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Bundling of Services

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What is bundling?

The Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services defines Bundling as follows:

Bundle (bundling of services) Bundling is also referred to as package tie-in and tends to occur when one product is sold in combination with another as a requirement for the sale. Bundling of products may be a source of economies or efficiencies for the producer, part of which may be reflected in a lower composite price for the buyer than if all the different products were supplied or bought separately. However, bundling may also make it difficult for firms to enter different product segments of the market. The competition implications of bundling, including that of tied selling generally, are complex and need to be evaluated on a case by case basis adopting a rule of reason approach.¹

The practice of bundling was identified in a 1976 paper by Adams and Yellen. They described bundling as follows;

Firms often sell their goods in packages: sporting and cultural organizations offer season tickets, restaurants provide complete dinners, banks offer checking, safe deposit, and travelers' check services for a single fee, and garment manufacturers sell their retailers clothing grab bags comprised of assorted styles, sizes, and colors. We shall refer to the practice of package selling as commodity bundling.²

They also identified two different cases of bundling, what they called 'pure bundling' and 'mixed bundling'.

A firm that sells goods only in package form has adopted a pure bundling strategy. A firm that sells the same goods separately as well as in packages has adopted a mixed bundling strategy.³

Why does bundling occur? Businesses offering bundled products tend to focus on the advantages of the practice to the consumer, as the following quotes from three Irish company websites show:

- 1. We offer an extensive range of facility services and we understand that because all businesses are different their facility services needs can also be different. That's why we offer customers the option to select either a single or a bundled service.*
- 2. We offer a 'one stop shop' for all your transport and logistics requirements*
- 3. We're known for providing end-to-end supply chain management solutions to quick service restaurants*

¹ OECD/Eurostat (2014), Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services: Second Edition, OECD Publishing. <http://dx.doi.org/10.1787/9789264220676-en>, page 424

² Commodity Bundling and the Burden of Monopoly Author(s): William James Adams and Janet L. Yellen Reviewed work(s): Source: The Quarterly Journal of Economics, Vol. 90, No. 3 (Aug., 1976), pp. 475-498 http://au4372.epage.au.edu.tw/ezfiles/71/1071/attach/31/pta_41897_1023718_80983.pdf

³ Ibid.

These quotes stress the convenience to the customer of purchasing a bundled package. The customer gets a coordinated service, and knows who to hold responsible if something goes wrong.

But there are many potential advantages to the producer also. For example, it can save on production and distribution costs. It can also allow businesses to increase their revenues where customers have a range of demands. Different customers may have only purchased different parts of the bundle if they were only sold separately, but are now willing to buy the entire bundled product.

In fact there is an abundance of literature on the advantages and disadvantages to the producer and to the consumer of adopting a bundling approach. But there is next to nothing on the question that concerns us here, that is, how do we need to adjust our statistics to track turnover and price changes in a world where bundling is so common?

In which industries is bundling most common?

One crude way of judging this question is to count the number of mentions of 'bundle' or 'bundling' in the industry sections of The Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services. These are given in the following table:

Table 1: Mentions of 'bundle' or 'bundling' by industry in the manual [Eurostat- OECD Methodological guide for developing producer price indices for services –Second edition 2014](#).

Industry	Mentions
Telecommunications	8
Freight Transport by Road, Accommodation and Food Services	4
Warehousing and Storage	3
Software Publishing, Financial and Insurance, Engineering	2
Wholesale and Retail, Water Transport, Cargo Handling, Courier and Postal, Real Estate, Management Consultancy, Advertising, Cleaning Services	1

As we might conclude from the table, bundling is fundamental in the Telecommunications industry. For example, a 2011 OECD study across 30 OECD countries showed that *'broadband services in the OECD are overwhelmingly sold as mixed bundles, allowing users to choose among stand-alone offers or bundled services'*.⁴

We can also see from the table that bundling is also important in the Freight Transport by Road and Warehousing and Storage industries. In fact the bundles are frequently combinations of products from each of these industries, potentially leading to classification problems.

In Ireland we are currently redeveloping the price indices for the industries Freight Transport by Road and Industrial Cleaning. It is becoming clear to us that bundling is very important in both these industries in Ireland. Many Irish Freight Transport by Road businesses offer their customers a

⁴ OECD (2011), "Broadband Bundling: Trends and Policy Implications", OECD Digital Economy Papers, No. 175, OECD Publishing. <http://dx.doi.org/10.1787/5kghtc8znnbx-en>

complete logistics solution, with Storage and Warehousing, Freight Forwarding, and other modes of transport included. Many Irish businesses classified in Industrial Cleaning also offer services such as Security and Landscape Services. They also offer in many cases a complete bundled facilities management service.

Classification Issues

Different examples of bundling pose different problems for our industry and product classification systems.

In the simplest case, all parts of the bundle are in the same classification. An example is the bundling of different television channels into one package to be purchased by the consumer.

The different components of the bundle could also be in different classifications. A bundled service combining Freight Transport and Warehousing services is an example of this.

The bundle could also have a Services and Non-Services component. Some very important examples fall in this category. One example is the sale of a mobile phone and network contract as a bundle. Another example is the sale of a Personal Computer with Operating System and other software. The SPPI manual stresses that *'The bundle should be priced excluding of hardware so that the price index is only capturing services.'*⁵ Another example is *'design-build contracts', 'bundled packages including architectural, engineering and construction services in a single contract'*⁶. These will usually be classified in the construction rather than the services sector.

There are also cases where the bundle comes from different enterprises. Potentially these enterprises could even be in different countries.

In the case of pure bundling, the issue is largely a classification problem. We have a consistent product to track from one period to the next, but the question is to which classification the turnover and price changes should be assigned. This is also the case with a contract between 2 businesses that bundles a variety of services together. However, with mixed bundling there is both a classification **and** a price tracking problem.

As was mentioned above, some businesses offering such services as Industrial Cleaning, Security and Landscape Services often offer a complete bundled facilities management service. The case of facilities management is unusual in that there exists a NACE and CPA category 81.10 'Combined Facilities Support Services'. This could be used as a suitable classification for some of these bundled activities. But at present this classification is not much used in Ireland. The following table shows the 2013 annual turnover of enterprises classified to Combined Facilities Management and specific services according to the Irish Business Register. It can be seen that the Combined Facilities Management NACE is much smaller than NACEs for the individual services.

⁵ OECD/Eurostat (2014), Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services: Second Edition, OECD Publishing. <http://dx.doi.org/10.1787/9789264220676-en>, page 226

⁶ Ibid. page 340

Table 2: Annual turnover of selected industries in the Irish Business Register.

Industry (NACE)	Annual Turnover 2013
Industrial Cleaning (812)	€597 million
Security (801, 802)	€735 million
Landscape Services (813)	€225 million
Combined Facilities Management (811)	€77 million

The only other example of a NACE suitable for bundled services is 82.11 'Combined office administrative service activities'. In general, the NACE and CPA system requires the statistician to either a) unbundle the bundled service, i.e. split it into its constituent parts, or b) classify it according to the most important part of the bundle, assuming we can determine this.

Bundling in Output

Services Output statistics in Europe is covered by two regulations, the Structural Business Statistics (SBS) Regulation (number 295/2008), and the Short Term Statistics (STS) Regulation (number 1165/98). The respective surveys for these regulations in Ireland are the Annual Services Inquiry and the Monthly Services Inquiry. Neither of these regulations considers the issue of bundling.

The current statistical unit prescribed in these regulations is the enterprise. The effect of this is that all output is assigned to the primary activity (NACE) code of the business, regardless of specific products, bundled or otherwise. The proposed changes to the regulations under the Framework Regulation integrating European Business Statistics (FRIBS) programme foresee that the new statistical unit for these regulations will be the Kind of Activity Unit (KAU). The effect of this should be that secondary activity of a business can be assigned to the NACE code for that activity. But neither the enterprise nor the KAU take account of the possibility that a product may be bundled, and may be a combination of products across different product codes.

Annex 8 of the SBS Regulation asks for a more detailed breakdown of turnover by product (according to CPA) in some service industries. Again, the assumption is that turnover can be broken down to its constituent parts. The section of the Irish turnover survey asking for this breakdown specifies:

If some of your products overlap with several of the proposed product categories, provide a qualified estimate of the percentage breakdown belonging to each of the relevant categories. Your answers are more usable to us, if you estimate the breakdown, even if the results are not perfect than if you allocate complex products to the main category.⁷

We see that a fundamental assumption of output regulations, of the prescribed statistical units for these regulations, and of the implementation in practice of these regulations, is that output can be broken down into single detailed industry and product codes. Bundling of products is in conflict with this assumption. In practice, it does appear that businesses can generally supply output figures broken down to the detail the regulations require, even for bundled products. The question is to

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<http://www.cso.ie/en/media/csoie/surveysandmethodologies/surveyforms/documents/distributionservices/pdfiles/NACE,Insert,Form,B,with,instructions,2013.pdf>

what extent this breaking down of a bundled products output figure into its constituent parts is arbitrary, and whether it tells us anything meaningful about what is really happening.

Bundling in SPPIs

If a product is a pure bundled one, there should be no problem in including it in an SPPI. It is a consistent product that can be tracked from one period to the next, so the fact that it is bundled is not so important (except for the possible classification issues discussed above).

If a product is a mixed bundling one, i.e. the component parts of the bundle are also sold separately, then it is more complicated to include it in an SPPI. Now we have a number of products to track, the bundle and each individual component, so we would like to know in what proportions customers buy the bundle, or buy the components individually.

The following example, based on an actual occurrence, is a more complicated case. In this instance, two products that had previously been sold separately were combined to form a pure bundled product, i.e.

Old prices were €49 for Product 1 and €72 for Product 2.

New price is €79 for the bundle of Product 1 and Product 2. They are no longer offered separately.

What is the price change here?

The simplest approach would be to say that the 2 products previously cost €49 + €72 = €121, and now they only cost €79, a **price reduction of 35%**. But this ignores that many consumers may not want one of the products.

Alternatively, suppose we estimate that previously 80% of customers bought Product 1 only, 10% of customers bought Product 2 only, and 10% bought both products.

Then we could argue that for:

80% of customers the price has been raised from €49 to €79, a raise of €30

10% of customers the price has been raised from €72 to €79, a raise of €7

10% of customers the price has been reduced from €121 to €79, a reduction of €42

So the overall price change is $(0.8 * €30) + (0.1 * €7) - (0.1 * €42) = €20.50$, a **price increase of 35%**.
(20.5/ (79-20.5))

But this ignores that the consumers do place some value on the product they were not previously purchasing. We need to also have estimates of what the average reservation price of each product was to customers who only bought the other product. That is, how much would customers who only bought Product 1 have been willing to pay for Product 2, and how much would customers who only bought Product 2 have been willing to pay for Product 1. Suppose we estimate that customers only buying Product 1 would have been willing to pay €10 for Product 2, and customers only buying Product 2 would have been willing to pay €30 for Product 1. We summarise the situation in the following table:

Table 3: Data to determine the change in price when a switch from mixed to pure bundling

Customer Group	Share of Market	Old expenditure	Reserve price for other product
Product 1 only	80%	€49	€10
Product 2 only	10%	€72	€30
Both products	10%	€121	

So 80% of customers were only buying Product 1. They would be willing to pay €10 on average for Product 2. The effective price change for these customers is $€79 - (€49 + €10) = €20$

10% of customers were only buying Product 2. They would be willing to pay €30 on average for Product 1. The effective price change for these customers is $€79 - (€72 + €30) = -€23$

10% of customers were already buying both products. The price change for these customers is $€79 - (€49 + €72) = -€42$

So now the overall price change is $(0.8 * €20) - (0.1 * €23) - (0.1 * €42) = €9.50$, a **price increase of 14%** ($9.5 / (79 - 9.5)$)

This seems more in line with what we would instinctively feel about the changes that have been made. It's not clear that this helps with providing a deflator to National Accounts, however. If we assume that the number of consumers remain unchanged after the switch to a pure bundling strategy, then the actual value and volume changes are as follows. The value of products sold has increased by 35%. While the volume of Product 1 has increased by 11% (previously 90% of consumers bought product 1, now 100% do) and the volume of Product 2 has increased by 500% (previously 20% of consumers bought product 2, now 100% do).

Another example of where bundling is an issue for the Irish SPPI is in the Telecommunications industry. This is in line with international patterns.

The website Callcosts.ie is a price comparison site supported by the communications regulator for Ireland, Comreg. It compares prices for home telephones, broadband, and a bundled service of home telephone and broadband. The user enters assumptions about their telephone requirements (time of day/week, number of minutes of local/national/international calls) and broadband requirements (speed). It then gives a list of current prices from a range of service providers both for telephone and broadband separately, and for a bundled service. For example on 27/7/2015, for the assumption of home telephone use anytime, a total of 300 minutes per month of national calls, and required broadband speeds of 30 MB and above, the prices per month for a selection of operators were as follows;

Table 4: Irish Telecommunications Operators Monthly Prices 27/7/2015

Operator	Telephone only, €'s	Broadband only, €'s	Telephone and Broadband combined, €'s
A	43.00	25.40	53.00
B	35.00	35.00	45.00
C	35.57	34.95	44.03
D	Not Available	Not Available	40.83

We see that even for the same assumptions, we cannot say which of the four operators offer the cheapest option. It depends on the individual customer's preferences. This is analogous to the equal difficulty of comparing prices for the same operator over time, and judging whether the price change constitutes an increase or a decrease, and how big that increase/decrease is.

But it is also clear that bundling is only one source of complication in this sector, and probably not the most difficult one. We also have to decide what our range of assumptions about usage will be, and decide how to weight the different competing providers. But bundling does provide an extra complication. We need to gather information or make estimates as to what proportion of consumers buy one product only or buy the bundled product. Keeping the bundles representative over time is another challenge.

Problems with bundled products are also likely to occur at the canvassing stage of establishing a price index, if we are not fully aware that bundled products are very common in the industry we are examining. Canvassing forms may unintentionally direct the respondent to supply unbundled products, even if bundled products are more dominant in the industry. The classification system may also bias the canvass to collect unbundled products only, even where bundled products are more representative.

Conclusions

Bundling is a very common pricing mechanism across many service sectors, and one that is almost totally overlooked by European statistical regulations, statistical units and classification systems. It could be argued that in the services sector there are more fundamental issues in producing accurate and meaningful statistics. Nevertheless, the practice is so prevalent in some industries that we must take account of it. A good starting point would be to have more classes in the Industry and Product classification systems specifically designed for the most commonly offered bundled products. The approach to bundling must be a consistent one across the output, pricing and National Accounts domains. But bundling also poses a fundamental challenge to our statistical conception/model of the economic world, where one of the unspoken assumptions is that everything (e.g. outputs, prices) can be broken down into the detail suggested by our industry and product classification systems.