

*Original Research Article***The dynamics of agri-food trade between the EU28 and East African Community (EAC)**

Ivo Zdráhal, Nahanga Verter, Věra Bečvářová

*Department of Regional and Business Economics, Faculty of Regional Development and International Studies, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic***Correspondence to:****I. Zdráhal**, Department of Regional and Business Economics, Faculty of Regional Development and International Studies, Mendel University in Brno, e-mail: ivo.zdrahal@mendelu.cz; nahanga.verter@mendelu.cz; vera.becvarova@mendelu.cz**Abstract**

The increasing number of regional blocs and interdependence of nations have become important aspects of global economic integration. The European Union (EU28) as one of the most advanced regional bodies has had preferential trade agreements with other regional bodies, such as the East African Community (EAC). Historically, the EU28 has been the EAC's leading trading partner. Against this background, this paper analyses the dynamics of bilateral trade in agri-food between the two regional blocs for the period 2000–2018, using the battery of empirical tools.

The findings indicate that even though the EU has finalised trade agreements with the EAC, it holds on the region regarding trade has diminished. The EAC bloc has diversified its trading partners (to other African countries, India and China) beyond the EU28 markets. The results further reveal that the EU28 has comparative advantages in 32 out of 46 agri-food products in trading with EAC. The export concentration ratios show the EU28 slightly concentrated more in exporting products to the EAC than EAC to the Union. The BCG findings reveal (un)competitive and/or promising (dropping) products in export structures of both regions. By and large, the results indicate certain shifts in the comparative advantage, specialisation/diversification of exports and competitiveness of specific products on the bilateral level between EU28 and EAC. Policymakers, especially from EAC should continue to create enabling environments to stimulate food processing, trade and monitor changes in trade patterns or shocks within the framework of the Partnership Agreement.

**Keywords:** agri-food; comparative advantage; competitiveness; EAC; EU28; LFI**INTRODUCTION**

The growth of global interdependence and regionalism has intensified in recent decades (Gaens et al., 2012). One of the driving forces of regional interconnectedness is foreign trade (Verter, 2017). This development has partly led to the manifestation of the dynamics of a growing number of preferential trade agreements between the different regional groupings (McIntyre, 2005; Bergstrand et al., 2016). Nevertheless, the integration has brought both economic benefits and costs in the regions involved (Verter, 2017).

Preferential trade agreements may have adverse implications for regional and trans-regional development. The agreements may, to some extent, impede free trade on the multilateral levels (McIntyre, 2005; Freund and Ornelas, 2010; Duncan, 2014; Orefice

and Rocha, 2014). This paper is focused on bilateral trade in the agrarian sector.

The dynamics of agrarian trade may have been driven by the level of cooperation between regional bodies through bilateral and multilateral agreements. As compared with trade patterns in other products, agrarian sector is more complicated because it is related not only to economic growth but also food security, especially in the least developed countries (LDCs).

The European Union (EU28) is one of the most advanced regional bodies that have preferential trade agreements with other regional groupings worldwide. To stimulate trade and economic growth, in 2014, the EU and the East African Community (EAC)<sup>1</sup> finalised a trade agreement, under the umbrella of the 'Economic Partnership Agreement (EPA)' based

1 The current EAC members include Kenya, Uganda, Tanzania, Rwanda, Burundi and South Sudan. The EAC treaty was signed in 1999 and entered into force in 2000. The EAC founded the Customs Union in 2005 and was fully-fledged with zero internal tariffs in 2010, signed a protocol on a monetary union in 2013.

on the Convention of Lome and Cotonou. Even though the agreement was expected to be signed in 2016, it has resulted in a deadlock as some EAC countries have not ratified the negotiations.

Nevertheless, since 2008, the EU has allowed duty-free access to their markets for products from the EAC due to the inclusion of these countries, the LDCs under the EU's 'Everything But Arms' initiative. Kenya was reclassified under the standard scheme of preferences (Generalised Scheme of Preferences) but gained duty-free access to EU markets since 2014 (European Commission, 2015a; EU-EAC, 2016).

The EAC bloc has undertaken to liberalise up to 82.6% of the value of imports from the EU. Under the EAC Customs Union, it has already taken care of more than 50% of these have been imported duty-free from the EU28. The rest of imports were to be liberalised progressively within 15 years from the moment the EPA enters into force. Also, a smaller portion, 2.9% of imports would be liberalised within 25 years. The EAC has decided to temporarily exclude from the process of full liberalisation of the range of commodities, including some food and agricultural products (EU-EAC, 2016).

Trade concentration, diversification, and competitiveness are among the critical implications of regional trade agreements (Yang and Gupta, 2005; López-Cálix et al., 2010; European Commission, 2015b; Blažková, 2016), especially when advanced economies (in this case, the EU), trade with developing economies, such as the EAC member countries. Given that study about the dynamics of agrarian trade between the EU and the EAC is scanty, this study is an attempt to narrow the gap. This paper is aimed at investigating the dynamics of bilateral trade in agrarian products between the EU28 and EAC member countries. The paper deals with agri-food trade performance, specialisation and competitiveness of the regional blocs.

**MATERIALS AND METHODS**

This paper analyses the current food and agricultural trade between the EU28 and the EAC for the period 2000–2018. In this context, attention is drawn to the structure of agri-food trade, thus making it possible to define the level and dynamics and competition between the two regional blocs. The analysis is based on data obtained from the United Nations Conference on Trade and Development (UNCTAD, 2019a), and the European Commission (EC). South Sudan is not included in the analysis because the country joined the EAC in 2016.

The analysis of regional and commodity structure of agrarian trade is based on the Standard International Trade Classification (SITC) Revision 3. Trade flows are at current prices in US dollars (US\$). The total foreign

trade between the EU28 and the EAC is defined as All Allocated products (SITC 0-8 + 961 + 971), and agrarian foreign trade (SITC 0 + 1 + 22 + 4). a detailed analysis of the commodity structure was carried out by the 3-digit code, at 46 different commodity groups (Appendix I) of agricultural and food trade. In this work, agri-food is used interchangeably with food and agriculture.

Some basic statistical methods to evaluate the development and structure of individual indicators and competitiveness are used. The descriptive approach looks at the trends, turnover, growth rate and trade balance in agri-food products. Similarly, Smutka et al. (2016) use these methods to assess the development and structure in time series data in agri-food trade.

The growth index is usually presented as a percentage and represents changes in the time series data. In the case of a basic index, it is a deviation from the base(fixed) period, in the case of chain index, it is a deviation from the annual period. Index calculation is then based on the following relationship (%):

$$k_i = \frac{y_i}{y_{i-1}} \times 100 [\%], i= 2,3,\dots,n \tag{1}$$

The average growth rate in the time series was calculated as a geometric mean of individual growth indices. The advantage stems from the recognition of both positive and negative increases. This approach made it possible to summarise trends in certain periods and compare the average increase/decline in turnover, export and import for the entire studied period, and to compare between the two regional blocs.

The geometric mean is calculated as follows (%):

$$G = \sqrt[n]{X_1 \times X_2 \dots \times X_n} \tag{2}$$

For a detailed assessment of the competitiveness of exports in foreign markets (i.e., trade between the EU28 and EAC), an index, which shows the ratios of exports (X) to imports (M), known as Trade Coverage Index (TCI) is used. The TCI is mathematically presented as follows:

$$TCI_i = \frac{X_i}{M_i} \times 100 \tag{3}$$

Where:  $TCI_{ij}$  denotes trade coverage index of a product with other countries;  $X_{ij}$  stands for export of product groups;  $M_{ij}$  represents an import of product groups. If the value of the index is higher than 100%, then, the country (a group of countries) has an overall relative trade advantage over its trading partners. The disadvantage of this indicator is that it ignores the qualitative parameters of the trade.

Following Reis and Farole (2012), the Coefficient of concentration (CR), Herfindal-Hirschman index (HHI) and Theil's Entropy were used to assess the changes in the product structure of trade. The concentration indexes indicate how exports and imports of EU or

EAC concentrate on a few products or otherwise are distributed more homogeneous among a broad range of products. The model of the Coefficient of concentration is mathematically presented here as follows:

$$CR_i = \frac{x_{ij}}{\sum_1^n x}, \text{ where } 1 = 3 \text{ and } 5 \text{ most traded products} \quad (4)$$

The HHI is mathematically presented here as follows:

$$HHI = \sum s_{ij}^2 \quad (5)$$

Where;  $s$  is the share of exports (imports) in the total agrarian trade for the product  $i$  in the year  $j$ . The index value ranges from 0 to 1. A value closer to 1 indicates that an agrarian trade is concentrated in few goods, thus its vulnerability to trade shocks, whereas a completely diversified portfolio will have an index close to 0. The CR and HHI can be classified as an indication of diversification in the exporter's (importer's) profile.

Theil's Entropy is another measure of the export or import concentration. The Theil's Entropy is mathematically presented here as follows:

$$E_i = - \sum_i s_{ij} \log s_{ij} \quad (6)$$

High entropy values indicate a diversified export portfolio. If one good is all that a country exports, the entropy is zero. If  $n$  products have an equal share, the maximum value is the log of  $n$ . A portfolio with a high concentration of specific subgroups of products produces an HHI closer to 1 and an entropy value closer to 0.

To capture the degree of comparative advantages of the relevant sectors included in the total agrarian trade, Balassa (1965, 1977) suggested the 'revealed' comparative advantage (RCA), also known as the Balassa index (BI). The BI is mathematically presented as follows:

$$BI_{ij} = \frac{\frac{X_{ij}}{X_i}}{\frac{X_{wj}}{X_w}} \quad (7)$$

Where;  $X$  indicates exports,  $i$  represents a nation,  $j$  signifies a product and  $w$  represents a set of countries. The Balassa index varies between 0 and infinity. Values less than 1 signify that the economy does not have a comparative advantage. Also, it implies that the economy does not specialise in exporting that given product; while values that exceed 1 signifies that the country has a comparative advantage in that given sector. The BI reveals the comparative advantage only towards the world market. To analyse comparative advantage on the bilateral level and to determine

the competitiveness or comparative advantage of agrarian products within the two regional blocs, Lafay index (LFI) is applied (Lafay, 1992) as follows:

$$LFI_j^i = 100 \left( \frac{x_j^i - m_j^i}{x_j^i + m_j^i} \frac{\sum_{j=1}^N (x_j^i - m_j^i)}{\sum_{j=1}^N (x_j^i + m_j^i)} \right) \quad (8)$$

Where  $x_j^i$ ; and  $m_j^i$  are exports and imports of commodity  $j$  of country or region  $i$ , towards and from the rest of the world, respectively. According to the LFI, the comparative advantage of country or region  $i$  in the trade of item  $j$  is, therefore, measured by the deviation of product  $j$  normalised trade balance from the overall normalised trade balance, multiplied by the share of trade (imports + exports) of product  $j$  on total trade. Given that LFI measures each group's contribution to the overall normalised trade balance,

the following relation holds  $\sum_{i=0}^n LFI_j^i = 0$ . Positive values of the index signify the presence of comparative advantages in a product, the larger the value, the higher the degree of specialisation. On the other hand, negative values indicate de-specialisation (Zaghini, 2003).

The modified version of the Boston Consulting Group Matrix (BCG Matrix) or also called Grow-Share Matrix (Kotler, 2007) has been used to investigate the structural characteristics of agri-food products regarding its competitiveness. This generic analytical tool is often used in studies of a product portfolio but recently was also used in agri-food trade analyses (Smutka et al., 2016; Svatos et al., 2013). The BCG Matrix allows splitting the export structure into segments characterised by several development trends and identify the promising or non-perspective product groups within the EU-EAC agri-food trade.

The modified version of BCG Matrix and its interpretation is as follows: Stars (products in export structure revealing high share and rapid growth rate of its export value); Cash Cows (high share but low growth rate); Question Marks (low share but rapid growth rate); and Dogs (low share and growth rate). In the case of the EU's export to EAC: the average percentage of products in the total agri-food export of the EU to the EAC, served as a benchmark for the shares; the average growth rate of the total agri-food export from the EU28 to the EAC, served as a benchmark for the growth rates. In the case of EAC's export to the EU28: the average share of products in the total agri-food export of the EAC to the EU28, serving as a benchmark for the share; the average growth rate of the entire agri-food export from the EAC to the EU28 served as a benchmark for the growth rates. The BCG Matrix methodology is applied for five-year intervals: 2000–2004; 2005–2009; 2010–2014; and 2015–2018 to reveal structural changes in export composition.

**RESULTS AND DISCUSSION**

**Dynamics of total and agrarian trade between the EU28 and EAC**

This section presents the results of the dynamics of trade between the EU28 and EAC. Table 1 shows that the total trade between the EU28 and EAC dramatically increased from \$2.8 billion in 2000 to \$7.3 billion in 2018. Although overall exports from both regional blocs increased, an average annual growth rate was higher in the EU28 than EAC with 6.8% and 3.9%, respectively. The EU28 witnessed positive trade balance (all products) with the EAC between 2005 and 2018. In the same direction, the TCI also improved in the same period under study. Arguably, trade liberalisation might have given the EU28 exporters a more significant opportunity to perform better than EAC exporters.

The value of agri-food (SITC 0 + 1 + 22 + 4) trade represents a significant segment of bilateral trade between the EU28 and the EAC. The EAC exports to the EU largely dominated by agrarian products (72% in 2000 and 63% in 2018). On the other hand, the EU28 substantially exports non-agrarian products to EAC countries as agri-food products accounted for only 7% and 9% between 2000 and 2018, respectively. The value of agri-food exports from the EAC countries to the EU28 rose from \$1.0 billion in 2000 to \$1.8 billion in 2018, representing an average annual growth rate of 3.2%. The significant increase is seen in the first part of the period under review. This somewhat corresponds to the observation, that the agri-food trade in Africa has progressively expanded since the mid-1990s (Martin, 2018).

Similarly, the values of the EU’s food to the EAC rose from \$89 million to \$484 million in 2016 before declining to 393 million. Although the EU28 is a net importer of agrarian food from the EAC, the gap has drastically narrowed. This is because the EU28 exports to EAC grew (an average of 8.6% between 2000 and

2018.) faster than the EAC just as its TCI improved from 9% in 2000 to 22% in 2018 (Table 1).

As earlier mentioned, the dynamics of trade between the EU28 and EAC have evolved and may be driven by the ongoing regional trade agreements. As shown in Table 2, the share of intra-group (EAC) agrarian exports and imports increased from 6.6% and 15.3% to 18.4% and 22.9% between 2000 and 2018, respectively. Contrary, the share of intra-group non-agricultural trade decreased. Even though the value of food exports has increased, the percentage of EAC’s export to the EU28 decreased from 52.5% in 2000 to 28.6 in 2018. Also, the share of the EU’s export in the import structure of EAC decreased from 19.4% to 12.6% within the same period under review. Despite this drop, the EU28 is still the EAC’s vital trade partner in agri-food products.

It is important to reiterate that, since the new millennium, when the implementation of Uruguay Round Agreement on Agriculture (URAA) was completed, tariffs of agri-food products declined (Bureau et al., 2019). Four EAC Partner States (Burundi, Rwanda, Tanzania and Uganda) receive full duty-free and quota-free access to the EU for all their exports under EU’s “Everything But Arms” initiative (Liu et al., 2019). These measures or policies might have had implications to trade in agri-food products in the sub-region.

This shows that the EAC bloc has diversified its agrarian trading partners (to other African countries, India and China) beyond the EU28 markets. In the same direction, the relevance of the EU28 as a major trading partner of the EAC in agricultural and non-agricultural products has taken a back seat as China and India have intensified to become the new leading partners in the region (Table 2). Notwithstanding, it is worth reiterating that the EU’s exports to EAC grew by 3.6 times, whereas EAC exports to the EU28 growth by 3.3 times between 2000 and 2018 (Table 3). This finding is consistent with conclusions of Fugazza and Vanzetti

**Table 1.** Total and agrarian trade and its dynamics between the EU28 and EAC, and other economies

Indicator/year	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Total trade (SITC 0-8 + 961 + 971)</b>											
Turnover (US\$ mill.)	2,783	4,413	6,542	8,092	7,490	7,451	7,686	7,531	7,037	6,774	7,271
EU28 exports (US\$ mill.)	1,351	2,382	3,998	4,867	4,676	4,649	4,692	4,579	4,241	3,965	4,375
EAC exports (US\$ mill.)	1,433	2,031	2,544	3,226	2,814	2,801	2,995	2,952	2,796	2,809	2,896
Balance (US\$ mill.)	-82	351	1,453	1,641	1,862	1,848	1,697	1,626	1,445	1,157	1,479
TCI (EU28)	94	117	157	157	151	166	157	155	152	141	151
<b>Food trade (SITC 0 + 1 + 22 + 4)</b>											
Turnover (US\$ mill.)	1,113	1,550	1,993	2,419	2,103	2,070	2,210	2,315	2,253	2,235	2,217
EU28 exports (US\$ mill.)	89	115	242	307	283	338	430	479	484	458	393
EAC exports (US\$ mill.)	1,024	1,435	1,751	2,113	1,820	1,731	1,780	1,836	1,769	1,776	1,824
Balance (US\$ mill.)	-934	-1,320	-1,509	-1,806	-1,537	-1,393	-1,350	-1,356	-1,285	-1,318	-1,431
TCI (EU28)	9	8	14	15	16	20	24	26	27	26	22

Source: Compiled from UNCTAD data

**Table 2.** Structure of total and agrarian trade (%) between the EAC and other regions

	Agrarian export- EAC		Other export- EAC		Agrarian import- EAC		Other import- EAC	
	2000	2018	2000	2018	2000	2018	2000	2018
<b>Total</b>	100	100	100	100	100	100	100	100
<b>intra group</b>	6.6	18.4	33.3	19.2	15.3	22.9	14.1	5.6
<b>extra group</b>	93.4	81.6	66.7	80.8	84.7	77.1	85.9	94.4
<b>extra</b>	100	100	100	100	100	100	100	100
<b>EU28</b>	52.5	28.6	44.2	15.0	19.4	12.6	30.9	13.0
<b>USA</b>	3.0	3.8	6.8	7.4	7.6	1.8	4.9	2.0
<b>China</b>	0.1	2.4	0.8	4.6	2.0	3.4	4.7	25.7
<b>India</b>	4.7	6.5	4.0	7.5	0.9	4.4	6.4	14.0
<b>Rest of Africa</b>	13.0	21.4	21.3	21.4	20.5	15.3	11.9	7.7
<b>Others</b>	26.7	37.3	22.9	44.1	49.6	62.6	41.2	37.7

Source: Own work based on UNCTAD data

**Table 3.** Grow rates and chain index of agri-food trade between the EU28 and EAC

Average growth rate	2000–04	2005–09	2010–14	2015–18	2000–18
<b>Turnover (EU28 + EAC)</b>	1.016	1.087	1.030	1.000	1.039
<b>EU28 Exports to EAC</b>	1.019	1.188	1.148	0.968	1.086
<b>EAC exports to the EU28</b>	1.015	1.076	1.009	1.008	1.032
<b>The base index</b>	2000	2005	2010	2015	2018
<b>Turnover (EU28 + EAC)</b>	1.00	1.377	1.773	2.056	1.977
<b>EU28 Exports to EAC</b>	1.00	1.281	2.728	5.444	4.409
<b>EAC exports to the EU28</b>	1.00	1.385	1.690	1.764	1.767

Source: Own work based on UNCTAD data

(2008), USDA (2015), Amanor and Chichava (2016) that global agricultural trade patterns have changed in recent decades. While agrarian exports from developing countries to developed markets (North-South trade) have increased; one of the most apparent trends has been the significant growth in agricultural trade between developing countries (South-South trade).

**Food commodity structure, specialisation and comparative advantage**

Historically, the EU28 has exported a wide range of high-value food and agricultural products to other regions across the globe. On average (2000-2018), the BI reveals that the EU28 recorded weak comparative advantages in 22 out of 46 food products traded in the world market. On the other hand, EAC bloc shows typical characteristics of developing countries' trade structure. The BI reveals that EAC recorded comparative advantages in 14 out of 46 food product groups, notably tea and mate (SITC 074), coffee (SITC 071), unmanufactured tobacco (SITC 121), other cereal meals (SITC 047) and meal and flour (SITC 046) in the world market. These products are the flagship (Table 4) regarding EAC food competitiveness.

On a bilateral trade between EU28 and EAC, the LFI scores reveal that EU28 has comparative advantages in 32 out of 46 products, notably SITC 041, SITC 048, SITC 0411, SITC 061 and SITC 223 and SITC 431. This

appears inconsistent as the EU28 is a net importer of agri-food trade with EAC. However, many products show only minor values of trade flows (Table 4).

It is not always the case that if EAC reveals a comparative advantage towards the world market, it also reveals it towards the EU28 and vice versa. For instance, the findings show that EAC has comparative advantages in some of its agri-food products (SITC054, SITC058, SITC071, S074, SITC075, SITC121) in both towards the global market and the EU28 (Table 4). These findings are in line with conclusions of Chingarande et al. (2013) whose results revealed that EAC countries have comparative advantages in some food products, such as teas, jute and beans in Kenya, fish fillet or meat in Tanzania, coffee, maize and fish in Uganda, coffee and tea in Rwanda.

Unlike the world market that EAC reveals comparative advantages in products, such as SITC035, SITC045, SITC046, SITC047, SITC062, SITC091, and SITC431, EAC records comparative disadvantages in the same products in bilateral trade with EU28 (Table 4). This result is in line with a general observation that the product composition of regional trade can be quite different from that of global trade (Krugman, 1980; WTO, 2011).

Differences and changes in trade patterns due to demand and supply sides, both at domestic and international markets, factor-intensities and

Table 4. RCA of EU28 and EAC towards the world market (BI) and bilateral trade (LFI), 2000–2018

SITC code	BI <sub>EU28</sub>		BI <sub>EAC</sub>		LFI <sub>EU28→EAC</sub>		SITC code	BI <sub>EU28</sub>		BI <sub>EAC</sub>		LFI <sub>EU28→EAC</sub>	
	avg.	var.	avg.	var.	avg.	var.		avg.	var.	avg.	var.	avg.	var.
SITC 001	1.40	0.11	0.15	0.47	0.34	0.50	SITC 057	0.79	0.08	0.78	0.30	-0.80	-0.80
SITC 011	0.85	0.09	0.02	0.59	0.00	1.33	SITC 058	0.94	0.04	1.17	0.42	-0.82	-0.35
SITC 012	1.27	0.04	0.05	1.01	0.08	1.04	SITC 059	1.09	0.03	0.52	0.35	-0.04	-1.42
SITC 016	1.92	0.04	0.14	0.35	0.01	0.57	SITC 061	0.64	0.16	0.58	0.30	0.28	1.39
SITC 017	1.34	0.05	0.05	0.38	0.07	0.56	SITC 062	1.15	0.04	1.02	0.18	0.09	0.23
SITC 022	1.47	0.04	0.19	0.76	0.69	0.38	SITC 071	0.70	0.12	7.34	0.18	-6.63	-0.40
SITC 023	1.61	0.04	0.06	0.88	0.05	0.54	SITC 072	0.81	0.11	0.87	0.38	-0.37	-0.64
SITC 024	1.91	0.05	0.00	0.53	0.14	0.44	SITC 073	1.65	0.06	0.05	0.38	0.28	0.40
SITC 025	1.61	0.04	0.05	0.80	0.03	1.11	SITC 074	0.42	0.08	39.21	0.05	-2.92	-0.32
SITC 034	0.63	0.05	1.86	0.46	-2.29	-0.35	SITC 075	0.46	0.08	1.84	0.32	-0.08	-1.02
SITC 035	0.97	0.24	1.76	0.54	0.01	1.25	SITC 081	0.87	0.05	0.22	0.81	0.58	0.82
SITC 036	0.38	0.12	0.20	0.41	-0.22	-0.32	SITC 091	1.26	0.04	1.11	0.32	0.01	0.57
SITC 037	0.56	0.04	0.23	0.52	-0.26	-0.66	SITC 098	1.26	0.03	0.13	0.37	3.88	0.38
SITC 041	0.71	0.16	0.10	1.19	4.45	1.05	SITC 111	1.45	0.04	0.20	0.78	0.87	0.51
SITC 042	0.22	0.13	0.30	0.61	0.06	1.53	SITC 112	1.71	0.04	0.19	0.55	2.83	0.35
SITC 043	1.18	0.12	0.05	0.72	0.14	1.20	SITC 121	0.51	0.13	6.82	0.19	-2.33	-0.71
SITC 044	0.45	0.08	0.50	0.41	0.03	3.34	SITC 122	1.38	0.10	0.96	0.39	0.09	0.73
SITC 045	0.62	0.13	1.48	1.26	0.00	4.20	SITC 222	0.26	0.10	0.48	0.39	-0.07	-1.18
SITC 046	0.86	0.16	3.05	0.51	0.10	1.23	SITC 223	0.65	0.09	0.94	0.70	0.05	1.11
SITC 047	0.76	0.07	4.79	0.57	0.03	2.51	SITC 411	1.04	0.11	0.05	1.18	0.03	2.45
SITC 048	1.51	0.02	0.13	0.24	3.83	0.24	SITC 421	1.04	0.06	0.21	0.69	0.35	0.40
SITC 054	1.09	0.04	1.86	0.12	-2.48	-0.42	SITC 422	0.25	0.09	0.64	0.22	-0.01	-3.87
SITC 056	1.29	0.03	0.40	0.23	0.41	0.41	SITC 431	0.89	0.06	1.16	0.53	0.02	1.12

Source: Own work based on UNCTAD data; Note: green – strong CA, blue – medium CA and yellow – weak CA.

productivity differentials (Widodo, 2009) or trade policy measures (the tariff or non-tariff barriers) may have accounted to the variations of these findings.

The coefficients of variation indicate a more excellent dispersion in the variables, and thus relative changes of some comparative advantages during the analysed period (Table 5). In other words, the changes in revealed comparative advantages occurred as a result of trade performance between two regional bodies (Table 3).

Comparing the LFI scores (Table 5) five period (average 2000-2004) to the next (average 2015-2018), half (23 out of 46 products) of the EU’s comparative advantages increased. The EU28 perspectives, 22 out of 46 food products, notably SITC 041, SITC 048, SITC 098, SITC 111, SITC 112, have revealed comparative advantages throughout the periods, from 2000 to 2018. The major products that gained and revealed comparative advantages: wheat (SITC 041; +10.04), edible products (SITC 098; +2.82) and alcoholic beverages (SITC 112; +2.11).

Equally, EAC’s comparative advantages increased in another half of the analysed products. From the EAC perspective, 9 out of 46 food products (SITC034, SITC036, SITC054, SITC057, SITC058, SITC071,

SITC074, SITC121 and SITC222) have revealed comparative advantage throughout the periods under study. The major products that revealed comparative advantages: coffee (SITC071; +6.00); unmanufactured tobacco (SITC121; +3.87); vegetables (SITC054; +2.41); tea and mate (SITC074; +2.27); fruit and nuts (SITC057; +1.62); and fresh, chilled or frozen fish (SITC034; +1.20).

It is worth explaining that between 2015 and 2018, the EAC started to reveal comparative advantage towards EU28 (change its status from comparative disadvantage) in oilseeds (SITC223); and fixed vegetable fat and oils (SITC422). On the other hand, EU28 started to reveal comparative advantage towards EAC in prepared and preserved fish (SITC037) and fruit and vegetable juices (SITC059) within the same period. To sum up, some of the food products in both regional blocs under study have fluctuated and moved in either direction overtime.

### Export Product Concentration

Globally, nations or firms that are involved in global trade try to spread their risks by diversifying in many baskets of markets or products. Product diversification is promoted to avoid countries or confirms from being

**Table 5.** LFI: agricultural trade between the EU28 and EAC

SITC	2000-04	2005-09	2010-14	2015-18	Δ	2018	SITC	2000-04	2005-09	2010-14	2015-18	Δ	2018
001	0.20	0.21	0.44	0.53	0.33	0.81	057	-0.30	-0.48	-0.71	-1.92	-1.62	-2.32
011	0.00	0.00	-0.00	0.01	0.01	0.02	058	-0.65	-0.67	-0.84	-1.18	-0.53	-0.75
012	0.03	0.02	0.07	0.23	0.20	0.22	059	-0.09	-0.06	-0.04	0.02	0.11	0.00
016	0.00	0.01	0.02	0.02	0.01	0.01	061	0.06	0.21	0.23	0.70	0.64	1.36
017	0.06	0.07	0.07	0.05	-0.00	0.06	062	0.09	0.10	0.09	0.09	-0.00	0.09
022	0.76	0.46	0.66	0.93	0.17	1.12	071	-3.77	-5.19	-8.41	-9.77	-6.00	-8.74
023	0.05	0.02	0.05	0.07	0.01	0.06	072	-0.09	-0.29	-0.45	-0.71	-0.62	-0.53
024	0.08	0.10	0.17	0.22	0.14	0.27	073	0.16	0.23	0.39	0.34	0.18	0.45
025	0.02	0.01	0.01	0.06	0.04	0.10	074	-2.11	-2.31	-3.16	-4.38	-2.27	-3.93
034	-1.73	-2.28	-2.36	-2.92	-1.20	-2.59	075	-0.02	-0.03	-0.08	-0.21	-0.19	-0.21
035	0.00	0.01	0.01	0.01	0.01	0.01	081	0.36	0.33	0.46	1.31	0.95	2.31
036	-0.26	-0.18	-0.17	-0.29	-0.03	-0.30	091	0.01	0.01	0.02	0.02	0.01	0.03
037	-0.19	-0.37	-0.34	-0.08	0.11	0.01	098	2.49	2.76	5.26	5.31	2.82	5.27
041	0.17	3.58	3.96	10.22	10.04	4.06	111	0.29	0.83	1.43	0.96	0.67	0.82
042	0.16	0.06	0.00	0.01	-0.15	0.01	112	2.02	2.06	3.39	4.13	2.11	4.69
043	0.00	0.29	0.17	0.08	0.08	0.02	121	-0.96	-1.22	-2.96	-4.65	-3.68	-3.87
044	0.11	0.00	0.00	0.00	-0.12	0.00	122	0.14	0.09	0.11	0.03	-0.11	0.04
045	0.00	0.00	0.00	0.00	-0.00	0.00	222	-0.01	-0.04	-0.07	-0.16	-0.15	-0.19
046	0.21	0.04	0.02	0.12	-0.08	0.25	223	0.05	0.07	0.11	-0.03	-0.08	-0.05
047	0.02	0.08	0.03	0.00	-0.02	0.00	411	0.01	0.00	0.00	0.12	0.11	0.05
048	2.93	4.01	4.67	3.69	0.76	3.77	421	0.42	0.23	0.29	0.47	0.05	0.64
054	-1.25	-2.27	-2.98	-3.66	-2.41	-3.34	422	0.01	0.01	0.00	-0.07	-0.08	-0.08
056	0.51	0.33	0.49	0.30	-0.22	0.31	431	0.05	0.02	0.01	0.01	-0.04	0.04

Source: Own work based on UNCTAD data

**Table 6.** Export product concentration ratio (%), HHI and Entropy (index) of EAC and the EU28

Year	Export from EU28 to EAC				Export from EAC to EU28			
	CR3	CR5	HHI	Entropy	CR3	CR5	HHI	Entropy
2000	44.3	56.1	0.090	1.221	67.7	87.3	0.222	0.820
2005	52.8	64.5	0.110	1.148	64.1	82.4	0.165	0.910
2010	53.7	70.4	0.121	1.098	60.8	84.7	0.171	0.893
2011	61.0	71.6	0.149	1.059	61.1	83.0	0.190	0.886
2012	62.3	73.4	0.146	1.051	61.4	84.9	0.189	0.873
2013	55.2	74.8	0.129	1.069	59.5	82.3	0.177	0.904
2014	62.1	79.8	0.176	0.964	61.7	82.7	0.170	0.904
2015	66.7	81.4	0.215	0.906	60.5	82.7	0.171	0.897
2016	67.8	81.8	0.225	0.902	59.7	81.3	0.162	0.904
2017	60.2	75.6	0.155	1.017	59.6	81.0	0.174	0.898
2018	48.1	69.0	0.109	1.116	57.4	79.7	0.164	0.911
Average	57.6	72.1	0.143	1.059	61.3	82.3	0.171	0.911

Source: Own work based on UNCTAD data

vulnerable to the external shocks, usually driven by price, demand and market access directions (Verter, 2017). Export product concentration index between the EU28 and EAC is shown in Table 6.

The export concentration ratio as shown in Table 6 indicates that share of the three main EU's export products to the EAC was of 58% on average between 2000 and 2015. It also rose from 44% in 2000 to about

68% in 2016 and dropped later. Similarly, the share of five EU's main export products to the EAC was about 70% on average between 2000 and 2018. It increased from 56% in 2000 to 82% in 2016 and dropped to 69% in 2018. Similarly, the share of the three main export products was of 58% on average between 2000 and 2018. It also rose from 44% in 2000 to about 68% in 2016 and dropped later. The drop in the share of the top three

Table 7. Selected major agri-food export products (% share) in the EU28 and EAC

	2000-04	2005-09	2010-14	2015-18		2000-04	2005-09	2010-14	2015-18
<b>EU28 exports to EAC</b>									
Avg. share (%)	2.17	2.17	2.17	2.17	No. of prod.	26	26	26	26
Avg. grow (index)	1.030	1.181	1.135	0.967	% of export	95.5	96.4	97.7	98.5
<b>Share on the No. of products</b>					<b>Share on the value of export</b>				
Dogs	38.5	42.3	26.9	11.5	Dogs	7.9	6.9	7.3	0.8
Question marks	23.1	2.8	42.3	53.8	Question marks	5.3	2.8	8.0	9.9
Cash cows	19.2	23.1	15.4	7.7	Cash cows	21.4	44.0	41.5	35.6
Stars	19.2	15.4	15.4	26.9	Stars	65.4	46.2	43.3	53.7
<b>EAC exports to EU28</b>									
Avg. share (%)	5.88	5.88	5.88	5.88	No. of prod.	17	17	17	17
Avg. grow (index)	1.015	1.076	1.005	1.008	% of export	99.6	99.6	99.6	99.6
<b>Share on the No. of products</b>					<b>Share on the value of export</b>				
Dogs	17.6	35.3	17.6	17.6	Dogs	7.4	11.7	5.6	4.8
question marks	52.9	35.3	52.9	47.1	question marks	9.0	5.2	10.5	7.4
Cash cows	5.9	11.8	17.6	23.5	Cash cows	26.6	34.7	58.1	67.8
Stars	23.5	17.6	11.8	11.8	Stars	57.0	48.3	25.8	20.0

Source: Own work based on UNCTAD data

and five products is due to a significant decline in wheat (SITC041) exports after 2016. The structure of TOP 5 export products has been rather stable and consisted from cereals preparations (SITC 048), edible products (SITC 098), wheat (SITC 041), alcoholic beverages (SITC 112), non-alcoholic beverages (SITC 111), vegetables (SITC 054,SITC 056), milk and cream (SITC 022) and fish (SITC 034).

The EU's specialisation process was also confirmed (except 2017 and 2018) on the over-all level using HHI and Theil's Entropy. The HHI rose from 0.09 to 0.225 and the Entropy index decline from 1.221 to 0.902 between 2000 and 2016.

On the other hand, the concentration ratio in Table 6 further indicates that export of five main agrarian products from the EAC to the EU28 reduced from 87% in 2000 to 80% in 2018 or an average of 82%. Similarly, three export products declined from about 68% in 2000 to 57% in 2018 (or an average of 61%). Also, the HHI substantially fell from 0.222 to 0.164, and Entropy index increased from 0.820 to 0.911 between 2000 and 2018. This implies that even specialisation of the EAC's agrarian export to the EU's market has reduced, it is still substantial. The structure of top five export products has been stable and consisted are as follows: coffee (SITC 071); tea and mate (SITC 074); unmanufactured tobacco (SITC 121); vegetables (SITC 054); and fresh, chilled or frozen fish (SITC 034).

**Competitiveness of specific products in the export structures**

The modified BCG matric was used further to assess product composition and to identify essential and promising product groups in the mutual trade between the EU28 and EAC blocs. Not all out of 46 product

groups are assessed because some of them show only minor export values. After reduction, 26 out of 46 are analysed in the EU28 exports to EAC. The 26 products represent between 95.5% and 98.5% of the total agri-food export values. For EAC exports to the EU28, only 17 out of 46 products are analysed. Nevertheless, the 17 products accounted for about 99.6% of the export values to the EU28. Most products are characterised as Dogs or Question Marks. On the other hand, most of the export value is created by Cash Cows and Stars (Table 7, and Appendix II).

In the case of the EU's exports to EAC, there is a visible shift towards fewer Dogs and Cash Cows and a higher proportion of Question Marks and Stars. The share of Dogs (typically, SITC 034, SITC 059, SITC 062, SITC 072, SITC 122) in the value of exports decreased from 7.9% to 0.8%. These products do not reveal perspective in the export structure. The flagship and promising products (usually a star or cash cows) are SITC 022, SITC 041, SITC 048, SITC 056, SITC 061, SITC 081, SITC 098, SITC 111, and SITC 112. Also, there are still a lot of products with Question marks: SITC 001, SITC 012, SITC 024, SITC 046, SITC 058, SITC 071, SITC 073, SITC 411 and SITC 412. Future development will show the perspective of these products.

In the case of the EAC export to the EU28, there is a visible shift towards more Cash Cows and fewer Stars. The number of Dogs and Question Marks fluctuate but seems to be structurally stable. The flagship and promising products (usually a star or cash cows) are SITC034, SITC054, SITC071, SITC074 and SITC121. The rest reveals Dogs or Question Marks status. The only exception is SITC057 moved from Question Marks status (between 2000–2015) to Star status in the last period.



The results of the BCG Matrix mapping indicate that the export structure of EAC towards EU28 has matured (currently, EAC exports are mostly created by Cash Cows). The structure of EU28 exports to EAC has undergone higher structural changes, and around 15% of Stars is still creating momentum for future agri-food export profile towards EAC.

### CONCLUSIONS

The EU and EAC have recently finalised trade negotiations through the EPA that would define the framework for the development of mutual trade benefits. This contribution analyses the dynamics of agri-food trade between the regional bodies in recent years.

Historically, the EU28 has been the EAC's leading trading partner. The agrarian products represent a significant segment of bilateral trade between the EU28 and the EAC, albeit its share on the total trade has reduced. Nonetheless, food products remain the mainstay of EAC exports to the EU28 markets. Although the EU28 is a net importer of agrarian food from the EAC, the gap has narrowed.

Even though the EU has finalised trade agreement with the EAC, it holds on the region has diminished. The EAC bloc has diversified its trading partners beyond the EU28 markets. The results further reveal that the EU28 has comparative advantages in 32 out of 46 agri-food products in trading with EAC. The export concentration ratios show the EU28 slightly concentrated more in exporting products to the EAC than EAC to the Union. The BCG findings reveal (un)competitive and/or promising (dropping) products in export structures of both regions. By and large, the results indicate certain shifts in the comparative advantage, specialisation/diversification of exports and competitiveness of specific products on the bilateral level between EU28 and EAC.

The structure of EU28 exports to EAC has undergone some changes and kept the momentum for future agri-food export towards EAC.

The results indicate certain shifts in the comparative advantage, specialisation/diversification of exports and competitiveness of specific products on the bilateral level between EU28 and EAC. Policymakers, especially from EAC should continue to create enabling environments to stimulate food processing, trade and monitor trade changes/shocks within the framework of the Partnership Agreement.

This study is part of an effort to provide information towards much broader questions as 1) the identification and prioritization of relevant sectors to improve comparative advantage, 2) robust policy formulations and implementations to improve and sustain agrarian and food processing sectors for comparative advantages.

This, from the perspective of the EAC countries, should remain a critical area of interest.

### ACKNOWLEDGEMENTS

This work was supported by Internal Grant Agency of Faculty of Regional Development and International Studies, Mendel University in Brno, under no.: 2016/013 The Dynamics of EU's Economic Relations.

### REFERENCES

- Amanor K. S., Chichava S. (2016): South-South cooperation, agribusiness, and African agricultural development: Brazil and China in Ghana and Mozambique. *World Development* 81(C): 13–23.
- Balassa B. (1965): Trade liberalisation and “revealed” comparative advantage. *The Manchester School* 33: 99–123.
- Balassa B. (1977): Revealed’ comparative advantage revisited: an analysis of relative export shares of the industrial countries. 1953–1971. *The Manchester School* 45: 327–344.
- Bergstrand J. H., Egger P., Larch M. (2016): Economic determinants of the timing of preferential trade agreement formations and enlargements. *Economic Inquiry* 54: 315–341.
- Blažková I. (2016): Convergence of market concentration: evidence from Czech food processing sectors. *AGRIS on-line Papers in Economics and Informatics* 8: 25–36.
- Bureau J., Guimbard H., Jean S. (2019): Agriculture trade liberalisation in the 21st century: has it done the business? *Journal of Agricultural Economics* 70(1): 3–25.
- Chingarande A., Mzumara M., Karambakuwa R. (2013): Comparative advantage and economic performance of East African Community (EAC) Member States. *Journal of Economics* 4(1): 39–46.
- Duncan O. (2014): Effects of East African Community regional trade agreement on member's agricultural exports. *International Conference on Dynamics of Rural Transformation in Emerging Economies* 27–28.
- European Commission (2015a): How trade policy and regional trade agreements support and strengthen EU economic performance. European Commission, Brussels.
- European Commission (2015b): Economic Partnership Agreement between the EU and the Eastern African Community. European Commission, Brussels.
- EU-EAC (2016): Economic Partnership Agreement between the East African Community Partner States, of the one part, and the European Union and its Member States of the other Part. Available: <http://bit.ly/1GeeyEr>. [Accessed: 2017, July 5].

- Freund C., Ornelas E. (2010): Regional trade agreements. *Annual Review of Economics* 2: 139–166.
- Fugazza M., Vanzetti D. (2008): a South-South survival strategy: the potential for trade among developing countries. *The World Economy* 31(5): 663–684.
- Gaens B., Jokela J., Mattlin M. (2012): The EU's Asia: renegotiating boundaries, renegotiating norms. *Asia Europe Journal* 10: 91–97.
- Kotler P. (2007): *Moderní marketing: 4. evropské vydání*. Grada Publishing, Praha.
- Krugman P. (1980): Scale economies, product differentiation, and the pattern of trade. *American Economic Review* 70: 950–959.
- Lafay G. (1992): The measurement of revealed comparative advantages. In: DAGENAIS, M. G. & MUET, P.-A. (eds.) *International Trade Modelling*. Chapman & Hall, London.
- Liu Ch., Lin D., Liu J., Li Y. (2019): Quantifying the effects of non-tariff measures on African agri-food exporters. *Agrekon* 58(4): 451–471.
- López-Cáliz J. R., Walkenhorst P., Diop N. (2010): Trade competitiveness of the Middle East and North Africa: policies for export diversification. World Bank, Washington, D. C.
- Martin W. (2018): a research agenda for international agricultural trade. *Applied Economic Perspectives and Policy* 40: 155–173.
- Mcintyre M. A. (2005): Trade integration in the East African Community: an assessment for Kenya (IMF Working Paper No. 5–143). International Monetary Fund, Washington, D.C.
- Orefice G., Rocha N. (2014): Deep integration and production networks: an empirical analysis. *The World Economy* 37: 106–136.
- Reis J. G., Farole T. (2012): Trade competitiveness diagnostic toolkit. The World Bank, Washington, DC.
- Svatoš M., Smutka L., Qineti A., Selby R. (2013): Visegrad countries's agricultural foreign trade development (transformation Process). *Scientia Agriculturae Bohemica* 44:38–46.
- Smutka L., Svatoš M., Tomšík K., Sergienko O. I. (2016): Foreign trade in agricultural products in the Czech Republic. *Agriculture Economics – Czech* 62: 9–25.
- UNCTAD (2019a): UNCTADstat. [Online]. Available at: <https://bit.ly/2UARKHk> [Accessed: 2019, September 2].
- UNCTAD (2019b): Standard international trade classification (SITC) revision 3. Available at: <https://bit.ly/2k4rxob> UNCTAD
- USDA (2015): South-South agricultural trade on the rise. Available at: <http://6b.cz/pb9F> [Accessed: 2019, December 30].
- Verter N. (2017): International trade: the position of Africa in global merchandise trade. In: *Macroeconomics and Microeconomics*. InTech, Rijeka.
- Widodo T. (2009): Comparative advantage: theory, empirical measures and case studies. *Review of Economic and Business Studies* 4: 57–82.
- WTO (2011): World trade report: The WTO and preferential trade agreements: from co-existence to coherence. WTO, Geneva.
- Yang Y., Gupta M. S. (2005): Regional trade arrangements in Africa: past performance and the way forward (EPub) (No. 5–36). International Monetary Fund, Washington, D. C.
- Zaghini A. (2003): Trade advancing and specialization dynamics in acceding countries (European Central Bank Working Paper No. 249). European Central Bank, Frankfurt.

*Received: September 24, 2019*  
*Accepted after revisions: May 4, 2020*

**Appendix I.** Commodity structure of the agri-food trade (SITC 0+1+22+4)

SITC 001 Live animals other than animals	SITC057 Fruits and nuts, fresh or dried
SITC011 Meat of bovine animals, fresh/chilled/frozen	SITC058 Fruit, preserved, and fruit preparations
SITC012 Other meat and edible meat offal	SITC059 Fruit and vegetable juices, unfermented
SITC016 Meat, salted, dried; flours, meals	SITC061 Sugar, molasses and honey
SITC017 Meat, prepared, preserved	SITC062 Sugar confectionery
SITC022 Milk, cream and milk products	SITC071 Coffee and coffee substitutes
SITC023 Butter and other fats	SITC072 Cocoa
SITC024 Cheese and curd	SITC073 Chocolate, food preparations with cocoa
SITC025 Birds' eggs, and eggs' yolks; egg albumin	SITC074 Tea and mate
SITC034 Fish, fresh (live or dead), chilled or frozen	SITC075 Spices
SITC035 Fish, dried, salted or in brine; smoked fish	SITC081 Feeding stuff for animals
SITC036 Crustaceans, mollusks, aquatic invertebrates	SITC091 Margarine and shortening
SITC037 Fish, aqua. invertebrates, prep., preserved	SITC098 Edible products and preparations
SITC041 Wheat (including spelt) and meslin, unmilled	SITC111 Non-alcoholic beverages
SITC042 Rice	SITC112 Alcoholic beverages
SITC043 Barley, unmilled	SITC121 Tobacco, unmanufactured; tobacco refuse
SITC044 Maize (not including sweet corn), unmilled	SITC122 Tobacco, manufactured
SITC045 Cereals (excl. wheat, rice, barley, maize)	SITC222 Oil seeds and oleaginous fruits (ex. flour)
SITC046 Meal and flour of wheat and flour of meslin	SITC223 Oil seeds & oleaginous fruits (incl. flour)
SITC047 Other cereal meals and flour	SITC411 Animals oils and fats
SITC048 Cereal preparations, flour of fruits or veg.	SITC421 Vegetable fats & oils, crude, refined, fractio.
SITC054 Vegetables	SITC422 Vegetable fats & oils, crude, refined, fract.
SITC056 Vegetables, roots, tubers, prepared, pres.	SITC431 Animal or veg. oils & fats, processed

Source: UNCTAD, 2019b

Appendix II. Results of BCG mapping

EU export to EAC					EAC export to EU				
SITC	00-04	05-09	10-14	15-18	SITC	00-04	05-09	10-14	15-18
001	Dogs	Dogs	Q. M.	Q. M.	034	Stars	C. C.	C. C.	C. C.
012	Dogs	Q. M.	Q. M.	Q. M.	036	Q. M.	Dogs	Q. M.	Q. M.
022	C. C.	C. C.	Stars	Stars	037	Q. M.	Dogs	Q. M.	Dogs
024	Q. M.	Q. M.	Q. M.	Q. M.	054	Stars	C. C.	Stars	C. C.
034	Stars	C. C.	C. C.	Dogs	056	Dogs	Dogs	Dogs	Q. M.
041	Dogs	Stars	C. C.	C. C.	057	Q. M.	Q. M.	Q. M.	Stars
046	Dogs	Dogs	Q. M.	Q. M.	058	Dogs	Dogs	Q. M.	Dogs
048	Stars	Stars	C. C.	Stars	059	Dogs	Dogs	Q. M.	Dogs
054	C. C.	C. C.	Dogs	Q. M.	061	Q. M.	Dogs	Dogs	Q. M.
056	C. C.	C. C.	C. C.	Stars	071	C. C.	Stars	C. C.	C. C.
057	Q. M.	Dogs	Dogs	Q. M.	072	Q. M.	Q. M.	Dogs	Q. M.
058	Dogs	Dogs	Q. M.	Q. M.	074	Stars	Stars	C. C.	Stars
059	Dogs	Q. M.	Dogs	Q. M.	075	Q. M.	Q. M.	Q. M.	Q. M.
061	C. C.	Stars	Dogs	Stars	121	Stars	Stars	Stars	C. C.
062	Dogs	Dogs	Dogs	Q. M.	222	Q. M.	Q. M.	Q. M.	Q. M.
071	Q. M.	Dogs	Q. M.	Q. M.	223	Q. M.	Q. M.	Q. M.	Q. M.
072	Q. M.	Q. M.	Q. M.	Dogs	422	Q. M.	Q. M.	Q. M.	Q. M.
073	Dogs	Q. M.	Dogs	Q. M.					
081	C. C.	Dogs	Q. M.	Stars					
098	Stars	C. C.	Stars	Stars					
111	Q. M.	Stars	Stars	C. C.					
112	Stars	C. C.	Stars	Stars					
121	Q. M.	Dogs	Dogs	Q. M.					
122	Dogs	Dogs	Q. M.	Dogs					
411	Dogs	Dogs	Q. M.	Q. M.					
421	Stars	Dogs	Q. M.	Q. M.					

Source: Own work based on UNCTAD data. Note: Q. M – Question Marks; C.C – Cash Cows