



08 Nov 2018

## Classifications: Broad Economic Categories

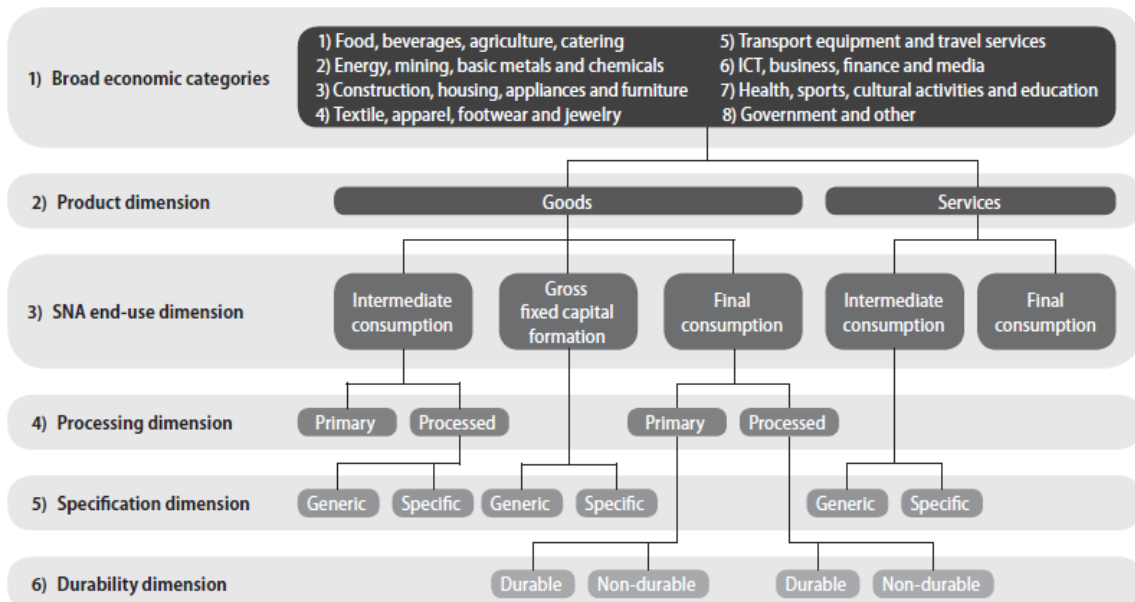
Progress on Establishing Correlations

Note by UNSD

### Background

1. The fifth revision of BEC was endorsed by UN Statistical Commission in 2016. This revision (BEC 5) is defined in terms of HS 2012 sub-headings and CPC 2.1 classes for goods and services, respectively. It differs than BEC 4 due to addition of services, redesigned top level of broad economies and new variables (specification dimension). See illustration below (Figure 1).

Figure 1. Illustration of BEC 5 structure.



2. With its adoption, focus has now shifted to finalizing the correspondence tables between BEC 5 and HS/ CPC/ EBOPS /ISIC. Those correspondence tables will be posted on the website of UNSD as soon as possible; starting with correlations between BEC 5 and HS 2017.
3. The primary objective of establishing correlations (or relationships) between HS/CPC/EBOPS and BEC/ISIC is to facilitate data conversion from primary classifications which are used to collect and compile basic data, thus reducing burden (rather than collect data in BEC). UNSD maintains correlations among trade related classifications<sup>1</sup>.

### Principles

4. The principle of predominant **use of a goods** (or services) can be used when establishing correlations between BEC and other classifications. See Box 1 below for an example.

Box 1. An example of considerations to assign a specific product to a BEC 5 category

A tractor is predominantly a capital investment in the agriculture sector. It is not predominantly used as a personal vehicle. Therefore, the tractor would be allocated as (1) agriculture, (2) goods, (3) capital goods, (4) --, and (5) generic. Parts of a tractor would however be allocated as (1) transport, (2) goods, (3) intermediate goods, (4) processed, (5) specific, and (6) durable. Some parts could probably be generic.

Dual use goods such as passenger motor cars are used extensively both for industry and for household consumption. Therefore, they could be allocated as (1) transport, (2) goods, (3) final or capital goods, (4) processed, (5) generic or specific, and (6) durable or non-durable. The proportion of dual use depends on national circumstances.

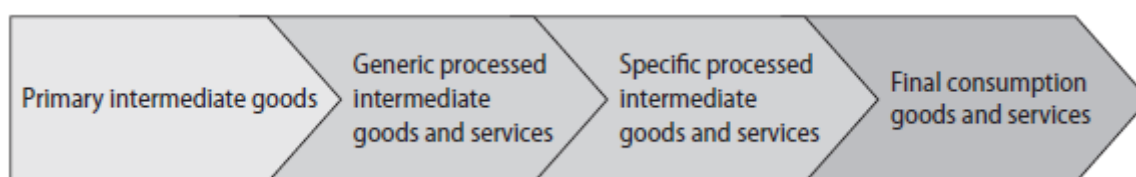
- a. 1st LEVEL (BEC dimension): Map HS sub-headings and CPC classes to the first top level of broad economic categories. Because a basis for the construction of those main economic classes is ISIC, then we need to decide whether to consider a goods or services as input or output to specific industries. For example, a computer is an output of ICT industry; but it can be used as input to any industries (or depends on what kind of computers). This implies whether we need to establish different correlations between imports and exports.
- b. 2nd LEVEL (Product dimension): There is no need for much work here. Goods and services are quite distinct and there are existing guidelines on how to classify them.
- c. 3rd LEVEL (End-use dimension): Even though, this may be challenging, but for goods, we can reuse (and review) existing correlations between BEC 4 and

<sup>1</sup> <https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>

HS 2012<sup>2</sup>. On the contrary, for services, we may need to reach out to experts. In addition, some goods, such as personal vehicle, can have dual use, namely as capital good and as final consumption good (or gasoline – as intermediate and final consumption). They need to be flagged and given a footnote, which indicates that the proportion of dual use should be determined at national level.

- d. 4th LEVEL (Processing dimension): Similar with 3rd level, for goods, we can refer to existing correlations between BEC 4 and HS 2012. Note: this level is not applicable for services.
- e. 5th LEVEL (Specification dimension): This is new dimension, therefore requires more research to establish correlations. The idea is to identify position (downstream/upstream) of goods/services within value-added chain (see illustration below, Figure 1). We would rely on industry experts and existing literatures. This is to be done case-by-case basis (and the problem is that HS categories may not be detailed enough).

Figure 1. BEC Rev.5, value-added chain



- f. 6<sup>th</sup> LEVEL (Durability dimension): Similar with 3<sup>rd</sup> and 4<sup>th</sup> levels, we can reuse existing correlations between BEC 4 and HS 2012 for goods. This dimension is not applicable for services.
5. Apparently, the main analytical use of the classification is to understand the predominant use of a goods (or services), entailing that the main consideration is the use of (or services), or as inputs to the economic activities. That is, correlations based on the principle of output can be considered alternative or secondary.

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<sup>2</sup> <https://unstats.un.org/unsd/trade/HS2007-BEC%20-%20Explanatory%20Note.pdf>

## Methodology or Mechanics of Establishing Correlations

6. Several tools or draft documents are already available. See Box 2 below for available draft working files.

### Box 2. Available working data files

- Draft correspondences between BEC 5 and HS 2012 / EBOPS 2010 developed during the drafting of BEC 5 manual
- Existing correspondences between BEC 4 and HS at 4-digit and 6-digit levels to ISIC v.3, ISIC v.4.0, CPC v.1.1, GTAP and BEC End-Use with possible breakdown among intermediate, consumption and capital (no HS 2017) developed by OECD and USITC
- Existing correspondences between BEC 4 and HS 2017 and earlier HS editions developed by UNSD

### BEC 4 to other classifications (including HS 2017)

7. We started by comparing existing BEC 4 correlations with other classifications developed separately by OECD/USITC and UNSD. The discrepancies were identified and analysed. In July 2018, we shared the file containing discrepancy of 80 HS codes (each sub-heading HS codes to be classified to primary or processed goods) with WCO requesting their feedback.
8. Applying UNSD correlation tables between BEC 4 and HS 2017 and HS 2012 and HS 2017, we complemented OECD/USITC table with HS 2017 codes. The output file is called OECD/USITC/UNSD table. Even though, most of HS 2017 codes correlations could be derived from HS 2012 codes with following rules:
  - f. Keep pre-defined correlations of 1-to-1, n-to-1, and n-to-n (with retained codes) relationships between HS 2017 and HS 2012
  - g. The rest would be done manually based on description of similar HS codes And the other HS 2017 codes are to be correlated manually (by comparing with existing correlations with similar descriptions). All records added by UNSD are flagged accordingly.

### BEC 5 to other classifications.

9. Undertake manual verification on draft correspondences between BEC 5 and HS 2012 / CPC. For verification, we followed the following procedures (HS 2012):
  - a. Review existing draft and compare SNA end-use dimension with BEC 4. Adjustment was made if necessary. To the extent possible, possible dual end-use was identified and then necessary correspondence was added.

- b. Review and adjust the processing and durability dimension (Primary vs. Processed) taking into account the definition from original formulation of BEC<sup>3</sup>. See also description on BEC 5 paras 3.10-3.11 and 3.17-3.18
- c. Review and adjust the specification dimension following guidelines from BEC 5 paras 3.12-3.16. Further, we also crossed check the result against *existing* some GVC definition lists<sup>4</sup> consisting of automobile, textile, apparel, footwear and electronic.
- d. Finally, to the extent possible, corresponding BEC 5 codes were designated at the most detailed level. If not, then the next higher-level code would be selected (i.e., if specification dimension cannot be determined, then it would be marked “GEN/SPEC”).

Table 1. Summary correspondence between HS 2012 and BEC 5

BEC 5 Dimension				
End Use	Processing	Specification	Durability	No of HS codes
CAP		GEN/SPEC		96
CAP		GENERIC		344
CAP		SPECIFIC		191
CAP/CONS		GENERIC		7
CAP/CONS		SPECIFIC		9
CAP/INT		GENERIC		28
CAP/INT		SPECIFIC		6
CONS	PRIMARY		DURABLE	1
CONS	PRIMARY		NON-DURABLE	557
CONS	PROCESSED		DURABLE	532
CONS	PROCESSED		NON-DURABLE	109
CONS/CAP	PROCESSED		DURABLE	66
CONS/INT	PRIMARY		NON-DURABLE	25
CONS/INT	PROCESSED		DURABLE	80
CONS/INT	PROCESSED		NON-DURABLE	14
INT	PRIMARY			337
INT	PROCESSED	GEN/SPEC		27
INT	PROCESSED	GENERIC		1087
INT	PROCESSED	SPECIFIC		1572
INT/CAP	PROCESSED	SPECIFIC		10
INT/CONS	PRIMARY			4
INT/CONS	PROCESSED	GEN/SPEC		1
INT/CONS	PROCESSED	GENERIC		34
INT/CONS	PROCESSED	SPECIFIC		66

<sup>3</sup> See E/CN.3/408 (1970).

<sup>4</sup> <https://public.tableau.com/profile/uncomtrade#!/vizhome/GVC-ApparelElectronicsFootwareVehicles/Dashboard1>

10. As for CPC/EBOPS, the verification task focused on ensuring that the right BEC description matches description of CPC/EBOPS. The processing and durability dimensions are not applicable on services, therefore, there are only three codes relevant to services: 1) Services – Intermediate Consumption – Generic; 2) Services – Intermediate Consumption – Specific; and 3) Services – Final Consumption. Unfortunately, CPC codes are not detailed enough to identify specification dimension, therefore, we can only make correspondence up to SNA end-use dimension (3<sup>rd</sup> level).

Table 2. Summary correspondence between CPC 2.1 and BEC 5

End Use	No of CPC codes
<b>CONS</b>	122
<b>INT</b>	167

11. Finally, by applying existing correspondence table between HS 2012 and 2017<sup>5</sup>, we derived correlation between HS 2017 and BEC 5.

### Trade Data in BEC 5

12. One way to clarify the correspondence is to apply it with trade data. In this regard, imports data of USA, UK, China, Germany and France from 2012 to 2016 were utilized to create comparison of end-use category between BEC 4<sup>6</sup> and BEC 5. There are no differences in intermediate goods; slight differences in capital goods; and relatively large differences in consumption goods. This may be due to limitation of conversion from HS to BEC 4 which allocates some trade to NES (see that the value of NES in BEC 4 is -much more- than BEC 5).

Table 3. Imports of USA, UK, China, Germany and France in BEC 4 and 5, 2012-2016

BEC Version	End-use	processing	specification	durability	2012-2016 (avg)
5	CAP		GEN/SPEC		194,867,025,217
5	CAP		GENERIC		199,909,091,767
5	CAP		SPECIFIC		552,954,593,598
<b>CAP BEC 5</b>					<b>947,730,710,582</b>
<b>CAP BEC 4</b>					<b>1,027,700,027,453</b>
					-8%
5	CONS	PRIMARY		DURABLE	54,061,446
5	CONS	PRIMARY		NON-DURABLE	568,485,535,686
5	CONS	PROCESSED		DURABLE	1,086,917,528,258
5	CONS	PROCESSED		NON-DURABLE	80,330,176,393
<b>CONS BEC 5</b>					<b>1,735,787,301,784</b>
<b>CONS BEC 4</b>					<b>1,330,591,157,664</b>
					29%
5	INT	PRIMARY			836,909,600,000

<sup>5</sup> <https://unstats.un.org/unsd/trade/classifications/correspondence-tables.asp>

<sup>6</sup> <https://unstats.un.org/unsd/tradekb/Knowledgebase/50090/Intermediate-Goods-in-Trade-Statistics>

5	INT	PROCESSED	GEN/SPEC		130,101,800,000
5	INT	PROCESSED	GENERIC		880,078,400,000
5	INT	PROCESSED	SPECIFIC		1,812,792,000,000
INT BEC 5					3,659,881,800,000
INT BEC 4					3,646,880,000,000
					2%
5	NES				211,714,600,000
4	NES				542,732,168,572
TOTAL					6,547,903,353,689

Source: UN Comtrade

13. Looking at broad economic categories (1<sup>st</sup> level) broken down by end-use, processing, specification and durability dimensions, it shows that high values of specialized intermediate goods are concentrated in BEC broad economic categories 5 and 6 which implies GVCs automobile and electronics, respectively. The largest value in broad economic category 2 is primary fuels which is basically a crude oil. And in processed final consumption, the broad economic categories 4 and 5 are quite significant.

Table 4. Imports of USA, UK, China, Germany and France in BEC 5 – Broad Economic Categories, 2012-2016

Category	Enduse / Processing / Specification / Durability											
	PRIMA..	INT			CAP			CONS				NES
		PROCESSED						PRIMARY		PROCESSED		
	GEN/SP..	GENERIC	SPECIFIC	GEN/SP..	GENERIC	SPECIFIC	DURAB..	NON-D..	DURAB..	NON-D..		
1.Agriculture, forestry, fishing, food, beverages, toba..	118B	94B	2B		27B				236B	1B	62B	
2.Mining, quarrying, refinery, fuels, chemicals, electri..	692B	192B	244B	17B	84B	26B		285B	0B	7B		
3.Construction, wood, glass, stone, basic metals, hous..	17B	84B	278B	312B	104B	57B	33B	13B	149B	1B		
4.Textile, apparel, shoes	10B		172B	41B		9B	0B	0B	276B	8B		
5.Transport equipment and services, travel, postal ser..	0B	46B	121B	416B	15B	14B	142B		365B			
6.ICT, media, computers, business and financial servic..			11B	500B	0B	6B	277B		0B	185B	1B	
7.Health, pharmaceuticals, education, cultural, sport	0B		2B	294B	58B	3B	71B		33B	111B	1B	
8.Government, military and other			4B	3B			4B		0B	1B	1B	

## Way forward

14. We plan to conduct consultation in period November – December 2018 to gather feedback. When the resulting correlations are reviewed and verified; then we will publish it to UNSD website.

15. We expect the work to be completed by the end of 2018.