Statistics Netherlands

Division of Macro-economic Statistics and Dissemination
Department of price statistics and short-term indicators

P.O.Box 24500
2490 HA Den Haag
The Netherlands

SPPI for Technical Testing and Analysis in The Netherlands

M. Spanjaard

Remarks:
The views expressed in this paper are those of the author and do not necessarily reflect the policies of Statistics Netherlands.

Project number: *BNM-*
BPA number: *-BNM*
Date: *16 June 2011*

SPPI FOR TECHNICAL TESTING AND ANALYSIS IN THE NETHERLANDS

1. Introduction

This paper provides an overview of the SPPI for "technical testing and analysis" (NACE Rev. 2 category 71.2) as presently composed in the Netherlands. The paper is part of a session of mini-presentations during the Voorburg Group meeting in Newport (Wales), 2011. The structure of the paper is based on the Content Development Framework of the Voorburg Group.

2. Definition of the service being priced

According to NACE Rev. 2, class 71.20 "Technical testing and analysis" includes the performance of physical, chemical and other analytical testing of all types of materials and products. Technical testing is situated in the 2-digit class "71", together with "Architectural and engineering activities".

Examples of services included in 71.20 Technical testing and analysis:

Acoustic and vibration testing, testing of composition and purity of minerals, testing activities in the field of food hygiene, testing of physical characteristics and performance of materials, reliability and failure analysis, periodic road-safety testing of motor vehicles, etc.

Excluded services for 71.20 are:

Testing of animal specimens, testing and analysis of medical and dental specimens.

A more detailed description of the classification structure of NACE and CPA can be found in chapter 5.

3. Pricing unit being measured

The pricing unit of measure represents one full test or analysis conducted. However, as with other services, most tests or analyses are not directly comparable to each other since there are numerous different tests or analyses to be conducted. Therefore, there are a lot of price determining factors, like: type of test/analysis, type of tested "object" (different materials/cars/etc), scale, amount, duration, customer (new/existing or large/small), etc.

Furthermore, due to progress in the field, new types of tests are developed regularly. This will cause other tests to be obsolete. The transition from one test method to

another – while testing the same "object" – could result in large price fluctuations, which should be taken into account.

4. Market conditions and constraints

4.1 Size of the industry

In 2008, the total turnover in the Netherlands of Technical testing and analysis was approximately 6.1 Billion euros (see Table 1). Table 1 also shows the turnover distribution across the SBI classification[1]. From this, we can see that 71202 "Technical testing and analysis of machinery, equipment and materials" is by far the largest sub-class, in terms of both number of enterprises and turnover.

Table 1. Number of enterprises and turnover specified by SBI classification in 2008 (Dutch classification system – see also chapter 5).

SBI classification[1]	number of enterprises	Turnover	
		€ x 1000	%
71201 Testing and analysis of agricultural products and food	206	714,482	11.7
71202 Technical testing and analysis of machinery, equipment and materials	1,122	4,969,280	81.2
71203 Other technical testing and analysis	123	436,253	7.1
712 Total	1451	6,120,015	100

Table 2 shows the number of enterprises and turnover for Technical testing and analysis in the Netherlands distributed across "number of employees". In 2008, there were by far more companies with a low number of employees (0-9) than larger companies (9+ employees). The turnover seems "equally" distributed across the different "number of employee" classes.

Table 2. Number of enterprises and turnover specified by number of employees in 2008.

number of employees	number of enterprises	turnover	
		€ x 1000	%
0-9	1,135	873,256	14.3
10-49	150	794,113	13.0
50-199	111	1,531,385	25.0
200-499	46	1,722,068	28.1
>500	9	1,199,192	19.6
Total	1,451	6,120,015	100

[1] SBI: the standard classification of economic activities in the Netherlands

4.2 Special conditions and restrictions

4.2.1 71201 Testing and analysis of agricultural products and food

In this sub-sector, there are lots of companies that work for the Dutch government, like The Food and Consumer Product Safety Authority. Prices in this sub-sector are mostly “non-market prices”, therefore, we decided – in cooperation with National Accounts – to not monitor this sub-sector. Other tests in this sub-class relate to international standards for import and export.

4.2.2 71202 Technical testing and analysis of machinery, equipment and materials

Periodic road-safety testing of motor vehicles is an important activity for the sub-sector “technical testing and analysis of machinery, equipment and materials”. Since the CPI already holds an index for this activity, it was used as a proxy for the SPPI.

Besides periodic road-safety testing of motor vehicles, this sub-class is populated by a variety of tests on machinery, equipment and materials. Examples are: tests on pipes, electricity cables/wires, concrete and other building material. Also, products are tested before they enter the market, like toys for children, these tests are mostly about health and safety.

4.2.3 71203 Other technical testing and analysis

We found that most activities in the “other technical testing and analysis” sub-class were about environmental inspections. So, we only followed environmental inspections in this sub-class like: water inspections (e.g. legionella) or other laboratorial tests or the removal of asbestos. Other tests in this sub-class consist of the yearly inspections that are part of governmental policy, like ISO certifications of companies.

4.3 Record keeping practice

Prices are observed quarterly with the use of model pricing (see chapter 8). Paper questionnaires are sent to the responding companies, which are digitalized by hand when returned. For aggregation, weights are based on company turnover, which are applied for at initial contact. Weights for higher aggregates are based on “turnover statistics”. The administrative response (response calculated without the use of weights) is at least 80 percent, but mostly above 90 percent. The weighted response (large companies count for more response than smaller ones) must be over 65%, otherwise we will not publish the results.

In total, the survey consists of 83 companies with an average of 4 quotations per company.

The results of the CPI proxy (periodic road-safety testing of motor vehicles) are recalculated into a quarterly index.

5. Standard classifications structure

Table 3 shows the standard classification for “7120”. Both ISIC and NACE do not specify any further than these four digits. The Dutch SBI does specify three further classes on a five digit level.

Table 3. Standard classification: ISIC, NACE and SBI. On the right side: the detailed SBI structure.

ISIC rev. 4 NACE rev. 2 SBI 2008		SBI 2008 (Dutch classification system)	
7120	Technical testing and analysis	71201	Testing and analysis of agricultural products and food
		71202	Technical testing and analysis of machinery, equipment and materials
		71203	Other technical testing and analysis

The CPA knows five sub-classes below “71.20” on a six digit level, as is shown in Table 4. The CPA classification is markedly different from the SBI classification.

Table 4. Standard classification: CPA 2008.

CPA 2008	
71.20	Technical testing and analysis services
71.20.11	Composition and purity testing and analysis services
71.20.12	Testing and analysis services of physical properties
71.20.13	Testing and analysis services of integrated mechanical and electrical systems
71.20.14	Technical inspection services of road transport vehicles
71.20.19	Other technical testing and analysis services

6. Evaluation of the standard classification compared to the actual industry and market conditions

From Table 3 and 4 we see that there is a difference in classification between the CPA and the (Dutch) SBI. The classification of the SBI is based on the differentiation of “health and food” and “materials and machinery”. This seems to match the actual market conditions well. The CPA is based on activities, without thinking about “what the outcome of the test is used for”. In this sense it relates less direct to the market than the SBI does – however, the activities themselves are better specified.

Furthermore, in paragraph 4.3 we have specified that the most common activity in the “other technical testing and analysis sub-class” is “environmental inspections”. This activity is quite large and difficult to place somewhere else in the classification scheme. It might be worth having a sub-class only containing “environmental inspections” under 71.20.

7. National accounts concepts and measurement issues for this industry

To build up supply and use tables, national accountants use input from turnover and price statistics, from this, they calculate the volume component (this calculation is called deflation). For technical testing and analysis, national accounts (NA) both have the turnover and price information available – both are part of the STS requirements. With this information, the industry is covered and the supply and use tables can be produced. Price and turnover data for technical testing and analysis are available for – and used by – NA in the quarterly accounts (flash and regular) and the national accounts (provisional and final).

An important part of a national accountant is evaluating the input for the supply and use tables (turnover and prices). For this process, information is used from several public sources, like newspapers, television and internet. However, for the industry Technical testing and analysis, there is hardly any information available outside the statistical office. One may think that this industry will act (economically) similar as "Architects" and "Engineers", but this may not be true. The scope of Technical testing and analysis is far broader than Architects or Engineers (these two are not very similar either) because tests are performed everywhere, in almost all industries.

Thus, the supply and use tables from National accounts are produced periodically with the input from within the statistical office. However, the evaluation with reality can not be made as with other industries. Still producing the supply and use tables without a direct link with "outside sources" seems justified since technical testing and analysis provides a relative small part of the total GDP in the Netherlands.

8. Pricing method(s) used and the criteria for choosing these methods

The pricing method used is "model pricing". The activities followed are specified in a model, in which the price determining factors are controlled. The model is set up to be an activity which is representative for the company at hand, and as such will occur on a regular basis. In a sense, this method is very close to "contract prices" or "transaction prices" where prices are followed for repeated services. The difference with model pricing however is, that – in a period where the activity was not performed – the model is still priced (fictitious). For the models used, it is important to control the price determining factors. If a price determining factor is not controlled, unrealistic price developments may be measured. An example is a contract price for an existing or a new costumer. The new customer may get a lower price so that he/she returns in the future. It is obvious that we want to measure price changes and not changes in customer characteristics. Another important aspect in keeping the price determining factors controlled is the aspect of quality changes. When the model is detailed enough, no quality change in the service will cause price changes. Chapter 9 will cover quality changes in more depth.

In a pilot study performed in 2006, other pricing methods were considered and tested on a small sample of companies. The study revealed that the unit value

method was not adequate. The “hourly rates method” was found to be good to fill in by the companies, however, the resulting price index did not correspond to the actual market conditions and price developments. Almost all companies were satisfied with model pricing, especially since the resulting index seemed realistic according to the respondents at the time. A disadvantage of model pricing was that some companies found it hard to fill out the questionnaire and that is was more time consuming than the other methods. The latter statement holds true for the first couple of times a model is priced, when the respondent is familiar with the methodology, time becomes less of a problem.

After this initial pilot study, a new sample was drawn. All companies in the new sample were contacted to set up appropriate and representative models, all of which were unique for that specified company. The models were composed in cooperation with the companies themselves.

8.1 Example of model used

An example of a model that is used for testing a power supply:

Testing a Power Supply according to UL 60950
Price determining factors: certificate to be issued
Work activities: Certification requirements per standards UL 60950 – construction analysis, testing, bill-of-materials, report
Total amount invoiced to the customer (incl. possible discounts) for an existing customer

Note that this model is composed in cooperation with the company.

8.2 Results: Index graph Testing and analysis in the Netherlands

Figure 1 shows the development of the producer price index of Testing and analysis services in the Netherlands from 2006 onwards.

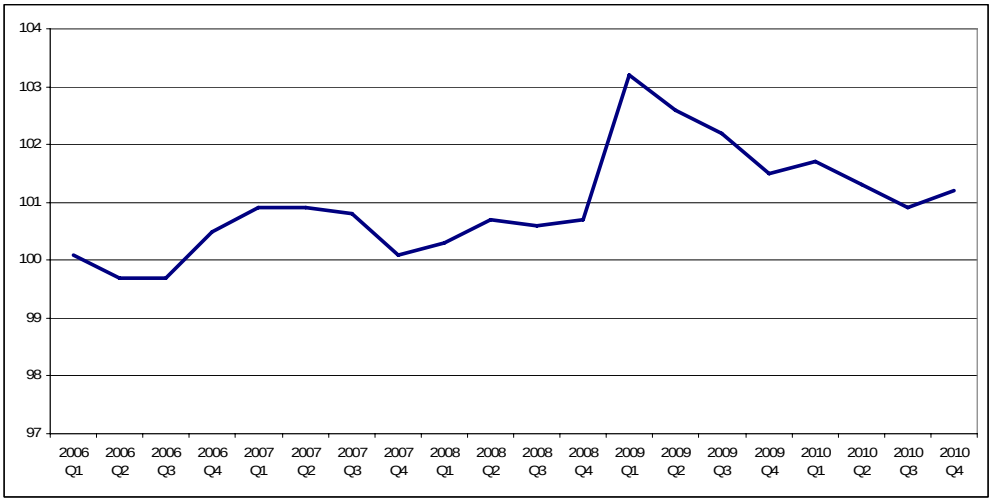

Figure 1. SPPI for technical testing and analysis in the Netherlands as is published online.

In the last four years, the development does not show a very clear pattern. It is known that price developments are partly influenced by the dollar exchange rates – since some tests have an international scope: tests for import and export, or tests where international certificates are issued, for example. The large price development in the first quarter of 2009 is partly caused by large price changes and partly by the dollar exchange rate.

9. Quality adjustment methodology's

With model pricing, it is very important to follow models that are representative to what a company “produces”. For most companies, representativeness can only be achieved with multiple models so that all important aspects for that company (within a sub-class of the classification scheme) are fulfilled. If there is a situation in which the “to-be-priced-model” is not representative any more (because there is a different type of test that is more often used, or an activity is simply not produced any more), than a different model is set up in cooperation with the company. Any difference between the two models is taken care of by using the overlap method: the overlap method needs a price quotation for both models in one period (the overlap period), so that there is one price relative for every period with input from the same model. Two different models are not used to make up one price relative.

Note however that the respondent needs to be familiarized with the model pricing method. A consequence is that the respondents need a little bit of “education” when the questionnaire is being filled in for the first time by the company, but also when there is another person within the company filling in the questionnaire. In the case we notice a change in contact person, we always check if the model is filled in correctly. This often turns out to using the overlap method between two contact persons.

10. Evaluation and comparability with turnover/output measure

At the moment, within Statistics Netherlands price statistics and turnover data are first confronted at the National accounts department (NA) for Technical testing and analysis. At this point (and without extra information from outside the statistical office as previously mentioned), price and turnover are compared on the top aggregate (7120) and coincide. This means that NA can use the SPPI and the turnover as direct input without causing the volume showing unrealistic developments. In the near future, prices and turnover will be compared at an earlier stage and on a lower level.

Both statistics (price and turnover) use the business register as population for the sample. Furthermore, the weights of the SPPI aggregates are based on turnover data.

11. Summary

Technical testing and analysis (NACE class 71.20) includes a large variety of tests which can generally be classified in “health and safety tests” and “tests of materials and equipment”. “Environmental inspections” is a third cluster of activities used in the Netherlands, which are the main activities in “other tests and analysis”. Prices are observed for the two latter classes mentioned above with the use of model prices. The first class contains lots of governmental bodies performing tests and thus do not contain market prices.

The model price method is an appropriate alternative to be used for industries where service outputs are predominantly unique (see also the OECD/Eurostat methodological guide for developing SPPI’s). Technical testing and analysis is an industry where the activities are mainly unique services, hence, the model price method is justified.

Price and turnover statistics are confronted by National accounts when supply and use table are produced – the data from both sources coincide. The difficulty for National accounts in the technical testing industry is that there is hardly any information outside the statistical office about this industry that can be used to evaluate price or turnover statistics.

Prices are partly influenced by the dollar exchange rate since some tests are “international”, concerning import/export or internationally standardized certificates. Furthermore, some companies are part of an international organization where prices are set abroad, mostly in US dollars.