) The average parameters of profitability, the cost structure and the financial position are medians.

of machinery and equipment. Other unspecified business expenses amounted to about one-fourth of turnover.

In 1989, taxes averaged 1.3 per cent of turnover after ajustments, net interest expenses (i.e. interest expenses less interest income) 0.2 per cent and increases in reserves 1.5 per cent. Compared with 1988, adjusted taxes increased and net interest expenses contracted substantially.

Gross margin averaged 11 per cent and net profit five per cent of turnover in 1989. The former figure improved somewhat from the previous year. This was due to the large number of orders in hand and to the high capacity utilization rate. The latter figure remained unchanged.

5.8. Financial position 3)

In firms with twenty or more employees, the gearing ratio, i.e. the sum of shareholders' equity and reserves as a percentage of the balance sheet total, averaged 26 per cent in 1989. This represents a slight fall from the level of 1987. The fall was due to investments financed by loans. At the same time, liabilities (excl. advances) as a percentage of turnover rose from less than 35 per cent to 40 per cent.

The quick ratio, i.e. the ratio of liquid assets to current liabilities (excl. advances), averaged 2.1 in 1989. This represents a slight improvement on 1988.

3) The average parameters of profitability, the cost structure and the financial position are medians.

ANNEX 1. Technical services in the Finnish Standard Industrial Classification

71	Technical consulting services
711	Urban planning and research
7110	Urban planning and research
712	Technical construction services
7121	Civil engineering services
7122	Architectural services
7123	Structural engineering services
7124	Air conditioning, heating, and ventilation design
7125	Electrical engineering services
7129	Other technical construction services
713	Plant and process design
7130	Plant and process design
719	Other technical consulting services
7190	Other technical consulting services

Annex 2. TECHNICAL CONSULTING SERVICES AS CLASSIFIED IN THE ENTERPRISE SURVEY AND IN THE CPC

ENTERPRISE SURVEY	CPC
1. ARCHITECTURAL SERVICES Design of buildings and building complexes, design of renovation and restoration of buildings and building complexes, interior design	8671 ARCHITECTURAL SERV.
2. BUILDING CONSTRUCTION SERVICES Geotechnic engineering, air conditioning, heating and ventilation design, electrical engineering, telecommunications, acoustics, structural engineering, property management and evaluation, construction management	8672 ENGINEERING SERV. (PART)
3. CIVIL ENGINEERING SERVICES Traffic engineering, highway, street and area infrastructure engineering, bridge construction, water supply, sanitation and hydraulic engineering, geotectonic and geotechnic engineering	8672 ENGINEERING SERV. (PART)
4. PLANT AND PROCESS DESIGN SERVICES Automation and instrumentation, energy technology, mechanical engineering, transportation and materials handling engineering, marine and process engineering, air conditioning, heating and ventilation design, electrical engineering, telecommunications, environmental pollution control engineering	8672 ENGINEERING SERV. (PART)
5. URBAN PLANNING AND LANDSCAPE ARCHITECTURAL SERVICES Urban and regional planning, landscape design, socio-economic planning for communities	8674 URBAN PLANNING AND LANDSCAPE ARCH. SERVICES

6. CARTOGRAPHIC, SOIL-MECHANICAL AND HYDROLOGICAL SERVICES Survey and cartographic services, geotechnic analysis, groundwater engineering, water analysis, watercourse survey	8675 RELATED SCIENTIFIC AND TECHNICAL CONSULTING SERVICES
7. TECHNICAL TESTING AND ANALYSIS SERVICES Quality control systems and regulating programs, technical testing methods	8676 TECHNICAL TESTING AND ANALYSIS SERVICES
8. MANAGEMENT CONSULTING SERVICES General management consulting, placement and supply of personnel, administration, human resources and organisation management consulting, market research, public opinion polling, marketing and public relations management consulting, finance and investment management, consulting, production and supply of financial data, production management consulting, other management consulting services	8640 MARKET RESEARCH AND PUBLIC OPINION POLLING SERVICES 8650 MANAGEMENT CONSULTING SERVICES 8720 PLACEMENT AND SUPPLY SERVICES OF PERSONNEL
9. OTHER SERVICES	
10. OTHER INVOICING	