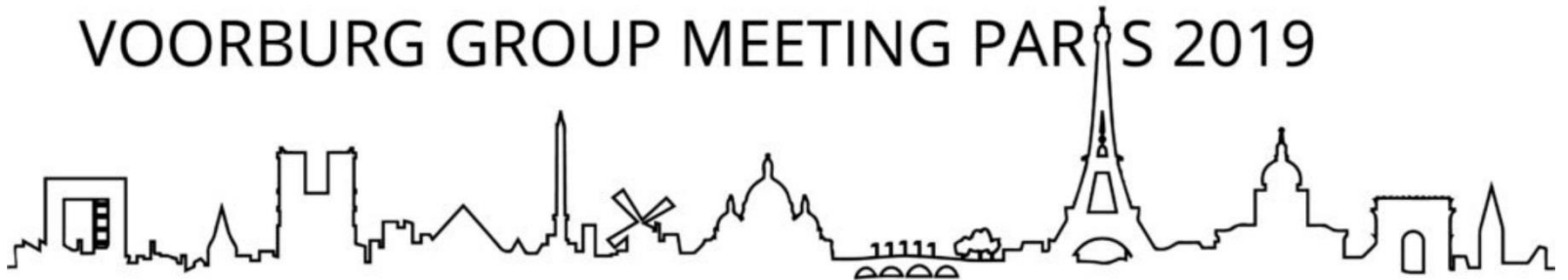


Revisited sector paper – ISIC 71.1 SPPI

Presentation by Maja Dozet, based on findings from the meeting in

New Delhi, 2017

VOORBURG GROUP MEETING PARIS 2019



VOORBURG - PARIS - 2019

The previous sector paper- Architects and engineers

1991 - first report on a study for setting up a price index for consulting engineering services (Statistics Canada)

2002 - a collection of several approaches towards an engineering SPPI by several NSOs (USA)

Revisited Sector Paper by Bernhard Goldhammer in 2008

- Architecture: Asaaf (2006), Israel
Kruger Enge (2000), Norway
- Engineering services: many contributions, but most important:
Rosenbaum (2002), USA, papers from several countries

The previous sector paper- Architects and engineers

- Sources of addresses: Business registers, often combined with sector information
- PPS Sampling – most popular method of determining the respondents

Often combined with a cut-off limit (small companies completely excluded) and a total sample stratum (large companies are all in)

- Subject to discussion – criterion for sampling: turnover vs. number of employees

The previous sector paper - Architectural services

Uniqueness – almost no repeated services

Private households, private enterprises, public institutions → different price mechanisms

NSOs often track only the most important services → pragmatic approach

Pricing methods

Two are dominating:

Pricing based on working time

- Distinguished by position of staff, type of service, type of customer
- Often problems with bad record-keeping
- Productivity bias

Model pricing

- No productivity bias
- High response burden, poor response rate
- Just estimation
- Some NSOs even switched back to Pricing based on working time

- Other methods in use: percentage fee, contract pricing, component pricing

The previous sector paper – Engineering Services

- Major distinction of engineering services:
 - Services related to construction (of buildings, infrastructure, etc.)
 - Non-construction related services (often not covered, hard to tackle, large variety)

Pricing methods

Model pricing

- Pros: - comparability over time
- avoiding of productivity bias, no quality adjustment
 - a „precise” estimation according to exact definition of the service
- Cons:- quickly outdated models
- influence of negotiations on price-subjective estimation
 - different results when different project leaders estimate the same project

Pricing based on working time

- The standard method for engineering services
- Hourly charge-out rates by personnel category and activity
- Easiest way to get valid price quotations
- Data type depends on willingness and ability of the respondent: realised hourly rates are preferred

Alternative methods

- Netherlands, 2002: - realised contract pricing
- quotation of standard hourly rates every year; each quarter several completed contracts with their worked hours and the total price are quoted
 - basis for index calculation: standard rates, updated by realisation rate(billed price/standard price)
- Canada, since 1998:-estimated output pricing (or proxy estimated method)
- price calculation: multiplying hourly rates, worked hours and a mark up
 - price index: wage rate index * hours of labour index * net multiplier index (mark-up)

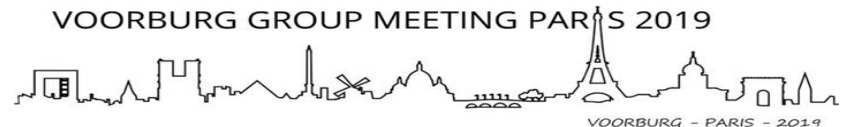
The previous sector paper - considerations

- Measuring productivity progress and quality adjustment – major tasks
- Needs for communication and to convince the respondents of the necessity and advantages of an SPPI
- New types of services were created over time: e.g. "design-build contracts": bundled packages of services including architectural, engineering, and construction services in a single contract.

Rather a part of the construction sector, not included in SPPIs

2017 – progresses/changes/new experiences

- 2018/2019 - Revisited Sector Paper due to new developments and a new CDF
- 2017 - SPPI contributions:
 - Yann Leurs & Frederic Ouradou (France)
 - Maja Dozet & Josipa Kalčić Ivanić (Croatia)
 - Cristina Cecconi & Salvatore Cavallaro (Italy)
 - Moegi Inoue (Japan)

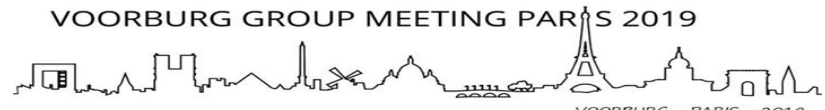


2017 – progresses/changes/new experiences - General remarks

- Decrease in engineering service industry in recent years in some countries, but with signs of recovery
- Many small enterprises in 71.1
- Some countries cover all activities in 71.1 whereas others only cover activities within 71.12
- Exports (and imports) in this industry - an important trend in global trade
- Affect of new technologies and digitalization

2017 –new experiences

- The uses of SPPI: - as a deflator for ISP and for NA
 - as an index of price revaluation for contract indexation
- Mostly product based indices, one country – industry based
- Data sources: - Survey- all countries
 - Other databases-Ministry of Land, Infrastructure, Transport and Tourism-Japan
- Sampling design:
 - France - first, „cut-off” sampling by turnover
 - secondly, a „well-informed choice” method (tries to determine firms that would be forgotten with the first process)
 - Italy - a stratified sample of enterprises by turnover, PPS sampling
 - a large companies are integrally sampled
 - Croatia - combination of probability sampling, PPS (for small enterprises, even with 2 employees) and Census (for medium-sized and large enterprises)
 - two criteria: turnover and number of employees



2017 –new experiences – pricing methods

France

- **Time based method** – daily/hourly rates by category of staff (e.g. daily price for a telecommunications, junior engineer)
- **Direct use of repeated services** – in some cases, following fixed individual services prices, when they are recurrent
- **Percentage fee** – the case when prices are based on percentage of project costs (e.g. percentage of total construction cost) – not predominant price model
- **A turnover ratio per hour** – when percentage fee seems to be impossible to be furnished by the enterprise. Many disadvantages – quality adjustment almost impossible

Italy

Model pricing

- Each respondent has to provide the description of three different projects
- Projects can be hypothetical or based on real transactions
- The variables that identify the model: customer type; market type; service life span; reference cost; category of work; functional destination; work identification and type of activity
- For each quarter and each model- the estimated price of the described service for selling the service to a hypothetical customer

Japan

Model pricing – used when differences in service quality are large. The BOJ uses the price data from other databases instead of mailing the survey to reporting companies. Surveyed price -calculated from data published by Ministry of Land, Infrastructure, Transport and Tourism (Man-day costs by Ranks of Engineers) and from results published by governments (bid results)

Time-based method – used in cases when the quality of the service is proportional to the quantity of labor input. The BOJ surveys the prices of services per unit of labor input.

The other methods also used- **The direct use repeated services, The unit value method and The list price method**

Croatia

Time-based method – used in all groups of services. 3 different types:

1. **Hourly charge-out rate** - simplest time based method
2. **Hourly list rates** -Price = List Price per hour x quarterly hours invoiced/ quarterly hours worked
3. **Wage rates** – Price = Wage data per hour x quarterly hours invoiced/ quarterly hours worked x (1/100) x (100 + margin rate)

Direct use of repeated services - when services are relatively homogeneous (e.g. some geodetic services)

Percentage fee – the case when prices are based on percentage of project costs- mostly for complex building projects

2017 –new experiences – pricing methods

- Uniqueness (a main aspect of architectural and many engineering services) and a wide range of services → lead to variety of pricing methods
- **Time based method**
 - still the most popular pricing method
 - easy to report, but often changes in labor productivity are not captured
- **Model pricing**
 - suitable for unique services
 - difficult to comprehend and provide estimation for the price change
- **Direct use of repeated services**
 - simple method
 - only for homogenous services
- **Percentage fee**
 - straightforward method to use
 - multiple factors that influence the price of engineering services – method may not adequately reflect actual prices received

New challenges

- Should new technologies be reflected as quality or price changes?

Some considerations – new technologies may have different impact depending on the pricing methodology being used. E.g. to avoid use charge out rates in industries impacted by rapid replacement of workers

- How to incorporate the prices of new technologies like drones or BIM and how to quality adjust?
- Many small enterprises – need to survey them also
- Any countries, planning to replace surveys with other data sources?



Thank you!