



Voorburg Task Force – Alignment of Methodology and Scope between Service Producer Price Indices (SPPIs) and Consumer Price Indices (CPIs)

Developing a framework for using CPIs in SPPI calculation

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Meeting
June 2022

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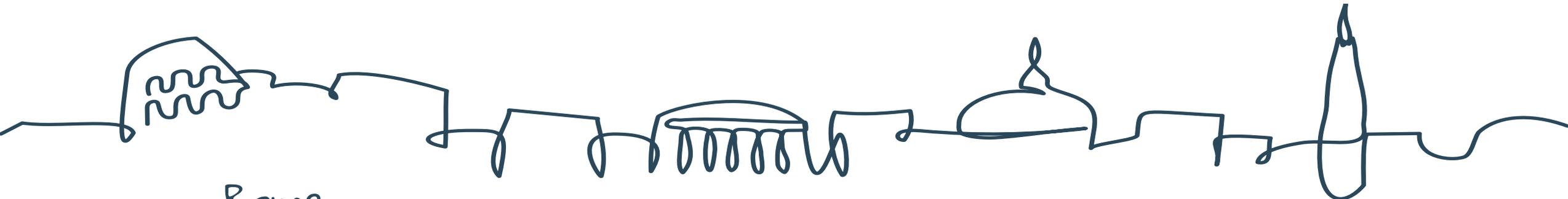
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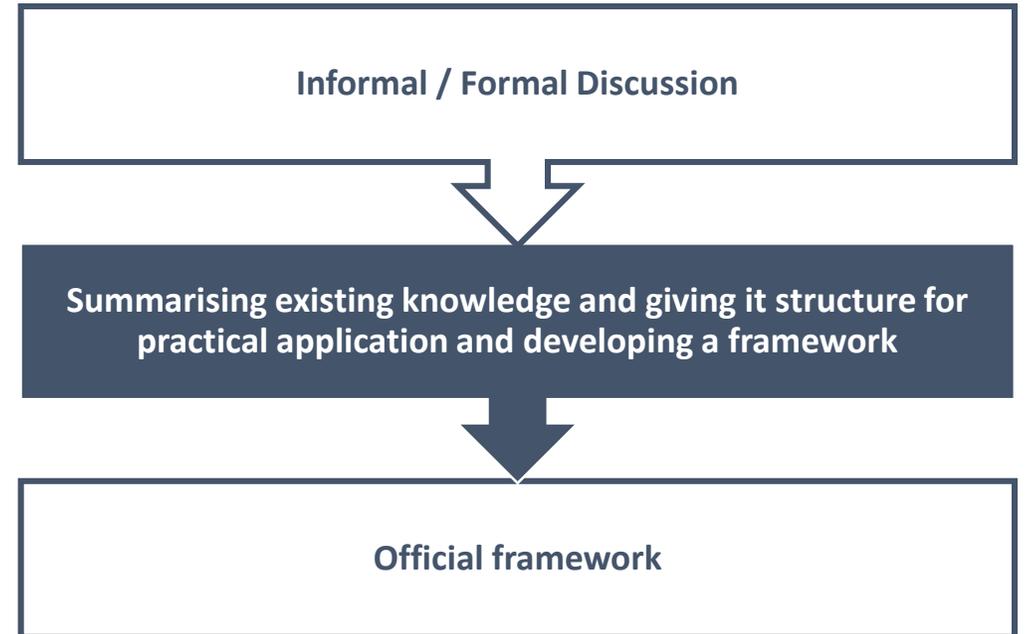
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Foreword

This Voorburg Group Task Force was formed with the mandate of improving knowledge regarding the utilization of CPIs as proxy and/or directly comparable replacements to SPPIs.

Official presentations on CPI usage in SPPIs have been made most recently at the 36th Voorburg Group meeting (2021), 34th Voorburg Group meeting (2019), 29th Voorburg Group meeting (2014) and via the second edition of the Eurostat-OECD Methodological Guide for Developing Producer Price Indices for Services (2014).

A formal framework, however, is yet to be officially established. The paper that this task force has developed takes a further important step in the establishment of such an official framework.





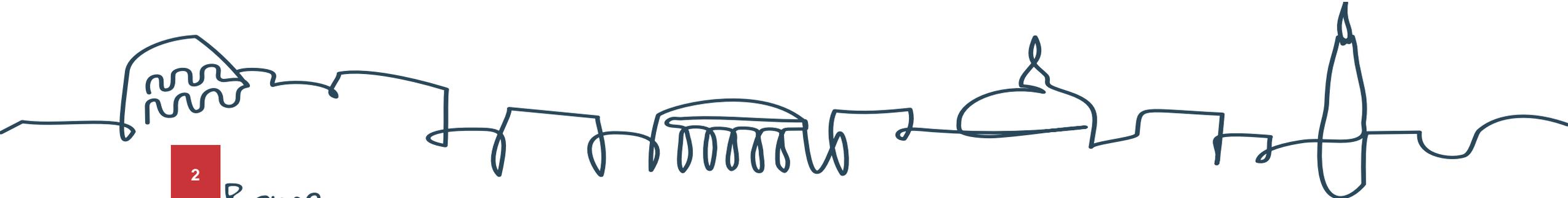
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Voorburg Task Force - A framework for using CPIs in SPPIs

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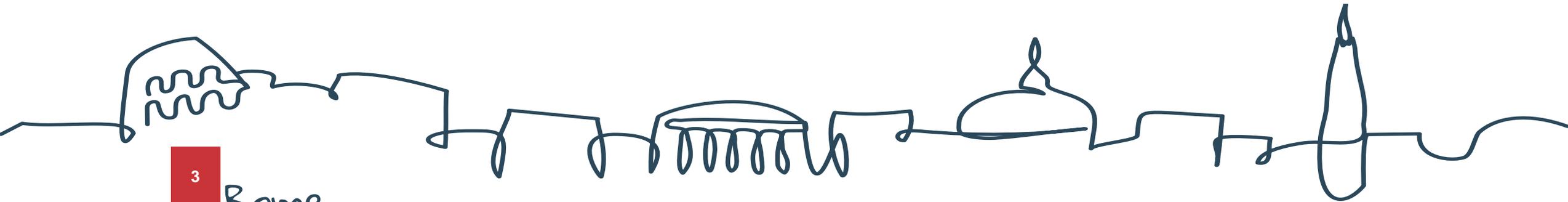
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Current Guidance

The rise in turnover and need for coverage of the service based economy whilst balancing limited organizational resources has led to some preliminary discussions at Voorburg and a basic level of advice in literature:

- The methodological guide for developing SPPIs does not provide any rules for how to use CPIs when compiling SPPIs but loosely communicates the concept of “collect once, use many times”
- The guide does not provide a systematic repeatable framework for assessing the feasibility and practical application of using CPIs as a proxy
- The guide advises to utilise CPIs where the vast share of output goes to household final demand which is only a limited “one dimensional” take on representativeness
- Supply / Use tables are colloquially discussed as a valuable data source for determination purposes but no practical experiences and/or framework provided for application





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Main Purpose and Valuation Principles

Basic price = the amount received by the producer from the purchaser plus any subsidies received on a product.

Producers' price = the amount received by the producer from the purchaser

Purchasers' price = the amount paid by the purchaser for the product

$$\begin{aligned}
 & \text{Basic prices (PPI)} \\
 & + \\
 & \text{Taxes on products excluding invoiced VAT} \\
 & - \\
 & \text{Subsidies on products} \\
 & = \\
 & \text{Producers' prices} \\
 & + \\
 & \text{VAT not deductible by the purchaser} \\
 & + \\
 & \text{Separately invoiced transport charges} \\
 & + \\
 & \text{Wholesalers' and retailers' margins} \\
 & = \\
 & \text{Purchasers' prices (CPI)}
 \end{aligned}$$

Diagram originates from
[System of National Accounts \(2008\)](#), Page 103 (§ 6.69)



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Voorburg Task Force - A framework for using CPIs in SPPIs International Trade

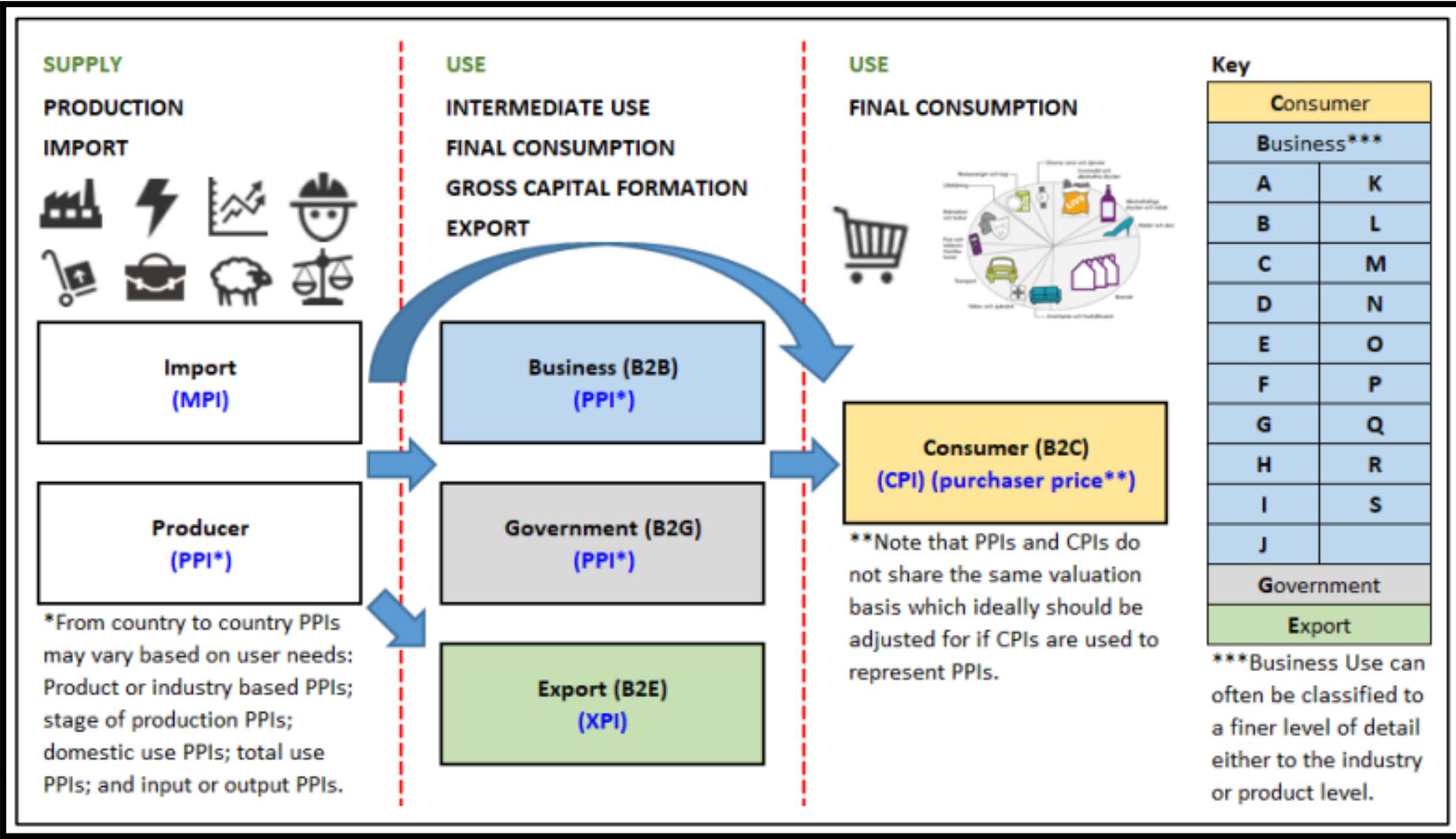


Diagram originates from R.Draper and M.Fridén (Statistics Sweden, 2019) – “SPPIs by customer sector – the Swedish experience” (34th Voorburg Meeting).



Voorburg Task Force - A framework for using CPIs in SPPIs Nomenclature (concordance) and Product vs Industry

- COICOP (CPI) vs ISIC (PPI) vs CPA (PPI)
- An excel file is available that attempts to define concordance between SPPIs and CPIs

- (1) **Match** - when the definitions of the two classifications are relatively close (8 CPA categories out of 129), especially for transport of passengers, services relating to dwellings, videogames, etc.;
- (2) **Proxy** - when the definitions of the two classifications partially overlapped (22 CPA categories out of 129);
- (3) **Proxy by aggregation of several CPIs** - with the question of the weightings of these CPIs which have to be used in order to estimate the evolution of a SPPI (20 CPA categories out of 129);
- (4) **Weak Proxy**, when the definitions of the two classifications are far from being close (16 CPA categories out of 129); and finally
- (5) **Weak Proxy by aggregation of several CPIs**, with only 11 CPA categories covered.



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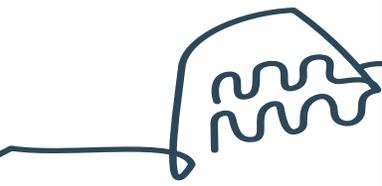
Voorburg Task Force - A framework for using CPIs in SPPIs Supply and Use Tables

Simple schematic of supply-use tables

Supply							
Products	Industries			Imports	Trade and transport margins	Taxes less subsidies on products	Total
	Agriculture	Industry	Services activities				
Agricultural products	Output by product and by industry at basic prices			Imports by product	Trade and transport margins by product	Taxes less subsidies on products by product	Total supply by product at purchasers' prices
Industrial products							
Services							
Total	Total output at basic prices by industry			Total imports	Total trade and transport margins	Total taxes less subsidies on products	Total Supply at purchasers' prices

Use							
Products	Industries			Final uses			Total
	Agriculture	Industry	Services activities	Final consumption	Gross capital formation	Exports	
Agricultural products	Intermediate consumption by product and by industry			Final uses by product and by category			Total use by product at purchasers' prices
Industrial products							
Services							
Value added	Value added by component and by industry, at basic prices						Value added
Total	Total output at basic prices by industry			Total final uses by category			

Diagram originates from OECD (2017) – "what role for supply use tables"
<http://oecdinsights.org/2017/06/05/statistical-insights-what-role-for-supply-use-tables/>





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This analysis is a starting point to assessing the feasibility of a CPI as a proxy for PPI. A quick checklist to consider when using SUTs for finding and utilizing CPI's as PPI Proxies:

- How detailed are your Supply-and-Use-tables, industry, service, 6-digit level?
- How homogenous are the given industry or service at the level of detail available to you?
- Is there a share of household consumption for a given service or industry that is deemed to be too high a risk for use as a broad-based proxy?
- How big are the export and import share of the revenue data in the SUT for the given industry or service?

SUPPLY	
Imports	I2ALL
USE ¹⁶	
Total Intermediate Use	B2B
Household final consumption expenditure	B2C
Government final consumption expenditure	B2G or B2B
Gross fixed capital formation	B2B
Exports	B2E



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Product (use)	Australia B2C	Australia B2E	Australia Import	Austria B2C	Austria B2E	Austria Import	Denmark B2C	Denmark B2E	Denmark Import	France B2C	France B2E	France Import
Electricity, gas, steam and air conditioning, bp	22%	0%	0%	15%	5%	5%	48%	10%	6%	31%	3%	0%
Water supply, sewerage, waste management and remediation services, bp	30%	0%	0%	1%	9%	17%	42%	7%	8%	24%	8%	4%
Natural water, water treatment and supply services, bp	48%	0%	0%	0%	0%	0%	64%	0%	0%	39%	0%	0%
Sewerage services, sewage sludge, waste collection & management serv., bp	4%	0%	0%	1%	10%	19%	39%	9%	9%	20%	10%	5%
Waste collection, treatment & disposal serv., materials recovery serv., bp	4%	0%	0%



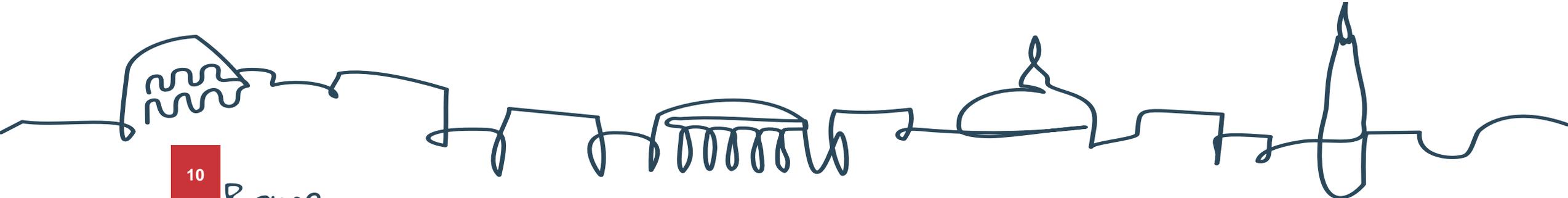
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“Blending” – Using CPIs in combination with traditional data source

Single-source Data Collection “Traditional”

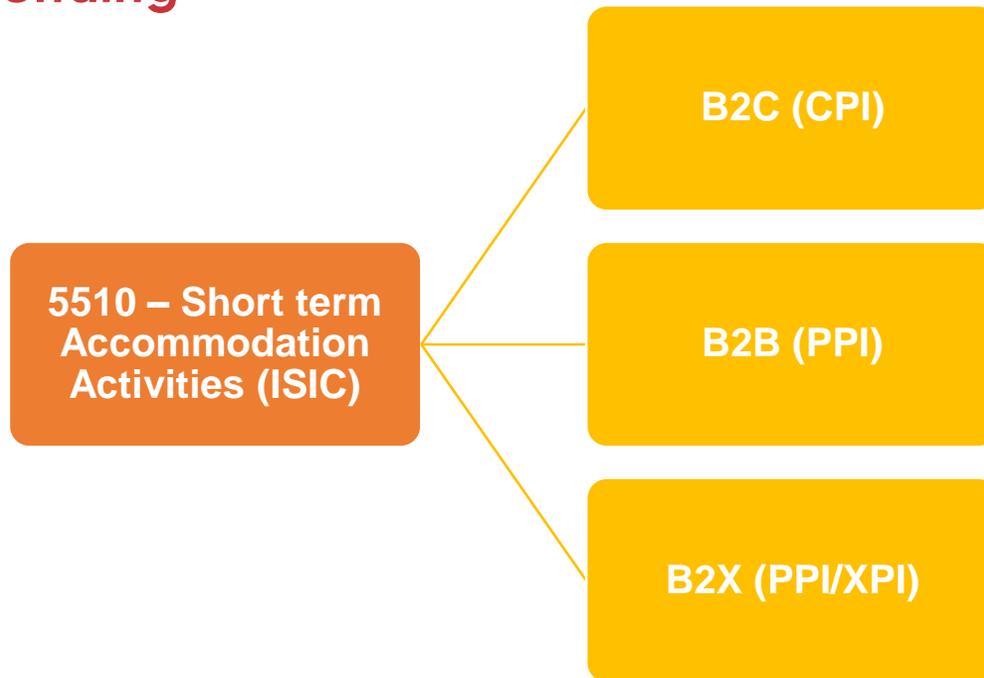


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“Blending” – Using CPIs in combination with traditional data source

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Multi-source Data Collection “Blending”



Checklist for fitness of CPI data:

- ✓ Valuation Principles
- ✓ International Trade Shares
- ✓ Nomenclature (concordance)
- ✓ Supply and Use (representativeness)



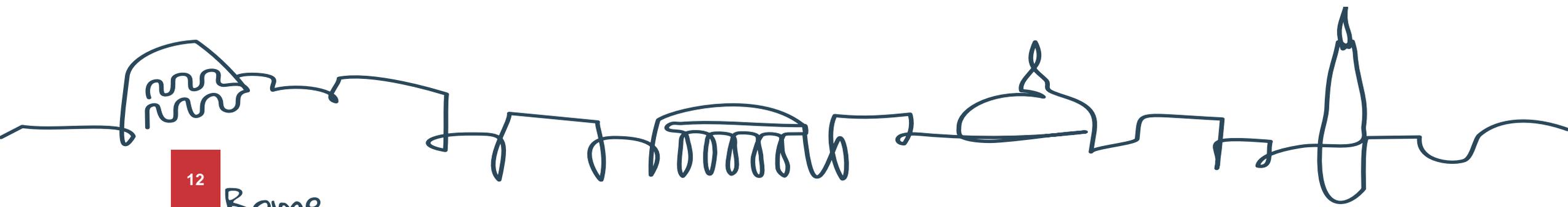
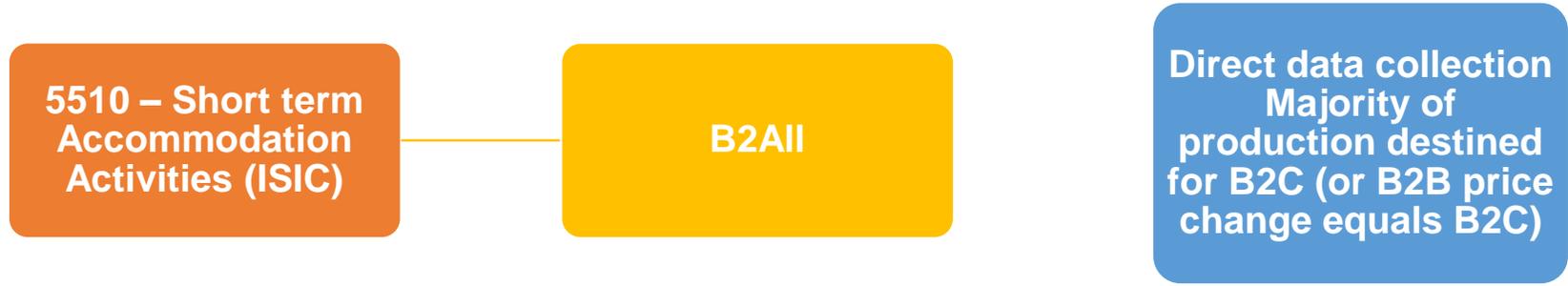
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"Blending" – Using CPIs in combination with traditional data source

Single Source Data Collection "Alternative Data"





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“Blending” – Using CPIs in combination with traditional data source

Multi-source Data Collection – A Practical approach to “Blending”

- Once appropriate PPI candidates have been identified for coverage by CPIs and CPIs have themselves been deemed fit-for-purpose, explicit weights may be constructed for their inclusion in the aggregation structure of the PPI.
- The paper proposes a potential practical way of blending the indices together. Predominantly, this is based on the proportion of B2C and B2B shares of output with the Supply-Use-tables (SUTs) providing the price statistician with a sensible starting point.
- SUTs generally hold the information needed to create weights for blending the data sources together, but there are a few steps needed to calculate the output shares. Just as the SUTs can be utilized to support determining suitability of CPIs as a proxy, the same calculation can be utilized to build a weighting structure.

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“Blending” – Using CPIs in combination with traditional data source

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When utilizing CPIs in the PPI some important factors are worth considering:

- **Communication** – the need for closer communication between the CPI and PPI teams to ensure large changes in methodology and/or price movements are discussed and considered.
- **Harmonization (general)** – general principles and their application, for example, pricing methods; quality adjustment; imputation and sampling should be well understood and harmonized where appropriate.
- **Harmonization (per period)** – ensuring that quality adjustment and imputation methods used in reaction to evolving phenomenon are compatible and retain fitness-for-purpose (for example, imputation needs and imputation application used during the recent pandemic).



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CPI frequency as an alternative data source for a particular 4-digit classification.

Class	Name	Frequency
H	Transportation and storage	
4911	Passenger rail transport, interurban	8
4912	Freight rail transport	1
4921	Urban and suburban passenger land transport	9
4922	Other passenger land transport	7
4923	Freight transport by road	2
5011	Sea and coastal passenger water transport	6
5021	Inland passenger water transport	1
5110	Passenger air transport	6
5221	Service activities incidental to land transportation	4
5310	Postal activities	3
5320	Courier activities	2
I	Accommodation and food service activities	
5510	Short term accommodation activities	7
5520	Camping grounds, recreational vehicle parks and trailer parks	4
5590	Other accommodation	2
5610	Restaurants and mobile food service activities	11
5621	Event catering	1
5629	Other food service activities	4
5630	Beverage serving activities	5
J	Information and communication	
5811	Book publishing	4
5813	Publishing of newspapers, journals and periodicals	5
5819	Other publishing activities	1
5820	Software publishing	1
5911	Motion picture, video and television programme production activities	2
5913	Motion picture, video and television programme distribution activities	1
5914	Motion picture projection activities	4
5920	Sound recording and music publishing activities	1
6020	Television programming and broadcasting activities	2
6110	Wired telecommunications activities	5
6120	Wireless telecommunications activities	3
6312	Web portals	1
6399	Other information service activities n.e.c.	1

N	Administrative and support service activities	
7710	Renting and leasing of motor vehicles	1
7722	Renting of video tapes and disks	1
7729	Renting and leasing of other personal and household goods	2
7740	Leasing of intellectual property and similar products, except copyrighted works	1
7911	Travel agency activities	2
7912	Tour operator activities	3
7990	Other reservation service and related activities	1
8121	General cleaning of buildings	1
8129	Other building and industrial cleaning activities	1
P	Education	
8510	Pre-primary and primary education	2
8521	General secondary education	2
8522	Technical and vocational secondary education	3
8530	Higher education	1
8541	Sports and recreation education	1
8542	Cultural education	1
8550	Educational support activities	1
R	Arts, entertainment and recreation	
9311	Operation of sports facilities	4
9312	Activities of sports clubs	2
9321	Activities of amusement parks and theme parks	1
9329	Other amusement and recreation activities n.e.c.	1
S	Other service activities	
9511	Repair of computers and peripheral equipment	1
9512	Repair of communication equipment	1
9521	Repair of consumer electronics	1
9522	Repair of household appliances and home and garden equipment	1
9523	Repair of footwear and leather goods	1
9601	Washing and (dry-) cleaning of textile and fur products	3
9602	Hairdressing and other beauty treatment	5
9603	Funeral and related activities	4
9609	Other personal service activities n.e.c.	2



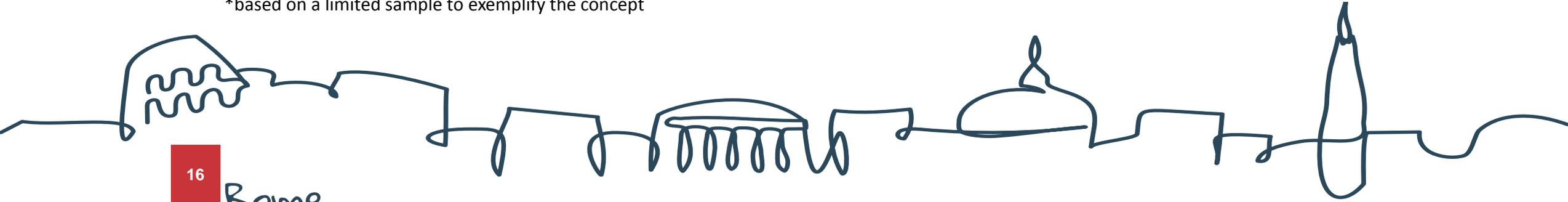
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Voorburg Task Force - A framework for using CPIs in SPPIs Prevalence of household consumption (B2C)*

Product (use)	Australia			Austria			Denmark			France		
	B2C	B2E	Import	B2C	B2E	Import	B2C	B2E	Import	B2C	B2E	Import
Total product at purchaser's prices	27%	9%	...	22%	20%	...	20%	23%	...	24%	13%	...
Total product at basic prices (bp)	26%	9%	10%	20%	21%	20%	17%	24%	21%	23%	14%	21%
Products of agriculture, forestry and fishing, bp	12%	17%	2%	20%	8%	31%	11%	34%	25%	19%	14%	15%
Products of agriculture, hunting and related services, bp	11%	17%	2%	22%	10%	33%	12%	34%	23%	19%	15%	14%
Products of forestry, logging and related services, bp	2%	10%	3%	14%	2%	24%	5%	8%	8%	22%	3%	4%
Fish and aquaculture products, support serv. to fishing, bp	32%	17%	3%	43%	3%	56%	4%	46%	45%	21%	14%	41%
Mining and quarrying, bp	2%	59%	7%	0%	7%	78%	4%	33%	30%	0%	5%	89%
Coal and lignite, bp	0%	92%	0%	...	...	...	...	...	...	...	...	...
Crude petroleum and natural gas, bp	10%	51%	20%	...	...	...	...	...	...	...	...	...
Metal ores, bp	0%	63%	6%	...	...	...	...	...	...	...	...	...
Other mining and quarrying products, bp	0%	16%	10%	...	...	...	...	...	...	...	...	...
Mining support services, bp	0%	1%	2%	...	...	...	...	...	...	...	...	...
Manufactured products, bp	26%	15%	42%	11%	42%	42%	10%	41%	44%	18%	31%	38%
Food, beverages and tobacco products, bp	47%	22%	20%	36%	35%	29%	21%	42%	32%	48%	17%	19%
Food products, bp	43%	23%	18%	...	...	...	...	...	...	...	...	...
Beverages, bp	66%	17%	27%	...	...	...	...	...	...	...	...	...
Textiles, wearing apparel, leather and related products, bp	58%	9%	81%	48%	32%	72%	25%	58%	83%	30%	37%	69%
Textiles, bp	34%	5%	58%	...	...	...	...	...	...	...	...	...
Wearing apparel, bp	79%	5%	95%	...	...	...	...	...	...	...	...	...
Leather and related products, bp	40%	22%	77%

*based on a limited sample to exemplify the concept





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Prevalence of household consumption (B2C)

Product (use)	Australia B2C	Australia B2E	Australia Import	Austria B2C	Austria B2E	Austria Import	Denmark B2C	Denmark B2E	Denmark Import	France B2C	France B2E	France Import
Accommodation and food services, bp	71%	12%	14%	77%	9%	6%	68%	2%	0%	71%	0%	0%
Accommodation services, bp	46%	32%	41%	...	...	...	...	...	...	...	...	...
Food and beverage serving services, bp	78%	6%	7%	...	...	...	...	...	...	...	...	...
Information and communication services, bp	17%	4%	7%	13%	18%	18%	14%	13%	18%	17%	9%	9%
Publishing services, bp	32%	10%	31%	29%	17%	35%	20%	19%	31%	32%	6%	8%
Audiovisual and broadcasting services, bp	16%	2%	12%	13%	10%	24%	16%	4%	9%	9%	10%	9%
Motion picture, video & TV programme production serv., etc., bp	15%	3%	24%	...	...	...	...	...	...	...	...	...
Programming and broadcasting services, bp	18%	2%	0%	...	...	...	...	...	...	...	...	...
Telecommunications services, bp	32%	3%	3%	36%	9%	9%	40%	7%	10%	37%	7%	7%
Computer programming, consultancy and related serv., Information serv., bp	6%	3%	3%	0%	23%	16%	1%	14%	17%	1%	11%	10%
Computer programming, consultancy and related services, bp	0%	4%	3%	...	...	...	...	...	...	...	...	...
Information services, bp	17%	2%	2%	...	...	...	...	...	...	...	...	...
Telecommunications services, bp	32%	3%	3%	36%	9%	9%	40%	7%	10%	37%	7%	7%
Computer programming, consultancy and related serv., Information serv., bp	6%	3%	3%	0%	23%	16%	1%	14%	17%	1%	11%	10%
Computer programming, consultancy and related services, bp	0%	4%	3%	...	...	...	...	...	...	...	...	...
Information services, bp	17%	2%	2%	...	...	...	...	...	...	...	...	...
Financial and insurance services, bp	35%	2%	2%	25%	11%	8%	36%	5%	4%	24%	6%	3%
Financial services, except insurance and pension funding, bp	29%	2%	1%	14%	13%	9%	32%	5%	3%	11%	9%	4%
Insurance, reinsurance & pension funding services, exc. compulsory S.S., bp	83%	1%	1%	58%	11%	9%	66%	5%	6%	66%	4%	2%
Services auxiliary to financial services and insurance services, bp	6%	2%	2%	9%	3%	2%	15%	6%	7%	0%	0%	0%
Real estate services, bp	64%	1%	0%	62%	0%	0%	73%	0%	0%	73%	0%	0%
Imputed rents of owner-occupied dwellings, bp	98%	1%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%
Real estate services excluding imputed rents, bp	0%	0%	0%	32%	0%	1%	52%	0%	0%	39%	0%	0%



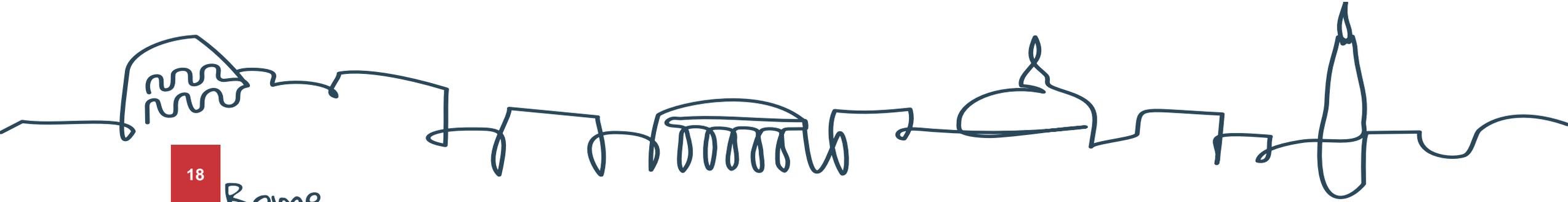
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Prevalence of household consumption (B2C)

Product (use)	Australia B2C	Australia B2E	Australia Import	Austria B2C	Austria B2E	Austria Import	Denmark B2C	Denmark B2E	Denmark Import	France B2C	France B2E	France Import
Arts, entertainment and recreation services, bp	57%	4%	5%	60%	6%	6%	45%	1%	6%	34%	3%	1%
Creative, arts, entmnt, library, museum, other cult. serv., gambling, bp	60%	3%	6%	55%	8%	9%	46%	1%	9%	38%	5%	3%
Creative, arts and entertainment services, bp	17%	3%	4%	...	...	...	...	...	...	...	...	...
Gambling and betting services, bp	92%	4%	7%	...	...	...	...	...	...	...	...	...
Sporting services and amusement and recreation services, bp	54%	4%	5%	71%	2%	1%	42%	1%	0%	29%	0%	0%
Other services, bp	83%	1%	1%	40%	0%	1%	30%	1%	10%	37%	6%	5%
Services furnished by membership organisations, bp	...	...	...	3%	0%	0%	12%	1%	0%	0%	0%	0%
Repair services of computers and personal and household goods, bp	...	...	...	27%	1%	2%	100%	0%	0%	44%	0%	0%
Other personal services, bp	83%	1%	1%	84%	0%	1%	54%	0%	27%	64%	14%	12%
Services of HH as employers, undif. G&S prod. by HH for own use, bp	...	...	...	100%	0%	0%	6%	0%	0%	88%	0%	0%
Services provided by extraterritorial organisations and bodies, bp
Taxes less subsidies on products	58%	0%	...	65%	1%	...	59%	0%	...	58%	0%	...





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Conclusion

A framework for assessing the feasibility of CPI utilisation in SPPIs should include (but is not limited to) the following aspects:

- Main purpose
- Valuation Principles
- International Trade
- Nomenclature (concordance)
- Product vs Industry
- Supply and Use Tables (practical analysis)

Beyond these aspects there are of course other operational differences in the practical application of, for example: aggregation rules; quality adjustment; imputation methods; different methods of measuring intermediate services, such as banking and insurance services, and coverage of personal consumption components that are not directly paid by the consumer but by a third party.

- Communication / harmonization strategy

This paper sets the foundations from which more studies and analysis on the implication of using CPIs as a proxy for SPPIs can be done and an official ratified framework developed.

