Office for National Statistics

Article

Services producer price weight changes

The impact of introducing chain-linking and the other new methods on weights used in the Services Producer Price Index.

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Release date:
20 July 2020

Next release:
To be announced

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1 . Executive summary

We are implementing annually chain-linked business prices in line with international best practice and to improve consistency with other price indices such as the Consumer Prices Index (CPI). This is a significant improvement to the weighting and linking of business inflation statistics, which we previously announced as part of a consultation in 2017. The implementation of chain-linking is recommended by Eurostat over the current method of rebasing for price statistics, as the weighting structures are updated more frequently.

This article discusses the impact of introducing chain-linking and the other new methods on weights used in the Services Producer Price Index (SPPI). This article is part of a collection of articles we are publishing. Other articles published are:

- producer price inflation methods changes: this outlines the move from net to gross basis to measure the headline producer price index, removal of duty and the sources used to compile the weights required for chain-linking
- services producer price inflation methods changes: this outlines the sources used to compile the weights required for chain-linking and a change to the classification framework
- producer price weight change impacts: this discusses the impact of introducing chain-linking and the other new methods on weights used in the Producer Price Indices (PPIs)
- chain-linking in business prices: this focuses on the methodology and practical implementation of chain-linking for business prices, including the technical process of price updating sales data to forecast more representative weights

To complete the collection of articles, we will publish a further two articles to provide the impact of implementing the new methods on the PPI and SPPI. We are planning to publish the PPI and SPPI using the new methods towards the end of 2020.

2 . Introduction

The purpose of this article is to compare and explain changes in the weights and sales data from 2008 to 2019. This period covers weights calculated using three types of methodology:

- 2008 to 2013 – 2010 fixed base weights, which are updated every five years
- 2014 to 2018 – annually chain-linked weights excluding consumer transactions (business-to-business)
- 2019 onwards – annually chain-linked weights including consumer transactions (business-to-all)

The focus of this article is on how the weights movements align to changes in the structure of the UK economy. However, some of the changes are also driven by changes in the methodologies used to calculate them. This is explored in more detail in Chain-linking in business prices and Services Producer Price Index (SPPI) method changes. Further detail on the methodology used at the last 2010 rebasing exercise is available in the SPPI Methods and Guidance (PDF, 457KB).

Throughout this article, the weights used to calculate the SPPI between 2008 and 2013 will be referred to as 2010 rebasing weights, as this is the method and year the data are sourced from. From 2014 onwards, the chain-linked weights are calculated using price updated sales from the Quarter 4 (Oct to Dec) of the previous year. These weights will be referred to by the year they are used to calculate the index. For example, weights used to calculate the 2018 index use sales data from Quarter 4 2017 data.

3 . Changes in SPPI between 2010 rebasing weights and 2014 to 2018 chain-linked weights

This section focuses on describing the extent of weight changes in the Services Producer Price Index (SPPI) over the period 2008 to 2018 because of both changes in the structure of the UK economy and changes to methodology and data sources used to produce the weights with the introduction of annual chain-linking. The changes in weights are relative; a large movement in one division leads to the realignment of weights elsewhere in the basket of services. Details of the sources used, the coverage and processing of the weights are published in SPPI methods changes.

Changes between 2010 rebasing weights and the 2014 to 2018 chain-linking weights

Table 1 provides an overview of the changes between the 2010 weights dataset used at the last rebasing and the 2014 to 2018 chain-linked weights dataset.

Table 1 shows the weight of each division within the top-level SPPI and are ordered by their 2010 sizes. Only divisions that are currently covered by the SPPI are included. We do not produce an index for every industry in the services sector, so the SPPI is a partial, best estimate of the overall inflation to UK businesses in the services sector.

Table 1: Weight of two-digit divisions into the top-level SPPI 2010 index to 2014 to 2018 indices
UK

Industry division	Description	2010	2014	2015	2016	2017	2018
69	Legal and accounting services	15.50	13.29	13.28	13.14	13.01	12.70
78	Employment services	8.03	4.19	4.19	4.72	4.55	4.58
49	Land transport services and transport services via pipeline	7.59	7.57	7.76	8.01	7.83	7.45
62	Computer programming, consultancy and related services	7.33	4.71	4.70	5.10	5.27	5.40
61	Telecommunications services	7.00	1.81	1.83	1.49	1.50	1.67
71	Architectural and engineering services; technical testing and analysis	6.41	9.29	9.28	8.91	8.60	8.55
55	Accommodation services	6.24	1.11	1.06	1.07	1.00	1.01
52	Warehousing and support services for transportation	6.14	7.04	7.03	7.28	7.41	7.38
73	Advertising and market research services	6.01	3.79	3.79	3.60	3.71	4.07
53	Postal and courier services	5.52	3.93	3.93	3.29	3.03	3.05
68	Real estate services	5.50	3.96	3.93	4.00	3.89	3.85
58	Publishing services	5.28	1.82	1.86	1.73	1.63	1.54
70	Services of head offices; management consulting services	5.03*	10.57	10.56	11.01	11.74	11.99
452	Wholesale and retail trade and repair services of motor vehicles and motorcycles	3.89	1.37	1.39	1.37	1.33	1.33
56	Food and beverage serving services	1.84	0.71	0.72	0.74	0.71	0.73
80	Security and investigation services	1.52	2.41	2.42	2.27	2.15	2.10
81	Services to building and landscape	1.46	3.41	3.42	3.49	3.64	3.64
51	Air transport services	1.19	1.15	1.17	1.06	1.02	0.95
77	Rental and leasing services	1.00	3.23	3.20	3.34	3.19	3.30
50	Water transport services	0.85	0.70	0.65	0.68	0.71	0.43
85	Education services	0.62	3.50	3.43	3.15	3.10	3.19
82	Office administrative, office support and other business support services	0.39	3.71	3.71	3.76	3.81	3.99
96	Other personal services	0.38	1.09	1.08	1.08	1.11	1.11
63	Information services	0.25	1.69	1.69	1.62	1.63	1.63
74	Other professional, scientific and technical services	0.03	2.98	2.97	3.04	3.26	3.08
59	Motion picture, video and television programme production services, sound recording and music publishing	0.01	0.96	0.96	1.05	1.14	1.26

Source: Office for National Statistics – Services producer price weight changes

Notes

1. Weights are shown as a percentage. Back to table

2. The Services Producer Price Index (SPPI) does not cover the whole of the services sector; those products that are not currently covered are excluded from this table. Back to table

3. *Services of head offices; management consulting services was weighted into the SPPI from 2011. Its weight for 2010 was zero. The sum of 2010 column does not equal 100. Back to table

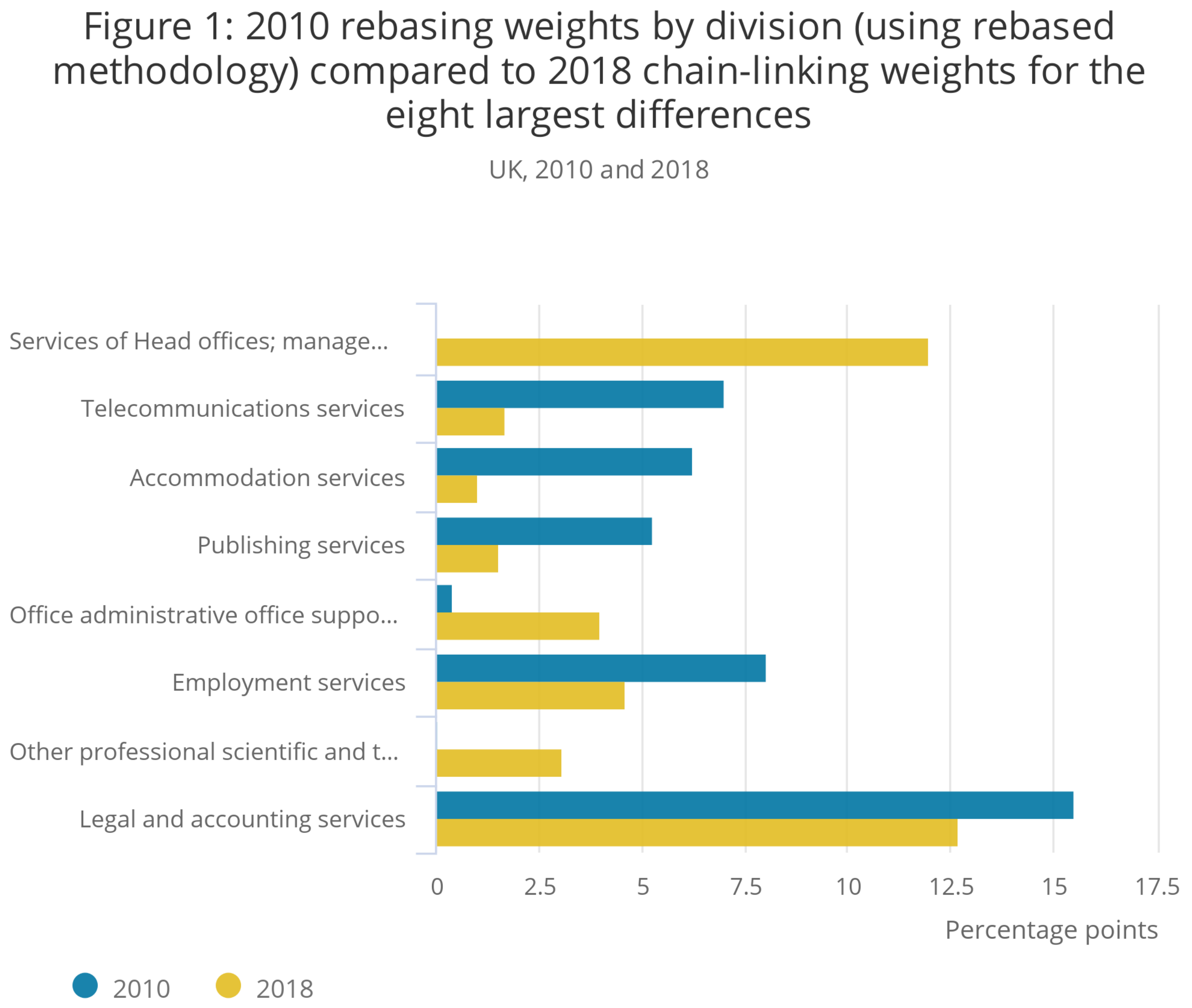
With a few exceptions, most divisions' relative importance within the SPPI is broadly comparable between fixed base and chain-linked weights. The highest weighted division in 2010, Legal accounting services, remains the highest weight also from 2014.

The movements in the weights from 2014 are relatively stable. There are two main factors contributing to this. First, updating the weights more regularly means that weight changes tend to become less dramatic. Under the previous method of five-yearly rebasing, there could be substantial shifts in service sector dynamics in that period. Secondly, the specific methods of imputation applied to the data sources to derive annual weights cause reduced variability in the chain-linked weights for this period. This is discussed in greater detail in SPPI methods changes.

Eight divisions have seen large absolute differences of approximately three percentage points between the 2010 rebased weights and 2018 chain-linked weights; these are visualised in Figure 1.

Figure 1: 2010 rebasing weights by division (using rebased methodology) compared to 2018 chain-linking weights for the eight largest differences

UK, 2010 and 2018



Source: Office for National Statistics – Services producer price weight changes

Most of the large changes represent a decrease relative to 2010 weights. The decreases are occurring in sectors with large-to-medium weights, while small increases can be observed in low weighted sectors. This means that the distribution of weights is spread more evenly in 2018 compared with 2010. The range and the median of the two sets of data are summarised in Table 2.

Table 2: Minimum, maximum and median percentage points
UK, 2010 compared with 2018

	Weight		
	minimum	**maximum**	**median**
2010	0	15.5	2.87
2018	0.43	12.7	3.14

Source: Office for National Statistics – Services producer price weight changes

4 . Reasons for movements in divisions between 2010 rebasing weights and 2014 to 2018 chain-linking weights

Legal and accounting services (division 69)

There has been a decrease in the weight of around 2.8 percentage points between 2010 and 2018 from 15.5% to 12.7% in legal and accounting services. The Annual Business Survey (ABS) data reported an increasing trend in legal and accounting services with growth in value of 33% between 2010 and 2017. This links to research completed by City UK in 2019, which shows growth in the legal sector of 6% per annum. Similarly, the Competition and Market Authority (CMA) report indicated a moderate growth of around 20% between 2014 and 2018. The turnover values used to calculate the weights have increased in a way that is consistent with the external economic trends and the ABS data.

The decrease in weights has been driven by a change in the overall coverage of the Services Producer Price Index (SPPI) index weights rather than a fall in turnover of the legal and accounting services sector (for futher information, see SPPI methods changes). In other words, the size of this division has increased, but relative to the total size of the rest of SPPI it is now a smaller component part.

Employment services (division 78)

There is a drop in the weight of around 3.45 percentage points between 2010 and 2018 from 8.03 to 4.58. This is driven by a slight decrease in the level of turnover for employment services between these two periods coupled with the increase in SPPI coverage.

Between 2010 and 2018, ABS data show instead a 61% increase in turnover output for this industry. The difference could be driven by differences between ABS and the Annual Survey of Goods and Services (ASGS), as further explained in SPPI methods changes. Trends measured by the Recruitment and Employment Confederation (PDF, 828KB) show growth but note a number of underlying factors that influence the behaviour of the employment services sector and potentially their measurement. These include stagnant wage growth, changing employment legislation and increasing complexity of the recruitment supply chain.

The trends observed in employment services may also be influenced by using different methods of estimation in the ASGS compared to the Services Turnover Survey (STS), which can lead to divergences in some turnover point estimates. Further details about these can be found in the ASGS QMI.

Accommodation services (division 55)

The weight of accommodation services has decreased from 6.24 to 1.01 between 2010 and 2018. The underlying turnover has also seen a large decrease. During this period, ABS data show a 47% increase in value, whereas Statista measured more moderate growth of 22%.

This divergence is likely because of two factors. First, a different method was used to estimate the business-to-business element of accommodation services in 2010. Secondly, turnover generated by conference centres is no longer included as a part of this industry from the 2014 index onwards. The combination of these two elements means that the two sets of weights are not directly comparable. These issues are discussed in greater detail in SPPI methods changes.

Publishing services (division 58)

There has been a decrease of 3.74 percentage points between 2010 and 2018 from 5.28 to 1.54 in the weight for publishing services. This is in line with the trends observed in ABS data where there was a decrease in the value after 2010 followed by some fluctuations from 2014 onwards. Statista's research shows a steadier trend for this period, which is reflected in the 2014 to 2018 weights.

Services of head offices and management consultancy (division 70)

Division 70 first collected prices in 2011 so has not been captured in the calculation of the 2010 indices effective weights and appears as 0.00. For a more meaningful comparison, the effective weight for 2011 will therefore be used for this section. The weight was 5.03 in 2011 and has increased to 11.99 in 2018. The weight change has been driven by an increase in coverage under the ASGS. This is explained further within the SPPI methods changes. Under the previous structure, only 6 out of 11 categories within the management consultancy division were collected, while the full set of categories have been collected from 2014.

Another contributing factor has been the way in which the 2010 data were mapped into the Classification of Products by Activity (CPA) structure; this is explained in SPPI methods changes.

Office administrative, office support and other business support services (division 82)

The weight of office administrative, office support and other business support services has increased from 0.39 in 2010 to 3.99 in 2018. This has been driven by a change in coverage under the new data sources being used. In 2010, 3 categories out of 13 were covered, while in 2014 all 13 categories were covered. Earlier versions of the SPPI did not include all CPA six-digits within scope. This is explained in more detail in SPPI methods changes.

Other professional, scientific and technical services (division 74)

The weight of other professional, scientific and technical services has increased from 0.03 in 2010 to 3.08 in 2018. This has been driven by an increase in coverage resulting from the new data sources being used, as explained in SPPI methods changes. In 2010, 4 categories out of 25 were covered, while in 2014 all 25 categories were covered, and this has changed the scope of the index.

Telecommunications services (division 61)

The weight for telecommunications services has decreased from 7.00 to 1.67 between 2010 and 2018. The 2010 data were collected using administrative data from Ofcom, whereas the 2014 data onwards were calculated using the ASGS. This decrease is therefore likely the result of the source change and use of the updated method in the 2018 weights.

5 . Weight changes between 2018 and 2019 chain-linking weights

The changes between business-to-business and the business-to-all index weights detailed in this section are driven by the removal of the ratio (known as business-to-business ratios, which is explained in Services Producer Price Index (SPPI) methods changes) estimating business consumption of the services within each division. This will result in the values of the turnovers increasing, which will then have an impact on the weighting pattern. Table 3 compares the 2018 weights excluding consumer transactions with the 2019 weights including consumer transactions.

Table 3: 2018 weights excluding consumer transactions compared with 2019 weights including consumer transactions
UK

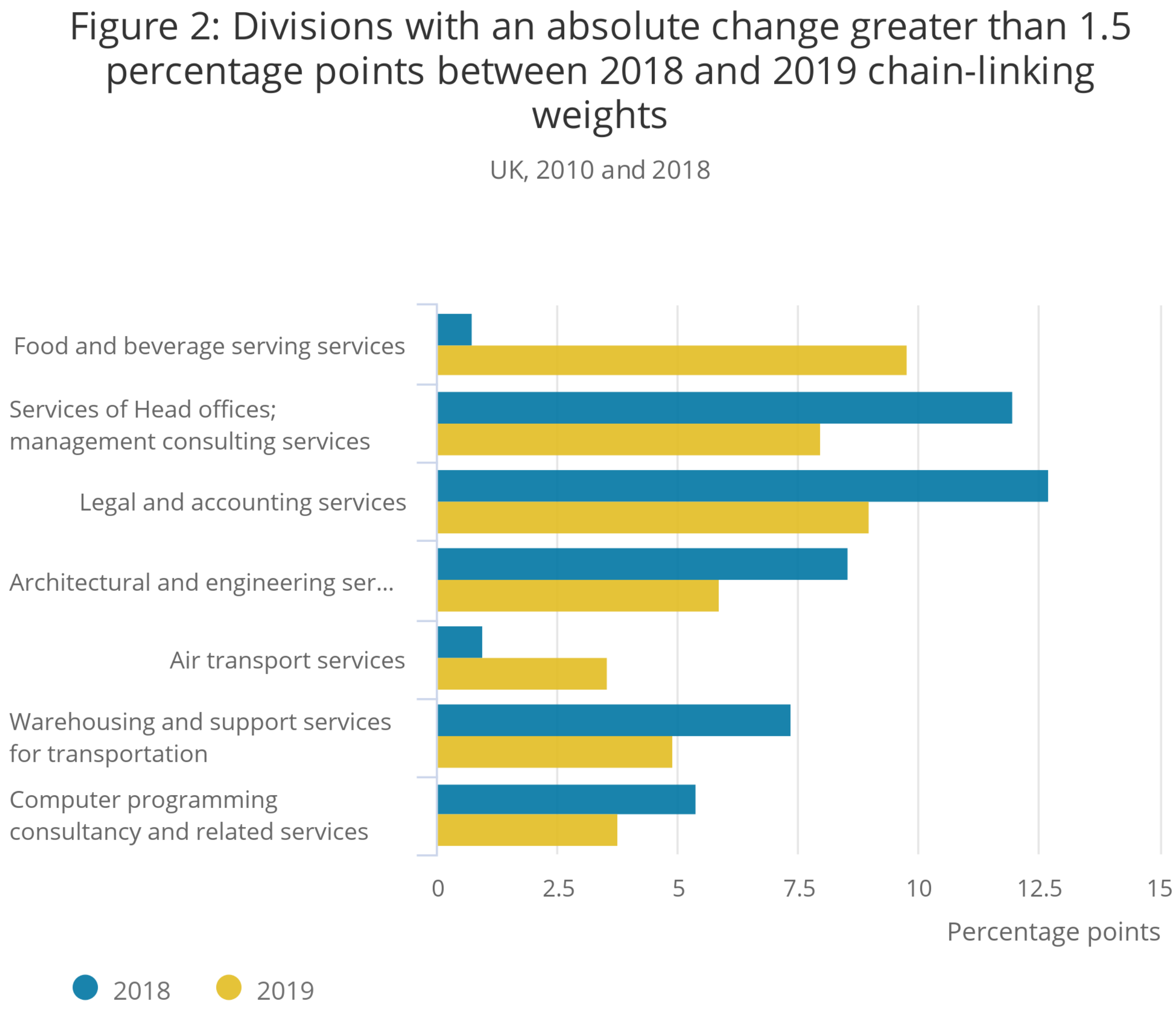
Industry division	Description	2018	2019
56	Food and beverage serving services	0.73	9.78
69	Legal and accounting services	12.7	9
70	Services of Head offices; management consulting services	11.99	8
49	Land transport services and transport services via pipeline	7.45	7.7
71	Architectural and engineering services; technical testing and analysis	8.55	5.89
52	Warehousing and support services for transportation	7.38	4.93
68	Real estate services	3.85	4.56
77	Rental and leasing services	3.3	4.22
78	Employment services	4.58	4.14
62	Computer programming, consultancy and related services	5.4	3.76
51	Air transport services	0.95	3.57
82	Office administrative, office support and other business support services	3.99	3.57
85	Education services	3.19	3.39
81	Services to building and landscape	3.64	3.26
73	Advertising and market research services	4.07	2.73
58	Publishing services	1.54	2.45
55	Accommodation services	1.01	2.37
96	Other personal services	1.11	2.37
74	Other professional, scientific and technical services	3.08	2.25
452	Wholesale and retail trade and repair services of motor vehicles and motorcycles	1.33	2.14
61	Telecommunications services	1.67	2.14
53	Postal and courier services	3.05	2.12
80	Security and investigation services	2.1	2
59	Motion picture, video and television programme production services, sound recording and music publishing	1.26	1.88
63	Information services	1.63	1.12
50	Water transport services	0.43	0.67

Source: Office for National Statistics – Services producer price weight changes

There are seven divisions with an absolute change greater than 1.5 percentage points. These are visualised in Figure 2 and discussed in Section 6.

Figure 2: Divisions with an absolute change greater than 1.5 percentage points between 2018 and 2019 chain-linking weights

UK, 2010 and 2018



Source: Office for National Statistics – Services producer price weight changes

Most of the large movements are decreases, meaning that the inclusion of consumer transactions has reduced the weight of that service in the total SPPI. These are sectors that rely mainly on non-consumer transactions as a source of sales, for example, computer programming, consultancy and related services.

In contrast, services such as air transport and food and beverage serving services have seen an increase. These divisions rely on consumers for a large portion of their sales; consequently, including consumer transactions has increased their relative importance in the SPPI.

6 . Reasons for movements in divisions between 2018 and 2019 chain-linking weights

Food and beverage services (division 56)

Food and beverage services has increased from a weight of 0.73 in 2018 to 9.78 in 2019 and become the highest weighted division. This is because in the 2014 to 2018 dataset, the turnover was adjusted by a ratio of 0.05, meaning that 95% of the turnover was removed as this was attributed to consumer transactions.

The Classification of Products by Activity (CPA) category most associated with business-to-business transactions is other food serving services (56.29). The business-to-business ratio can therefore be approximately benchmarked to the proportion of this CPA category to the total collected in the Annual Business Suvey (ABS) and Annual Survey of Goods and Services (ASGS). In ABS, other food servicing services is approximately 8%, and in the ASGS this is around 1% of the total sales for food and beverage services. The ratio used to adjust the data is therefore in line with the values returned from ABS and the ASGS.

Services of head offices, management consulting services (division 70)

For services of head offices, management consulting services, the weight has decreased from 11.99 in 2018 to 8.00 in 2019. This is because the value of the total Services Producer Price Index (SPPI) has increased, while consumer transactions make up a marginal proportion of division 70. The turnover value has not radically increased between 2018 and 2019, while the total turnover for the SPPI has seen a larger increase.

Legal and accounting services (division 69)

The weight of legal and accounting services has decreased between 2018 and 2019 from 12.70 to 9.00. This is because the value of the total SPPI has increased, while the amount of consumer transactions in legal services is relatively low at around 5% of the turnover value. In other words, the value of legal and accounting services has increased at a slower rate relative to the total increase of turnover within the SPPI.

Architectural and engineering services; technical testing and analysis (division 71)

Architectural and engineering services; technical testing and analysis has decreased from 8.55 in 2018 to 5.89 in 2019. This is because of the high proportion of turnover allocated to business and government transactions and steady growth, combined with a large increase in the total value of the SPPI.

Warehousing and support services for transportations (division 52)

The weight of warehousing and support services for transportations has decreased from 7.38 in 2018 to 4.93 in 2019. This is because the value of the total SPPI has increased and reduced the size overall for this division when considering consumer transactions in the total SPPI. This division had little capacity to increase as previously, almost all transactions measured were business-to-business.

Air transport services (division 51)

Air transport services has increased from 0.95 in 2018 to 3.57 in 2019 when consumer transactions are included. This indicates a large increase in overall turnover in the division. The business-to-business ratio used here was tailored to the CPA category using Department for Transport data. This meant that the business-to-business ratio for passenger transport (51.1) was around 0.18 and 1.00 for freight transport and space transport (51.2). Of these two categories, 51.2 is small in both ABS and the ASGS, being around 1% of the total air transport services. Consequently, the inclusion of non-business passengers has led to an increase in the total weight of the division.

Computer programming, consultancy and related services (division 62)

Computer programming, consultancy and related services has decreased from 5.40 in 2018 to 3.76. This is because the consumer element within this division is relatively low. As these transactions are counted in 2019, the weight for division 62 has decreased relative to the total SPPI.

7 . Authors

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