

## **28<sup>th</sup> Voorburg Group Meeting**

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SPPI Mini Presentation

### **SPPI for Other Software Publishing Services in Germany**

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## Introduction

The subject of the following mini paper software publishing has already been discussed in previous meetings of the Voorburg group in Nantes (2002), Tokyo (2003) and Ottawa (2004). This mini-paper adds some notions from the German perspective to the findings from the previous works that were conducted for the mentioned earlier Voorburg meetings. Since Germany does not produce a SPPI for “publishing of computer games”, the paper focusses only on “other software publishing services”.

### 1. Definition of the service

The definition of the CPA 58.29 “Other software publishing services” includes publishing of ready-made (non-customised) software for operating systems and business and other applications. The service also includes translation or adaptation of non-customised software for a particular market on own account.

Common secondary activities within the industry NACE rev.2 “Other software publishing services” are training and installation services, re-sales of hardware and software, and services within CPA 62 “Computer programming, consultancy and related activities”.

### 2. Pricing unit of measure

As Holdway and Swick (2003) point out, “prepackaged software is not “sold” in a traditional sense; rather producers license the right to use their software. Right-to-use terms can be perpetual or limited to specified time periods. The latter is growing in importance as producers experiment with various subscription or annuity pricing models to obtain more predictable revenue streams. Generally the usage terms set forth in a license do not allow or restrict the consumer’s ability to resell, transfer, reverse-engineer or alter, though licenses for open-source software can be less restrictive.” (2003 – Tokyo, Measuring Constant Quality Industry Output - Software Services (paper), Holdway, Michael; Swick, Roslyn B., p.5-6)

Holdway and Swick warn that “if a statistical agency’s sample of transaction prices were limited to software license fees then the universe of industry revenues has been significantly truncated. The composition and growth of industry revenues is increasingly dependent on maintenance contracts with commercial and government accounts. Maintenance agreements are usually tied or bundled with software licenses and based on fixed terms of 2-4 years. The maintenance fee is an annual payment (typically 20-30 percent of the original software license fee) that give buyers the right to upgrade at no additional cost to subsequent software versions. Maintenance fees are essentially prepayments for future versions of software and place additional pressure on software vendors to introduce new versions (if new versions are not introduced then the maintenance fee is not refunded).” (2003 – Tokyo, Measuring Constant Quality Industry Output - Software Services (paper), Holdway, Michael; Swick, Roslyn B., p.5-6)

According to a German survey between 2009 and 2011, about one third of all surveyed software publishers named the software package as their pricing unit. About two thirds named software package per user as their pricing unit. We cover maintenance agreements as a part of secondary services where the regular pricing unit varies between hourly rate, service level agreements and complex contracts.

### 3. Market conditions and constraints

#### a. Size of industry

Turnover generated in “Other Software Publishing” increased by 36 percent between 2009 and 2010. Between 2008 and 2009, it shrank by 6 percent. Since 2008, Service Statistics also display a growing number of enterprises. In 2010, 4.800 people were employed in Other Software Publishing in Germany.

NACE rev.2	Year	Turnover in bill. €	Number of enterprises	Number of employees (in k)
58.29 Other Software Publishing	2008	0.53	228	3.5
58.29 Other Software Publishing	2009	0.50	333	3.4
58.29 Other Software Publishing	2010	0.68	376	4.8

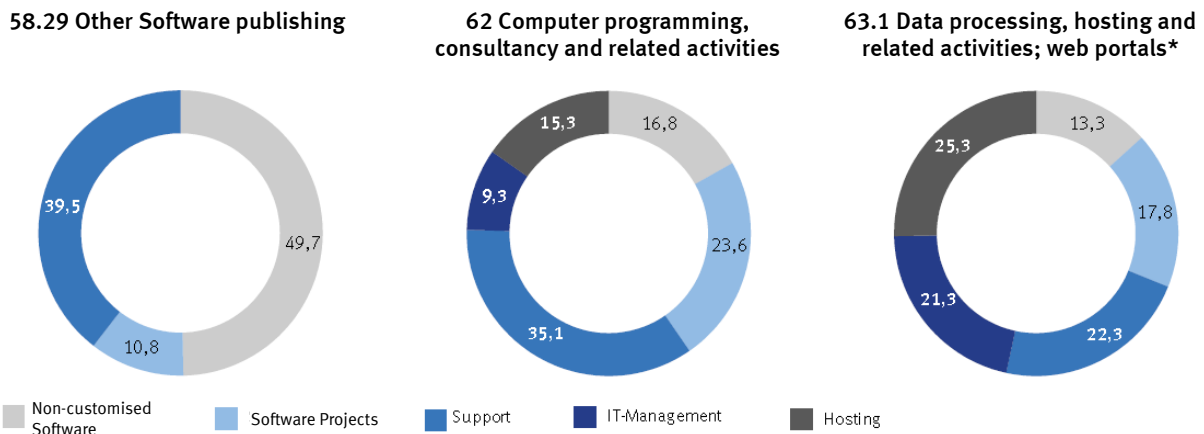
Turnover is highly concentrated. According to data from the German Service Statistics (“Strukturerhebung im Dienstleistungsbereich 2010”), the other software publishing industry (NACE 58.29) supported about 400 establishments in 2010 generating a turnover of 0.7 billion Euro. Of the 300 software publishers, only 12 had revenues of 10 million Euro or more. These 12 largest establishments account for 3 percent of all establishments, but contribute almost 58 percent to industry revenue (0.4 billion Euro). Establishments with revenues less than 1 million Euro account for 76 percent of all establishments, but only 10 percent of industry revenue. This is in line with Holdway and Swick (2003)’s finding of an high industry turnover concentration in the US prepackaged software industry in 1997

**b. Special conditions or restrictions**

Software as a marketed product is produced in substantial amounts as a second activity in other NACE classes than NACE rev.2 58.29. This is of importance if a country (like Germany) wants to produce a product SPPI and uses a business register organized after industries to select respondents.

In a survey conducted between 2009 and 2011, all industries with direct IT reference (that is, NACE rev.2 58.29, 62 and 62.1) were asked to break down their turnover to CPA-products associated with information technologies. It was found that in Germany, NACE rev.2 62 generated about 10 billion EUR of software turnover while NACE 58.29 generated only 0.23 billion EUR. Annual not published surveys by the service statistics since then confirmed the finding that NACE rev.2 62 generates the bulk of turnover with pre-packaged software. The reason for this is that big German IT companies have their main activity in NACE rev.2 62 and only small ‘pure’ software publishers are in NACE rev.2 58.29. Another minor reason is that software is sold as part of a bigger software project (for example CPA 62.02) on a commission by companies associated to NACE rev.2 62. While the main turnover of the key product in NACE rev.2 58.29 is generated in NACE rev.2 62, other software publishers also generate products associated to rev.2 62 as side-production.

The following graph shows the interrelation of the three NACE classes associated with information technology:



\* without web portals

Due to this tight connection, the SPPI for Other Software Publishing in Germany was calculated together with the SPPIs for NACE rec.2 62 and NACE rev.2 63.1. All are based on product indices for the above products. The product indices are each filled with prices from companies attributed to all three NACE classes. We are aware that the resulting SPPIs are no pure industry SPPIs, but we do not expect a large difference. To our opinion, the small gain in quality cannot justify the resources needed to put up three independent indices.

#### 4. Standard classification structure and detail related to the area

The NACE rev. 2 class of 58.29 Other Software Publishing is not divided into categories. CPA 2008 Software Publishing has five categories and 10 subcategories.

CPA (2008)	Label
58.29	Other software publishing services
58.29.1	Systems software, packaged
58.29.11	Operating systems, packaged
58.29.12	Network software, packaged
58.29.13	Database management software, packaged
58.29.14	Development tools and programming languages software, packaged
58.29.2	Application software, packaged
58.29.21	General business productivity and home use applications, packaged
58.29.29	Other application software, packaged
58.29.3	Software downloads
58.29.31	System software downloads
58.29.32	Application software downloads
58.29.4	On-line software
58.29.40	On-line software
58.29.5	Licensing services for the right to use computer software
58.29.50	Licensing services for the right to use computer software

#### 5. Evaluation of standard vs. definition and market conditions

In an evaluation of the classification structure, I want to raise issues related to its definition and its level of detail.

Due to the tight relationship between pre-packaged software and customizing of software, it is difficult to understand the separation of these services into different NACE classes, especially, since the products used to be in one NACE class in the previous NACE rev.1. Companies in the field of information technology have problems understanding the differentiation and little sympathy to be put into publishing services (NACE rev.2 58). Since pre-packaged software is regularly changed with updates and software is much faster depreciated, similarities to the publishing industry seem to be quite small.

Also, the CPA structure seems very detailed. Especially, the subdivision of CPA products according to their distribution channels (online, download of offline) along with content-related categories (system software, application software) seems odd. Even if actual software is distributed on CD (CPA 58.29.1 or CPA 58.29.2), the software updates are often downloaded (CPA 58.29.3). The updates are essential parts of the software, but no turnover can be recorded for them. Also, the separation into online software mixes software on the service providers' servers with software a company holds on its own servers to make it accessible within the company's network. While the previous service involves also services like access, back-up, storage or capacity, the latter is more similar to offline or downloaded software packages (CPA 58.29.1-3).

The SPPI for Other Software Publishing in Germany was not structured along different distribution channels. Instead, a simplified structure with close reference to only two CPA categories was used. On the most detailed level the SPPI follows roughly CPA 58.29.1 "System Software" under the heading 'Network, systems, database and security management software' and CPA 58.29.2 "Application Software" under the two headings 'Software tools, applications and other software' and 'business productivity applications and business specific industry applications'.

## 6. National accounts concepts and measurement issues

According to the SNA, price indices for software should be used to derive volume estimates for packaged software. Additional to that, they can be used to construct price indices for custom-made and own-account software if more appropriate price indices are unavailable (SNA 08; 15.149).

Contrary to practice in price statistics to use Laspeyres indices, national accounts require chained price indices.

According to the understanding of German national accounts, the definition of goods for resale excludes all services (with little exceptions like services of travel agencies). If software licenses are part of bigger software projects, thus, the software turnover has to be counted in gross (turnover of pre-packaged software producers and within the turnover of the IT project producer).

## 7. Pricing methods

In previous Voorburg papers, the following issues have been raised as price measurement challenges:

- Price measurement should be based on economically meaningful characteristics. If characteristics are drawn only from the producers' side, new features of a software might get over-emphasized, but actually have little use. Levine (2002) raises the question whether software features might evolve of strategic decisions and not of market demand. This makes it more difficult to identify meaningful price determinants.

- Markets can be heavily influenced by only few firms. “(… ) certain service lines are dominated by a few very large producers. Because of this concentration and the PPI’s pledge to keep data confidential there are certain cell indices that are unpublishable.” (2002 – Nantes, Producer Prices for Computer Services (paper), Levine, Jordan, p. 3)
- Complex license agreements make it difficult to set up an effective method to ensure comparability over time. A detailed example is given in Levine (2002).

I like to add the following:

- Software licenses are to our knowledge subject to substantial discounts. Discounts are given according to several criteria. To prevent volatile price indices, these criteria should be incorporated as price characteristics.
- In a situation where the turnover generated in Other Software Publishing is small and a much higher amount of turnover of this CPA class is generated in NACE rev. 2 62, price statisticians should consider to develop product price indices and derive industry price indices from them.

## 8. Quality adjustment

A typical case for quality adjustment seems to be a software update. In contrast to new software versions that provide noticeable new functionality, Levine (2002, p. 5) characterizes such updates as redesigns including an addition of superficial new features. Generally, software updates are not associated with a price change. In this case, Levine proposes a quality adjustment on direct comparison to the old version of the software. Since the update as defined above does not include substantial changes in functionality, I would like to stress that a direct comparison would almost certainly lead to no quality adjustment.

New versions of software usually provide noticeable new features the previous version did not incorporate. Usually, the new features cannot be priced individually. Due to the lack of alternative adjustment methods, link-to-show-no-price-change will be the most appropriate adjustment method. This view is also in line with Levine (2002). This method assumes that the price difference between both versions is completely due to quality differences and thus rules out a pure price change. Since price changes during version changes are not unlikely, the resulting price index might be biased, though. Utsunomiya (2004) describes in the production cost method an interesting alternative.

To reduce new item bias, Levine (2002) describes a directed substitution procedure for the U.S. PPI for prepackages software that “captures evolutionary changes to a current product or service that did not exist when the sample was selected.” For this, respondents are periodically asked for information regarding new versions of their software. (2002 – Nantes, Producer Prices for Computer Services (paper), Levine, Jordan, p. 2).



## **9. Comparability with turnover/ output measures**

The German Service Statistic has been producing results of turnover figures for Other Software Publishing since 2008. The SPPI Other Software Publishing with the base 2006 was first published in 2013.

The level of comparability between the SPPI and turnover data is high. Both statistics use the same classification system. The business register provides the statistical population for sampling for SPPIs and the Service Statistics. To ensure comparability between both statistics, the SPPI section and the Service Statistics section share cases of misclassification and are generally in close contact with each other.

## **10. Summary**

Other Software Publishing in Germany is a rather small, but growing class generating about 0.5 billion Euros in turnover. Most of the turnover of the product Other Software Publishing is however, generated in NACE rev.2 62.

In Germany, the SPPI for NACE rev.2 58.29 is calculated on the basis of product indices which are again used to produce SPPIs for NACE rev.2 62 and NACE rev.2 63.1. This leads to no pure industry index. However, this procedure acknowledges the tight inter-industry relations between all NACE classes in the field of information technologies. The strong connection between the industries is not recognized in the standard classification structure.

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