Measuring International Competitiveness Across Countries – An Application to the Global Food Industry

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Abstract

International competitiveness can be analysed at various levels of the economy: at the enterprise level, the sector level, or the level of the entire economy. Several measures exist for each of these levels. This paper focuses on two indicators suited for sector analysis: The Relative Export Production Index and the Relative Export Advantage Index. Both indicators are calculated for 51 countries and 28 different industries. The results reveal that the food and the beverage industries are among those which export least and in which export growth has been rather small over the last two decades. However, the analysis also indicates that considerable differences among the various branches in the food sector exist. While the two measures employed deliver in most cases similar results, this does not hold in general. The paper discusses the differences between the two indicators and identifies the factors leading to disagreement in the results obtained.

Keywords

Competitiveness – Food Industry – Exports – Relative Export Advantage Index – Relative Export Production Index

1 Introduction

International competitiveness (IC) is crucial to all nations since in the long run every country must earn by selling on international markets at least as much of its own production as the cost of its imports, in order to achieve economic sustainability. However, the concept of IC is not clearly defined and has many facets – from meaning simply higher exports to diversifying the export basket, sustaining higher rates of export growth over time, upgrading the technological and skill content of export activity, to expanding the base of domestic companies able to compete globally etc (UNCTAD, 2002, p. 117; for a broader discussion of IC see also Lall, 2001 and for an application within the context of the food industry see Traill and Pitts, 1998). International competitiveness can broadly be defined as the ability of a firm, sector or country to supply goods and services in the location and form and at the time they are sought by importers, at prices that are as good as or better than those of other potential exporters, while earning at least the opportunity cost of returns on resources employed (Freebairn, 1986, p. 2).[1] This implies that export earnings are positive (ie, no dumping is considered) and that they contribute to a country's development by obtaining foreign exchange. However, at the same time it needs to be acknowledged that exporting may be easier in some industries than in others. In particular, the export of consumer-oriented food products may be difficult given their perishability and their character as culture-bound goods, which poses specific international logistics and marketing problems (Carter, 1997, p. 8-9).

[1] There is in fact no single definition of competitiveness in the economic literature. The difficulties in defining competitiveness are due to the various dimensions of this concept. The above definition, however, seems to be widely accepted in the economic literature.

Measuring IC is rather elusive: depending on how it is defined there exist several measures to do so. In this paper we will make use of the Relative Export Advantage Index (RXA) that is widely applied in the literature (see, for instance, Hoeckman *et al*., 2002, pp. 585-88 for a discussion, and Drescher and Maurer, 1999 for an application). In addition we suggest the use of the Export Production Ratio (EPR) and the Relative Export Production Index (MREPI) as alternative ways to measure the export intensity of a sector and its international competitiveness, respectively.

The structure of this paper is as follows: a brief introduction into the data and methodology applied is provided in Section 2 while the results of the empirical analysis with respect to those indicators are summarised in Section 3. A critical evaluation of the indicators applied in the study is provided in Part 4. Section 5 concludes.

2 Data and methodology

Raw data for this analysis comes from the Trade and Production CD-ROM of the World Bank. The handbook to the data set is edited by Hoekman *et al*., 2002. The CD-ROM contains trade information (e.g. exports in US$ terms) from the UN COMTRADE database which has been especially prepared, using an OECD SITC (Standard International Trade Classification) – ISIC (International Industrial Standard Classification) filter, to make it directly comparable to national production data as collected in the UNIDO's Industrial Statistics Database. The 1976-1999 trade data includes 67 countries at the 3 digit level (28 industries) and 24 countries at the 4 digit level (81 industries). The production data (e.g. output in US$ terms), however, is far less complete and for most of the countries data are only included until 1995, at the 3

digit as well as at the 4 digit level. For this reason the most recent year considered in the study is 1995. Since export data have not been complete for all countries only 51 countries from the original full data set could be included in the analysis. For a more detailed description of the data contained on the Trade and Production CD-ROM see Nicita and Olarreaga, 2001.

The methodology used in this paper is as follows:

(1) For all 3 digit industries average export-production ratios (EPR) (ie, exports as percentage of national production) are calculated over all 51 countries for which data was available for the year 1995. In addition, annual growth rates (AAGRs) of exports in these industries have been computed for the period 1981 to 1995.

(2) At the 4 digit industry level EPRs for the individual industries and AAGRs of exports have also been compiled. However, since data availability at this level was much lower, the calculations are based on 17 countries only.

(3) The Relative Export Advantage (RXA) Index and a newly introduced Relative Export Production (REP) Index have been calculated for all 51 countries at the 3 digit industry level for the ISIC 311 (food products) and 313 (beverages). The RXA Index is defined as follows (see Equation 1):

$$RXA_{ij} = (X_{ij} / \sum_{l,l \neq j} X_{il}) / (\sum_{k,k \neq i} X_{kj} / \sum_{k,k \neq i} \sum_{l,l \neq j} X_{kl}) \quad (1)$$

where X refers to exports. Subscripts i and k denote the product/sector categories and j and l the countries. The index is defined as the ratio of a country's export share of a certain product/sector in the world market excluding the considered country to the same

country's share in world export of all other commodities/sectors. One special feature of this measure is that the country and product/sector 'total' is always taken as the sum across all countries and products except the one studied. This avoids counting countries and commodities in both the numerator and the denominator. This procedure may be seen as a kind of dynamic benchmarking since every country is compared to a different reference value. This calculation mode yields, however, unbiased index values in particular for countries which are large as compared to the others included in the analysis, and/or if the commodity/sector considered is important in total trade. In these cases, double counting would lead to biased index values. The level of this index is to be interpreted as follows: values above unity suggest that the country has a competitive export advantage in the considered product category/sector, whereas values below 1 point to a competitive export disadvantage. For the sake of a better interpretation the index figures have been rebased at the origin by subtracting one, thus comparative advantages are always indicated by a positive sign while comparative disadvantages are shown by a negative sign. We call this index the Modified Relative Export Advantage (MRXA) Index.

The calculated MRXA figures are then compared to the results from the newly introduced REP Index. This index is shown in Equation 2:

$$REP_{ij} = ((X_{ij} / P_{ij}) / (\sum_{k,k\neq i} X_{kj} / \sum_{k,k\neq i} P_{kj})) \quad (2)$$

where P stands for production. This index relates the export-production ratio for a particular product/in a particular sector i for a country j to all other countries' export-production ratio of the product/sector i. Thus, analogous to the procedure of calculating the RXA double counting is prevented. As for the RXA this indicator is rebased to the

origin and named MREP. A positive value for the MREP Index indicates a competitive export advantage, and a negative one a competitive export disadvantage.

(4) For the 17 countries for which complete 4 digit data was available MREPs were calculated for the 15 food industry sub-sectors for 1995. The figures provide detailed information on these countries' food industry competitiveness in that year.

3 Results

Table 1 lists the average EPRs, coefficients of variation and the AAGRs of exports for the 28 industries at the 3 digit level. The means are based on production and trade values of the 51 countries in the respective industry. In the last line of the table the unweighted average over the 28 industries is provided. The industries are ranked in a decreasing order according to their EPRs, thus industries where, on average, exports are small relative to local production are listed first. Table 2 provides the same information as Table 1 but at the 4 digit ISIC level and for the 15 food industry sub-sectors only. As discussed above the base on which the means in this table are calculated are 17 countries. As for Table 1 the industries are ranked in descending order according to their export-production ratios.

The results in Table 1 confirm that food and drink products are among those which are exported least if expressed relative to local production. In 1995, only 18% of global (ie, that of 51 countries) food and 9% of global beverage production were exported. This is only 43% and 21%, respectively of the overall average of 42% for the 28 industries included in the analysis. It is interesting to note that the coefficients of variation are

also smaller for the food product (0.72) and beverages (1.27) industries than the all-industry average of 1.58. This indicates that the variation in the EPRs for these sectors between countries is less than on average for other industries. The results so far indicate that it is generally much more difficult for countries to export food and beverage products than other commodities, such as other manufactured products. Average annual growth rates of the exports between 1981 and 1995 amount to 7% for food products and 9% for beverages while the all-industries average equals 9%. Thus food and drink products were not only exported relatively less, export growth was also slower or only equal than for most other products, implying that exporting food and drink products may generally be much more difficult than other products, such as raw materials or intermediate industrial input goods.

The results in Table 2 show that EPRs, however, vary considerable depending on the food sub-sectors considered. In 1995, relatively high EPRs can be observed for canned and preserved fish products (57%), canned and preserved fruit and vegetables products (44% respectively), spirits (35%), and oil and fats (34%), all commodities with long shelf-lives. Products which are much more perishable, such as dairy (4%) as well as bakery (6%) goods were among those food commodities exported least relative to production. The same holds for the beverages beer (3%) and soft drinks / carbonated waters (2%) but also for wine (10%). The high water content of these drinks makes exporting (ie, transport) probably too expensive. However, annual export growth during 1981-95 was highest among these low-export products, with soft drinks / carbonated waters leading with a 33% annual growth rate, followed by bakery products (27%) and oils and fats (24%). This resembles the considerable technical progress that has taken place in the transportation sector over the last decades leading to a decline in

transportation costs and securing the fast delivery of the commodities from their origin to their destination (OECD, 1996). Lowest export growth rates can be found for sugar (7%) and prepared / preserved meats (9%). While the former might be due to the protectionist policies applied for this good in most countries that hamper export growth the latter is likely induced by the increasing sanitary requests imposed by most importers.

Figure 1 represents a graph in which the 51 countries are displayed according to their competitive position in the food and beverage industries measured on the base of the MRXA (*x*-axis) and the MREP (*y*-axis) indicators, introduced in Section 2.

The comparison between the MRXA and the MREP indicators (Figure 1) reveals that for most countries the indices yield similar results with regard to whether a country's food or drink industry has a competitive export advantage or disadvantage. That is, both indices are positively correlated. The correlation coefficients between the two index series for the 51 countries are 0.469 for food products and 0.713 for beverages. The cases for which the signs of the two indices differ can be divided into two categories:

(1) +MRXA and -MREP (Sector IV in Figure 1). This group contains 7 countries (Hungary, Panama, Ethiopia, Columbia, Spain, South Africa, and Egypt) for food products and also 7 countries (Uruguay, Panama, Costa Rica, Bolivia, Guatemala, Cameroon, and Venezuela) for beverages. The reason for the differing classifications by the indices can be found in the small export shares of these countries' food and beverage industries in total industry exports. In order to show this the two group means are tested whether they differ in a statistically significant way with regard to two

indicators: (i) the countries' share in respective total industry exports and (ii) the share of the countries' food or beverage exports in total country exports. While +MRXA, +MREP countries (26 for food products and 13 for beverages) on average hold a 1.8% share in total food industry exports (5.7% in beverage industry exports), the 7 +MRXA, -MREP countries hold only 0.7% (0.1%). (The respective two means are statistically significantly different at least at the 90.0% confidence level using the Exact Mann-Whitney U test). This compares to a mean 19.0% share of food products in total country exports for +MRXA, +MREP countries (1.8% for beverages) as compared to a mean of 21.2% (2.3%) for the +MRXA, -MREP countries. (This time the respective means are not statistically significantly different). Thus, the MRXA Index shows competitiveness, although there is actually none – at least as indicated by the MREP Index – for countries in which the share of food or beverage exports in the countries' total exports are large but which are actually little relative to world food / beverage exports.

(2) -MRXA and +MREP (Sector II in Figure 1). This group contains 4 countries (Italy, Germany, Canada, and Taiwan) for food products and also 4 countries (Canada, Finland, Sweden, and Malaysia) for beverages. As before, misclassified countries are characterised by a statistically significantly (Exact Mann Whitney U test, 95.0% confidence level) – this time – higher share in total industry exports (5.5% as compared to 1.8% for food products, and 1.4% as compared to 0.7% for beverages respectively). At the same time there is no statistically significant difference in the shares of exports in these industries in total country exports between -MRXA and +MREP and -MRXA and -MREP countries (4.0% versus 3.0% for food products and 0.3% versus 0.2% for beverages respectively). Thus, this finding supports the one from before that the

MRXA Index is also unreliable in indicating a country's competitive position, if compared across countries, when the analysed industries' exports hold a small share in overall country exports but a comparative large share in total industry exports.

Table 3 summarises the values for the MREP Index for the food industry sub-sectors (4 digit industry level) and the 17 countries available in the data base in 1995. The results indicate that specialisation matters strongly in the food industry. Only four out of the 17 countries (Chile, Ecuador, India, and Malaysia) reveal the strongest competitive advantages (ie, being the industry leader) of all countries in the analysis for more than one food industry sub-sectors at a time. However, there is no country that is the "industry leader" in more than two sub-sectors at the same time. Most striking, the only two industrialised countries, Canada and USA, included in the sample are not among the industry leaders in any of the sub-sectors considered. While Canada scores in the middle field in all of them, the US turns out to be in three sub-sectors (canning and preserving of fruit and vegetables, manufacture of bakery products, and manufacture of cocoa chocolate and sugar confectionery) even the least competitive country among the 17 included.

4 Discussion of the indicators applied

The aim of this section is to discuss the strengths and weaknesses of the three indicators applied in this paper. This should also help to understand the underlying causes for the different results delivered by those indicators.

The first indicator presented in the study was the EPR. This ratio provides information with respect to the export intensity of different sectors. However, the EPR is not to be considered as a means to measure IC. As already mentioned above, competitiveness is a relative measure. Thus, indicators based on absolute production and market shares or production-trade shares give little information on the competitive position of a product, sector or subsection in an economy. Indicators that compare one sector relative to others should be considered instead. More sophisticated and comprehensive measures of international competitiveness take account of this aspect: two of those have been presented in this study the MRXA Index and the MREP Index.

Both indicators, the MRXA as well as the MREP Index, are easy to calculate. However, while the data requirements of the MRXA Index are rather low, it is much more difficult to obtain the data for calculating the MREP Index in a meaningful way. This has also become clear in this study which used especially prepared data published in 2002 but which contained figures only up to 1995.

Both indicators might be criticised because they neglect imports. Since intra-industry trade is of great and increasing relevance the results might indicate a high level of international competitiveness for a country in a specific industry although the considered country is an important net importer of the products analysed. Since intra-industry trade increases for instance with economic development and with economic integration the results provided on the basis of this indicator might be biased. This problem might be especially pronounced for countries of greater wealth and for nations that belong to an economic union such as the EU. To overcome this problem the analysis should be extended to include for instance the Relative Trade Advantage

(RTA) Index (see Equation 3) and a newly defined Relative Trade Production (RTP) Index (see Equation 4), where *M* stands for imports.

$$RTA_{ij} = RXA_{ij} - RMA_{ij} \tag{3}$$

$$RTP_{ij} = REP_{ij} - RMP_{ij} \tag{4}$$

However, since in this study the focus was on the ability of an industry or sector to export its products the MRXA and the MREP indices seemed to be more appropriate. Nevertheless, a comparison of the results obtained with those of the RTA and RTP indices is envisaged by the authors.

There are numerical problems with the RXA (MRXA) as well as the REP (MREP) indices. Both indicators' lower end is zero (or -1 in the case of their modified versions used in this paper), but they are unbounded above zero. Thus, in effect, competitive advantages and competitive disadvantages are indicated on different scales. Were this not the case the interpretation of any value they took would be easier, in the sense that one would be in a better position to assess the extent of a country's (lack of) competitiveness.

A further problem with respect to the RXA Index is discussed by Traill and Pitts (1998). In their opinion this index cannot be compared across countries, since the size of a country affects the values. Let's assume countries *j* and *l* account each for 50% of world exports of a commodity. Let country *l* be much larger and therefore have a considerably higher share than country *j* in total world trade in all other commodities. In this example, the RXA value for country *j* would exceed that of country *l*, though both countries had the same share in the world market for the commodity considered. Can country *j* be interpreted as being more competitive than country *l* ? Traill and Pitts deny

this. However, one could argue that the size of the country should be taken into account: it is much more difficult for a small country to reach the same volume of export as a large one. In any case this shortcoming does not apply to the MREP Index which makes this indicator for international comparisons the more adequate one, as this paper shows.

This latter aspect is closely related to the contradictory results that can be obtained by the MRXA and the MREP indices. Thus, especially where: (i) exports in the analysed industry are large relative to a country's total exports but small relative to world total industry exports. In this case the MRXA Index indicates a competitive advantage where there is none if measured by the MREP Index. (ii) Exports of the analysed industry are small as compared to a country's overall exports but large relative to total industry exports. In this case, the MRXA Index indicates a competitive disadvantage although this is not confirmed by the MREP Index.

5 Conclusions

The above discussion has shown that there exists no indicator that is capable to capture all facets of international competitiveness. Depending on the problem to be analysed the appropriate measure has to be chosen. For comparisons of the competitive situation within a specified industry but across countries, however, the results of this paper show that the RXA Index may be biased. A measure which is more suitable for that purpose is the proposed REP Index. Data availability for calculating this index may be a problem, however. In addition, both indices have also considerable drawbacks and can,

by their very nature, only explain part of the various aspects of the complex concept of competitiveness.

A second conclusion that can be drawn is that comparing competitiveness across industries may be problematic in the presence of technological factors hampering trade in some areas such as complicated logistics or specific product preferences formed by cultural particularities. The standard view, differentiating between tradable and non-tradable goods only, should be extended by one which acknowledges the existence of highly and lowly tradable goods, and everything in between. The results of the analysis in this paper show that export-production ratios vary widely across industries, as do export growth rates. Manufactured food and drink products are among those goods which rank low in both these measures. Therefore it seems questionable to compare such industries then directly to, for instance, industrial chemicals which are characterised by a much higher degree of export intensity.

Overall, it also needs to be stressed that considerable research work in this field still rests to be done. One way to improve the analysis in this paper would be to check how export-production ratios have developed over time. Another necessary next step would be to also incorporate imports into the analysis (ie, to use net exports instead of simple export flows) and to relate them to domestic production. Finally, the impact of intra-industry trade in particular on the competitiveness of the food and beverage industry needs to be assessed in the context proposed in this paper.

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Tables

Table 1. Export Production Ratios (EPR)* in 1995 and Average Annual Growth Rates (AAGR) of exports over the period 1981-1995 for different industries (3 digit ISIC level), based on 51 countries

ISIC	Description	Mean EPR	Coeff. of var.†	AAGR 1981-95
342	Printing and publishing	0.08	0.92	0.10
369	Other non-metallic mineral products	0.09	0.99	0.07
313	Beverages	0.09	1.27	0.09
314	Tobacco	0.15	3.69	0.10
311	Food products	0.18	0.72	0.07
356	Plastic products	0.20	1.16	0.12
352	Other chemicals	0.23	0.93	0.11
341	Paper and products	0.24	0.94	0.10
354	Miscellaneous petroleum and coal products	0.26	2.51	0.01
381	Fabricated metal products	0.28	1.57	0.08
332	Furniture except metal	0.29	1.18	0.12
331	Wood products except furniture	0.31	1.09	0.09
355	Rubber products	0.34	1.37	0.09
362	Glass and products	0.35	1.11	0.11
383	Machinery electric	0.39	1.15	0.13
321	Textiles	0.42	0.75	0.08
324	Footwear except rubber or plastic	0.42	0.94	0.08
351	Industrial chemicals	0.42	0.67	0.08
322	Wearing apparel except footwear	0.47	0.84	0.09
384	Transport equipment	0.51	1.30	0.09
323	Leather products	0.59	0.78	0.09
382	Machinery except electrical	0.60	1.35	0.10
371	Iron and steel	0.60	4.09	0.05
372	Non-ferrous metals	0.65	1.64	0.07
361	Pottery china earthenware	0.71	3.59	0.07
385	Professional and scientific equipment	0.72	0.94	0.10
390	Other manufactured products	0.78	1.24	0.09
353	Petroleum refineries	1.48	5.45	0.01
Mean		*0.42*	*1.58*	*0.09*

Notes: *EPR = Export-production ratio – ie, exports as a percentage of production.

†Coefficient of variation.

See appendix for a listing of the 51 countries.

Source: Authors' own calculation based on UN data (see text, p. 3 for a description of the raw data).

Table 2. Export Production Ratios (EPR) in 1995 and Average Annual Growth Rates (AAGR) of exports over the period 1981-1995 for different food industry sub-sectors (4 digit ISIC level), based on 17 countries

ISIC	Description	Mean EPR*	Coeff. of var.†	AAGR 1981-95
3134	Soft drinks and carbonated waters industries	0,02	1,29	0,33
3122	Manufacture of prepared animal feeds	0,03	1,17	0,17
3133	Malt liquors and malt	0,03	1,18	0,13
3112	Manufacture of dairy products	0,04	1,14	0,21
3116	Grain mill products	0,06	1,19	0,15
3117	Manufacture of bakery products	0,06	1,12	0,27
3132	Wine industries	0,10	1,55	0,10
3118	Sugar factories and refineries	0,11	1,08	0,07
3121	Manufacture of food products not elsewhere classified	0,20	1,06	0,12
3119	Manufacture of cocoa chocolate and sugar confectionery	0,25	0,81	0,13
3111	Slaughtering preparing and preserving meat	0,30	1,71	0,09
3115	Manufacture of vegetable and animal oils and fats	0,34	0,92	0,24
3131	Distilling rectifying and blending spirits	0,35	1,73	0,17
3113	Canning and preserving of fruits and vegetables	0,44	0,94	0,18
3114	Canning preserving and processing of fish crustacea and similar foods	0,57	0,84	0,11
Mean		*0,19*	*1,18*	*0,16*

Notes: *EPR = Export-production ratio – ie, exports as a percentage of production.

†Coefficient of variation.

Mean values based on 17 countries: BOL, CAN, CHL, COL, CRI, ECU, EGY, GTM, IDN, IND, JOR, KOR, MYS, PHL, TUR, USA, VEN.

See appendix for a description of the country codes.

Source: Authors' own calculation based on UN data (see text, p. 3 for a description of the raw data).

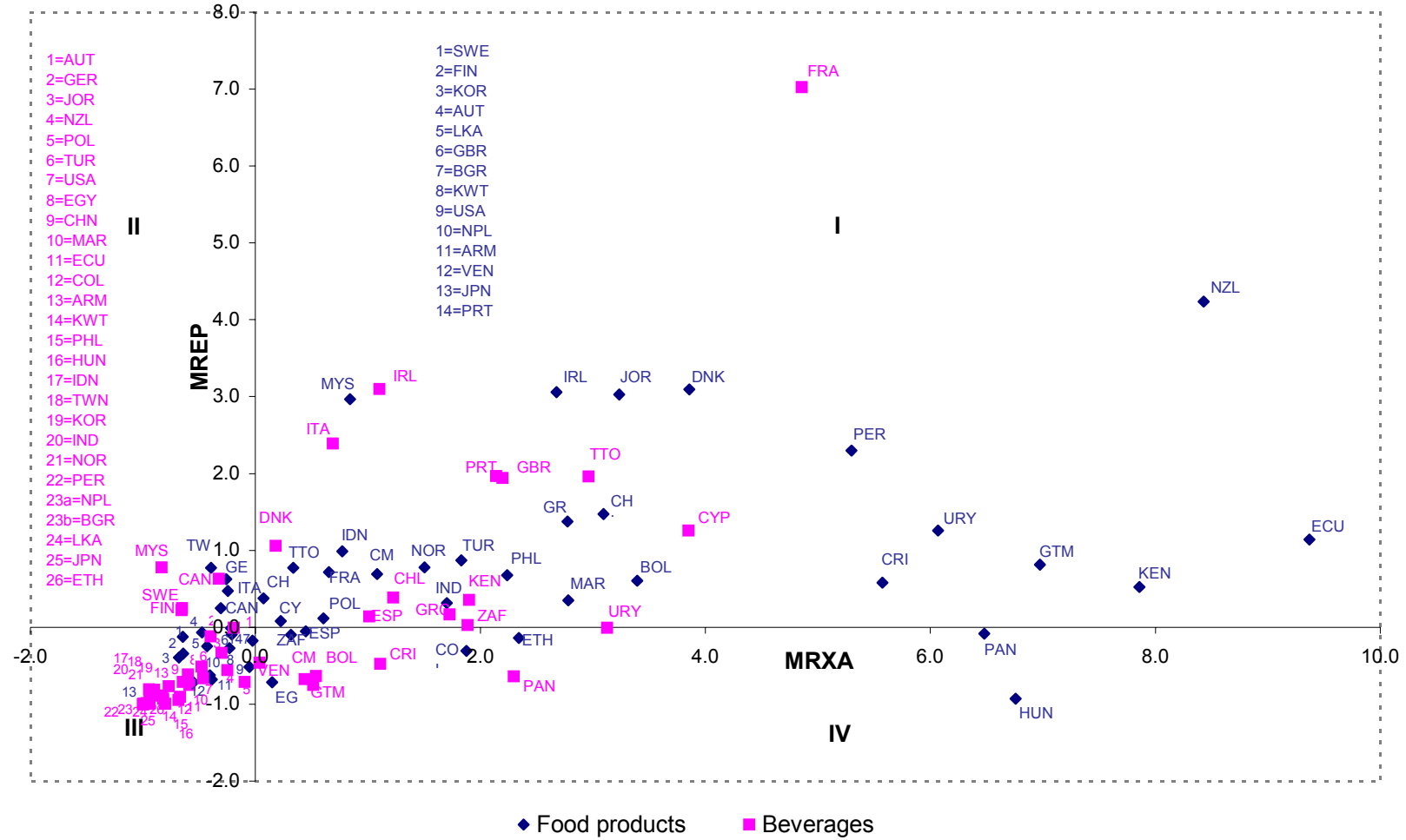
Table 3. Relative Export Production Index* for different food industry sub-sectors and 17 countries, 1995

Country	Sub-sector (ISIC)														
	3111	*3112*	*3113*	*3114*	*3115*	*3116*	*3117*	*3118*	*3119*	*3121*	*3122*	*3131*	*3132*	*3133*	*3134*
BOL	-0.74	0.15	14.18	–	1.79	-0.80	0.11	0.66	0.65	-0.89	-0.45	0.44	-0.83	-0.43	-0.93
CAN	0.90	0.90	-0.07	-0.04	1.13	0.87	2.33	-0.31	1.69	0.37	1.47	–	–	–	–
CHL	-0.53	2.21	5.15	1.10	1.04	-0.53	1.32	-0.91	0.52	1.49	-0.72	-0.88	8.62	1.11	-0.76
COL	-0.68	-0.69	-0.18	1.44	-0.91	-0.96	-0.12	3.42	0.78	0.91	-0.96	-0.91	-1.00	-0.89	-0.97
CRI	2.55	0.96	9.89	4.00	0.02	-0.92	0.67	4.51	3.24	6.10	-0.45	4.38	-0.78	-0.99	-0.84
ECU	-0.73	-0.12	6.21	0.05	-0.73	-0.47	-0.24	-0.54	6.70	9.04	-0.63	-0.68	-1.00	-0.99	-0.93
EGY	-0.19	0.38	0.76	-0.81	-0.97	-0.41	-0.72	-0.87	-0.55	-0.45	-0.98	3.24	-0.95	-0.27	0.00
GTM	2.12	0.62	0.54	-0.04	-0.38	-0.32	1.47	5.00	2.24	1.80	2.04	-0.47	1.62	-0.96	-0.41
IDN	4.18	-0.37	4.46	0.33	0.50	-0.38	-0.05	-0.49	4.86	0.06	1.00	9.62	-0.98	-0.93	-0.09
IND	17.79	-0.80	4.42	0.39	-0.52	4.62	-0.77	-0.66	-0.31	1.32	-0.86	-0.94	-0.98	-0.83	-0.90
JOR	14.48	4.84	2.82	–	2.03	-0.37	0.36	–	0.66	0.86	2.15	–	–	–	1.03
KOR	-0.51	-0.71	-0.48	-0.06	-0.89	-0.93	0.54	1.62	0.82	-0.35	-0.93	-0.89	-0.75	-0.74	0.00
MYS	0.83	6.67	2.02	0.31	1.76	-0.03	6.98	0.36	6.14	2.11	-0.25	–	–	–	4.45
PHL	-0.96	-0.77	2.75	-0.01	2.67	-0.99	-0.13	0.11	1.11	0.23	-0.64	-0.89	3.23	-0.87	-0.79
TUR	-0.43	0.30	5.05	-0.50	-0.33	1.10	7.54	-0.97	3.81	4.24	-0.80	-0.89	1.38	0.51	1.49
USA	-0.29	-0.25	-0.75	-0.32	-0.59	-0.50	-0.78	-0.26	-0.85	-0.56	0.74	0.70	-0.78	-0.55	-0.71
VEN	-0.78	-0.32	-0.39	-0.38	-0.85	-0.67	-0.42	0.59	-0.71	-0.75	-0.71	-0.77	-0.47	0.38	1.32

Notes: *For the definition of the MREP Index see the expositions in the text. See appendix for country code description and Table 2 for the ISIC description.
– = no data (either production or exports were available in the raw data).
Colour coding: dark green (and framed) = most competitive; light green (and framed) = 2nd most competitive; dark red = most uncompetitive; light red = 2nd most uncompetitive.

Source: Authors' own calculation based on UN data (see text, p. 3 for a description of the raw data).

Figure 1. The competitive position of 51 countries' food and beverage industries, 1995, as measured by the Modified Relative Export Advantage (MRXA) Index and the Relative Export Production (MREP) Index



Notes: See text for a description of the indices. See appendix for country code description.

Source: Authors' own calculation based on UN data (see text, p. 3 for a description of the raw data).

Appendix

Code	*Name*
ARM	Armenia
AUT	Austria
BGR	Bulgaria
BOL	Bolivia
CAN	Canada
CHL	Chile
CHN	China
CMR	Cameroon
COL	Colombia
CRI	Costa Rica
CYP	Cyprus
DNK	Denmark
ECU	Ecuador
EGY	Egypt
ESP	Spain
ETH	Ethiopia
FIN	Finland
FRA	France
GBR	United Kingdom
GER	Germany
GRC	Greece
GTM	Guatemala
HUN	Hungary
IDN	Indonesia
IND	India
IRL	Ireland
ITA	Italy
JOR	Jordan
JPN	Japan
KEN	Kenya
KOR	Korea, Republic of
KWT	Kuwait
LKA	Sri Lanka
MAR	Morocco
MYS	Malaysia
NOR	Norway
NPL	Nepal
NZL	New Zealand
PAN	Panama
PER	Peru
PHL	Philippines
POL	Poland
PRT	Portugal
SWE	Sweden
TTO	Trinidad and Tobago
TUR	Turkey
TWN	Taiwan
URY	Uruguay
USA	United States
VEN	Venezuela
ZAF	South Africa