International Competitiveness in EU based on balanced domestic trade estimates

Author: Pedro Martins Ferreira, Eurostat

Abstract

A new methodology for balancing international domestic trade was developed at the European Commission, Eurostat, during the FIGARO project. As a result, a reference data set for trade statistics was built which contains a consolidated view broken down into quasi-transit trade, domestic trade and re-exports. The QDR methodology is able to provide information for several indicators but probably the most important is that of domestic exports, in other words, exports between a country of origin and a country of destination that originated in the economy of the exporting country.

This paper examines the development of domestic trade in EU countries over the 2010-2017 period. International competitiveness for a selected group of commodities will be assessed over the balanced domestic trade estimates, instead of the usual raw estimates of one of the trade flows, providing a more accurate view on international competitiveness.

Introduction

International trade estimates are in general asymmetric. Very rarely the values of exports equals the value of mirror exports, i.e. imports reported by the trading partners. Although there are well known reasons for trade asymmetries to appear in official statistics, practitioners and research often need a consolidated trade estimates.

The OECD already publish 'Balanced International Merchandise Trade Statistics' estimates, which provides researchers with a single figure for a particular trade flow. Eurostat as also estimated a balanced view of trade to use in the FIGARO project that aims to build official Inter-Country Supply, Use and Input-Output Tables. During the FIGARO project, a new methodology, the QDR methodology, to address international trade asymmetries was developed which not only provides a balanced trade view but also breaks down the consolidated trade flow into different components: quasi-transit, domestic and re-exports.

This paper tries to make the case that taking into account the value, origin and destination of re-exports is a very important step to properly evaluated trade specialisation indicators, in particular for countries and / or products where re-exports are significant.

In the first section of the paper, a very brief description of the QDR methodology, presenting a concrete example where breaking down the balanced trade estimates into different components is quite useful. In the next section, the Revealed Symmetric Comparative Advantage (RSCA) indicator

that aims to measure the degree of trade specialisation will be analysed in view of trade estimates from the QDR methodology.

QDR method

The QDR methodology (Martins Ferreira, 2018) address in one-hand trade asymmetries and, on the other hand to provide estimates for quasi-transit[1], domestic and re-exports. QDR methodology was used in FIGARO project and it revealed very useful for identifying relevant trade relationships within countries.

The QDR methodology proposes to consolidate exports and imports, both valued in FOB, by:

$$T_{ij} = \frac{(1-\bar{\theta}_i)\cdot X_{ij} + \left(1-\bar{\phi}_j\right)\cdot M_{ij}}{(1-\bar{\theta}_i) + \left(1-\bar{\phi}_j\right)} \quad (1)$$

where X_{ij} is the exports from country i to country j, M_{ij} is the corresponding mirror exports, while $\bar{\theta}_i$ and $\bar{\phi}_j$ are three year averages of mean relative asymmetries of exports and imports, respectively.

The consolidated trade flows are then broken down into three components: quasi-transit, domestic and re-exports, according to:

$$\hat{X}_Q = X_C - X_N \quad (2)$$

where $\hat{X}_Q$ is the estimate of quasi-transit component, X_C is the export value according to the community principle, i.e. including quasi-transit and X_N is the export value according to the national principle, i.e. excluding quasi-transit,

$$\hat{X}_D = \frac{M_D}{M_C} X_C \quad (3)$$

where $\hat{X}_D$ is the estimate of domestic component, M_D is the domestic component of mirror exports, i.e. total imports for which country of consignment and country of origin are the same and M_C is the total imports,

$$\hat{X}_R = X_N - \hat{X}_D = X_N - \frac{M_D}{M_C} X_C \quad (4)$$

where $\hat{X}_R$ is the estimate of re-exports component.

The importance and usefulness of breaking down trade into quasi-transit, domestic and re-exports will become more clear with the example described in the following section.

[1] **quasi-transit** refer to goods that are brought into or taken out of a EU Member State to be declared there as imports/exports for customs or tax purposes without the Member State having acquired the ownership of the goods

Example: German exports of Chapter 64 of CN, 2017

As an illustrative example of the usefulness of the QDR approach, Table 1 shows the estimates of German exports of Chapter 64 of the Combined Nomenclature "*footwear, headgear, umbrellas, sun umbrellas, walking sticks, seat-sticks, whips, riding-crops and parts thereof; prepared feathers and articles made therewith; artificial flowers; articles of human hair*":

Table 1: German exports of Chapter 64 of CN, 2017, million euros

	Exports	Mirror exports	Consolidated
Raw data	6 470.0	5 928.2	-
Non-Alloc correction	0.0	9.3	-
Total	6 470.0	5 937.5	-
CIFFOB adj.	-	94.8	-
Final	**6 470.0**	**5 842.7**	**6 316.8**

The consolidate value of German exports in 2017 is 6.3B€. In 2010, the value of consolidated exports was 2.6B€, i.e. there was an average growth of 13.5% per year between 2010 and 2017. However, breaking down the gross consolidated trade into quasi-transit, domestic and re-exports will give us a more accurate insight. The average growth of the domestic component of exports is (only) 4.7%, while re-exports is 18.4% and quasi-transit is 11.2%.

Figure 1: Quasi-transit, Domestic and Re-exports of Chapter 64 in Germany, 2010=100

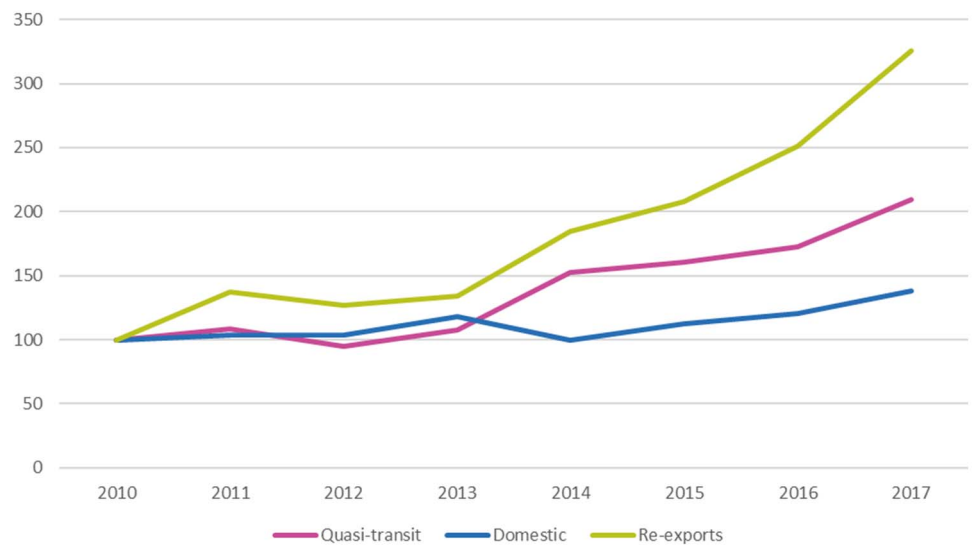
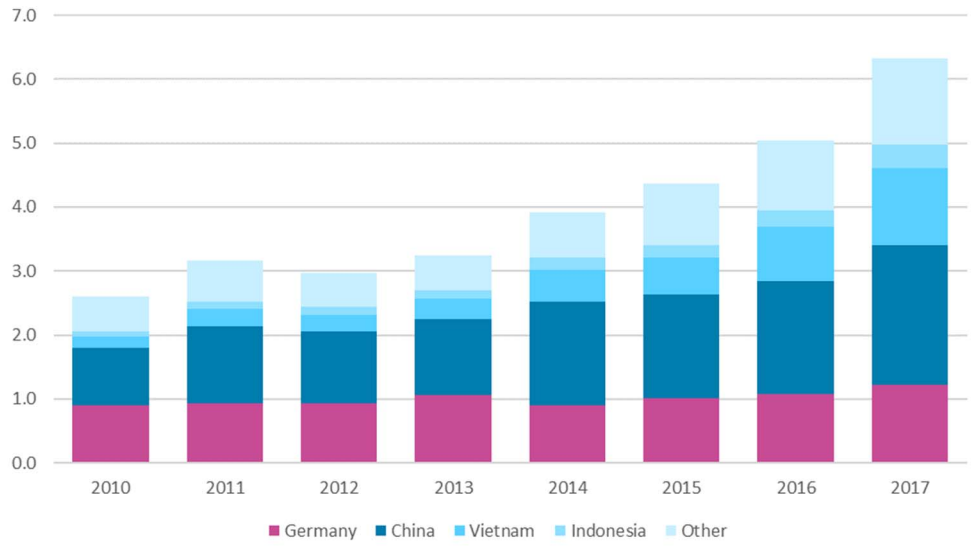


Figure 1 clearly shows that the growth of re-exports content is significantly higher than domestic exports. Consequently, the share of domestic exports in total exports is becoming smaller and smaller over time – from 34% in 2010 to 20% in 2017. Figure 2 shows the breakdown of German exports by country of origin. Most of the German re-exports were originated in China, Vietnam and Indonesia. The trade margin accrued by German in re-exporting products from Chapter 64 of the CN went from 95.9M€ in 2010 to 317.7M€ in 2017.

Figure 2: German exports by country of origin



Knowing the country of origin and country of destination of German re-exports, as well as the trade margin associated with those re-exports is extremely valuable to build an Inter-Country Supply, Use and Input-Output (IC-SUIOT) table (RUEDA-CANTUCHE, J.M.(ed) and REMOND-TIEDREZ, 2019).

In an inter-country use table, the domestic use table of each country is connected to the import use tables of all other countries. Table 2 shows the structure of the import use table. The re-export vector (shaded in blue) needs to be properly distributed by country of origin and country of destination. In this example, German re-exports of products in Chapter 64 need to be distributed to China, Vietnman, Indonesia, etc, as indicated in Figure 2.

Table 2: Structure of the Imports Use Table

Industries / Products	Industries					Final uses				Total use at basic prices
	Agriculture	Manufacturing	...	Services	Total	Final Consumption	Gross capital formation	Exports	Total	
Agriculture Manufacturing ... ... Other Services	Imported products for intermediate consumption at CIF values				Total imported products for intermediate consumption	Imported products for final uses at CIF values		Re-exports	Total imported products for final uses	Imported total use
Total	Intermediate consumption by Industry					Total final uses by category				

In conclusion, by breaking down the gross exports of Germany, not only we can have a more accurate picture of the export evolution, e.g. the 13.5% annual growth is mainly due to re-exports, since the domestic trade is estimated to grow (only) 4.7% annually. In addition, we will have as well a rich data set to use for the construction of SUIOT and IC-SUIOT.

International competitiveness indicators

Assessing the international competitiveness of countries' industries and identifying the key factors influencing international performance is important for both improving theoretical understanding and formulating effective policies to maintain, adjust, or enhance industries' market positions (or withdraw from activities that have become unsustainable).

The concept of (revealed) comparative advantage has been widely used for analysing the relative strengths of nations in different economic sectors, notably using indicators of trade flows that are assumed to reveal comparative advantages of countries or regions with respect to producing and exporting specific goods (Maksymets, 2016).

The concept of specialisation implies a strong focus on one narrow area of activity and a less intense focus on others. In the context of international export specialization, RCA is a relative measure indicating a strong focus on some sectors but less on others.

The Revealed Comparative Advantage (RCA) of country j regarding product i is given by:

$$RCA_{ij} = \frac{X_{ij}/\sum_i X_{ij}}{\sum_i X_{ij}/\sum_i \sum_j X_{ij}}$$

where X_{ij} are exports of product i from country j and the summation over j represents a set of countries, in this case, EU countries. It compares the exports share of product i in total country exports, with that share in the EU. If the RCA is (significantly) above 1, than the country is said to be specialised in product i and if RCA is (significantly) below 1, than the country is said not to be specialised (or 'under-specialised').

Since the RCA results in an output which cannot be compared on both sides of 1 (its neutral value), (Laursen, 2015) proposed making the index symmetric, defining the Revealed Symmetric Comparative Advantage (RSCA) as

$$RSCA_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1}$$

In this paper, the Revealed Symmetric Comparative Advantage will be analysed for the EU Member-States, for the period 2010-2017, making use of the estimates produced by the QDR methodology described above.

The impact of (not) taking into account re-exports

We will now evaluate if not taking into account re-exports provides a distort picture of trade competitiveness. For this purpose, the RSCA is computed for the consolidated trade before applying the QDR methodology and after applying that methodology. The main factor for differences is, of course, the level of re-exports. Table 3 shows the top five biggest shares of re-exports and quasi-transit in total trade, by CN chapter and by country:

Table 3: Top 5 biggest shares of re-exports and quasi-transit by CN chapter and by Country

Chapter	Share of R and Q
57	67%
61	64%
65	59%
62	58%
64	55%

Country	Share of R and Q
LU	66%
NL	63%
BE	51%
LV	50%
MT	46%

Figure 3 presents a contour plot of the differences in the RSCA before and after applying the QDR methodology. Not surprisingly, there is a significant impact on the Revealed Symmetric Comparative Advantage, in particular in CN chapters and countries listed in Table 3.

Figure 3: Significant differences in RSCA before and after applying QDR

Table 4: Top five biggest differences on the RSCA before and after applying QDR methodology

country	Chapter	before	after
Croatia	42: *Articles of leather*	0.396	-0.774
Netherlands	57: *Carpets and other textile*	0.358	-0.682
Netherlands	92: *Musical instruments*	0.169	-0.815
Malta	27: *Mineral fuels*	0.641	-0.234
Latvia	26: *Ores, slag and ash*	-0.068	-0.922

There are several cases where taking into account the level of re-exports can lead to completely different perspective on the level of specialisation of country on a particular product. As an example, Table 4 shows the top five biggest differences on the RSCA before and after applying QDR methodology. If we base our analysis only on the gross exports, we probably conclude that Croatia has some degree of specialisation on '*articles of leather*', with a revealed symmetric comparative advantage index of 0.396. However, if we take into account the level of re-exports of that product, then **we conclude the opposite**: Croatia is under-specialised on '*articles of leather*'. The same applies to '*carpets*' and '*music instruments*' from the Netherlands, '*mineral fuels*' from Malta, '*ores, slag and ash*' from Latvia and many other examples.

Looking at the supply and use tables of domestic inputs for the countries listed in Table 4, we can conclude that the RSCA after applying the QDR methodology is likely to be much more accurate than before applying that methodology, taking into account their levels of output and domestic exports reported in their respective SUIOT.

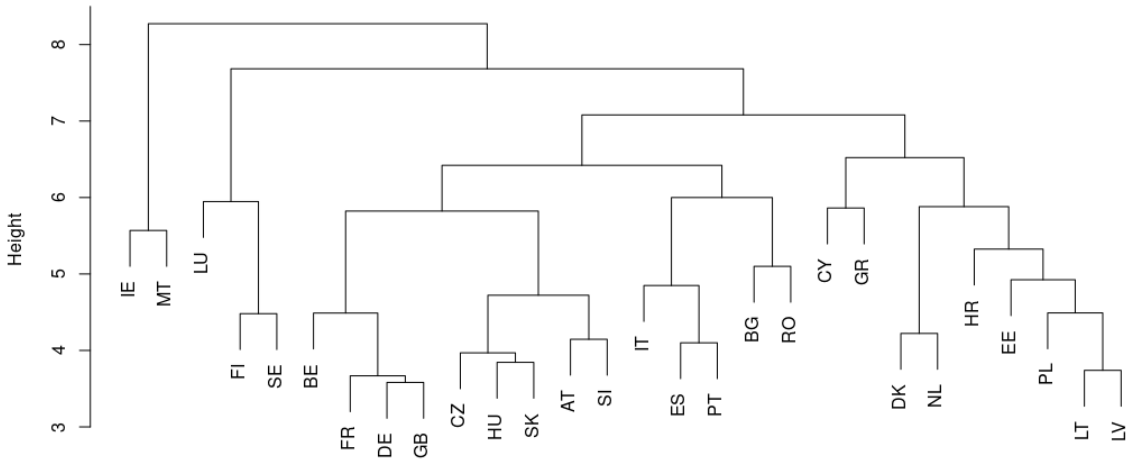
We can then conclude that we need to take into account re-exports (and quasi-transit in the case of EU countries) before computing trade specialisation indicators, otherwise we will have a distort view a possibly wrong view on the level of specialisation.

Degree of specialisation patterns in EU

In this section, we will identify similar patterns in trade specialisation in EU countries. All calculations were based on the RSCA indicator after applying the QDR methodology.

We start by plotting a dendogram based on the Euclidean distance between countries specialisation patterns.

Figure 4: Hierarchical clustering of RSCA



In Figure 4 we can see for example that France, Germany and United Kingdom trade specialisation patterns are similar, or that Portugal and Spain share a similar pattern. The next step is to try to find a number of plausible clusters.

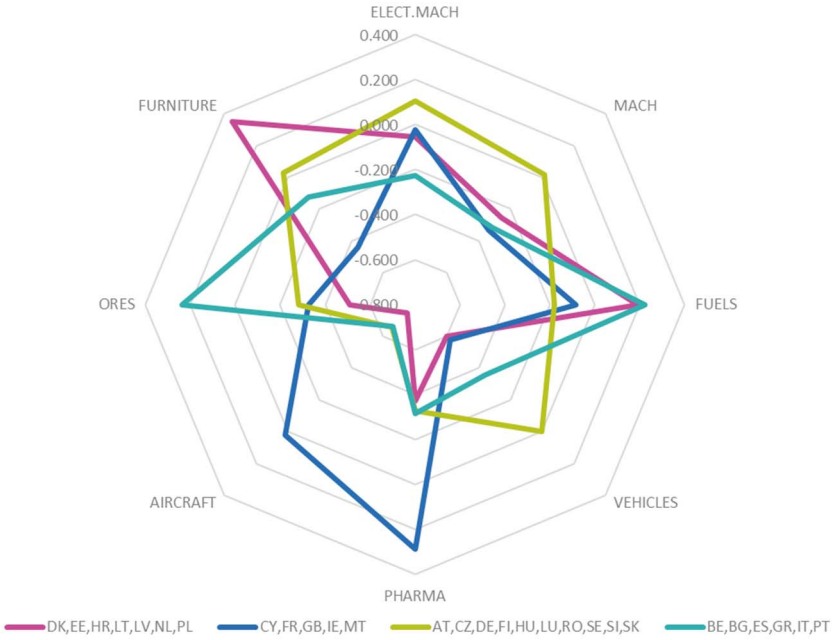
There is no definitive method to determine the optimal number of clusters in a data set. Nevertheless, the R package '*factoextra*' allow us to easily apply several methods to determine number of clusters according to different criteria, such as the elbow method, the silhouette method or the gap statistic method. Four clusters were identified in the RSCA data set:

- **Cluster 1**: Denmark, Estonia, Croatia, Lithuania, Latvia, Netherlands and Poland;
- **Cluster 2**: Cyprus, France, United Kingdom, Ireland and Malta;
- **Cluster 3**: Austria, Czech Republic, Germany, Finland, Hungary, Luxembourg, Romania, Sweden, Slovenia and Slovakia;
- **Cluster 4**: Belgium, Bulgaria, Spain, Greece, Italy and Portugal.

Figure 5 compares the average RSCA for each cluster for a selected group of eight products, covering more than 50% of EU countries exports.

We can see that while there is a group of countries, including Czech Republic, Germany and Austria, which show some level of specialisation on 'electric machinery and equipment parts' (ELECT.MACH) and 'machinery and mechanical appliances' (MACH), other group of countries, including France and United Kingdom, are more specialised in ´pharmaceuticals' and 'aircrafts and parts thereof'.

Figure 5: Trade specialisation patterns for selected products



The key message of this section is that EU countries show significantly different specialisation patterns. The correct assessment of those patterns are only possible if the level, origin and destination of re-exports are properly taken into account.

Evolution of trade specialisation over time

Figure 6 shows the correlation between RSCA and time over the period 2010-2017. A value of 1 represents a completely linear growth of specialisation over time and a value of -1 represents a completely linear decrease over time.

We can conclude that picture is quite mixed and that different countries show diverse evolutions of trade specialisation over time. However, it seems that in average, EU countries tend to increase trade specialisation on some products like '*clocks and watches*' (C91) or *´vegetable products´* (C06), and decrease the level of specialisation on other products like *´edible fruits and nuts´* (C08) or *´articles of apparel and clothing accessories´* (C62).

Figure 6: Time correlations of RSCA by chapter and country

Chapter	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HR	HU	IE	IT	LT	LV	LU	MT	NL	PL	PT	RO	SE	SI	SK	EU
C91	0.70	0.67	0.54	0.72	0.45	-0.90	0.65	0.90	-0.37	0.81	0.63	0.95	0.05	0.96	0.81	0.23	-0.72	-0.53	0.91	0.67	-0.14	0.80	0.71	-0.15	-0.16	0.86	0.53	0.33	0.39
C06	-0.90	-0.89	0.48	-0.22	0.74	0.51	-0.54	0.53	0.40	0.87	0.76	0.30	0.76	0.91	0.30	-0.21	0.66	0.84	0.60	0.09	0.18	-0.08	0.92	0.18	0.25	0.90	-0.38	0.92	0.32
C28	0.72	0.73	-0.45	0.23	-0.57	0.95	0.75	0.60	-0.09	0.92	-0.41	-0.90	0.40	0.77	-0.42	0.57	0.68	0.51	0.28	0.82	0.76	-0.59	0.65	0.21	0.36	0.84	0.52	-0.09	0.31
C90	-0.40	0.67	-0.18	-0.45	0.83	-0.49	-0.87	0.92	0.32	0.89	-0.91	0.39	0.56	0.92	-0.07	0.78	0.18	0.84	0.85	-0.39	0.69	0.65	0.97	0.84	0.93	-0.12	-0.48	0.08	0.28
C39	-0.74	-0.17	0.46	-0.01	0.18	-0.63	-0.05	-0.09	-0.16	0.54	0.83	0.54	0.43	0.78	0.77	0.68	0.77	0.27	0.42	-0.82	0.36	-0.96	0.98	0.88	0.95	0.66	0.50	0.32	0.27
C84	0.33	-0.01	0.48	-0.53	-0.63	0.57	0.00	0.90	0.39	-0.44	0.13	0.60	0.42	-0.64	0.43	-0.62	0.78	0.64	-0.61	0.83	0.80	0.58	-0.47	0.51	0.56	0.68	-0.36	0.94	0.22
C67	-0.90	0.56	0.45	0.92	0.60	0.84	-0.80	0.92	-0.66	0.17	-0.91	0.64	-0.74	0.59	-0.01	0.91	-0.21	0.91	0.36	0.44	0.47	0.24	0.32	0.04	-0.91	-0.09	0.79	0.85	0.21
C87	0.18	-0.50	-0.01	-0.20	0.86	-0.72	-0.82	0.53	-0.03	0.90	-0.85	0.80	0.17	0.28	0.90	0.29	0.79	-0.14	0.25	0.64	0.28	0.83	-0.80	-0.63	0.80	0.55	-0.04	0.60	0.18
C48	0.10	0.41	0.89	-0.97	-0.28	-0.62	-0.21	0.76	-0.65	0.86	0.30	-0.10	0.61	0.85	-0.80	0.34	0.92	0.80	0.75	0.23	-0.18	0.60	-0.56	-0.29	0.95	-0.01	0.81	-0.71	0.17
C73	-0.75	-0.67	0.76	-0.14	-0.53	-0.31	-0.08	0.78	-0.27	-0.35	-0.41	0.49	-0.54	0.77	0.94	0.23	-0.28	0.71	0.74	0.66	0.61	0.54	0.83	0.04	0.42	0.20	0.33	-0.07	0.17
C38	-0.37	0.05	0.82	-0.19	-0.51	-0.55	0.20	-0.49	0.78	-0.02	0.68	0.33	0.39	0.65	0.95	-0.44	-0.71	0.47	-0.24	0.45	-0.62	-0.01	-0.28	0.09	0.88	0.66	0.71	0.59	0.15
C32	-0.37	-0.68	-0.30	0.69	-0.42	-0.21	0.32	-0.93	-0.27	-0.81	0.87	0.38	0.50	0.82	0.34	-0.32	0.88	0.67	0.29	0.21	0.37	0.56	0.39	0.23	0.57	0.47	0.22	-0.26	0.15
C33	-0.87	0.60	-0.39	0.22	-0.33	-0.94	-0.27	0.84	0.14	-0.33	-0.17	0.45	0.45	0.94	0.84	0.11	0.97	0.95	-0.38	-0.68	0.56	0.93	-0.80	0.14	0.67	0.53	-0.11	0.12	0.15
C83	0.87	-0.40	0.83	-0.14	-0.63	-0.90	0.38	0.77	-0.56	0.87	-0.37	-0.48	0.47	0.48	0.34	0.14	-0.58	0.47	0.91	0.13	-0.59	-0.77	0.97	-0.07	0.98	0.31	-0.13	0.84	0.15
C21	-0.04	0.90	-0.24	0.69	-0.78	-0.21	-0.63	-0.50	-0.65	0.45	0.08	0.85	0.76	0.21	0.68	-0.88	0.95	0.50	0.73	-0.52	0.48	-0.70	0.54	0.19	0.86	-0.11	0.13	0.38	0.15
C37	-0.56	-0.56	-0.55	-0.38	0.30	0.90	0.76	0.67	-0.12	0.76	-0.59	0.26	0.63	-0.28	0.82	0.63	-0.62	0.83	0.40	0.12	0.00	0.36	0.68	-0.31	0.75	-0.36	0.07	-0.50	0.15
C23	0.76	-0.28	0.83	-0.74	0.86	0.19	-0.38	-0.14	-0.51	0.96	0.40	0.93	-0.38	0.15	0.74	0.46	0.94	-0.47	0.18	0.68	-0.24	-0.94	0.84	-0.58	0.43	-0.38	-0.25	-0.20	0.14
C92	-0.83	0.63	0.80	-0.40	0.63	0.79	-0.88	0.45	-0.35	0.58	0.92	0.32	-0.54	0.76	0.04	-0.40	-0.84	0.79	-0.16	0.45	-0.81	-0.85	0.89	0.13	0.24	0.88	-0.59	0.85	0.13
C30	0.53	0.69	-0.55	0.31	-0.74	0.28	0.81	0.75	-0.16	0.11	-0.47	-0.42	-0.14	0.87	0.14	-0.31	-0.81	0.21	0.26	0.89	0.85	0.87	-0.45	0.66	-0.11	0.35	-0.19	-0.73	0.12
C10	0.04	0.10	0.74	-0.68	0.57	-0.29	-0.69	0.90	-0.66	-0.14	-0.78	-0.29	-0.50	0.52	-0.10	-0.23	-0.34	0.89	0.55	0.63	-0.27	0.24	0.88	0.28	0.90	0.77	-0.58	0.67	0.11
C85	0.82	-0.90	0.26	-0.85	0.31	0.91	0.76	0.48	0.63	-0.91	0.64	-0.13	0.72	0.54	-0.88	0.37	0.69	0.60	0.21	-0.86	-0.58	0.51	-0.04	0.60	0.19	-0.77	0.58	-0.92	0.11
C70	-0.73	-0.90	0.83	0.84	0.04	0.65	-0.82	0.34	-0.07	-0.92	-0.56	-0.18	0.38	0.70	0.87	0.18	-0.71	0.80	0.74	0.65	0.19	-0.90	0.88	-0.51	0.82	-0.24	0.40	0.18	0.11
C68	-0.52	-0.94	0.78	-0.20	-0.38	0.21	0.53	0.93	-0.67	0.44	0.46	-0.55	0.06	0.22	0.93	0.73	-0.08	0.41	0.33	0.69	-0.57	0.75	0.07	-0.69	-0.19	0.13	0.51	-0.45	0.10
C94	-0.96	-0.96	0.86	0.40	0.90	-0.92	-0.18	0.78	0.58	-0.52	-0.97	0.66	-0.30	0.53	0.35	0.44	-0.95	0.91	0.72	-0.39	0.78	0.62	0.78	0.79	0.83	-0.55	-0.97	-0.38	0.10
C18	-0.59	0.47	0.36	0.25	0.52	0.46	0.29	-0.88	-0.77	-0.20	-0.78	0.77	0.83	0.61	0.51	-0.06	0.92	0.42	-0.35	-0.30	0.00	-0.04	-0.24	-0.25	0.92	0.64	-0.82	0.09	0.10
C52	0.84	-0.01	0.78	-0.91	-0.73	0.75	0.04	0.01	0.39	0.75	-0.84	0.06	-0.57	0.56	0.11	0.16	-0.92	0.46	0.25	-0.21	-0.05	0.04	0.38	0.49	0.65	0.26	0.62	-0.62	0.10
C35	0.03	0.00	-0.81	-0.66	-0.91	0.47	0.59	-0.25	0.54	0.23	0.84	0.13	0.02	0.35	-0.43	0.18	-0.33	0.31	0.44	0.45	0.03	0.40	-0.23	0.38	0.93	0.49	-0.07	-0.43	0.10
C31	-0.11	-0.81	-0.71	-0.73	-0.95	-0.35	0.42	0.62	0.29	0.55	0.64	0.79	0.47	-0.05	-0.42	-0.14	0.84	0.46	0.57	0.37	0.05	0.49	-0.31	-0.18	-0.92	0.55	0.78	0.34	0.09
C05	0.12	0.49	0.68	0.10	0.10	0.49	-0.68	0.74	-0.54	0.80	0.39	-0.11	0.49	-0.49	-0.57	-0.13	-0.29	0.93	0.28	0.58	-0.48	0.07	0.65	-0.38	-0.32	-0.32	-0.42	0.33	0.09
C57	-0.48	-0.39	0.52	0.24	0.87	-0.70	-0.13	0.03	0.32	0.95	-0.08	0.23	0.12	0.36	0.91	-0.20	0.28	0.50	-0.31	0.63	0.16	-0.49	-0.89	-0.46	-0.55	0.90	-0.09	-0.03	0.08
C96	-0.87	0.77	-0.60	-0.70	0.94	-0.88	0.94	-0.64	-0.38	0.59	-0.86	-0.18	0.90	0.72	0.75	-0.80	-0.69	0.38	-0.48	0.61	0.67	0.31	0.77	-0.18	-0.73	0.74	0.17	0.76	0.07
C40	-0.81	0.45	0.92	-0.56	0.05	0.73	0.86	-0.59	-0.78	-0.28	-0.87	-0.73	-0.89	0.89	0.54	0.41	-0.46	0.25	0.84	-0.78	0.76	-0.18	-0.59	0.73	0.66	0.66	-0.29	0.94	0.07
C60	0.00	0.02	0.00	-0.30	0.67	0.24	-0.60	0.36	0.38	0.86	-0.79	0.06	-0.30	0.83	0.56	0.44	-0.59	0.31	-0.63	-0.47	-0.73	0.50	0.41	0.00	-0.79	0.81	0.29	0.31	0.07
C86	0.17	-0.11	0.29	-0.89	-0.35	-0.41	0.10	0.35	0.24	-0.28	0.05	0.27	0.33	-0.02	0.52	-0.18	-0.12	0.04	-0.46	0.83	-0.50	0.56	0.37	-0.09	0.51	0.64	-0.03	-0.20	0.06
C34	-0.77	0.00	-0.64	0.82	-0.91	-0.05	-0.57	-0.71	0.31	-0.69	0.69	0.60	0.34	0.89	0.37	0.56	0.78	0.94	-0.06	-0.34	0.57	-0.67	-0.81	0.21	-0.56	0.62	0.20	0.52	0.06
C66	0.59	0.77	0.24	0.71	-0.64	-0.34	0.42	0.25	-0.69	0.04	0.78	-0.11	0.03	0.39	-0.80	-0.40	-0.52	0.14	0.03	0.83	0.34	0.60	0.53	-0.64	-0.18	0.09	-0.55	-0.39	0.06
C76	0.39	-0.55	-0.23	-0.83	-0.37	-0.94	0.22	-0.25	-0.25	0.93	0.43	0.28	0.58	-0.49	-0.64	0.11	0.54	0.92	0.25	-0.96	0.01	0.31	0.88	0.40	-0.32	-0.06	0.56	0.40	0.05
C01	-0.80	0.10	-0.19	0.64	0.67	0.83	0.30	-0.70	0.09	0.56	0.02	-0.25	-0.56	0.92	-0.74	-0.53	0.34	-0.87	-0.31	0.68	0.27	-0.51	-0.84	-0.11	0.77	0.53	0.57	0.44	0.05
C82	-0.73	0.44	-0.12	-0.62	-0.75	0.91	-0.39	-0.77	-0.23	0.03	0.63	-0.95	0.68	0.81	0.72	-0.52	0.74	0.65	0.34	0.42	-0.54	0.70	-0.31	-0.21	-0.46	-0.06	0.09	0.77	0.04
C78	0.77	0.80	-0.37	-0.69	0.83	-0.78	-0.23	-0.53	-0.66	0.97	0.79	0.00	-0.05	0.82	-0.09	-0.48	0.83	-0.94	-0.19	0.66	0.75	-0.65	-0.10	-0.82	-0.65	0.64	-0.14	0.56	0.04
C58	-0.72	-0.65	0.92	0.52	0.41	0.47	0.73	-0.53	0.41	0.12	-0.52	0.41	0.00	-0.14	0.85	-0.64	0.03	0.70	-0.20	0.85	-0.34	-0.72	-0.62	-0.27	-0.51	-0.10	0.71	-0.30	0.03
C95	-0.92	0.82	0.85	-0.37	0.05	-0.88	-0.17	-0.49	0.01	-0.72	-0.83	-0.16	-0.61	0.95	0.70	-0.16	-0.60	0.55	-0.66	0.39	0.79	0.72	0.96	-0.20	-0.51	-0.27	0.79	0.71	0.03
C24	-0.79	0.65	-0.31	-0.93	0.84	-0.33	0.05	0.27	-0.80	0.65	-0.95	-0.88	-0.29	-0.21	0.70	-0.86	0.77	0.90	-0.54	0.51	0.34	-0.84	0.82	0.47	0.71	0.72	0.57	-0.55	0.03
C27	-0.61	0.63	-0.19	0.25	-0.50	0.64	-0.90	-0.81	0.65	-0.35	0.26	-0.68	0.96	0.18	0.26	0.25	-0.68	-0.74	0.54	0.65	0.47	-0.42	-0.78	0.87	0.51	-0.30	0.08	0.08	0.01
C74	0.60	0.64	0.47	-0.67	-0.92	-0.18	0.01	0.56	-0.46	0.79	-0.53	0.00	0.59	-0.59	0.53	-0.31	0.77	0.70	-0.53	0.88	0.57	-0.34	-0.63	-0.81	-0.79	-0.18	0.71	-0.66	0.01
C51	0.32	-0.52	0.90	-0.30	-0.70	-0.65	0.56	0.64	0.17	0.43	-0.56	0.42	-0.81	0.93	-0.64	-0.11	-0.65	0.72	0.38	0.92	-0.74	0.35	-0.72	-0.10	-0.87	0.67	0.14	-0.34	-0.01
C13	-0.62	-0.78	0.83	0.62	-0.31	0.47	-0.10	-0.74	-0.23	-0.72	0.48	-0.42	-0.21	0.58	0.05	0.45	0.67	0.35	0.12	0.29	-0.14	-0.33	0.91	-0.88	-0.45	-0.39	-0.42	0.65	-0.01
C22	0.05	0.96	-0.57	0.76	0.31	0.35	0.76	-0.83	-0.66	-0.33	-0.46	-0.37	-0.60	-0.74	0.92	0.19	0.75	-0.17	-0.48	0.56	0.21	0.24	0.80	-0.84	-0.19	0.92	-0.92	-0.89	-0.01
C04	0.14	0.43	0.11	0.73	-0.90	0.73	0.18	-0.81	-0.44	-0.79	0.12	0.59	0.70	-0.34	0.24	0.19	0.84	-0.37	-0.47	0.23	0.41	-0.48	0.13	-0.70	0.76	-0.06	-0.77	-0.76	-0.01
C41	0.28	0.54	0.17	-0.15	-0.70	-0.28	0.50	-0.33	-0.75	0.78	0.87	-0.26	-0.84	-0.09	0.36	0.21	-0.54	0.03	-0.84	0.34	-0.60	0.72	-0.31	-0.19	-0.86	0.76	-0.07	0.92	-0.01
C03	-0.28	-0.12	0.88	-0.41	-0.16	0.85	0.70	-0.59	-0.60	0.37	-0.10	-0.64	-0.86	0.13	-0.01	-0.15	-0.83	0.56	-0.42	0.41	0.13	0.40	-0.23	-0.87	0.59	0.11	0.73	-0.11	-0.02
C75	0.35	0.28	-0.29	0.51	-0.72	0.24	-0.01	-0.19	-0.58	0.03	-0.60	0.39	-0.24	0.21	-0.08	-0.16	-0.19	0.56	-0.65	0.61	0.27	0.01	-0.19	-0.09	-0.24	0.73	-0.21	-0.45	-0.02
C49	0.01	0.50	0.76	-0.52	0.41	-0.39	0.63	-0.56	-0.76	-0.85	-0.95	-0.37	-0.32	0.74	-0.09	-0.03	-0.98	-0.12	0.96	-0.18	-0.03	-0.46	0.97	-0.51	0.90	0.72	-0.21	0.03	-0.02
C56	-0.65	-0.67	0.54	-0.14	-0.10	-0.31	-0.25	0.92	0.43	0.43	-0.83	0.31	0.48	0.37	-0.44	-0.33	-0.23	0.63	0.33	0.28	-0.54	-0.68	0.89	-0.22	-0.47	0.12	0.33	-0.92	-0.03
C17	0.92	0.13	-0.69	-0.48	-0.27	0.69	-0.22	-0.81	0.26	0.29	-0.32	-0.28	-0.73	-0.58	-0.75	0.88	0.67	0.10	-0.38	0.63	0.81	0.00	0.93	-0.30	-0.93	0.69	-0.80	-0.46	-0.04
C12	0.82	-0.49	-0.63	0.15	-0.12	-0.28	0.32	-0.66	-0.22	-0.25	0.64	-0.62	-0.61	0.87	-0.46	0.81	0.76	-0.51	-0.39	-0.46	0.51	-0.04	0.44	-0.51	0.34	0.74	-0.90	-0.54	-0.05
C50	-0.64	0.41	0.53	-0.62	0.16	0.22	-0.46	0.04	-0.78	0.09	-0.06	0.24	-0.54	-0.67	0.26	0.43	-0.63	0.81	-0.10	-0.28	-0.76	0.56	0.60	-0.35	0.97	-0.40	0.23	-0.54	-0.05
C80	0.86	0.26	0.50	-0.41	-0.49	-0.86	-0.06	0.43	0.27	-0.83	-0.05	-0.34	-0.29	-0.37	0.86	-0.64	0.30	0.86	-0.38	0.48	-0.55	0.44	0.57	-0.25	-0.22	-0.79	0.00	-0.90	-0.06
C19	-0.84	-0.16	-0.15	-0.32	0.83	-0.39	0.83	0.86	-0.35	0.18	-0.02	-0.74	-0.52	-0.35	-0.62	0.23	-0.90	0.24	0.18	-0.07	-0.10	0.79	0.97	-0.84	0.94	-0.39	-0.37	-0.53	-0.06
C42	-0.75	0.06	0.21	-0.15	0.60	0.40	-0.04	-0.42	0.44	-0.93	-0.90	0.31	-0.17	-0.86	0.89	-0.03	0.45	-0.10	-0.42	-0.60	-0.63	0.49	0.42	0.36	-0.79	0.10	0.02	0.44	-0.06
C88	0.44	-0.74	-0.17	0.35	-0.28	0.61	-0.12	0.46	0.04	-0.67	0.33	0.17	-0.93	-0.64	-0.10	0.49	-0.79	-0.54	0.63	-0.18	-0.85	0.56	0.43	0.26	0.53	-0.60	0.31	-0.70	-0.06
C11	0.91	0.34	-0.66	-0.88	-0.91	0.90	0.87	-0.90	-0.75	-0.44	-0.76	-0.36	0.18	0.80	-0.86	-0.25	0.27	0.09	0.45	0.22	0.24	-0.31	0.75	0.65	-0.54	0.32	-0.32	-0.84	-0.06
C47	0.80	-0.95	-0.32	-0.53	-0.83	0.01	-0.23	0.12	-0.63	0.93	-0.29	-0.44	-0.28	0.11	-0.46	-0.10	-0.16	-0.43	0.15	-0.82	0.00	0.24	0.79	0.14	0.76	-0.24	0.83	0.03	-0.07
C65	0.73	0.48	0.42	-0.09	-0.68	0.12	-0.51	-0.31	0.45	-0.16	0.15	0.30	0.21	0.13	0.04	0.01	-0.80	0.75	-0.74	-0.36	0.08	-0.31	-0.67	-0.17	-0.55	0.05	0.47	-0.88	-0.07
C36	0.97	-0.49	-0.93	-0.87	0.12	0.09	-0.57	-0.45	0.47	0.07	0.24	-0.51	-0.51	0.92	-0.25	-0.91	0.79	0.60	0.24	-0.40	0.69	-0.10	0.24	-0.20	-0.47	-0.49	-0.87	0.70	-0.07
C93	0.90	-0.37	0.92	-0.91	0.91	-0.13	-0.77	0.77	-0.25	0.70	-0.54	-0.75	-0.74	0.71	0.33	-0.52	-0.67	0.42	-0.68	-0.70	-0.53	-0.80	0.80	-0.13	-0.58	-0.83	0.71	0.86	-0.07
C07	-0.71	-0.81	0.54	-0.76	-0.75	0.13	0.19	0.87	-0.09	-0.79	-0.69	-0.52	-0.63	0.96	-0.15	-0.16	0.57	-0.59	0.71	0.43	0.22	-0.96	-0.28	0.95	0.53	0.82	-0.52	-0.46	-0.07
C53	-0.38	-0.23	-0.67	-0.75	-0.82	-0.16	0.36	0.49	0.36	0.28	0.88	0.15	-0.89	0.82	-0.48	-0.41	-0.83	0.34	-0.22	0.67	-0.15	-0.14	-0.28	-0.13	0.40	-0.74	0.03	0.39	-0.08
C72	0.92	0.22	-0.49	-0.76	-0.95	0.25	-0.13	0.31	-0.73	0.78	0.91	-0.77	-0.81	-0.59	-0.34	-0.39	0.82	0.40	-0.95	0.09	0.63	-0.52	-0.91	0.51	-0.93	0.88	0.76	-0.30	-0.08
C14	0.87	-0.95	0.46	0.74	0.74	-0.65	-0.14	-0.47	-0.20	-0.73	0.71	0.35	0.22	-0.01	-0.52	-0.37	0.10	0.24	0.25	0.51	0.13	0.13	-0.83	-0.39	-0.61	-0.92	-0.52	-0.55	-0.09
C64	0.65	0.91	-0.93	0.50	0.69	0.64	-0.82	-0.42	0.15	-0.30	-0.19	0.50	0.03	-0.77	-0.73	-0.27	-0.76	0.52	0.04	-0.79	0.81	-0.83	0.50	-0.67	-0.96	0.41	0.45	-0.95	-0.09
C15	-0.76	-0.85	0.88	0.29	0.65	-0.45	0.06	-0.21	-0.02	-0.82	-0.74	-0.55	0.31	0.51	0.21	0.01	-0.19	0.73	-0.45	0.85	-0.80	-0.88	0.05	0.23	-0.26	0.81	-0.54	-0.84	-0.10
C81	-0.42	-0.38	-0.89	-0.35	-0.21	0.26	-0.05	-0.04	-0.52	-0.01	0.52	0.28	-0.18	0.23	-0.25	0.89	0.04	-0.27	0.31	0.48	-0.04	0.10	0.11	-0.81	-0.52	-0.46	-0.10	-0.56	-0.10
C26	-0.38	0.71	0.70	-0.27	-0.42	0.42	-0.66	0.54	-0.49	0.53	-0.40	-0.24	0.28	-0.24	-0.48	-0.35	-0.01	-0.07	-0.69	-0.02	0.11	-0.43	0.44	-0.02	-0.38	-0.08	-0.21	-0.83	-0.10
C79	-0.21	-0.49	0.01	-0.63	0.11	-0.75	-0.43	-0.65	0.16	0.08	0.66	0.60	-0.82	0.67	0.25	-0.09	-0.65	0.32	-0.86	0.85	-0.17	-0.26	-0.81	-0.08	-0.73	0.77	0.45	-0.24	-0.11
C59	-0.86	-0.73	0.82	-0.68	0.51	0.31	-0.17	0.69	-0.20	-0.34	-0.93	0.34	0.63	-0.68	-0.69	0.12	0.47	0.62	-0.54	0.34	-0.84	-0.79	-0.15	0.30	-0.12	-0.60	0.37	-0.26	-0.11
C55	0.69	-0.14	0.26	-0.84	-0.85	-0.44	0.79	-0.25	-0.21	-0.44	-0.01	-0.81	0.51	-0.27	0.20	0.28	-0.74	0.10	-0.81	0.83	-0.70	0.76	-0.27	-0.61	-0.90	-0.77	0.91	0.64	-0.11
C54	-0.79	-0.70	0.53	0.07	0.84	-0.90	-0.65	0.96	0.26	-0.07	-0.78	0.50	0.35	0.67	0.34	-0.03	-0.04	-0.65	0.08	-0.69	-0.23	-0.14	-0.26	0.46	-0.59	-0.28	-0.70	-0.71	-0.11
C44	-0.67	-0.37	-0.73	-0.55	-0.74	0.13	0.75	0.76	-0.47	0.94	0.56	-0.58	-0.81	0.48	-0.81	-0.63	0.45	0.55	-0.64	0.85	-0.76	0.69	0.75	-0.67	-0.57	-0.25	-0.25	-0.64	-0.12
C16	-0.52	-0.63	0.96	-0.87	0.41	0.08	-0.84	-0.61	-0.67	-0.37	0.37	-0.40	-0.82	-0.61	-0.11	0.25	0.88	0.25	-0.75	-0.14	0.50	-0.35	0.61	-0.74	0.92	-0.45	-0.53	0.80	-0.12
C43	-0.80	-0.73	0.77	0.89	-0.79	0.46	0.15	-0.75	-0.86	-0.67	-0.74	-0.53	-0.46	-0.41	-0.72	-0.06	0.80	0.79	-0.18	-0.27	0.52	0.61	0.73	-0.69	-0.09	-0.33	-0.44	0.31	-0.13
C09	-1.00	-0.95	0.32	-0.54	0.31	0.19	-0.80	-0.88	-0.50	-0.88	0.97	-0.34	0.30	0.29	-0.91	0.74	0.88	-0.16	-0.61	0.67	0.19	-0.73	0.07	0.15	-0.18	-0.55	0.56	-0.19	-0.13
C29	0.56	0.50	-0.50	-0.92	-0.78	0.59	0.72	-0.75	-0.49	-0.09	-0.11	-0.78	-0.76	0.81	0.57	-0.36	0.82	0.85	-0.26	-0.22	-0.39	-0.81	-0.20	-0.65	-0.80	0.58	-0.07	-0.92	-0.14
C20	-0.77	0.60	-0.15	0.07	0.61	0.94	-0.69	0.69	-0.76	-0.87	-0.92	0.62	-0.87	-0.30	-0.78	0.04	-0.82	0.80	-0.64	0.19	-0.66	0.52	-0.36	-0.64	0.32	0.15	-0.84	0.62	-0.14
C71	-0.72	0.63	-0.09	-0.33	0.09	-0.76	-0.79	-0.28	-0.73	0.71	0.58	0.02	-0.34	0.15	-0.44	-0.48	-0.46	0.61	0.54	0.87	-0.88	-0.62	-0.10	-0.73	-0.07	-0.19	-0.18	0.06	-0.14
C63	-0.61	0.13	-0.21	0.59	0.22	-0.33	-0.28	0.85	0.49	0.43	-0.19	0.29	0.14	-0.91	-0.65	-0.30	-0.39	0.19	-0.39	-0.60	0.64	-0.78	-0.83	-0.89	-0.27	0.52	-0.25	-0.66	-0.14
C89	-0.20	0.01	-0.84	0.81	-0.64	0.39	-0.28	0.28	-0.69	0.35	0.18	-0.02	0.23	-0.84	-0.05	0.20	0.24	-0.82	-0.08	0.33	-0.52	0.40	-0.43	-0.76	-0.66	-0.73	0.62	-0.66	-0.15
C46	-0.90	-0.80	-0.55	0.69	0.73	-0.06	0.67	-0.37	0.57	-0.89	0.76	-0.26	-0.84	-0.58	0.90	-0.85	-0.44	0.75	0.10	-0.47	0.25	0.51	-0.62	-0.85	-0.97	-0.27	-0.41	-0.01	-0.15
C02	-0.91	-0.49	-0.38	-0.83	-0.94	0.10	-0.91	-0.12	0.63	-0.38	-0.98	-0.49	0.29	0.81	-0.86	0.15	0.62	0.08	-0.44	0.68	-0.19	0.21	0.70	-0.82	0.48	0.62	-0.51	-0.58	-0.16
C61	-0.37	0.81	-0.24	-0.72	0.79	0.29	-0.58	0.47	0.64	-0.61	-0.69	0.48	-0.05	-0.80	-0.75	-0.44	-0.59	-0.32	-0.96	0.05	0.77	-0.39	-0.60	-0.66	-0.95	0.50	0.57	-0.61	-0.18
C45	-0.87	-0.84	0.17	0.52	0.30	-0.77	0.53	0.07	-0.24	0.02	0.88	-0.77	-0.92	0.34	-0.71	-0.59	-0.74	0.56	-0.02	0.08	-0.04	-0.51	0.19	-0.71	-0.32	0.27	-0.42	-0.59	-0.18
C25	0.77	-0.78	0.33	0.65	-0.20	-0.90	0.25	-0.75	0.39	-0.61	-0.71	0.60	0.47	-0.36	-0.11	-0.16	-0.54	-0.56	-0.69	-0.50	-0.08	0.11	-0.73	-0.68	-0.42	0.74	-0.88	-0.73	-0.22
C97	-0.50	-0.05	-0.27	-0.48	-0.62	-0.57	-0.01	0.59	-0.68	-0.47	-0.41	0.30	-0.78	-0.68	-0.25	-0.81	-0.36	0.85	0.71	0.13	-0.70	-0.57	-0.08	-0.81	-0.08	-0.32	0.03	0.53	-0.23
C69	-0.93	-0.12	-0.63	-0.52	-0.72	-0.64	0.50	-0.89	-0.35	0.23	-0.89	-0.48	-0.53	-0.85	0.37	0.64	0.16	0.86	-0.35	0.96	-0.46	0.72	0.62	-0.76	-0.23	-0.63	-0.85	-0.69	-0.23
C08	-0.82	-0.85	-0.52	-0.73	0.14	0.91	0.77	-0.75	-0.56	-0.69	-0.79	-0.34	-0.83	-0.54	-0.84	-0.31	-0.68	-0.76	-0.72	-0.67	0.53	0.81	-0.54	0.85	-0.77	0.88	0.05	0.21	-0.27
C62	-0.76	-0.61	-0.31	-0.57	-0.77	0.05	-0.12	-0.86	0.67	-0.42	-0.95	0.48	0.03	-0.77	-0.82	-0.24	-0.29	0.17	-0.87	0.25	0.27	-0.55	-0.83	-0.63	-0.95	0.68	-0.73	-0.88	-0.37

Conclusions

From the results presented above we can conclude that the assessment of trade specialisation or other indicators derived from international trade gross flows estimates can be affected by the the

level, origin and destination of re-exports (and quasi-transit in the case of Eu countries). As it was shown, somtimes the conclusions based on gross exports can be the opposite if re-exports were taken into account. It is therefore very important to properly correct the effect of re-exports prior to derive indicators based on international trade.

The QDR methodology mention in the first section breaks down gross consolidated trade flows into quasi-transit, domestic and re-exports, allowing the corrections needed to properly assess trade specialisaiton patterns.

Eurostat is currently working on making the necesary arrangements, e.g. quality checks, assessing confidentiality disclosure, etc. to make the QDR data set available for researchers and general public, hoping that it can be a positive contribution to the academic community.

Bibliography

Laursen, K. (2015). Revealed Comparative Advantage and Alternatives as Measures of International Specialisation. *Eurasia Business and Economic Society*, 99-115.

Maksymets, O. a. (2016). International Competitiveness: A Case Study of American, Swedish and Ukrainian Forest Industries. *The International Trade Journal*, 159-176.

Martins Ferreira, P. (2018). QDR methodology: understandig trade flows in the EU. *EURONA - Eurostat Review on National Accounts and Macroeconomic Indicators*, 55-70.

RUEDA-CANTUCHE, J.M.(ed) and REMOND-TIEDREZ. (2019). *EU inter-country supply, use and input-output tables — Full international and global accounts for research in input-output analysis (FIGARO).* Eurostat.