

ICP 2021 | LAC Technical Meeting

Validation of Household Consumption Expenditure Prices

QUARANTA TABLE

REVIEW OF MAIN ASPECTS FOR INTER-COUNTRY VALIDATION

Quaranta Table – Context

Data validation stages of ICP price data



Quaranta Table – Intro

- Quaranta Table (QT) is the most common **validation tool** used at the regional and global validation stages for assessing the reliability of average prices reported by countries and the PPPs they produce.
- It was named after **Vincenzo Quaranta**, who first proposed its use in the European PPP program in 1990.
- Unlike the national validation stage, the regional and global validation stages require screening **prices reported in different currencies** for possible errors and examining the reliability of **PPPs**.
- The **QT helps streamline the regional (or global) validation process** by enabling the systematic comparison of (a) average prices across countries for each basic heading and (b) basic heading PPPs across countries, and (c) item- and basic heading-level price dispersion.

Quaranta Table – Layout

A QT is produced for each basic heading in the survey and consists of two inter-connected tables: (1) a basic heading table for the basic heading as a whole and (2) an item table for each item within the basic heading.

Example of QT for Basic Heading A

142XXXX Basic Heading A							Av.Weight: 1		No.of It.: 3				
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,									Var.Coef. (%): 26.3				
XR	PPP	PLI (%)	Weight/	No. of	Var.	XR	PPP	PLI (%)	Weight/	No. of	Var.		
'NC/BC'	'NC/CUP'	PPP/XR	100000	Items	Coef.	'NC/BC'	'NC/CUP'	PPP/XR	100000	Items	Coef.		
Country 1	45.340	55.000	59.2	1.0	2: *2	1.0	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)												T/R=[24: *15]		Var.Co.: 29.1	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-in	Wn	CUP-price	CUP-in	Wn	Remarks					
GM =>				1.61		GM=>	1.60								
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98							
Country 2	7.02 *	129	42.9	>	1.28	80	1.51	95							
Country 3	1.40 *	18	6.7	1.40	87		1.42	89							
Country 4	1.20 *	165	13.9	1.20	75		1.37	86							
Country 5	28.70 *	1	0.0	1.19	74		1.22	76							
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>						

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)												T/R=[19: *14]		Var.Co.: 14.0	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-in	Wn	CUP-price	CUP-in	Wn	Remarks					
GM =>				1.30		GM=>	1.41								
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100							
Country 2	8.02 *	18	18.8	1.16	89		1.37	97							
Country 3	5.26 *	54	13.9	0.96	74		1.13	80							
Country 4	73.26 *	166	5.5	1.26	97		1.33	94							
Country 5	1.03 *	24	17.3	1.03	79		1.04	74							
Country 6	1.41 *	162	13.3	1.41	108		1.61	114							

3 1XXXXXXX - Item 3 / Product 3 (ref.Q = 1 Kilogram)												T/R=[22: *4]		Var.Co.: 35.9	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-in	Wn	CUP-price	CUP-in	Wn	Remarks					
GM =>				6.64		GM=>	6.23								
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>						
Country 2	525.84	19	9.8	9.06	136		9.55	153	>						
Country 3	7.77	3	22.2	7.77	117		7.89	127							
Country 4	211.36 *	1	0.0	8.78	132		8.99	144							
Country 5	8.81	1	0.0	8.81	133		7.18	115							
Country 6	25.90	8	1.2	7.08	107		8.32	133							

BASIC HEADING TABLE

ITEM TABLES

Quaranta Table – Diagnostics

The two types of diagnostics produced by the QT are (1) **measures to compare average prices** (PLIs, XR/PPP-converted prices, XR/PPP-based indices) and...

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XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.
Country 1	45.340	59.2	1.0	2: *2	1.0	Country 4	1.3500	115.4	1.0	3: *2	6.7
Country 2	3.2100	85.0	1.0	3: *3	1.2	Country 5	1.0000	195.0	1.0	3: *3	50.1
Country 3	4.2300	84.7	1.0	3: *2	43.1	Country 6	1.0000	0.0	1.0	0: *0	0.0

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)		T/R=[24: *15]		Var.Co.: 29.1						
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
			GM =>	1.61		GM=>	1.60			
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98		
Country 2	7.02 *	129	42.9	1.28	80		1.51	95		
Country 3	1.40 *	18	6.7	1.40	87		1.42	89		
Country 4	1.20 *	165	13.9	1.20	75		1.37	86		
Country 5	28.70 *	1	0.0	1.19	74		1.22	76		
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>	

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)		T/R=[19: *14]		Var.Co.: 14.0						
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
			GM =>	1.30		GM=>	1.41			
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100		
Country 2	8.02 *	18	18.8	1.16	89		1.37	97		
Country 3	5.26 *	54	13.9	0.96	74		1.13	80		
Country 4	73.26 *	166	5.5	1.26	97		1.33	94		
Country 5	1.03 *	24	17.3	1.03	79		1.04	74		
Country 6	1.41 *	162	13.3	1.41	108		1.61	114		

3 1XXXXXXX - Item 3 / Producto 3 (ref.Q = 1 Kilogram)		T/R=[22: *4]		Var.Co.: 35.9						
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
			GM =>	6.64		GM=>	6.23			
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>	
Country 2	525.84	19	9.8	9.06	136		9.55	153	>	
Country 3	7.77	3	22.2	7.77	117		7.89	127		
Country 4	211.36 *	1	0.0	8.78	132		8.99	144		
Country 5	8.81	1	0.0	8.81	133		7.18	115		
Country 6	25.90	8	1.2	7.08	107		8.32	133		

Quaranta Table – Diagnostics (cont.)

..and (2) **measures of price variation** to assess item- and basic heading-level price dispersion (basic heading, country, item and price observation variation coefficients, or CVs).

Example of QT for Basic Heading A

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CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,										Var.Coef. (%): 26.3			
	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	
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Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

Note: the *coefficient of variation* or CV is the key metric to measure price variation in the QT.

$$CV = \frac{\sigma}{\mu}$$

CV is a measure of relative variability. It is the ratio of the standard deviation to the unweighted arithmetic mean (regular average).

1 1XXXXXXX - Item 1/ Producto 1 (ref.Q = 1 Kilogram)										T/R=[24: *15]	Var.Co.: 29.1
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
				GM =>	1.61		GM=>	1.60			
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Country 3	1.40 *	18	6.7		1.40	87		1.42	89		
Country 4	1.20 *	165	13.9		1.20	75		1.37	86		
Country 5	28.70 *	1	0.0		1.19	74		1.22	76		
Country 6	3.65	2	4.4		3.65	227	>	2.98	186	>	

2 1XXXXXXX - Item 2/ Producto 2 (ref.Q = 1 Kilogram)										T/R=[19: *14]	Var.Co.: 14.0
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
				GM =>	1.30		GM=>	1.41			
Country 1	75.43 *	1	0.0		0.83	64	<	1.41	100		
Country 2	8.02 *	18	18.8		1.16	89		1.37	97		
Country 3	5.26 *	54	13.9		0.96	74		1.13	80		
Country 4	73.26 *	166	5.5		1.26	97		1.33	94		
Country 5	1.03 *	24	17.3		1.03	79		1.04	74		
Country 6	1.41 *	162	13.3		1.41	108		1.61	114		

3 1XXXXXXX - Item 3/ Producto 3 (ref.Q = 1 Kilogram)										T/R=[22: *4]	Var.Co.: 35.9
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks
				GM =>	6.64		GM=>	6.23			
Country 1	58.23	78	20.4		10.64	160	>	12.56	201	>	
Country 2	525.84	19	9.8		9.06	136		9.55	153	>	
Country 3	7.77	3	22.2		7.77	117		7.89	127		
Country 4	211.36 *	1	0.0		8.78	132		8.99	144		
Country 5	8.81	1	0.0		8.81	133		7.18	115		
Country 6	25.90	8	1.2		7.08	107		8.32	133		

Quaranta Table – How to interpret (1/7)

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Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

Price level index (PLI) = PPP/XR

Useful to compare the price level of a country's basic heading against that of another country, or a group of countries.

PPP being used is the 'basic heading' PPP.

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)										T/R=[24: *15]		Var.Co.: 29.1	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	1.61		GM=>	1.60						
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98					
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Country 3	1.40 *	18	6.7	1.40	87		1.42	89					
Country 4	1.20 *	165	13.9	1.20	75		1.37	86					
Country 5	28.70 *	1	0.0	1.19	74		1.22	76					
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>				

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)										T/R=[19: *14]		Var.Co.: 14.0	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	1.30		GM=>	1.41						
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100					
Country 2	8.02 *	18	18.8	1.16	89		1.37	97					
Country 3	5.26 *	54	13.9	0.96	74		1.13	80					
Country 4	73.26 *	166	5.5	1.26	97		1.33	94					
Country 5	1.03 *	24	17.3	1.03	79		1.04	74					
Country 6	1.41 *	162	13.3	1.41	108		1.61	114					

3 1XXXXXXX - Item 3 / Product 3 (ref.Q = 1 Kilogram)										T/R=[22: *4]		Var.Co.: 35.9	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	6.64		GM=>	6.23						
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>				
Country 2	525.84	19	9.8	9.06	136		9.55	153	>				
Country 3	7.77	3	22.2	7.77	117		7.89	127					
Country 4	211.36 *	1	0.0	8.78	132		8.99	144					
Country 5	8.81	1	0.0	8.81	133		7.18	115					
Country 6	25.90	8	1.2	7.08	107		8.32	133					

Quaranta Table – How to interpret (2/7)

Example of QT for Basic Heading A

142XXXX Basic Heading A							Av.Weight: 1	No.of It.: 3					
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,							Var.Coeff. (%): 26.3						
XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.		
Country 1	45.340	55.000	59.2	1.0	2: *2	1.0	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

GM = geomean of item prices at XR

XR price = item price/XR

XR Index = (item price at XR /GM) * 100

1 1XXXXXXX - Item 1/ Producto 1 (ref.Q = 1 Kilogram)											T/R=[24: *15]	Var.Co.: 29.1
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	1.61		GM=>	1.60					
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Country 4	1.20 *	165	13.9	1.20	75		1.37	86				
Country 5	28.70 *	1	0.0	1.19	74		1.22	76				
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>			

The XR Index indicates the extent to which XR-adjusted prices for the same item varies across countries.

2 1XXXXXXX - Item 2/ Producto 2 (ref.Q = 1 Kilogram)											T/R=[19: *14]	Var.Co.: 14.0
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	1.30		GM=>	1.41					
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100				
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Country 4	73.26 *	166	5.5	1.26	97		1.33	94				
Country 5	1.03 *	24	17.3	1.03	79		1.04	74				
Country 6	1.41 *	162	13.3	1.41	108		1.61	114				

Recall that XR don't fully account for differences in national price levels! (That's why we need PPPs.)

3 1XXXXXXX - Item 3/ Product 3 (ref.Q = 1 Kilogram)											T/R=[22: *4]	Var.Co.: 35.9
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	6.64		GM=>	6.23					
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Country 3	7.77	3	22.2	7.77	117		7.89	127				
Country 4	211.36 *	1	0.0	8.78	132		8.99	144				
Country 5	8.81	1	0.0	8.81	133		7.18	115				
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Quaranta Table – How to interpret (3/7)

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Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)										T/R=[24: *15]		Var.Co.: 29.1	
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Country 5	28.70 *	1	0.0	1.19	74		1.22	76					
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>				

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)										T/R=[19: *14]		Var.Co.: 14.0	
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
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Country 6	1.41 *	162	13.3	1.41	108		1.61	114					

3 1XXXXXXX - Item 3 / Product 3 (ref.Q = 1 Kilogram)										T/R=[22: *4]		Var.Co.: 35.9	
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GM =
geomean of item prices at PPP

CUP price (or PPP price) =
item price/PPP

CUP Index (or PPP ratio) =
(item price at PPP /GM) * 100

The CUP Index (or PPP ratio) indicates the extent to which PPP adjusted prices for the same item varies across countries. That is, even after adjusting for differences in national price levels via PPPs.

Quaranta Table – How to interpret (4/7)

Example of QT for Basic Heading A

142XXXX Basic Heading A						Av.Weight: 1		No.of It.: 3					
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,								Var.Coeff. (%): 26.3					
XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.		
Country 1	45.340	55.000	59.2	1.0	2: *2	1.0	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

Price observation variation coefficient

Measured using a *coefficient of variation (CV)*—the ratio of the standard deviation of price obs. within the country to the mean of these prices.

This value is calculated based on data available at the national validation stage; only one country's data is needed for it.

The higher the CV the more dispersion in the prices of a given item within a country.

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)											T/R=[24: *15]	Var.Co.: 29.1
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
				GM =>	1.61		GM=>	1.60				
Country 1	83.85 *	1	0.0		0.93	58	<	1.56	98			
Country 2	7.02 *	129	42.9	>	1.28	80		1.51	95			
Country 3	1.40 *	18	6.7		1.40	87		1.42	89			
Country 4	1.20 *	165	13.9		1.20	75		1.37	86			
Country 5	28.70 *	1	0.0		1.19	74		1.22	76			
Country 6	3.65	2	4.4		3.65	227	>	2.98	186	>		

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)											T/R=[19: *14]	Var.Co.: 14.0
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
				GM =>	1.30		GM=>	1.41				
Country 1	75.43 *	1	0.0		0.83	64	<	1.41	100			
Country 2	8.02 *	18	18.8		1.16	89		1.37	97			
Country 3	5.26 *	54	13.9		0.96	74		1.13	80			
Country 4	73.26 *	166	5.5		1.26	97		1.33	94			
Country 5	1.03 *	24	17.3		1.03	79		1.04	74			
Country 6	1.41 *	162	13.3		1.41	108		1.61	114			

3 1XXXXXXX - Item 3 / Producto 3 (ref.Q = 1 Kilogram)											T/R=[22: *4]	Var.Co.: 35.9
	NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
				GM =>	6.64		GM=>	6.23				
Country 1	58.23	78	20.4		10.64	160	>	12.56	201	>		
Country 2	525.84	19	9.8		9.06	136		9.55	153	>		
Country 3	7.77	3	22.2		7.77	117		7.89	127			
Country 4	211.36 *	1	0.0		8.78	132		8.99	144			
Country 5	8.81	1	0.0		8.81	133		7.18	115			
Country 6	25.90	8	1.2		7.08	107		8.32	133			

Quaranta Table – How to interpret (5/7)

Example of QT for Basic Heading A

142XXXX Basic Heading A		Av.Weight: 1				No.of It.: 3							
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,						Var.Coeff. (%): 26.3							
XR	PPP	PLI (%)	Weight/	No. of	Var.	XR	PPP	PLI (%)	Weight/	No. of	Var.		
'NC/BC'	'NC/CUP'	PPP/XR	100000	Items	Coef.	'NC/BC'	'NC/CUP'	PPP/XR	100000	Items	Coef.		
Country 1	45.340	55.000	59.2	1.0	2: *2	1.0	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

1 1XXXXXXX - Item 1/ Producto 1 (ref.Q = 1 Kilogram)										T/R=[24: *15]		Var.Co.: 29.1
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	1.61		GM=>	1.60					
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98				
Country 2	7.02 *	129	42.9	1.28	80		1.51	95				
Country 3	1.40 *	18	6.7	1.40	87		1.42	89				
Country 4	1.20 *	165	13.9	1.20	75		1.37	86				
Country 5	28.70 *	1	0.0	1.19	74		1.22	76				
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>			

2 1XXXXXXX - Item 2/ Producto 2 (ref.Q = 1 Kilogram)										T/R=[19: *14]		Var.Co.: 14.0
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	1.30		GM=>	1.41					
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100				
Country 2	8.02 *	18	18.8	1.16	89		1.37	97				
Country 3	5.26 *	54	13.9	0.96	74		1.13	80				
Country 4	73.26 *	166	5.5	1.26	97		1.33	94				
Country 5	1.03 *	24	17.3	1.03	79		1.04	74				
Country 6	1.41 *	162	13.3	1.41	108		1.61	114				

3 1XXXXXXX - Item 3/ Product 3 (ref.Q = 1 Kilogram)										T/R=[22: *4]		Var.Co.: 35.9
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks		
			GM =>	6.64		GM=>	6.23					
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>			
Country 2	525.84	19	9.8	9.06	136		9.55	153	>			
Country 3	7.77	3	22.2	7.77	117		7.89	127				
Country 4	211.36 *	1	0.0	8.78	132		8.99	144				
Country 5	8.81	1	0.0	8.81	133		7.18	115				
Country 6	25.90	8	1.2	7.08	107		8.32	133				

Item variation coefficient (i.e., item CV)

Measured using a *coefficient of variation (CV)*—the ratio of the standard deviation of the CUP indices across countries for an item to the mean of these CUP indices.

It is **item-specific** and can indicate whether comparable products have been priced in different countries.

A high 'item CV' raises questions on the comparability and accuracy of the items being priced in different countries.

Recall: CUP indices require PPPs, which in turn depend on average prices!

Quaranta Table – How to interpret (6/7)

Example of QT for Basic Heading A

142XXXX Basic Heading A		Av.Weight: 1		No.of It.: 3								
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,						Var.Coef. (%): 26.3						
XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	
Country 1	45.340	55.000	59.2	1.0	2: *2	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

1 1XXXXXXX - Item 1/ Producto 1 (ref.Q = 1 Kilogram)											T/R=[24: *15]		Var.Co.: 29.1
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	1.61		GM=>	1.60						
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98					
Country 2	7.02 *	129	42.9	1.28	80	>	1.51	95					
Country 3	1.40 *	18	6.7	1.40	87		1.42	89					
Country 4	1.20 *	165	13.9	1.20	75		1.37	86					
Country 5	28.70 *	1	0.0	1.19	74		1.22	76					
Country 6	3.65	2	4.4	3.65	227	>	2.98	186	>				

2 1XXXXXXX - Item 2/ Producto 2 (ref.Q = 1 Kilogram)											T/R=[19: *14]		Var.Co.: 14.0
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	1.30		GM=>	1.41						
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100					
Country 2	8.02 *	18	18.8	1.16	89		1.37	97					
Country 3	5.26 *	54	13.9	0.96	74		1.13	80					
Country 4	73.26 *	166	5.5	1.26	97		1.33	94					
Country 5	1.03 *	24	17.3	1.03	79		1.04	74					
Country 6	1.41 *	162	13.3	1.41	108		1.61	114					

3 1XXXXXXX - Item 3/ Product 3 (ref.Q = 1 Kilogram)											T/R=[22: *4]		Var.Co.: 35.9
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks			
			GM =>	6.64		GM=>	6.23						
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>				
Country 2	525.84	19	9.8	9.06	136		9.55	153	>				
Country 3	7.77	3	22.2	7.77	117		7.89	127					
Country 4	211.36 *	1	0.0	8.78	132		8.99	144					
Country 5	8.81	1	0.0	8.81	133		7.18	115					
Country 6	25.90	8	1.2	7.08	107		8.32	133					

Country variation coefficient (i.e., country CV)

Measured using a *coefficient of variation (CV)*—the ratio of the standard deviation of the CUP indices across items of a basic heading for a given country to the mean of these CUP indices.

It is **country-specific** and indicates the dispersion among a country's CUP indices for a given basic heading.

A low 'country CV' is the 'ideal' situation. It indicates that items priced by a country have a CUP index ≈ 100. A high 'country CV' could be problematic and due to culprit item(s) with an unusually high/low CUP index.

Note: country CV is basic heading specific. Different basic headings will showcase different country CVs.

Quaranta Table – How to interpret (7/7)

Example of QT for Basic Heading A

142XXXX Basic Heading A						Av.Weight: 1	No.of It.: 3						
CPD (weights: 3; 1). XR-,PPP-In limits = 65%, 150%,						Var.Coeff. (%): 26.3							
'XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.	XR 'NC/BC'	PPP 'NC/CUP'	PLI (%) PPP/XR	Weight/ 100000	No. of Items	Var. Coef.		
Country 1	45.340	55.000	59.2	1.0	2: *2	1.0	Country 4	1.3500	2.2734	115.4	1.0	3: *2	6.7
Country 2	3.2100	54.0000	85.0	1.0	3: *3	1.2	Country 5	1.0000	1.8534	195.0	1.0	3: *3	50.1
Country 3	4.2300	4.2800	84.7	1.0	3: *2	43.1	Country 6	1.0000	???	0.0	1.0	0: *0	0.0

Basic heading variation coefficient (i.e., basic heading CV)

Measured by taking the unweighted *arithmetic average* over all item CVs.

It measures the variation among all CUP indices for a basic heading, regardless of country or item.

1 1XXXXXXX - Item 1 / Producto 1 (ref.Q = 1 Kilogram)										T/R=[24: *15]	Var.Co.: 29.1
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
			GM =>	1.61		GM=>	1.60				
Country 1	83.85 *	1	0.0	0.93	58	<	1.56	98			
Country 2	7.02 *	129	42.9	>	1.28	80	1.51	95			
Country 3	1.40 *	18	6.7		1.40	87	1.42	89			
Country 4	1.20 *	165	13.9		1.20	75	1.37	86			
Country 5	28.70 *	1	0.0		1.19	74	1.22	76			
Country 6	3.65	2	4.4		3.65	227	>	2.98	186	>	

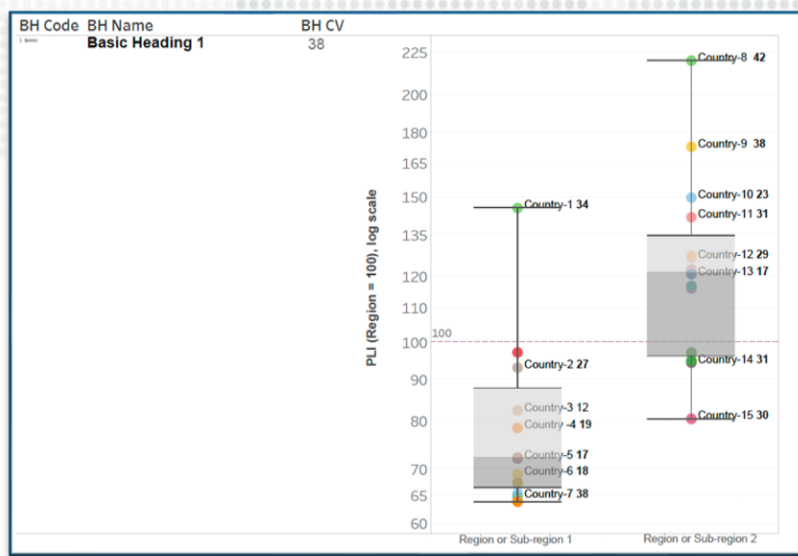
An unusually **high** basic heading CV could be problematic as it may indicate problems related to a specific country, product or both.

2 1XXXXXXX - Item 2 / Producto 2 (ref.Q = 1 Kilogram)										T/R=[19: *14]	Var.Co.: 14.0
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
			GM =>	1.30		GM=>	1.41				
Country 1	75.43 *	1	0.0	0.83	64	<	1.41	100			
Country 2	8.02 *	18	18.8		1.16	89	1.37	97			
Country 3	5.26 *	54	13.9		0.96	74	1.13	80			
Country 4	73.26 *	166	5.5		1.26	97	1.33	94			
Country 5	1.03 *	24	17.3		1.03	79	1.04	74			
Country 6	1.41 *	162	13.3		1.41	108	1.61	114			

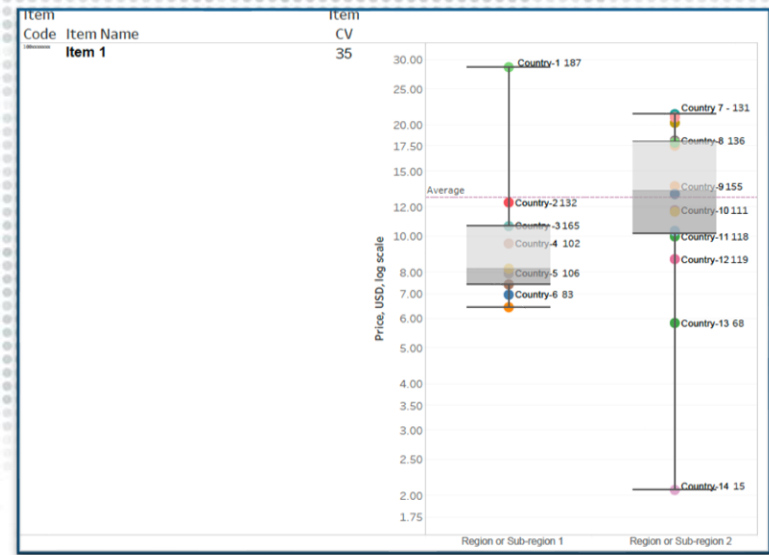
3 1XXXXXXX - Item 3 / Product 3 (ref.Q = 1 Kilogram)										T/R=[22: *4]	Var.Co.: 35.9
NC - price *	Qts.	Var.Co.	Wn	XR-pr.	XR-In	Wn	CUP-price	CUP-In	Wn	Remarks	
			GM =>	6.64		GM=>	6.23				
Country 1	58.23	78	20.4	10.64	160	>	12.56	201	>		
Country 2	525.84	19	9.8	9.06	136		9.55	153	>		
Country 3	7.77	3	22.2	7.77	117		7.89	127			
Country 4	211.36 *	1	0.0	8.78	132		8.99	144			
Country 5	8.81	1	0.0	8.81	133		7.18	115			
Country 6	25.90	8	1.2	7.08	107		8.32	133			

Box-Plots – Another validation tool

Box-plots are a **visual diagnostic tool**. Like the QT, they provide information at the basic heading- and item-level. The average prices and measures of price variation included in the graphs are those exactly those shown in the QT.

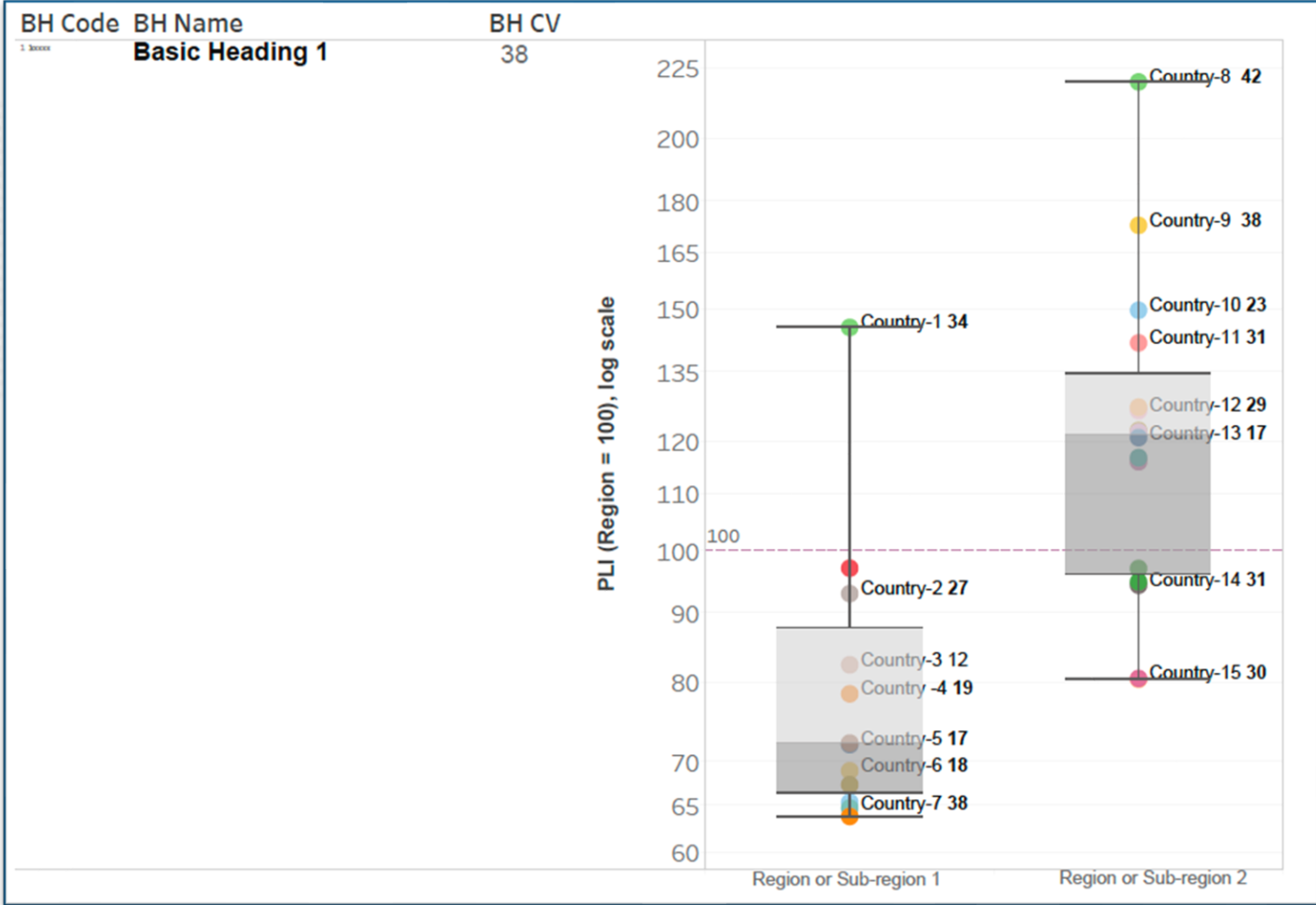


Basic Heading-level graph



Item-level graph

Box-Plots – Interpreting the graphs

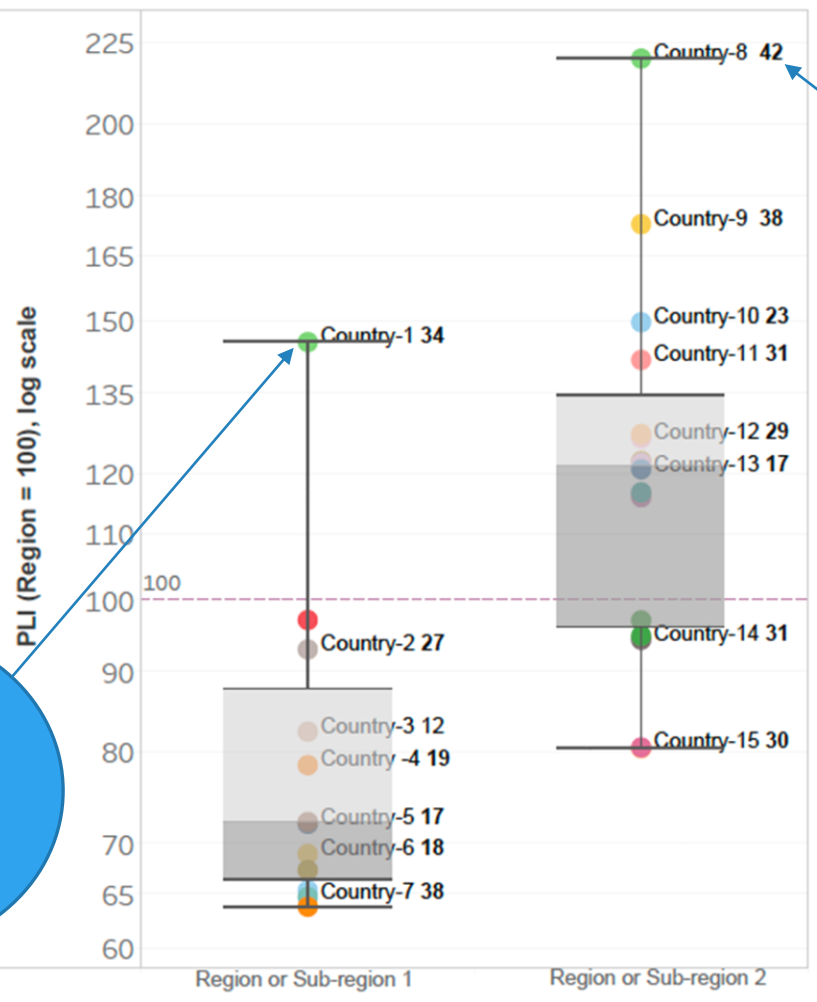


Box-Plots – Basic heading-level

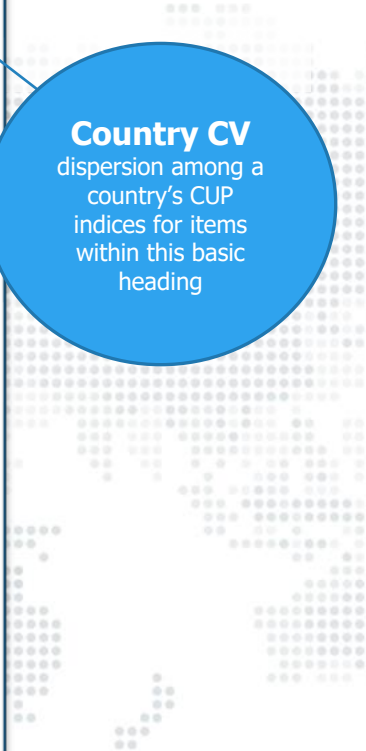
BH Code	BH Name	BH CV
1.30000	Basic Heading 1	38

Basic Heading CV
dispersion among all CUP indices for a basic heading, regardless of country or item

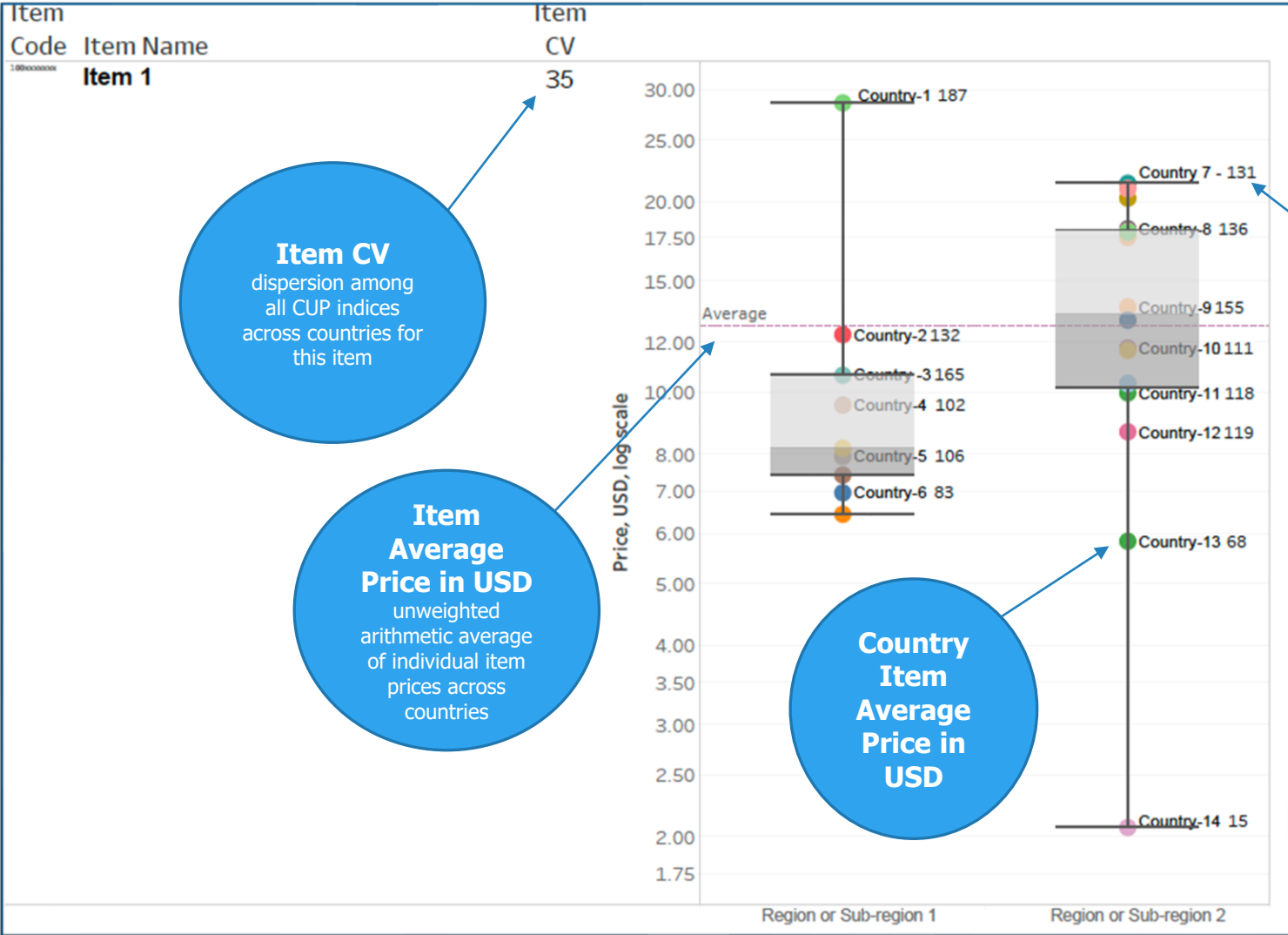
Country PLI
Basic heading PPP/XR, with the region as base



Country CV
dispersion among a country's CUP indices for items within this basic heading



Box-Plots – Item-level



Concluding remarks

- QT validation are based on a series of inter-connected tables and indicators. However, the starting point is always the average price reported by the countries. A problematic average price will impact the rest of the QT diagnostic indicators.
- QT CUP indices (PPP ratios) are often preliminary during the initial validation stages. Recall that they depend on the basic heading PPPs calculated using the prices collected. These prices may still have unresolved issues!
- Validation is an iterative process. QT helps assess potential issues from different angles and/or at different stages—from the item-level, from the BH-level, at the level of average price or PPP.
- Box-Plots are just another validation tool for presenting the information included in the QT but in a visual manner.



Thank you! | ¡Gracias!

Questions or comments?