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## European Sport Management Quarterly

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t716100711>

### Global Trade in Sports Goods: International Specialisation of Major Trading Countries

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**To cite this Article** Andreff, Madeleine and Andreff, Wladimir(2009) 'Global Trade in Sports Goods: International Specialisation of Major Trading Countries', *European Sport Management Quarterly*, 9: 3, 259 – 294

**To link to this Article:** DOI: 10.1080/16184740903024029

**URL:** <http://dx.doi.org/10.1080/16184740903024029>

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ARTICLE

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# Global Trade in Sports Goods: International Specialisation of Major Trading Countries

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**ABSTRACT** The analysis of international trade in sports goods is still in its infancy. In order to alleviate the sports economics ignorance in this area, an entirely new dataset is built up by extracting Comtrade data at the most disaggregated level (6 digits). The dataset covers 41 countries, 36 different sports goods, and 94–96% of global sports goods trade (1994–2004). The country sample is divided into five regional areas: North American Free Trade Area (NAFTA), EU+Switzerland, Eastern Europe, Asia and other emerging countries. A detailed snapshot of global trade in sports goods and its distribution by major areas, countries and products provides first empirical evidence about how much industrialisation in emerging countries and de-industrialisation in developed market economies have affected international specialisation, and indirectly tests multinational companies outsourcing and production relocation strategies in low unit cost countries in the sports goods industry.

Then, studying export/import ratios and country's position in the global market, it appears that major trading areas are Asia, Europe and NAFTA. Major exporters are China, Hong Kong, the USA and France, and major importers are the USA, Japan, Germany, France, the UK and Italy. The biggest market shares are in sportswear, anoraks and gymnastic equipment trade. Asia, Eastern Europe and emerging countries have an excess balance in sports goods trade, whereas NAFTA and Europe are in deficit. Three indexes assess a country's comparative advantages and disadvantages and competitiveness, and describe international specialisation. NAFTA and Europe are specialised in equipment-intensive sports goods, while Asia, Eastern Europe and emerging countries are specialised in trite sports goods and some less equipment-intensive sports goods. NAFTA is not competitive in any sport good, Europe is competitive in skis, emerging countries and Eastern Europe in sportswear and anoraks, and Asia in sportswear, anoraks, rackets, balls, skates and gymnastic equipment. Such an international specialisation pattern fits with both assumptions of industrialisation/de-industrialisation and firms outsourcing strategies. A principal component analysis with hierarchical ascendant classification groups trite sports goods as opposed to intensive-equipment sports goods in global trade and shows that production relocation influences international trade specialisation.

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Major policy implications are that developed economies and multinational companies should continue investing in R&D in order to keep their comparative advantages in equipment-intensive sports goods, while Asian and emerging countries should more tightly supervise working conditions and child labour in their subcontracting producers that work for foreign multinational companies.

## Introduction

In 2006, most sport economists celebrated the fiftieth anniversary of the first famous article (Rottenberg, 1956) that started up a new scientific discipline coined as sports economics. Now, let us imagine, more than fifty years later, that someone attending a scientific conference in sports economics asked: “with overall economic globalisation, I am interested in the share of sports goods in overall global trade, could you provide data?”. A silent sense of panic would spread throughout the audience. At best, one scientist will venture as far as to suggest that the requested figure is in the range of \$US2.5 billion (in 2004), a figure publicised in business and commercial journals. Since overall global trade was \$US8,933 billion in 2004, the aforementioned figure would make up for 0.03% of overall international trade in the world. A miniscule proportion! Is such an estimation correct? Nobody knows. Our paper shows that it is a dramatic underestimation. International trade issues have been entirely unheeded in sports economics so far. We include here such issues as: what is the sports goods share in global trade? What is sports goods’ importance in a country’s foreign trade? Is a country a net importer or a net exporter of sports goods? What is a country’s trade specialisation in sports goods, i.e., which are its major imported and exported sport goods? Providing a response to such questions would make it possible to state whether and how much global trade in sports goods is determined by multinational company (MNCs) strategies in the sports goods industry and industrialisation in some newly industrialised emerging economies. A further step, beyond this article, would consist in studying detailed factors of countries’ comparative advantages and disadvantages, namely the size of market demand and gaps in labour unit costs, which are underlying the observed international specialisation.

In the face of deep collective ignorance, we started building up an entirely new dataset of global trade in sports goods. The major rationale for this paper is to present the very first results and first basic explanations and major policy implications. A number of companion papers, with more sophisticated econometric treatment, are in prospect.

The paper is organised as follows. The starting point is a brief survey of the literature. Then, MNCs’ strategies of production relocation abroad are sketched in relationship with industrialisation trends in emerging countries and relative de-industrialisation in developed market economies, both impacting on international specialisation and trade in the sports goods industry. The new dataset is described. The latter provides a snapshot of global trade in sports goods and its distribution by sports goods. Asian and emerging economies are net exporters, as against North American and

European countries, who are net importers, a pattern that traces back to foreign direct investment and international subcontracting in the sports goods industry. A methodology for analysing country's international specialisation is presented. Its implementation results in a clear-cut delineation of developed countries' comparative advantages in equipment-intensive sports goods and emerging countries' comparative advantages in trite sports goods, which both verifies the aforementioned MNCs' strategies and current trends of industrialisation/de-industrialisation insofar as they affect the sports goods industry. A principal component analysis on 2004 data shows that international specialisation is influenced by production relocation. Some policy and further research implications are derived in the conclusion.

### An Unheeded Issue in Sports Economics Literature

Sports economists have not to date been interested in international trade in sports goods. This is all the more amazing since customs data are usually available and rather easy to collect. A first article was published 33 years after Rottenberg's article (Andreff, 1989). It described French foreign trade in all sports goods groups that could be found in French customs classification, as well as trade balance and export/import ratios for each good. A first approach of French specialisation in sports goods trade was attempted, relying on two specifications. The first one used a simple Balassa intra-industry specialisation index:

$$Bi = [(Xi - Mi)/(Xi + Mi)] \times 100$$

With such an index,  $i$  usually stands for an industry ( $i = 1, \dots, n$ ). In the above-mentioned study,  $i$  stood for each group of sports goods within the overall French sports goods industry. Thus, it was, to be more precise, an intra-product (or intra-product group) specialisation index rather than an intra-industry index. Some sports goods were identified as nearly 'pure' *Heckscher-Ohlin* goods when France exhibited an inter-product specialisation: France was almost exclusively importing (or exporting) such goods. When French exports were nearly of the same value as its imports for one sport good, such a good was coined a 'pure' *Balassa* good and France exhibited a *Krugman* intra-product specialisation.

The same paper considered the unit value of internationally traded sports goods. Skis, ski boots, sailing boats, windsurfs and golf equipment could not be categorised as the same sort of sporting goods as sportswear, tracksuits, balls, swimsuits and sporting footwear. In the former group, goods had a high unit value due to a significant value-added in the production process, rather sophisticated and evolving technology and know-how, whereas goods in the latter group were cheaper (per unit) with a lower value-added, and were produced with mature technology and easily transferable know-how. Moreover, high unit value sports goods are those usually required for practice of specialised equipment-intensive sports, such as sailing, winter sports, surfing, motor sports or golf. They were coined '*equipment-intensive*' sports goods. Low unit value sports goods are less specialised and can be

used in a wider range of sport practices (gymnastics, walking, body building, keep fit, team sports and track and fields) or even in leisure time without any sport practice (e.g., sportswear, tracksuits, sporting footwear, balls). They were labelled 'trite' sports goods.

An update (Andreff, 2004) has shown that, in the long run, France has specialised as an exporter of equipment-intensive sports goods. On the other hand, since 1981, France has been a net importer of trite sports goods and has switched from net export to net import in swimsuits and sportswear. An assumption can be derived, to the extent that France is representative for developed countries, that such countries tend to be net exporters of high value-added and high-tech equipment-intensive sports goods, whereas they are net importers of trite sporting goods.

A study geared towards the economy and finance of sports in a dozen European countries (Andreff, Bourg, Halba, & Nys, 1994) was undertaken for the Council of Europe, and it observed sports goods foreign trade of sampled countries in 1990, though with less detail. A major result was that most European countries exhibited a foreign trade deficit in sports goods, while being well-known exporters of equipment-intensive sports goods. Therefore, these countries were likely to be significant net importers of trite sports goods, but no data were available to clearly demonstrate that such a specialisation was prevailing. Two European exceptions were France and Italy, who showed a trade balance excess in sports goods, due to exporting more equipment-intensive sports goods than importing trite sports goods.

A last study tackled the issue of the international division of labour between countries (and regions) in sports goods trade (Harvey, & Saint Germain, 2001). It covered data for 28 countries, from 1974 to 1994, representing 75% of overall global trade in sports goods, and encompassed three NAFTA countries (Canada, Mexico, USA), 15 EU countries (as of 1995, after the fourth enlargement) and ten SE Asian countries (China, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand). Among sampled countries, in 1994, ten major exporters of sports goods were the USA, China, Hong Kong, France, Austria, Korea, Japan, Italy, Germany and Canada; ten major importers were the USA, Japan, Germany, Hong Kong, Canada, France, the UK, Italy, the Netherlands and Spain. A study of global trade concentration in sports goods, by trading blocs, exhibited a tendency of developed (NAFTA and EU) countries to primarily trade together. Trade in sports goods, just like trade in most manufactured products, displayed a geographical concentration on developed countries within a same area (NAFTA or the EU). The same conclusion was extended to the ten sampled Asian countries, since intra-bloc trade across Asian countries had skyrocketed from 1974 to 1994. Thus, a second tendency was coming to the fore, one of regionalisation in sports goods trade within continental blocs. The main limitation of Harvey and Saint Germain's (2001) study is that it did not go further into the analysis of product specialisation. To overcome this, a much more detailed data collection (by products) would have been required.

Given our poor knowledge in this area, a first motivation is to present detailed information based on new data collection accompanied by a first-step explanation and descriptive data treatment. What is published here is the outcome of a long-lasting and generally unrewarding stage in the research process, but one which is an absolute precondition for further research.

### **Two Factors Shaping International Specialisation Patterns in Sports Goods Trade**

In the 1950s and 1960s, most sports goods were produced and consumed in developed countries, generating a significant trade across themselves but only a tiny flow of international trade with developing countries in the sports goods industry. In a nutshell, developed economies were specialised in production and trade of nearly all sports goods while most developing countries were specialised in none of them.

Two major factors have transformed the shape of international specialisation in sports goods trade since the late 1970s. One is industrialisation of the so-called newly industrialising countries in the Third World (now coined emerging economies) together with relative de-industrialisation in most developed market economies (Fontagné & Lorenzi, 2005; Andreff, 2009). The other one is a change in firms' strategies in the sports goods industry, more geared toward foreign markets and production relocation (Andreff, 2006a, b), as a reaction to the aforementioned long-run industrialisation/de-industrialisation trends.

When it comes to the first factor, de-industrialisation is referred to an increasing share of the services industry in GDP in all developed market economies. This is due to both rising services demand linked to increased household incomes and leisure time, and relocation of labour-intensive production in emerging countries where industrial goods production benefits from quite lower unit labour costs (unit wages divided by labour productivity). Of course, such tendencies affected the sports economy in developed countries where demand grew faster for sport services than sports goods in the last decades on the one hand and, on the other hand, production of relatively labour-intensive (less high tech, less value-added) goods—i.e., trite sports goods—was relocated to emerging countries. As a result, developed economies started to de-specialise from production of trite sports goods and concentrated on producing equipment-intensive sports goods, which require highly skilled personnel working with sophisticated technologies and computerised services<sup>1</sup> as their basic inputs. Thus, emerging countries started to specialise in the production of those sports goods which had been given up in developed countries, i.e., trite sports goods. For instance, during the 1980s, France lost 70–80% of domestic trite sports goods production which had relocated to Asia and North Africa. In the same decade and the following one, 80–90% of balls, sportswear and footwear, tracksuits and anoraks manufacturers concentrated in countries such as South Korea, Taiwan, Malaysia, Pakistan, Indonesia, China, Philippines, Thailand,

Morocco, Tunisia, Turkey and Central Eastern European countries. This must translate into different international specialisation patterns in developed and emerging countries' sports goods trade. Building up a detailed dataset may help verify such an outcome. The expectation is to demonstrate that developed countries are specialised in exporting equipment-intensive sports goods, while being net importers in trite sports goods from emerging countries.

On top of this, a second factor is that firms (at least big MNCs) adapted their strategies to industrialisation/de-industrialisation in the sports goods industry. They continued exporting equipment-intensive sports goods to developed market economies but also started supplying newly industrialising countries, where new demand for these goods was emerging. As regards trite sports goods, in the 1980s and 1990s, MNCs started fragmenting their production process (Arndt & Kierzkowski, 2001) and relocating those goods whose production relies on low unit labour cost; this factor is decisive for emerging countries' comparative advantage. Outsourcing labour-intensive goods is an overall trend in globalisation of the world economy (Feenstra & Hanson, 1996) and there is no reason why sports goods firms would not have embarked on such a strategy. However, MNCs have adopted two different strategies to outsource trite sports goods and relocate their production in emerging economies. One is based on foreign direct investment (FDI), exemplified in the 1980s and 1990s by firms like Adidas, Puma, Fila, Lafuma and others.<sup>2</sup> On the other hand, Nike, Reebok, Mizuno, Asics and others privileged contracting out their production to domestic sport goods producers located in emerging countries through subcontracting and outward processing trade. Nike went so far in this strategy that it became a hollow corporation, producing practically no sporting goods any longer in the USA and simply trade-marking goods produced by its Pakistani, Indonesian, Chinese and other Asian subcontractors (Price, 2001). This has reinforced an international specialisation pattern in which emerging countries are net exporters and developed countries net importers in trite sport goods. In some ways, testing such a specialisation pattern, our data are expected to indirectly confirm that MNCs have followed such outsourcing and relocation strategies in the sports goods industry.

### Building up a Dataset Covering Global Trade in Sports Goods

Our paper first intends to fill the gap that still exists at the crossroads between sports economics and international trade analysis. A first task was one of gathering detailed data as regards global trade in sports goods, an extended process. We started collecting data from *Comtrade*, the United Nations database that covers all international trade flows in the world each year. For some countries data are replaced with blanks, not only because these countries do not trade any sport goods, but also because, in some instances, they did not report data to the UN, for all or some goods. In the case of sports goods, data are missing in our sampled dataset for 1994 for Belgium, Russia and the Philippines and, before 2004, for Pakistan. Consequently, the dataset is unbalanced.

In *Comtrade*, for many countries, there is practically no sports goods trade or it is very tiny. Thus, we selected 41 countries that are major trade partners in sports goods. Apart from the importance of their foreign trade in sports goods, we used two other selection criteria, one is quasi-institutional, the other one is aimed at making our dataset comparable, to some extent, with that built up by Harvey and Saint Germain (2001), with a view to further inter-temporal comparisons. We have kept their 28 sampled countries and enlarged our dataset with 13 additional countries. In Europe, we have included Switzerland, which is a significant trade partner in sports goods. A first sub-sample, labelled *EU+S*, groups 15 countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, the UK + Switzerland (although it is not an EU member, its overall foreign trade resembles EU trade).

A second sub-sample is *NAFTA: Canada, Mexico and the USA*. The Asian sub-sample (*Asia*) is slightly enlarged by adding India and Pakistan, thus we have 11 countries: China,<sup>3</sup> India, Indonesia, Japan, Hong Kong, Korea, Malaysia, Pakistan, Philippines, Singapore and Thailand.

India was added because it is now one of the biggest and fastest-growing Asian economies, even though its emergence in the global market is not very significant in sports goods. Pakistan, like Indonesia, has a concentrated number of subcontracted factories producing sports goods, namely working for Nike (Andreff, 2004), which generate outward-processing trade. Unfortunately, Pakistan's data are only available since 2004.

Eastern Europe is also a significant area for sports goods production and trade, due to both local firms and relocated factories through Western European FDI. Moreover, this area is of interest in a companion research work (Andreff & Poupaux, 2007). We sampled Russia, the biggest regional economy, and six other significant sports goods producers and trade partners in an *East* country group: Bulgaria, the Czech Republic, Hungary, Poland, Romania, Russia and Slovakia.

Finally, with the 36 countries listed above, we are missing some other emerging economies whose sports goods trade is not negligible, due to either local production (Argentina, Brazil) or outward-processing trade (Morocco, Tunisia) or both (Turkey). They are gathered in an *EMEC* country group: Argentina, Brazil, Morocco, Tunisia and Turkey.

When it comes to identifying sports goods in *Comtrade* SITC (standard international trade classification), it is not straight forward. At aggregate SITC levels (say two or three digits), no sport good is evident. Thus, we had to go down to the most disaggregated SITC level (six digits in *Comtrade*). There we found 36 different identifiable sports goods that are internationally traded (see the Appendix, Table A1). However, six-digit SITC are not without their problems in regard to our needs. For instance, the 620191, 620192, 620193 and 620199 classes probably contain sports goods; they are parts of an aggregate 6201 class in which some overcoats, capes, wind-jackets, car-coats, cloaks, wind-cheaters, raincoats and anoraks (classified in 620111, 620112, 620113, 620119) may well be sportswear and sold to sport consumers; but we cannot clearly identify them at the given aggregation level.

The most tricky issue is with T-shirts, shorts, gloves and the like, which are not classified in the aggregate 6211 class but, instead, show up in classes 6201–6210 and 6212–6217 or even in the two-digit 61 class (articles of apparel, accessories, knit or crochet) different from the aggregate 62 class. A number of these goods are obviously or probably sports goods, but both classes 61 and 62 (except 6211) are not disaggregated on a use value (or demand) basis but by considering materials and technology used to manufacture them (knitted, crocheted, wool, cotton, fine animal hair, synthetic fibres, textile materials, artificial fibres, man-made fibres). Then, we cannot distinguish among all this sort of textile-clothing products which part corresponds to sporting use or a demand derived from sport participation, despite the fact that a share of it is obviously made up of sports goods.<sup>4</sup> A similar comment applies to some other SITC classes that we have screened. For instance, motor cars and motor bikes are classified with products of the automotive industry and cannot be identified as sports goods; some airplanes, wind-gliders and new flying machines used in sport are classified in SITC with the aeronautical industry, and a number of sport shoes are classified with the leather-shoes industry trade. We face here the same identification limitation as with textile-clothing products. This is the main limitation of our dataset (which only includes ski boots as regards to sport shoes), since sport footwear is nearly as important as sportswear in global trade, and involves such leading firms as Nike, Adidas-Reebok, Puma, New Balance, Asics and so on (Andreff, 2006b).

A precise identification of all sports goods is not possible with SITC and this has three consequences which the reader must be aware of. The first is that statistical estimation of global trade in sports goods as provided in our dataset, from the outset, is a marked underestimation, since it does not cover the whole global sport footwear and sportswear trade and it does not take into account any sport motor car, motor and non-motor bike, airplane, wind-glider and other flying machine. The second bias is that most missing sports goods are trite sports goods, such as sportswear, sport footwear and bikes, which are likely to be widely produced in emerging countries now. As a result, the real share of the latter types of country in global sports goods trade might well be bigger than exhibited here.

A third bias, linked to missing data about trite sports goods, is that the trade balance for some countries would have exhibited a different amount in our dataset had we been able to cover all traded sports goods. We have tested this bias on French trade in sports goods. With French customs data, France shows a sport goods trade deficit amounting to €560 million in 2002 and €382 million in 2004 while, with our collected *Comtrade* data, the deficit is respectively \$100 million in 2002 and \$35 million in 2004. Whatever the current euro/dollar exchange rate in both years, one cannot reconcile the two computed deficits each year. It is not a question of inconsistency. If one checks how French trade in sports goods is statistically covered (*STAT-Info*, 2007), it appears that the range of products with a sport use is much wider than in *Comtrade* SITC: for instance, it covers bikes, motor boats, airplanes, wind-gliders, sport fire arms, and fishing equipment

(but includes no motor car and motor bike and not all sportswear and sport footwear, for the same reasons as indicated for the SITC). This remains to be checked for other countries in further research.

Finally, given the size of our hand-made dataset ( $41 \times 36 = 1,476$  import data and 1,476 export data, i.e., 2,952 data per year), as a starting point we have only selected five years. The obvious candidates were 1994 and 2004, since 1994 is the last year covered by Harvey and Saint Germain (2001) and 2004 is the last available year in *Comtrade*. But 2004 is an Olympic year, which may specifically influence sports goods trade, while 1994 is a soccer World Cup year. In between we have selected, for the sake of temporal comparison, another World Cup year (2002) and two ‘ordinary’ years with no big global sport event, such as the Olympics or soccer World Cup—1997 and 1999.

Given the above-mentioned methodological amendments, our dataset is rather representative of overall global trade in sports goods. Every sampled year, our 41 countries total 94–96% of identifiable global sports goods imports and exports in SITC (Table 1).

### Global Trade in Sports Goods and its Distribution by Product

The first major results drawn from the dataset can now be discussed. To the question “how much does sports goods trade represent in overall global trade?”—the response is between 0.33% and 0.53% of global exports or imports of all traded goods (Table 2). This response must be qualified further. Since our dataset is missing a number of sports goods (see earlier discussion), probably between one third and one half, a more realistic estimation is that global sports goods trade is *in the range of 0.5–1%* of overall global trade (all goods). In some areas, percentage of sports goods is probably over 1%, as in Asian and emerging countries exports, and NAFTA imports, for example.

Table 1. Overall identifiable and sampled sports goods global trade

| \$US million                      | 1994   | 1997   | 1999   | 2002   | 2004   |
|-----------------------------------|--------|--------|--------|--------|--------|
| Sports goods imports              |        |        |        |        |        |
| All countries ( <i>Comtrade</i> ) | 20,264 | 24,253 | 21,700 | 24,531 | 31,844 |
| 41 sampled countries              | 19,538 | 23,249 | 18,720 | 23,277 | 30,003 |
| Sample/Overall (in%)              | 96.4   | 95.9   | 95.4   | 94.9   | 94.2   |
| Sports goods exports              |        |        |        |        |        |
| All countries ( <i>Comtrade</i> ) | 14,810 | 19,367 | 17,515 | 20,761 | 28,331 |
| 41 sampled countries              | 14,239 | 18,696 | 16,970 | 19,909 | 27,457 |
| Sample/Overall (in%)              | 96.2   | 96.5   | 96.9   | 95.9   | 96.9   |

Global imports and global exports should be equal. This is never the case due to “errors and omissions” in country reporting, different trade coverage across countries, smuggling and, here, more or less identifiable sports goods in SITC.

Table 2. Global sports goods trade in overall (all goods) global trade

|                 | 1994   |        | 1997   |        | 1999   |        | 2002   |        | 2004   |        |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                 | Import | Export | Import | Export | Import | Export | Import | Export | Import | Export |
| <i>Comtrade</i> | 0.53   | 0.39   | 0.46   | 0.37   | 0.39   | 0.33   | 0.39   | 0.34   | 0.36   | 0.33   |
| sports goods    |        |        |        |        |        |        |        |        |        |        |
| In our dataset  | 0.55   | 0.41   | 0.48   | 0.39   | 0.41   | 0.33   | 0.41   | 0.36   | 0.37   | 0.36   |
| of which        |        |        |        |        |        |        |        |        |        |        |
| NAFTA           | 0.78   | 0.26   | 0.67   | 0.30   | 0.51   | 0.24   | 0.51   | 0.24   | 0.48   | 0.22   |
| EU + S          | 0.48   | 0.31   | 0.46   | 0.31   | 0.39   | 0.27   | 0.40   | 0.27   | 0.40   | 0.26   |
| East            | 0.17   | 0.72   | 0.17   | 0.35   | 0.17   | 0.36   | 0.19   | 0.26   | 0.21   | 0.22   |
| Asia            | 0.51   | 0.62   | 0.42   | 0.60   | 0.42   | 0.55   | 0.37   | 0.61   | 0.28   | 0.59   |
| EMEC            | 0.15   | 0.63   | 0.16   | 0.46   | 0.14   | 0.57   | 0.12   | 0.59   | 0.12   | 0.49   |

Percentage of sports goods global import and export to overall (all goods) global trade.

When it comes to area and country distribution of the global sports goods trade, this had evolved between 1994 and 2004, but major features have remained almost unchanged. Asia was the major exporting area ahead of the EU region. NAFTA had quite a smaller share in the global export market (11–16%), while Eastern Europe (2–3%) and other emerging countries (3–4%) were marginal exporting areas. On the import side, major areas were the EU, ahead of NAFTA and Asia. Eastern Europe (1–2%) and other emerging countries had a small share in the global import market.

At a country level, from 1994 to 2004, the prevailing exporter of sports goods was China, followed by Hong Kong and the USA; France overtook the USA in 2004. France, Italy and Germany usually were the next significant exporters, while Argentina, Brazil and Greece lagged behind as the smallest exporters in our sample. The most significant major importer usually was the USA, followed by Japan and Germany, and then France, the UK, Italy, Canada and Hong Kong. The partners importing the least were Pakistan, Indonesia, Philippines, Morocco, India and Bulgaria. There was some inertia in the international division of labour across countries in the global market for sports goods (Table 3).

Distribution of the global sports goods trade by products changed only slightly and slowly over the 1994–2004 period (Table 4). The most significant changes were increasing shares of golf and gymnastic equipment and decreasing shares of sportswear, anoraks and skates in global trade. However, all results about goods distribution must be read with a major caveat, since our dataset does not cover sport footwear and bikes, and does not entirely cover sportswear (the distortion created by missing sports cars, motor bikes, and airplanes is less significant, these markets being known to be smaller).

Regarding regional sports goods trade, by product groups (Table 5), anoraks *import* (column 2) prevailed in nearly all geographical areas, except in emerging countries where its share was lagging behind sportswear import. Then sportswear import (column 1) followed in nearly all areas. In 2004, the ranking was reversed since the sportswear share in global trade fell to 22.5%, while gymnastic equipment (11) reached 21.4%, the latter being the third most significant imported sports goods in all areas. Golf (6), skis (3), balls (8), skates (10) and rackets had the next largest market shares in global trade, but clearly differentiate importing areas: Asia and NAFTA were the major golf importers, Eastern Europe had a significant import of skis, emerging countries are significant balls importers, skates and rackets imports are more evenly distributed across geographical areas. Boats (4) and table tennis equipment (9) definitely had the smallest global market shares, and represented only a tiny share of sports goods import in all areas.<sup>5</sup>

As to global *exports*, the three major sports goods export markets pertained to anoraks, sportswear and gymnastic equipment, just as for imports, for obvious (double-counting) reasons. But the export share of each product group is different across different geographical areas. Asia and Eastern Europe were major exporters of anoraks when the share of this product is looked at relative to their overall sports goods exports. The great

Table 3. Area and country distribution of sports goods global trade (%)

| Area                 | 1994   |        | 1997   |        | 1999   |        | 2002   |        | 2004   |        |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                      | Export | Import | Export | Import | Export | Import | Export | Import | Export | Import |
| NAFTA                | 13.6   | 36.6   | 16.2   | 34.7   | 15.3   | 34.6   | 13.3   | 35.0   | 10.6   | 32.1   |
| EU + S               | 34.8   | 37.9   | 35.4   | 40.4   | 34.7   | 40.8   | 32.2   | 40.3   | 33.1   | 44.8   |
| East                 | 2.8    | 0.6    | 3.4    | 1.3    | 3.7    | 1.3    | 3.4    | 1.8    | 3.5    | 2.6    |
| Asia                 | 44.9   | 24.2   | 42.1   | 22.4   | 42.4   | 22.4   | 47.0   | 22.2   | 49.1   | 19.7   |
| EMEC                 | 3.8    | 0.7    | 2.8    | 1.1    | 3.8    | 0.9    | 4.1    | 0.7    | 3.8    | 0.8    |
| Country <sup>a</sup> | Export | Import | Export | Import | Export | Import | Export | Import | Export | Import |
| USA                  | 9.9    | 32.0   | 10.9   | 29.9   | 10.2   | 29.4   | 8.9    | 29.8   | 7.0    | 27.2   |
| Germany              | 5.0    | 12.5   | 4.7    | 11.5   | 5.0    | 9.9    | 4.4    | 8.0    | 4.8    | 8.5    |
| Italy                | 7.5    | 3.1    | 6.5    | 3.3    | 7.0    | 3.9    | 6.7    | 4.4    | 5.8    | 5.2    |
| Czech Rep.           | 0.6    | 0.2    | 0.6    | 0.4    | 0.6    | 0.5    | 0.7    | 0.5    | 0.9    | 0.7    |
| China                | 16.7   | 0.4    | 20.2   | 0.4    | 21.6   | 0.5    | 28.4   | 0.6    | 33.6   | 0.7    |
| Tunisia              | 2.0    | 0.2    | 1.9    | 0.3    | 2.3    | 0.3    | 2.9    | 0.3    | 2.7    | 0.2    |

<sup>a</sup>We have selected one specific country per area and two in EU+S.

Table 4. Global sports goods trade, distribution by goods groups (in %)

| Global trade <sup>a</sup> | 1    | 2    | 3   | 4   | 5   | 6    | 7   | 8   | 9   | 10  | 11   |
|---------------------------|------|------|-----|-----|-----|------|-----|-----|-----|-----|------|
| 1994                      | 27.9 | 32.1 | 6.6 | 0.6 | 2.0 | 7.9  | 2.2 | 3.9 | 0.4 | 3.6 | 12.8 |
| 1997                      | 26.5 | 30.5 | 4.8 | 0.4 | 2.1 | 10.9 | 1.9 | 3.2 | 0.4 | 4.5 | 14.8 |
| 1999                      | 24.1 | 30.3 | 5.3 | 0.5 | 2.3 | 10.4 | 2.1 | 3.4 | 0.5 | 4.0 | 17.1 |
| 2002                      | 28.8 | 24.0 | 4.9 | 0.4 | 1.9 | 11.5 | 2.0 | 3.8 | 0.5 | 2.6 | 19.6 |
| 2004                      | 22.5 | 29.6 | 5.6 | 0.3 | 2.2 | 10.2 | 1.6 | 4.0 | 0.5 | 2.1 | 21.4 |

Sports goods groups 1–11, refer to Appendix Table A1.

<sup>a</sup>Average trade is defined as (import+export)/2.

bulk of sports goods export from emerging countries was sportswear; “fashionable” sportswear also had a predominant share in EU sports goods exports. Gymnastic equipment had a significant share in the US export, then in the EU export and, more recently, in Asian export. Following this, the most

Table 5. Regional breakdown of sports goods trade, distribution by goods groups (%)

|               | 1    | 2    | 3    | 4   | 5   | 6    | 7   | 8    | 9   | 10  | 11   |
|---------------|------|------|------|-----|-----|------|-----|------|-----|-----|------|
| <b>Import</b> |      |      |      |     |     |      |     |      |     |     |      |
| 1994          |      |      |      |     |     |      |     |      |     |     |      |
| NAFTA         | 21.1 | 35.8 | 3.4  | 0.2 | 1.2 | 9.0  | 1.3 | 4.4  | 0.1 | 7.0 | 16.6 |
| EU+S          | 27.4 | 40.1 | 5.7  | 0.9 | 1.4 | 3.4  | 2.3 | 3.7  | 0.6 | 2.4 | 12.1 |
| East          | 24.1 | 28.4 | 10.2 | 0.6 | 2.6 | 0.7  | 3.2 | 9.6  | 1.2 | 4.3 | 15.0 |
| Asia          | 28.4 | 24.6 | 8.8  | 0.6 | 2.6 | 14.8 | 3.7 | 3.4  | 0.5 | 2.4 | 10.4 |
| EMEC          | 31.3 | 21.4 | 1.1  | 0.3 | 1.8 | 1.2  | 1.4 | 14.6 | 0.5 | 6.2 | 20.2 |
| 2004          |      |      |      |     |     |      |     |      |     |     |      |
| NAFTA         | 15.2 | 28.7 | 3.9  | 0.1 | 2.7 | 11.9 | 0.9 | 4.0  | 0.3 | 2.0 | 30.3 |
| EU+S          | 21.1 | 36.3 | 6.3  | 0.5 | 1.9 | 5.4  | 1.4 | 3.7  | 0.4 | 2.5 | 20.4 |
| East          | 11.3 | 32.7 | 12.7 | 0.3 | 1.2 | 0.6  | 3.6 | 5.6  | 1.4 | 5.9 | 24.8 |
| Asia          | 22.1 | 25.5 | 2.5  | 0.2 | 2.2 | 24.1 | 3.3 | 3.0  | 0.6 | 2.6 | 13.9 |
| EMEC          | 33.5 | 26.3 | 1.3  | 0.3 | 1.8 | 0.8  | 2.3 | 8.8  | 0.7 | 0.5 | 23.6 |
| <b>Export</b> |      |      |      |     |     |      |     |      |     |     |      |
| 1994          |      |      |      |     |     |      |     |      |     |     |      |
| NAFTA         | 9.7  | 3.6  | 4.8  | 0.5 | 3.8 | 32.9 | 0.4 | 2.7  | 0.1 | 6.5 | 34.9 |
| EU+S          | 35.2 | 20.0 | 20.0 | 1.3 | 1.9 | 2.3  | 1.4 | 2.8  | 0.5 | 2.6 | 12.1 |
| East          | 26.1 | 61.6 | 2.2  | 0.2 | 0.4 | 0.1  | 0.2 | 0.9  | 0.2 | 3.3 | 4.8  |
| Asia          | 31.7 | 40.5 | 0.1  | 0.3 | 2.4 | 5.9  | 3.6 | 5.1  | 0.6 | 2.9 | 6.9  |
| EMEC          | 62.3 | 36.2 | 0.1  | 0.0 | 0.2 | 0.0  | 0.3 | 0.3  | 0.0 | 0.0 | 0.6  |
| 2004          |      |      |      |     |     |      |     |      |     |     |      |
| NAFTA         | 13.4 | 5.6  | 3.3  | 0.1 | 2.9 | 27.1 | 0.2 | 1.2  | 0.5 | 1.8 | 43.8 |
| EU+S          | 28.1 | 24.8 | 14.0 | 0.6 | 2.5 | 4.1  | 1.4 | 2.7  | 0.7 | 2.0 | 19.1 |
| East          | 25.8 | 39.5 | 14.2 | 0.1 | 0.8 | 0.1  | 2.2 | 0.7  | 0.2 | 3.1 | 13.2 |
| Asia          | 20.6 | 36.4 | 0.9  | 0.1 | 1.7 | 11.6 | 2.2 | 6.3  | 0.4 | 2.0 | 17.9 |
| EMEC          | 85.5 | 11.1 | 0.7  | 0.1 | 0.1 | 0.0  | 0.1 | 0.3  | 0.0 | 0.0 | 2.0  |

Sports goods groups 1–11, refer to Appendix Table A1.

significant shares are for golf, skis, balls, surfs, skates and rackets export, with marked differences across geographical areas: golf was important in NAFTA export, skis had a strong share in the EU and Eastern Europe's export, balls and rackets had a bigger share in Asian export compared to other areas, NAFTA was ahead for the surfing share, and the percentage for skates is rather evenly distributed across areas (except for NAFTA in 1994). Boats and tennis table equipment had the smallest export market shares in all areas.

Export specialisation revealed a crystal clear international division of labour. Asia is a major exporter of anoraks, rackets, balls and table tennis equipment. Emerging countries specialised in exporting sportswear and anoraks. Eastern Europe used to export anoraks, and moved on to more important skis, skates and rackets exports in 2004. NAFTA was an above average exporter of gymnastic equipment, golf and surfing gear, while the EU over-exported skis and sportswear.

All in all, this first snapshot tends to highlight that developed countries more commonly specialise in equipment-intensive sports goods, whereas Asian, Eastern European and other emerging countries are more specialised in the trite sports goods.

### Asian and Emerging Net Exporters vs. European and North American Net Importers

Which areas and countries were in sports goods trade excess or deficit? The absolute amount of a sports goods foreign trade balance in dollars does not reveal as much about the sports goods international trade and specialisation of a country. For example, a \$US1 million deficit in sports goods, in relative terms, is a hundred times more worrying in a country that exports \$US2 million sports goods than in a country that exports \$US200 million sports goods. Thus, instead of publishing trade balances, we present export/import ratios that tell the same story as foreign trade balances without being dependent on the absolute value of sports goods trade in each country. Such ratios are calculated as:

$$R = \frac{X}{M} \times 100 \quad (1)$$

where  $X$  is exports and  $M$  is imports (Figure 1).

In the Appendix (Table A2), emerging countries, Asia and Eastern Europe every year had an excess sports goods trade balance ( $R > 100$ ). They were *net exporters*. The trend was different in each area. In emerging countries,  $R$  started with a 379 value in 1994 and ended with 414 in 2004 (i.e., the exports value was four times the value of imports and, consequently, foreign trade excess is three times the imports value), and never fell below 212. Asia started with a 135 ratio in 1994, which augmented throughout the period to reach 228 in 2004. Eastern Europe could compare to emerging countries in 1994, with a 369 ratio. However, with progress towards a market economy

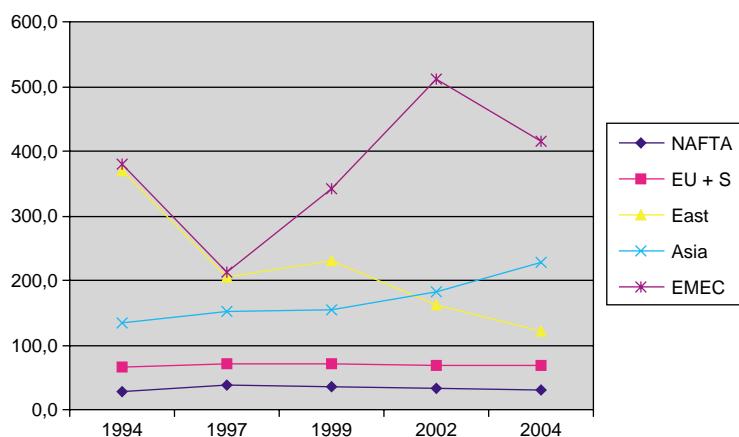


Figure 1. Sports goods export/import ratio (%)

and recovery in living standards, sports goods imports started to grow more than exports and  $R$  fell to 123 in 2004.

Two areas incorporated a sports goods foreign trade deficit: Europe and NAFTA. They were *net importers*. European imports in sports goods were roughly 50% bigger than European exports. In the case of NAFTA, on average, sports goods exports did not cover more than one third of imports.

We cannot comment here on export/import ratios for each country in detail.<sup>6</sup>

- The NAFTA export/import ratio is much influenced by US sport goods trade for which  $R < 30$  every year. Canada also is a net sports goods importer.
- Europe splits into four country sub-groups. Net importers for all years investigated in 1994–2004 were Belgium, Denmark, Finland, Germany, Greece, the Netherlands, Spain, Sweden, Switzerland and the UK. Net exporters were Austria and Italy. A third group is comprised of countries for which sports goods surplus became a deficit: Ireland (since 1997), France and Portugal (since 2002). Finally, in two countries, sports goods deficit was occasionally turned around into excess: the Netherlands (in 1997) and Belgium (in 2002).
- Emerging countries also split into two groups. Argentina and Brazil were net sports goods importers. Morocco, Tunisia and Turkey were big net exporters. In the first two countries, sports goods trade excess basically relies on international subcontracting with outward-processing trade, rather than FDI or local initiative, in particular in sportswear and sport footwear production, as has been shown elsewhere (Andreff & Andreff, 2000, 2001).
- In Asia as well, two countries were net importers, Japan and Singapore, whereas all other Asian countries were net exporters. Notice that Korea turned from a net exporter to a net importer position since 2002. Among net exporters, the most impressive are China, Indonesia and Pakistan. It is

interesting to note that Nike had relocated the great bulk of its sports goods production in the latter two countries.

- With the exception of Russia, all Eastern European countries were net sports goods exporters. Hungary became a sports goods net importer in 2004. The major net exporter in the region was Romania, followed by Bulgaria. Here again outward-processing trade in sportswear and sport footwear is a basic driving force.

### Country Specialisation in Global Sports Goods Trade: Methodology

Three specialisation criteria are implemented. The first one simply consists in checking which sports goods groups accumulate the most significant trade deficits and excesses in a country. Then, a specialisation index, widespread in current economic literature on international trade, is used—the so-called (goods) contribution to foreign trade balance (Lafay & Herzog, 1989). It is defined as:

$$CBk = \left\{ \frac{Xik - Mik}{\frac{1}{2}(Xi + Mi)} - \left[ \frac{Xi - Mi}{\frac{1}{2}(Xi + Mi)} \times \frac{Xik + Mik}{Xi + Mi} \right] \right\} \times 100 \quad (2)$$

where  $Xik$  is country  $i$ 's export of good  $k$ ,  $Mik$  is country  $i$ 's import of good  $k$ ,  $Xi$  is country  $i$ 's overall (all goods) export and  $Mi$  is country  $i$ 's overall import.<sup>7</sup> Country  $i$  exhibits a comparative advantage in good  $k$  when  $CBk > 0$  and a comparative disadvantage when  $CBk < 0$ . Since we are only interested here in comparative advantage and disadvantage in sports goods trade,  $Xik$  is country  $i$ 's export in one specific sports goods group  $k$  ( $k = 1, \dots, 11$ ; see Appendix Table A1),  $Mik$  is country  $i$ 's import of one specific sports goods group  $k$ ,  $Xi$  is country  $i$ 's overall sports goods export and  $Mi$  is country  $i$ 's overall sports goods import.

The  $CBk$  criterion shows in which goods a country holds a comparative advantage or disadvantage in its international trade specialisation. Another question to know, in global trade of good  $k$ , is which are those countries with high or low competitiveness—what is the market position of country  $i$  in global trade of good  $k$  (Fontagné, Freudenberg, & Ünal-Kesenci, 1995). This is computed as:

$$MPi = \frac{Xik - Mik}{\frac{1}{2}(Xi + Mi)} \times 100 \quad (3)$$

Formula (3) shows how big a balance excess (deficit) country  $i$  derives, relative to its overall foreign trade turnover, from its competitive (non-competitive) position in the global market for good  $k$ .

As a first data treatment, we use a principal component analysis (PCA) applied only to our last sampled year (2004). Through a statistical treatment, such a method generates new variables (named factorial axes) that are linear

combinations of initial variables, in such a way that factorial axes, ranked in a decreasing significance order, provide the best explanation of initial variables' statistical dispersion. Then, a hierarchical ascendant classification methodology, based on using the first factorial axes and observed values for each individual (each country), enables the creation of the most homogeneous country classes from within, while heterogeneity between classes is as big as possible. Classes are elaborated on, step by step, in an ascendant way, which starts from individuals (countries) and ends with all classes gathered into a single group.

### Developed and Emerging Countries Specialisation

Table 6 points to countries with either significant balance excesses or deficits in sports goods trade, in a sub-sample of 25 countries, all sports goods being classified in our eleven goods groups, in 1994 and 2004.<sup>8</sup> All major net importing developed countries show balance deficits in trite sports goods, such as sportswear (1), anoraks (2), rackets (7) and balls (8). This is evident for the USA, Switzerland, Germany, Spain, the UK and Japan. It is also nearly the case for Austria, Canada, France (except sportswear), the Netherlands, Sweden, and also for Brazil, Russia and Korea. Developed market economies (NAFTA and Europe) have few competitive sports goods with excess balance. Notice that several developed countries have simply no excess balance in any sport good: Switzerland, the UK, Japan, Russia, Canada (except skates in 1994) and the USA (except golf in 1994).

Sports goods contribution to foreign trade balance (Appendix Table A3) was positive, showing comparative advantage, for nearly all sampled years, in skis, boats, surfing equipment, golf and gymnastic equipment in NAFTA countries. On the other hand, NAFTA countries usually had comparative disadvantage in sportswear, anoraks, rackets and skates. The same comparative advantages and disadvantages are very clear in the US case.

Europe had a positive contribution to trade balance in sportswear, skis, boats, surfing equipment and table tennis equipment, while its negative contribution concentrated on anoraks, golf and rackets. Germany exemplified a country with comparative advantage in equipment-intensive sports goods, such as skis, boats and, to some extent, tennis table and gymnastic equipment, while Italy is specialised in less equipment-intensive sports goods, such as surfing equipment, skates and sportswear. The main German comparative disadvantages appeared in the trade of sportswear, anoraks, surfing equipment, golf, rackets, balls and skates. On the other hand, Italy's comparative disadvantages lay in anoraks, skis, golf, rackets and balls. Sports goods contribution to trade balance in NAFTA and Europe confirms that developed market economies are more specialised in equipment-intensive sports goods (skis, boats, surfing equipments) and less specialised in less equipment-intensive (rackets, skates) and trite goods (sportswear, anoraks, balls). However, several developed market economies even accumulate significant foreign trade deficits in skis (3), surfing equipment (5), golf (6), skates (10) and gymnastic equipment (11).

Table 6. Biggest trade balance excesses and deficits in some countries

| Sports goods     | 1994 |   |   |   |   |   |   |   |   |    |    | 2004 |   |   |   |   |   |   |   |   |    |    |
|------------------|------|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|----|----|
|                  | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Balance excesses |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Canada           |      |   |   |   |   |   |   |   |   | x  |    |      |   |   |   |   |   |   |   |   |    |    |
| Mexico           | x    |   |   |   | x | x |   |   |   |    |    | x    | x | x |   |   |   |   |   |   |    |    |
| USA              |      |   |   |   |   | x |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Austria          |      |   | x |   |   |   | x |   |   |    |    |      |   | x |   |   |   |   |   |   |    |    |
| France           | x    |   | x |   |   |   |   |   |   |    |    | x    |   | x |   |   |   |   |   |   |    |    |
| Germany          |      |   |   |   |   |   |   |   | x |    |    |      |   | x |   |   |   |   |   |   | x  |    |
| Italy            | x    |   |   |   | x |   |   |   |   | x  | x  | x    |   |   |   |   |   |   |   |   | x  | x  |
| Netherlands      |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Spain            |      |   | x |   |   |   |   |   |   |    |    |      |   | x |   |   |   |   |   |   |    |    |
| Sweden           |      |   | x |   |   |   |   |   | x |    |    |      |   |   |   |   |   |   |   |   | x  |    |
| Switzerland      |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| UK               |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Czech Rep.       |      | x | x |   |   |   |   |   |   | x  | x  | x    |   | x |   |   |   |   |   |   |    | x  |
| Hungary          | x    | x |   |   |   |   |   |   |   |    |    |      | x |   |   |   |   |   |   |   |    |    |
| Poland           | x    | x |   |   |   |   |   |   |   |    |    | x    | x |   |   |   |   |   |   |   |    |    |
| Romania          | x    | x |   |   |   |   |   |   |   |    |    | x    | x | x |   |   |   |   |   |   |    | x  |
| Russia           | nd   |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| China            | x    | x |   |   |   | x |   |   | x | x  | x  | x    | x | x |   |   | x | x | x | x | x  | x  |
| Hong Kong        | x    | x |   | x |   |   |   |   |   |    | x  | x    | x | x |   |   | x | x | x |   |    | x  |
| Indonesia        | x    | x |   |   |   |   |   |   |   |    |    | x    | x |   |   |   |   |   |   |   |    |    |

Table 6 (Continued)

| Sports goods     | 1994 |   |   |   |   |   |   |   |   |    |    | 2004 |   |   |   |   |   |   |   |   |    |    |
|------------------|------|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|----|----|
|                  | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Japan            |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Korea            | x    | x |   |   |   | x |   |   |   | x  |    |      |   |   |   |   |   |   |   |   |    |    |
| Brazil           |      |   |   |   |   |   |   |   |   |    |    |      |   | x |   |   |   |   |   |   |    |    |
| Morocco          | x    | x |   |   |   |   |   |   |   |    |    |      | x | x |   |   |   |   |   |   |    |    |
| Tunisia          | x    | x |   |   |   |   |   |   |   |    |    |      | x | x | x |   |   |   |   |   |    |    |
| Balance deficits |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Canada           | x    | x | x |   |   | x |   | x |   |    |    |      | x | x | x |   | x | x |   | x |    | x  |
| Mexico           |      |   |   |   |   |   |   | x |   | x  | x  |      |   |   |   |   |   |   |   | x |    | x  |
| USA              | x    | x | x |   | x |   | x | x |   | x  | x  |      | x | x | x |   | x | x | x | x | x  | x  |
| Austria          | x    | x |   |   |   |   |   | x |   |    | x  |      | x | x |   |   |   |   |   |   | x  | x  |
| France           |      | x |   |   |   | x | x | x | x |    |    |      |   |   |   |   | x | x | x |   | x  | x  |
| Germany          | x    | x |   |   | x | x | x | x |   | x  | x  |      |   |   |   | x | x |   | x |   | x  | x  |
| Italy            |      | x | x |   |   |   |   | x |   |    |    |      |   | x | x |   |   |   | x |   |    |    |
| Netherlands      | x    | x | x |   |   |   |   | x | x |    |    |      |   |   |   |   |   |   |   |   |    | x  |
| Spain            | x    | x |   |   |   |   |   | x | x |    |    |      |   |   |   |   | x | x | x | x |    | x  |
| Sweden           | x    | x |   |   |   | x |   | x |   | x  |    |      |   |   |   |   | x |   |   |   |    | x  |
| Switzerland      | x    | x | x |   |   |   |   | x | x |    |    |      |   |   |   |   | x | x | x | x |    | x  |
| UK               | x    | x |   |   | x | x | x |   |   | x  | x  |      |   |   |   | x |   | x | x | x | x  | x  |
| Czech Rep.       | x    |   |   |   |   |   |   |   |   |    |    |      |   | x |   |   |   |   | x |   | x  |    |
| Hungary          |      |   | x |   |   |   |   |   |   | x  | x  |      |   |   |   |   |   |   | x |   | x  | x  |

Table 6 (Continued)

| Sports goods | 1994 |   |   |   |   |   |   |   |   |    |    | 2004 |   |   |   |   |   |   |   |   |    |    |
|--------------|------|---|---|---|---|---|---|---|---|----|----|------|---|---|---|---|---|---|---|---|----|----|
|              | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 1    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Poland       |      |   | x |   |   |   |   | x |   |    |    |      |   | x |   |   |   | x | x |   | x  |    |
| Romania      |      |   |   |   |   |   |   | x |   |    |    |      |   |   |   |   |   |   | x |   |    | x  |
| Russia       | nd   |   |   |   |   |   |   |   |   |    |    |      | x | x |   |   |   |   | x |   | x  | x  |
| China        |      |   |   |   |   |   |   | x |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Hong Kong    |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    |    |
| Indonesia    |      |   |   |   |   |   |   |   |   |    |    |      |   |   |   |   |   |   |   |   |    | x  |
| Japan        | x    | x | x | x |   | x | x | x |   | x  |    | x    | x | x | x | x | x | x | x |   | x  | x  |
| Korea        |      |   | x |   |   |   |   | x |   |    |    | x    | x | x |   |   | x | x | x |   | x  | x  |
| Brazil       |      | x |   |   |   |   |   | x |   | x  | x  |      | x |   |   |   |   | x | x |   |    |    |
| Morocco      |      |   |   |   |   |   |   |   |   |    | x  |      |   |   |   |   |   |   |   | x |    | x  |
| Tunisia      |      |   |   |   |   |   |   |   |   |    | x  |      |   |   |   |   |   |   |   |   |    | x  |

Figures in columns refer to sports goods groups in Appendix Table A1.

Examining market positions (Table A3) basically confirms what is learnt from previous indexes. A positive sign of index (3) is interpreted as country competitiveness, the bigger its value the stronger its competitiveness. A negative sign of (3) points out a lack of competitiveness. NAFTA is practically non-competitive in all sports goods trade, except one year or two in boats or golf trade (the same applies to US trade). Europe is only competitive in skis trade, but Italy is not. Germany is competitive in boats, skis and table tennis trade, while Italy is competitive in sportswear, surfs, skates and gymnastic equipment trade.

The assumption that developed countries are specialised net exporters of high value-added and high-tech equipment-intensive sports goods, while they are specialised net importers of trite sporting goods is empirically verified.

Apart from Japan and Singapore, no Asian country exhibited foreign trade balance deficit in any sports good. Furthermore, none of these countries could have afforded substantial deficits in sports goods trade, given their level of economic development and living standards. Nowadays, Asian countries are among the most competitive in the global market for many sports goods. Table 6 shows that China, Hong Kong and Indonesia had excess balances in sportswear, anoraks, golf and balls trade, as well as rackets, skates and gymnastic equipment trade in the cases of China and Hong Kong. As expected Asia had a positive contribution to trade balance in sportswear, anoraks and balls, which are trite sports goods. The major comparative disadvantages of Asia were concentrated in skis and golf.

As to market position (Appendix Table A4), Asia was competitive in sportswear, anoraks, rackets, balls, skates and gymnastic equipment trade. Notice that China, which had been competitive in the same goods as Asia in the past, had extended (in 2004) its competitiveness to golf and, more slightly, to surfing equipment and skis, in keeping with its rapid industrialisation in the last decade. Conversely, Korea was competitive in the trade of sportswear, anoraks, golf and skates in 1994, but was no longer competitive in any sport good in 2004. This reflects the fact that Korea had recently joined the club of developed market economies (the USA, Japan, the UK, Switzerland were no longer competitive in any sport good trade in 2004).

Emerging countries had a positive contribution to trade balance in sportswear and anoraks. Major comparative disadvantages of emerging countries were related to balls and gymnastic equipment trade. Countries where sportswear production had been relocated through outward-processing trade (Morocco, Tunisia) showed a strong market position in export of sportswear and anoraks.

Eastern Europe's comparative advantages were close to those of emerging countries, with a positive contribution to trade balance in sportswear and anoraks, and significant comparative disadvantages in rackets, balls and gymnastic equipment. The Czech Republic confirmed this pattern with some local specificities, since it exhibited a comparative advantage in skates (linked to ice hockey being the most popular sport in this country) and in gymnastic equipment (gymnastics is the third Czech sport after hockey and

soccer). However, the Czech Republic's specialisation had changed markedly from 1994 to 2004: in the last year the country had new comparative advantages in skis and sportswear trade. Eastern Europe was competitive (Table A4) in skis trade, like developed economies, and sportswear and anoraks trade, like emerging countries.

From a country specialisation viewpoint, the expected international division of labour between developed market economies specialised in equipment-intensive sports goods and less developed (whether emerging or transition) countries specialised in trite goods is confirmed. The assumption that industrialisation/de-industrialisation and MNC relocation strategies have significantly shaped specialisation in global sports goods trade is thus valid.

### **International Specialisation Influenced by Production Relocation**

For reasons of length and complexity, it is inappropriate to publish here all the results of a PCA for the year 2004.<sup>9</sup> Applied to export/import ratios in sports goods trade, such analysis reveals a first factorial axis which depicts a size effect. A second axis divides sports goods into two groups as regards export/import ratios—golf, sportswear, anoraks and balls on the one hand and, on the other hand, gymnastic equipment, rackets, table tennis and skates. Apart from golf, the first group encompasses trite sports goods, whereas the second one gathers more specific equipment required by sportsmen and women. Along a third axis, golf, anorak and boats are opposed to sportswear and balls. Although the roots of this opposition are not immediately obvious, an assumption to be tested further would be a difference between goods with higher unit cost in the first group as compared to the second group. An ascendant typology puts most countries in the same class (Appendix Table A5). Three countries emerge as dramatically different. First, China increasingly appears as a dominant player in global sports goods trade. Then come Indonesia and Pakistan, which one might refer to as Nike's platforms for outward-processing trade in view of its world-wide exports. Tunisia, Thailand and Romania are also singled out. All three are known to host relocated sports goods production.

When it comes to goods contribution to foreign trade balance, the first two factorial axes sharply oppose typical trite sports goods (sportswear, anoraks) to typical equipment-intensive sports goods (skis, boats, golf, rackets, gymnastic equipment) whereas both goods groups are independent from global trade in balls, skates, surfing equipment and, to a lesser extent, table tennis goods. This descriptive result is probably one of the most promising for further econometric testing. One could look at economic determinants of global trade for these three different sports goods groups, such as innovation, production technology, value-added, unit value, which are usually assumed to delineate trite goods from equipment-intensive goods. Ascendant classification (Appendix Table A6) reveals that countries are heterogeneous regarding goods contribution to trade balance (i.e., specialisation). This is quite consistent with the idea that each country

attempts to find its own way towards a specific specialisation. From this more blurred picture, one country emerges as more than slightly different—Austria, the major world ski exporter (compared to its country size). Malaysia, Thailand, India and Philippines are rather close and may be assumed to represent a specific Asian specialisation pattern in sports goods trade. Another ascendant grouping encompasses Brazil, Canada, Germany, Italy, Japan, Mexico, Russia, Sweden and the USA. It seems that specialisation is rather similar among countries with the biggest domestic sports goods markets in the world (only France and Korea are missing in this group); and this specialisation is rather different from countries with a relocated sports goods production, since we can also notice specialisation closeness between Bulgaria, Morocco, Poland and Turkey. Production relocation by MNCs has created a dividing line in terms of product specialisation between developed and emerging countries.

### **Concluding Policy and Research Implications**

Developed countries—MNCs based in these countries—are basically able to retain some comparative advantages in sports goods trade in deepening their specialisation in equipment-intensive value-added and high tech sport goods. A major policy tool here is to ensure expenditure on research and development at a firm level remains high in order to innovate and improve the quality of products and production technology. Public–private partnerships in R&D in the sports goods industry might be an option, if any government policy is envisaged in this area.

In emerging countries, the technological gap with developed market economies is not on the verge of being bridged. Thus, deepening industrialisation and hosting relocated sports goods production is a natural option at a firm level as long as the gap in unit labour costs with developed economies does not diminish significantly, providing an incentive to MNCs investments or subcontracting in emerging countries. The latter strategy is not without its problem. A major issue is child labour in factories where production of trite sports goods is relocated. A well-known example is Nike. In Indonesia, 160,000 workers are involved in sportswear production for the Nike trademark. In the Bogor plant, the daily wage was half a dollar and a glass of milk in 1998. On each pair of shoes sold in developed countries, Nike's subcontractor worker received 10 cents (0.2% of the selling price). Nike's subcontractors in Indonesia are located in special (closed) trade zones where waged armed guards supervise them and trade unions are not allowed. The Sialkot assembly line for soccer balls in Pakistan was sadly infamous and publicised for resorting to mass child labour (Riddle, 1997).

After such negative advertising for its industry, the World Federation of the Sporting Goods Industry (WFSGI) was very much concerned with phasing out child labour. By the end of 1997, WFSGI adopted a Model Code of Conduct for global business practices, which addresses working conditions (child labour, forced labour, wages, length of the working day, the right of

unionisation and so on). It is a gentleman's agreement or a moral code rather than a binding economic regulation. However, due to the negative global image created by child labour, most MNCs in the sports goods industry now proclaim their zero tolerance and have instituted initiatives against this practice in developing countries. The policy issue now and in the future is to check and supervise how much child labour is regressing in relocated sports goods factories until it has been totally eradicated.

As regards the research implications of this article, determinants of global sports goods trade specialisation, connected to outward-processing trade and FDI in major trading countries has to be analysed further, beyond the simple assumptions based on industrialisation/de-industrialisation and MNC strategies. Among the most significant driving forces of international sports goods trade specialisation, domestic market size, level of economic development (GDP per capita), tariffs, R&D expenditures in the sports goods industry, unit labour costs, investment climate, country risk and distance (geographical location of a country) would probably show up in the econometric testing of a gravity model. As a driver who enters a tunnel, we do not yet see the other end largely because gathering unexploited and incomplete information is so time-consuming. More research is still needed to develop our dataset, but these results provide promising indications of how progress might be made.

### Acknowledgement

The authors thank Marie-José Desaignes (CES) for her assistance in building the dataset.

### Notes

1. One should be ware that, in the value of a computer, about 80% is 'industrialised' services (software), while 20% results from manufacturing material production (hardware).
2. During the past ten years, some of these firms partly switched to the second strategy, namely Adidas when acquiring Reebok in 2005.
3. Unfortunately, Taiwan's foreign trade is not published as such in *Comtrade*. In Harvey and Saint-Germain (2001), albeit Taiwan is selected in the country sample, no data appear. In fact, their real sample size is 27 instead of 28. Our sample does not encompass Taiwan either.
4. In France, roughly one-third of the textile-clothing industry production and trade are assumed to be sports goods. This assumption cannot be statistically verified so far, due to the same identification problem as with SITC.
5. All detailed country data unpublished in this paper are available to readers on request (email: andreff@univ-paris1.fr or andreff@univ-mlv.fr).
6. Ibid.
7. The contribution of a good  $k$  to trade balance is the difference between observed balance in good  $k$  (divided by half the overall foreign trade turnover of country  $i$ ) minus a theoretical balance in good  $k$  computed as if good  $k$  had the same weight in overall balance as its weight in country  $i$ 's overall foreign trade turnover (this theoretical balance corresponds to the assumption of no comparative advantage or disadvantage). Thus, when  $CBk > 0$  (comparative advantage), it may be due to either the observed excess balance being bigger than the theoretical excess balance in good  $k$  or a smaller observed

than theoretical balance deficit in good  $k$  trade. When  $CBk < 0$  (comparative disadvantage), it may be due to a smaller actual than theoretical balance in good  $k$  or to a bigger actual than theoretical balance deficit in good  $k$  trade.

8. For other years and countries, see note 5.
9. See note 5.

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## Appendix A

**Table A1.** Grouping identified sports goods in *Comtrade* (SITC codes)

| n° | Sports goods group <sup>a</sup> | SITC code  | Goods description in SITC   |
|----|---------------------------------|--|---|
| 1  | Sportswear                      | 6211 (11 sports goods groups in six digits)                    | Track suits, ski suits and swimwear, other garments   |
| 2  | Anoraks                         | 620191; 620192; 620193; 620199; 620291; 620292; 620293; 620299 | Men's, boys' anoraks, etc. Women's, girls' anoraks, etc.  |
| 3  | Skis                            | 950611; 950612; 950619   | Snow-skis and other snow-ski equipment  |
| 4  | Boats                           | 950621   | Sailboards  |
| 5  | Surfs                           | 950629   | Water-skis, surf-boards, other water-sport equipment  |
| 6  | Golf                            | 950631; 950632; 950639   | Golf (clubs, balls), golf equipment   |
| 7  | Rackets                         | 950651; 950659   | Lawn-tennis, badminton or similar rackets   |
| 8  | Balls                           | 950661; 950662; 950669   | Balls (lawn-tennis, inflatable or other)  |
| 9  | Tennis                          | 950640   | Article, equipment for tennis-table   |
| 10 | Skates                          | 950670   | Ice skates, roller skates, skating boots  |
| 11 | Gymnastic equip.                | 950691; 950699   | Physical exercise, gymnasium and athletics equipment; equipment for sports, swimming and paddling pools |

<sup>a</sup>In published tables we have grouped the 36 SITC identifiable sports goods into 11 economically relevant groups.

Table A2. Sports goods export/import ratio (%)

| Country/area       | 1994         | 1997         | 1999         | 2002         | 2004         |
|--------------------|--------------|--------------|--------------|--------------|--------------|
| Canada             | 48.4         | 56.1         | 61.8         | 53.2         | 47.0         |
| Mexico             | 95.6         | 182.5        | 151.2        | 146.0        | 150.0        |
| USA                | 22.5         | 29.4         | 28.5         | 25.5         | 23.6         |
| <b>NAFTA</b>       | <b>27.1</b>  | <b>37.5</b>  | <b>36.3</b>  | <b>32.6</b>  | <b>30.3</b>  |
| Austria            | 147.6        | 111.1        | 107.9        | 115.4        | 123.4        |
| Belgium            | n.a.         | 72.1         | 98.1         | 110.4        | 98.6         |
| Denmark            | 60.8         | 67.7         | 83.4         | 74.2         | 83.5         |
| Finland            | 93.5         | 63.9         | 56.4         | 56.9         | 57.9         |
| France             | 118.1        | 107.4        | 105.1        | 92.9         | 98.2         |
| Germany            | 29.5         | 32.6         | 41.2         | 46.6         | 52.3         |
| Greece             | 39.5         | 24.6         | 20.6         | 12.9         | 7.4          |
| Ireland            | 107.8        | 73.1         | 51.6         | 33.1         | 22.8         |
| Italy              | 173.7        | 155.6        | 146.6        | 130.7        | 101.7        |
| Netherlands        | 60.4         | 127.2        | 66.8         | 75.4         | 82.0         |
| Portugal           | 293.9        | 192.6        | 131.1        | 61.8         | 52.4         |
| Spain              | 28.7         | 40.4         | 46.7         | 45.5         | 46.6         |
| Sweden             | 25.6         | 35.1         | 42.4         | 45.0         | 44.9         |
| Switzerland        | 16.5         | 15.3         | 15.4         | 15.2         | 17.1         |
| United Kingdom     | 41.1         | 33.6         | 39.2         | 31.3         | 29.0         |
| <b>EU + S</b>      | <b>67.0</b>  | <b>70.5</b>  | <b>69.8</b>  | <b>68.3</b>  | <b>67.5</b>  |
| Bulgaria           | n.a.         | 591.1        | 573.7        | 437.2        | 315.6        |
| Czech Rep.         | 222.7        | 123.0        | 112.9        | 111.5        | 112.4        |
| Hungary            | 125.0        | 118.1        | 144.0        | 100.7        | 67.6         |
| Poland             | 612.5        | 265.8        | 269.9        | 124.4        | 105.6        |
| Romania            | 1,759.5      | 1,734.2      | 1,861.8      | 1,459.4      | 727.9        |
| Russian Federation | n.a.         | 61.2         | 100.4        | 44.4         | 14.2         |
| Slovakia           | 145.9        | 158.2        | 160.2        | 125.6        | 93.2         |
| <b>East</b>        | <b>368.5</b> | <b>204.5</b> | <b>230.1</b> | <b>161.2</b> | <b>122.6</b> |
| China              | 3,097.4      | 4,270.7      | 3,913.4      | 3,840.0      | 4,263.5      |
| Hong Kong (China)  | 146.3        | 143.3        | 150.2        | 145.7        | 141.4        |
| India              | 2,973.5      | 1,286.7      | 1,588.6      | 667.3        | 632.8        |
| Indonesia          | 10,355.0     | 4,430.1      | 15,941.5     | 2,761.8      | 2,204.1      |
| Japan              | 9.3          | 10.8         | 8.6          | 13.0         | 11.9         |
| Malaysia           | 110.2        | 124.8        | 161.2        | 99.3         | 117.9        |
| Pakistan           | n.a.         | n.a.         | n.a.         | n.a.         | 5144.4       |
| Philippines        | n.a.         | 533.5        | 692.8        | 724.5        | 564.5        |
| Rep. of Korea      | 402.3        | 138.3        | 177.2        | 49.3         | 33.2         |
| Singapore          | 59.8         | 50.9         | 51.7         | 50.1         | 71.1         |
| Thailand           | 1,280.0      | 843.0        | 881.0        | 512.8        | 497.1        |
| <b>Asia</b>        | <b>135.2</b> | <b>151.0</b> | <b>155.4</b> | <b>181.1</b> | <b>228.0</b> |
| Argentina          | 6.0          | 14.6         | 13.0         | 41.7         | 29.0         |
| Brazil             | 32.5         | 10.4         | 29.1         | 32.7         | 56.6         |
| Morocco            | 2,789.6      | 620.6        | 1,269.1      | 1,193.6      | 969.6        |
| Tunisia            | 705.9        | 539.6        | 560.8        | 849.6        | 1,145.5      |
| Turkey             | 1,763.2      | 263.2        | 307.8        | 190.3        | 89.1         |
| <b>EMEC</b>        | <b>378.7</b> | <b>212.0</b> | <b>340.7</b> | <b>510.5</b> | <b>414.1</b> |

Table A3. Sports goods contribution to foreign trade balance

| Sports goods | 1994   | 1997   | 1999   | 2002   | 2004   |
|--------------|--------|--------|--------|--------|--------|
| <b>NAFTA</b> |        |        |        |        |        |
| Sportswear   | -7.68  | -4.96  | -6.41  | -1.25  | -1.29  |
| Anorak       | -21.57 | -28.17 | -23.16 | -18.49 | -16.48 |
| Skis         | 0.96   | 1.46   | 0.92   | -0.40  | -0.46  |
| Boats        | 0.24   | 0.22   | 0.18   | 0.00   | 0.01   |
| Surfs        | 1.75   | 1.32   | 0.89   | 0.27   | 0.13   |
| Golf         | 16.08  | 19.50  | 17.21  | 12.81  | 10.90  |
| Rackets      | -0.59  | -0.67  | -0.76  | -0.63  | -0.49  |
| Balls        | -1.14  | -1.56  | -2.05  | -2.65  | -1.99  |
| Tennis       | -0.02  | -0.01  | 0.02   | 0.07   | 0.14   |
| Skates       | -0.32  | 0.55   | -0.76  | -0.63  | -0.12  |
| Gymnastic    | 12.30  | 12.31  | 13.92  | 10.91  | 9.66   |
| <b>EU+S</b>  |        |        |        |        |        |
| Sportswear   | 7.54   | 13.18  | 6.74   | 5.97   | 6.71   |
| Anorak       | -19.34 | -15.37 | -11.48 | -10.97 | -11.08 |
| Skis         | 13.82  | 7.69   | 7.42   | 7.57   | 7.40   |
| Boats        | 0.33   | 0.11   | 0.35   | 0.17   | 0.05   |
| Surfs        | 0.46   | 0.16   | 0.30   | 0.49   | 0.57   |
| Golf         | -1.14  | -1.64  | -1.40  | -1.66  | -1.26  |
| Rackets      | -0.85  | -0.74  | -0.15  | 0.00   | 0.02   |
| Balls        | -0.89  | -0.99  | -0.88  | -0.97  | -0.98  |
| Tennis       | -0.11  | 0.07   | 0.20   | 0.31   | 0.27   |
| Skates       | 0.18   | -1.40  | 0.05   | -0.26  | -0.43  |
| Gymnastic    | -0.01  | -1.06  | -1.13  | -0.66  | -1.27  |
| <b>East</b>  |        |        |        |        |        |
| Sportswear   | 1.35   | 7.72   | 9.41   | 13.03  | 14.41  |
| Anorak       | 22.24  | 26.38  | 25.27  | 16.94  | 6.79   |
| Skis         | -5.33  | -5.81  | -4.39  | -3.60  | 1.48   |
| Boats        | -0.29  | -0.02  | -0.15  | -0.12  | -0.17  |
| Surfs        | -1.48  | -0.94  | -1.53  | -1.34  | -0.41  |
| Golf         | -0.43  | 0.10   | -0.18  | -0.47  | -0.50  |
| Rackets      | -1.98  | -3.30  | -5.27  | -2.61  | -1.36  |
| Balls        | -5.89  | -6.06  | -8.35  | -5.93  | -4.84  |
| Tennis       | -0.66  | -1.14  | -1.48  | -2.40  | -1.17  |
| Skates       | -0.66  | -6.30  | -2.83  | -1.57  | -2.75  |
| Gymnastic    | -6.89  | -10.63 | -10.50 | -11.92 | -11.47 |
| <b>Asia</b>  |        |        |        |        |        |
| Sportswear   | 3.23   | 4.91   | 2.81   | 2.70   | -1.31  |
| Anorak       | 15.60  | 12.55  | 12.38  | 7.69   | 9.21   |
| Skis         | -8.47  | -3.26  | -2.83  | -2.03  | -1.31  |
| Boats        | -0.24  | -0.23  | -0.15  | -0.11  | -0.05  |
| Surfs        | -0.18  | -0.88  | -1.01  | -0.22  | -0.47  |
| Golf         | -8.64  | -10.83 | -9.83  | -9.30  | -10.58 |
| Rackets      | -0.15  | -0.22  | -0.31  | -0.70  | -0.93  |
| Balls        | 1.69   | 1.82   | 1.61   | 1.51   | 2.73   |
| Tennis       | 0.12   | 0.11   | 0.07   | -0.08  | -0.19  |
| Skates       | 0.47   | 1.61   | 1.73   | 0.39   | -0.51  |
| Gymnastic    | -3.44  | -5.57  | -4.47  | 0.14   | 3.41   |

Table A3 (Continued)

| Sports goods   | 1994   | 1997   | 1999   | 2002   | 2004   |
|----------------|--------|--------|--------|--------|--------|
| <b>EMEC</b>    |        |        |        |        |        |
| Sportswear     | 20.54  | 24.57  | 25.50  | 20.07  | 32.64  |
| Anorak         | 9.76   | 14.53  | 3.48   | -1.03  | -9.56  |
| Skis           | -0.66  | -0.49  | -0.12  | -0.25  | -0.40  |
| Boats          | -0.22  | -0.31  | -0.26  | -0.50  | -0.07  |
| Surfs          | -1.08  | -1.96  | -1.67  | -0.79  | -1.10  |
| Golf           | -0.77  | -1.14  | -0.75  | -0.35  | -0.51  |
| Rackets        | -0.75  | -1.16  | -1.21  | -1.55  | -1.41  |
| Balls          | -9.45  | -7.84  | -7.33  | -4.85  | -5.32  |
| Tennis         | -0.31  | -0.58  | -0.50  | -0.41  | -0.44  |
| Skates         | -4.12  | -1.39  | -1.09  | -0.34  | -0.30  |
| Gymnastic      | -12.95 | -24.23 | -16.05 | -10.00 | -13.54 |
| <b>USA</b>     |        |        |        |        |        |
| Sportswear     | -8.65  | -7.51  | -8.80  | -5.24  | -4.73  |
| Anorak         | -21.06 | -27.49 | -22.74 | -18.84 | -17.93 |
| Skis           | 1.46   | 2.31   | 1.95   | 0.25   | -0.60  |
| Boats          | 0.32   | 0.32   | 0.29   | 0.04   | 0.04   |
| Surfs          | 2.02   | 2.10   | 1.43   | 0.63   | 0.54   |
| Golf           | 18.50  | 20.56  | 21.43  | 17.37  | 15.21  |
| Rackets        | -0.46  | -0.54  | -0.63  | -0.48  | -0.40  |
| Balls          | -0.69  | -1.31  | -1.84  | -2.36  | -1.74  |
| Tennis         | -0.01  | -0.02  | -0.11  | -0.09  | -0.09  |
| Skates         | -2.19  | -0.25  | -1.22  | -0.75  | -0.37  |
| Gymnastic      | 10.76  | 11.82  | 10.25  | 9.47   | 10.06  |
| <b>Germany</b> |        |        |        |        |        |
| Sportswear     | -6.27  | -6.14  | -4.68  | -5.64  | -5.10  |
| Anorak         | -7.04  | -2.43  | -3.92  | -5.65  | -6.07  |
| Skis           | 7.74   | 6.35   | 5.49   | 7.88   | 8.00   |
| Boats          | 2.20   | 1.25   | 1.92   | 0.23   | -0.10  |
| Surfs          | -0.24  | -0.48  | -0.31  | -0.28  | -0.38  |
| Golf           | -0.54  | -0.22  | -0.87  | -1.29  | -1.23  |
| Rackets        | -0.71  | -0.78  | -0.78  | -0.74  | 0.86   |
| Balls          | -0.16  | 0.08   | 0.37   | 0.25   | -0.13  |
| Tennis         | 1.27   | 1.79   | 2.09   | 2.43   | 2.23   |
| Skates         | -1.08  | -3.44  | -2.22  | -1.53  | -1.59  |
| Gymnastic      | 4.83   | 4.02   | 2.91   | 4.35   | 3.49   |
| <b>Italy</b>   |        |        |        |        |        |
| Sportswear     | 24.22  | 17.49  | 17.00  | 17.20  | 16.37  |
| Anorak         | -19.78 | -21.86 | -22.96 | -24.19 | -28.16 |
| Skis           | -8.67  | -6.19  | -4.88  | -2.29  | -2.40  |
| Boats          | -0.76  | -0.51  | -0.73  | -0.32  | 0.01   |
| Surfs          | 2.95   | 3.12   | 3.96   | 4.10   | 5.47   |
| Golf           | -0.82  | -1.24  | -1.32  | -1.37  | -0.76  |
| Rackets        | -1.65  | -1.10  | -0.64  | -0.65  | -0.63  |
| Balls          | -1.35  | -2.23  | -1.40  | -0.98  | -0.90  |
| Tennis         | -0.38  | -0.19  | -0.14  | -0.07  | -0.06  |
| Skates         | 5.87   | 11.37  | 9.23   | 2.45   | 2.57   |
| Gymnastic      | 0.36   | 1.34   | 1.87   | 6.11   | 8.49   |

Table A3 (Continued)

| Sports goods      | 1994   | 1997  | 1999  | 2002   | 2004   |
|-------------------|--------|-------|-------|--------|--------|
| <b>Czech Rep.</b> |        |       |       |        |        |
| Sportswear        | -12.71 | 2.73  | 9.25  | 8.87   | 2.63   |
| Anorak            | 22.79  | -3.35 | -2.58 | -12.58 | -12.77 |
| Skis              | -5.30  | -5.02 | 2.56  | 8.03   | 14.27  |
| Boats             | -0.35  | -0.18 | -0.21 | 0.01   | -0.09  |
| Surfs             | -2.97  | -0.87 | -1.37 | -0.15  | 1.36   |
| Golf              | -0.77  | -0.22 | -0.23 | -1.02  | -0.99  |
| Rackets           | -2.43  | -5.75 | -4.96 | -0.14  | -1.12  |
| Balls             | -3.21  | -1.82 | -3.37 | -1.55  | -1.95  |
| Tennis            | -0.45  | -0.50 | -0.79 | -0.80  | -0.47  |
| Skates            | 8.73   | 15.37 | 1.41  | -0.34  | -3.19  |
| Gymnastic         | -3.32  | -0.38 | 0.29  | -0.32  | 2.34   |
| <b>China</b>      |        |       |       |        |        |
| Sportswear        | 2.63   | 1.73  | 1.18  | 0.79   | 0.66   |
| Anorak            | 4.74   | 3.68  | 3.79  | 2.56   | 2.68   |
| Skis              | -0.08  | -0.04 | -0.04 | -0.02  | -0.07  |
| Boats             | -0.02  | 0.00  | -0.01 | -0.01  | 0.00   |
| Surfs             | -0.02  | 0.00  | 0.00  | 0.01   | -0.01  |
| Golf              | -3.98  | -3.62 | -2.99 | -2.65  | -3.01  |
| Rackets           | -0.29  | -0.15 | 0.08  | -0.08  | -0.10  |
| Balls             | 0.12   | 0.22  | 0.26  | 0.24   | 0.21   |
| Tennis            | -0.18  | -0.09 | -0.03 | -0.04  | -0.12  |
| Skates            | -0.12  | -0.12 | 0.13  | -0.71  | -0.34  |
| Gymnastic         | -2.79  | -1.62 | -2.38 | -0.10  | 0.09   |
| <b>Tunisia</b>    |        |       |       |        |        |
| Sportswear        | -1.80  | 1.98  | 2.15  | 1.78   | 0.54   |
| Anorak            | 4.59   | 0.22  | -0.20 | 0.88   | 0.88   |
| Skis              | 0.08   | 0.19  | 0.61  | 0.34   | 0.26   |
| Boats             | -0.09  | -0.15 | -0.10 | -0.68  | 0.02   |
| Surfs             | -0.18  | -0.10 | -0.14 | -0.12  | -0.21  |
| Golf              | -0.13  | -0.06 | -0.07 | -0.02  | -0.01  |
| Rackets           | -0.15  | -0.08 | -0.04 | -0.05  | -0.05  |
| Balls             | -0.45  | -0.50 | -0.32 | -0.23  | -0.21  |
| Tennis            | -0.02  | -0.07 | -0.04 | -0.03  | -0.02  |
| Skates            | -0.01  | -0.02 | -0.04 | -0.01  | -0.01  |
| Gymnastic         | -1.83  | -1.40 | -1.81 | -1.85  | -1.18  |

Table A4. Countries' market position in sports goods global trade market

|                   | 1994   | 1997   | 1999   | 2002   | 2004   |
|-------------------|--------|--------|--------|--------|--------|
| <b>Sportswear</b> |        |        |        |        |        |
| Area              |        |        |        |        |        |
| NAFTA             | -29.08 | -18.88 | -21.15 | -16.94 | -17.11 |
| EU+S              | -4.50  | 2.11   | -2.15  | -4.21  | -2.58  |
| East              | 30.78  | 27.20  | 28.33  | 23.82  | 18.33  |
| Asia              | 12.30  | 15.46  | 13.69  | 15.55  | 15.10  |
| EMEC              | 85.56  | 66.05  | 98.31  | 120.56 | 124.80 |
| Country           |        |        |        |        |        |
| USA               | -32.17 | -23.90 | -26.56 | -22.31 | -21.68 |
| Germany           | -34.37 | -30.66 | -20.99 | -19.30 | -14.81 |
| Italy             | 47.85  | 32.52  | 30.21  | 27.40  | 16.93  |
| Czech Rep.        | -3.39  | 6.71   | 11.59  | 10.50  | 3.81   |
| China             | 58.06  | 59.76  | 54.03  | 49.77  | 40.78  |
| Tunisia           | 113.53 | 107.37 | 118.98 | 143.82 | 156.60 |
| <b>Anorak</b>     |        |        |        |        |        |
| Area              |        |        |        |        |        |
| NAFTA             | -54.70 | -54.37 | -46.79 | -42.34 | -41.48 |
| EU+S              | -31.97 | -25.90 | -22.96 | -22.65 | -23.38 |
| East              | 84.69  | 54.52  | 60.78  | 36.35  | 14.20  |
| Asia              | 25.70  | 25.96  | 26.89  | 25.51  | 35.03  |
| EMEC              | 48.26  | 32.74  | 26.23  | 21.53  | 7.61   |
| Country           |        |        |        |        |        |
| USA               | -61.38 | -63.23 | -53.98 | -49.34 | -49.34 |
| Germany           | -57.64 | -48.32 | -41.85 | -38.68 | -33.53 |
| Italy             | -7.49  | -10.60 | -12.62 | -16.38 | -27.61 |
| Czech Rep.        | 56.41  | 0.16   | -0.13  | -10.30 | -9.96  |
| China             | 91.20  | 86.07  | 83.43  | 79.01  | 86.76  |
| Tunisia           | 38.08  | 30.81  | 19.58  | 13.44  | 10.04  |
| <b>Skis</b>       |        |        |        |        |        |
| Area              |        |        |        |        |        |
| NAFTA             | -3.27  | -2.01  | -2.84  | -4.00  | -4.50  |
| EU+S              | 9.31   | 4.89   | 4.23   | 4.41   | 3.74   |
| East              | -0.83  | -2.55  | 0.80   | 1.06   | 4.24   |
| Asia              | -7.33  | -2.67  | -2.15  | -1.06  | -0.22  |
| EMEC              | -0.29  | -0.18  | 0.70   | 0.73   | 0.58   |
| Country           |        |        |        |        |        |
| USA               | -3.07  | -1.86  | -2.43  | -3.75  | -4.82  |
| Germany           | 0.21   | 0.80   | -0.15  | 1.85   | 2.01   |
| Italy             | -3.60  | -2.91  | -2.00  | -0.77  | -2.30  |
| Czech Rep.        | 3.41   | -2.99  | 4.09   | 10.55  | 17.44  |
| China             | 0.05   | 0.12   | 0.74   | 1.09   | 1.12   |
| Tunisia           | 0.32   | 0.61   | 2.02   | 1.65   | 1.68   |
| <b>Boats</b>      |        |        |        |        |        |
| Area              |        |        |        |        |        |
| NAFTA             | -0.06  | 0.02   | -0.09  | -0.17  | -0.14  |
| EU+S              | -0.09  | -0.13  | 0.02   | -0.11  | -0.15  |
| East              | 0.06   | 0.17   | 0.05   | 0.03   | -0.13  |
| Asia              | -0.11  | -0.10  | -0.02  | -0.01  | 0.04   |

Table A4 (*Continued*)

|                | 1994  | 1997  | 1999  | 2002  | 2004  |
|----------------|-------|-------|-------|-------|-------|
| EMEC           | -0.13 | -0.22 | -0.17 | -0.03 | 0.13  |
| Country        |       |       |       |       |       |
| USA            | -0.03 | 0.05  | -0.08 | -0.19 | -0.15 |
| Germany        | 0.42  | 0.17  | 0.55  | -0.25 | -0.51 |
| Italy          | -0.57 | -0.37 | -0.54 | -0.24 | 0.01  |
| Czech Rep.     | -0.09 | -0.16 | -0.19 | 0.04  | -0.07 |
| China          | 0.00  | 0.00  | 0.00  | 0.01  | 0.00  |
| Tunisia        | -0.04 | -0.08 | -0.06 | 0.06  | 0.35  |
| <b>Surfs</b>   |       |       |       |       |       |
| Area           |       |       |       |       |       |
| NAFTA          | -0.30 | -0.27 | -1.11 | -2.01 | -2.81 |
| EU+S           | -0.18 | -0.40 | -0.39 | -0.24 | -0.26 |
| East           | -0.47 | -0.51 | -0.84 | -0.80 | -0.21 |
| Asia           | 0.56  | 0.24  | 0.17  | 0.74  | 0.97  |
| EMEC           | -0.49 | -1.32 | -0.95 | -0.38 | -0.58 |
| Country        |       |       |       |       |       |
| USA            | -0.33 | -0.08 | -1.14 | -2.29 | -3.16 |
| Germany        | -1.24 | -1.57 | -1.38 | -1.33 | -1.58 |
| Italy          | 4.53  | 4.42  | 5.39  | 5.12  | 5.54  |
| Czech Rep.     | -1.29 | -0.55 | -1.10 | 0.01  | 1.56  |
| China          | 0.35  | 0.39  | 0.40  | 0.98  | 1.17  |
| Tunisia        | -0.10 | -0.05 | -0.08 | -0.07 | -0.10 |
| <b>Golf</b>    |       |       |       |       |       |
| Area           |       |       |       |       |       |
| NAFTA          | -0.08 | 1.98  | 1.19  | -3.60 | -5.61 |
| EU+S           | -2.31 | -2.93 | -3.12 | -3.72 | -3.14 |
| East           | -0.15 | 0.32  | -0.05 | -0.32 | -0.44 |
| Asia           | -5.74 | -4.94 | -3.92 | 0.50  | 1.44  |
| EMEC           | -0.48 | -0.84 | -0.48 | -0.20 | -0.31 |
| Country        |       |       |       |       |       |
| USA            | 1.08  | 1.68  | 3.07  | -2.70 | -4.99 |
| Germany        | -1.75 | -2.00 | -2.05 | -2.52 | -2.11 |
| Italy          | -0.59 | -0.93 | -1.01 | -1.09 | -0.75 |
| Czech Rep.     | -0.29 | -0.14 | -0.17 | -0.94 | -0.91 |
| China          | 1.91  | 5.67  | 6.16  | 8.17  | 7.40  |
| Tunisia        | -0.07 | -0.04 | -0.04 | -0.01 | 0.00  |
| <b>Rackets</b> |       |       |       |       |       |
| Area           |       |       |       |       |       |
| NAFTA          | -1.85 | -1.43 | -1.66 | -1.60 | -1.30 |
| EU+S           | -1.61 | -1.30 | -0.89 | -0.68 | -0.53 |
| East           | -1.02 | -1.77 | -1.58 | -0.89 | -0.79 |
| Asia           | 0.93  | 1.12  | 1.10  | 1.12  | 1.04  |
| EMEC           | -0.11 | -0.59 | -0.45 | -0.82 | -0.76 |
| Country        |       |       |       |       |       |
| USA            | -1.91 | -1.56 | -1.83 | -1.71 | -1.42 |
| Germany        | -2.50 | -1.91 | -1.72 | -1.58 | 0.06  |
| Italy          | -1.13 | -0.47 | -0.13 | -0.39 | -0.62 |

Table A4 (Continued)

|               | 1994   | 1997  | 1999  | 2002  | 2004  |
|---------------|--------|-------|-------|-------|-------|
| Czech Rep.    | -1.25  | -4.14 | -2.67 | 1.30  | -0.07 |
| China         | 5.74   | 4.97  | 4.97  | 4.30  | 2.87  |
| Tunisia       | -0.09  | -0.05 | -0.02 | -0.03 | -0.03 |
| <b>Balls</b>  |        |       |       |       |       |
| Area          |        |       |       |       |       |
| NAFTA         | -5.81  | -4.21 | -5.15 | -6.43 | -5.57 |
| EU+S          | -2.21  | -1.99 | -1.99 | -2.15 | -2.25 |
| East          | -2.77  | -4.16 | -5.73 | -4.51 | -4.24 |
| Asia          | 2.99   | 3.27  | 3.26  | 4.16  | 6.86  |
| EMEC          | -5.62  | -5.42 | -4.03 | -2.11 | -2.93 |
| Country       |        |       |       |       |       |
| USA           | -5.95  | -4.83 | -5.91 | -7.10 | -6.20 |
| Germany       | -2.98  | -2.48 | -1.75 | -1.99 | -2.30 |
| Italy         | 0.35   | -1.22 | -0.49 | -0.37 | -0.86 |
| Czech Rep.    | -0.52  | -1.28 | -3.01 | -1.22 | -1.61 |
| China         | 9.60   | 7.68  | 7.71  | 8.00  | 7.79  |
| Tunisia       | -0.25  | -0.29 | -0.19 | -0.13 | -0.11 |
| <b>Tennis</b> |        |       |       |       |       |
| Area          |        |       |       |       |       |
| NAFTA         | -0.16  | -0.17 | -0.20 | -0.28 | -0.25 |
| EU+S          | -0.31  | -0.11 | 0.01  | 0.09  | 0.05  |
| East          | -0.16  | -0.69 | -0.92 | -1.86 | -1.02 |
| Asia          | 0.28   | 0.34  | 0.30  | 0.19  | 0.16  |
| EMEC          | -0.19  | -0.42 | -0.31 | -0.23 | -0.24 |
| Country       |        |       |       |       |       |
| USA           | -0.18  | -0.22 | -0.35 | -0.46 | -0.46 |
| Germany       | 0.42   | 0.86  | 1.18  | 1.45  | 1.45  |
| Italy         | -0.25  | -0.10 | -0.07 | -0.02 | -0.06 |
| Czech Rep.    | -0.10  | -0.41 | -0.72 | -0.75 | -0.44 |
| China         | 1.06   | 0.79  | 0.77  | 0.60  | 0.46  |
| Tunisia       | -0.01  | -0.04 | -0.02 | -0.02 | -0.01 |
| <b>Skates</b> |        |       |       |       |       |
| Area          |        |       |       |       |       |
| NAFTA         | -8.19  | -4.12 | -5.44 | -3.99 | -2.19 |
| EU+S          | -0.81  | -3.22 | -1.51 | -1.19 | -1.32 |
| East          | 3.41   | 0.05  | 1.14  | -0.07 | -1.86 |
| Asia          | 1.26   | 2.88  | 3.11  | 1.84  | 1.21  |
| EMEC          | -2.59  | -1.01 | -0.70 | -0.19 | -0.17 |
| Country       |        |       |       |       |       |
| USA           | -10.26 | -5.44 | -6.26 | -4.46 | -2.30 |
| Germany       | -2.70  | -9.73 | -6.36 | -3.73 | -3.60 |
| Italy         | 9.62   | 16.99 | 12.52 | 3.56  | 2.62  |
| Czech Rep.    | 17.92  | 21.02 | 2.16  | 0.03  | -2.87 |
| China         | 5.48   | 7.21  | 8.51  | 4.92  | 3.25  |
| Tunisia       | 0.00   | -0.01 | -0.02 | -0.01 | -0.01 |

Table A4 (*Continued*)

|                  | 1994   | 1997   | 1999   | 2002   | 2004   |
|------------------|--------|--------|--------|--------|--------|
| <b>Gymnastic</b> |        |        |        |        |        |
| Area             |        |        |        |        |        |
| NAFTA            | -11.16 | -7.36  | -10.22 | -20.38 | -26.11 |
| EU+S             | -4.80  | -5.59  | -6.78  | -7.16  | -8.98  |
| East             | 1.08   | -3.98  | -3.15  | -5.93  | -7.72  |
| Asia             | -0.93  | -0.94  | 0.97   | 9.13   | 16.44  |
| EMEC             | -7.49  | -17.00 | -8.92  | -4.38  | -5.93  |
| Country          |        |        |        |        |        |
| USA              | -12.41 | -9.82  | -15.83 | -24.33 | -29.23 |
| Germany          | -6.85  | -6.73  | -8.68  | -6.79  | -7.70  |
| Italy            | 5.12   | 6.20   | 6.55   | 9.78   | 8.75   |
| Czech Rep.       | 5.24   | 2.38   | 2.27   | 1.65   | 4.84   |
| China            | 14.05  | 18.19  | 23.31  | 33.01  | 39.24  |
| Tunisia          | -0.99  | -0.75  | -0.67  | -0.83  | -0.52  |

Table A5. Country classification according to sports goods export/import ratios

| Rank           | Countries      |
|----------------|----------------|
| <b>Class 1</b> | Frequency: 32  |
| 1              | France         |
| 2              | Denmark        |
| 3              | Netherlands    |
| 4              | United Kingdom |
| 5              | USA            |
| 6              | Japan          |
| 7              | Belgium        |
| 8              | Poland         |
| 9              | Bulgaria       |
| 10             | Turkey         |
| 11             | Switzerland    |
| 12             | Portugal       |
| 13             | Korea          |
| 14             | Argentina      |
| 15             | Ireland        |
| 16             | Greece         |
| 17             | Malaysia       |
| 18             | Russian        |
| 19             | Morocco        |
| 20             | Singapore      |
| 21             | Brazil         |
| 22             | Czech          |
| 23             | Spain          |
| 24             | Slovakia       |
| 25             | Hungary        |
| 26             | Austria        |
| 27             | Finland        |

Table A5 (Continued)

| Rank           | Countries    |
|----------------|--------------|
| 28             | Canada       |
| 29             | Hong Kong    |
| 30             | Italy        |
| <b>Class 2</b> | Frequency: 3 |
| 1              | Germany      |
| 2              | Sweden       |
| 3              | Mexico       |
| <b>Class 3</b> | Frequency: 1 |
| 1              | Tunisia      |
| <b>Class 4</b> | Frequency: 1 |
| 1              | Thailand     |
| <b>Class 5</b> | Frequency: 1 |
| 1              | Romania      |
| <b>Class 6</b> | Frequency: 1 |
| 1              | Indonesia    |
| <b>Class 7</b> | Frequency: 1 |
| 1              | Pakistan     |
| <b>Class 8</b> | Frequency: 1 |
| 1              | China        |

Table A6. Classification according to goods contribution to foreign trade balance

| Rank           | Countries     |
|----------------|---------------|
| <b>Class 1</b> | Frequency: 20 |
| 1              | Belgium       |
| 2              | China         |
| 3              | Tunisia       |
| 4              | Greece        |
| 5              | Denmark       |
| 6              | Hong Kong     |
| 7              | Pakistan      |
| 8              | Portugal      |
| 9              | Switzerland   |
| 10             | Netherlands   |
| 11             | Indonesia     |
| 12             | Romania       |
| 13             | Russian       |
| 14             | Spain         |
| 15             | Hungary       |
| 16             | Czech         |
| 17             | Korea         |
| 18             | France        |
| 19             | Argentina     |
| 20             | Singapore     |

Table A6 (*Continued*)

| Rank           | Countries      |
|----------------|----------------|
| <b>Class 2</b> | Frequency: 4   |
| 1              | Bulgaria       |
| 2              | Morocco        |
| 3              | Turkey         |
| 4              | Poland         |
| <b>Class 3</b> | Frequency: 4   |
| 1              | United Kingdom |
| 2              | Japan          |
| 3              | USA            |
| 4              | Mexico         |
| <b>Class 4</b> | Frequency: 3   |
| 1              | Sweden         |
| 2              | Canada         |
| 3              | Germany        |
| <b>Class 5</b> | Frequency: 2   |
| 1              | Brazil         |
| 2              | Italy          |
| <b>Class 6</b> | Frequency: 1   |
| 1              | Austria        |
| <b>Class 7</b> | Frequency: 2   |
| 1              | Finland        |
| 2              | Slovakia       |
| <b>Class 8</b> | Frequency: 3   |
| 1              | Philippines    |
| 2              | India          |
| 3              | Ireland        |
| <b>Class 9</b> | Frequency: 2   |
| 1              | Malaysia       |
| 2              | Thailand       |