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MARITIME TRANSPORT COMMITTEE**

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**THE ROLE OF CHANGING TRANSPORT COSTS AND TECHNOLOGY  
IN INDUSTRIAL RELOCATION**

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## THE ROLE OF CHANGING TRANSPORT COSTS AND TECHNOLOGY IN INDUSTRIAL RELOCATION

### EXECUTIVE SUMMARY

- The study confirms what was already known. The adaptability of regular cargo shipping lines and advances in technology -- mainly containerisation – have accompanied or even encouraged the vigorous growth in the trade of manufactured goods and the transfer of their production to regions and countries offering significant comparative advantages, mainly in terms of labour costs.
- While shipping can overcome the obstacles of distance, and therefore costs, transport formalities and shipping times, it is not a determining factor in industrial relocation decisions, in terms of either encouraging or holding back development, in that such decisions are first and foremost governed by access to importing markets and the competitiveness of factors of production in the regions or countries of production (including exchange rates). Nonetheless, without the new advances achieved in the shipping industry in terms of technology and organisation, the growth in international trade in manufactured goods would not have been as robust as it has been over the past few years.  
In other words, shipping does not drive relocation but is simply part of the process, which still requires advances in the shipping sector to maintain its momentum.
- Trends in the regular shipping line sector and therefore in container transport remain unchanged and are starting to accelerate: the increase in the world fleet, and also the size and speed of vessels between the mid-1990s and the middle of the current decade, reflect new advances that have made it possible to absorb the greater than expected surge in the volume of goods shipped from Chinese ports. While demand can sometimes not always be met, it is not transport itself that is responsible for this but operational deficiencies in the transport chain in ports and inland.
- Shipping agents – i.e. the importers of the manufactured goods generated by the relocation of production or sourcing offshore – are increasingly taking better account of the factors of distance and transit time in their integrated Supply Chain Management (SCM) processes. The logistics services for goods produced by relocated plants, including transport, are outsourced, and the criteria relating to transport costs are increasingly less penalising given that growth in exports has not slowed, indeed quite the reverse, by the recent increase in freight rates.
- Time is the most determining factor in advanced relocation processes. For products with long transit times, remoteness and sourcing times are controlled. For products which have short production times and reduced storage times (including the “floating” storage of goods during shipping or other types of storage), production facilities are relocated (or relocated back) to sites close to consumer markets.

## 1. PRESENTATION

### 1.1. *Study background and scope*

1. In 1996, an OECD report on “industrial relocation and shipping” examined the interactions between demand for shipping generated by products whose manufacture had been relocated offshore and the supply of transport for such products. The contribution of sea container traffic to growth in trade, combined with the continuing decline in the costs of the maritime link in the chain, was described in the report as a factor that made trade possible in that it reduced the obstacle of distance between the place of production and that of consumption.

2. The purpose of this new report is to update the analysis and move it forward from an explanation in terms solely of lower transport costs and other primary interactions. The approach is extended here to embrace recent technological advances in the supply of shipping and logistical processes (transport demand and services).

3. This reconsideration of the topic from a broader perspective is designed to:

- Observe changes in freight transport over the period 1999-2004.
- Check again the role of shipping costs as a factor in relocation.
- Update the elements of analysis of the influence of transport and advances in the transport sector on relocations.
- Apply the above to industrial sectors which typically relocate.

### 1.2. *Definitions*

#### 1.2.1 *Industrial relocation*<sup>1</sup>

- In terms of trade and international transport, the relocation of manufactured goods is taken here in the general sense of relating production or sourcing offshore, i.e. a firm marketing products manufactured until now in country or region A transfers the production or purchasing of those products to country or region B2. This relocation of production from A to B can take the form of:
  - Direct investment in production (FDI) at B, with a view to replacing a production facility at A by one at B.
  - Orders to suppliers at B to replace orders placed with suppliers at A.
  - Modification of the market shares at A resulting in fewer orders placed at A and increased exports from B to A.
- Seen from this perspective, relocations generate flows of products exported to the markets from which they have been “relocated”, as well as demand for services relating to those exports such as commercial, transport and logistics operations, financial services, insurance or other transactions of a general or specific nature.

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<sup>1</sup> The term used more accurately reflects the physical change in the location of sources of sourcing than the terms “outsourcing” or “sub-contracting”, which do not imply a geographical relocation.

<sup>2</sup> The firms at location B may be suppliers of products both in A (offshore sourcing) and B (local market).

- Making use of local services. Some of the above services “relating to” commercial trade may be supplied or processed either in country or region A or in country or region B. They may therefore fall under the category of “relocated services”, an area that is not dealt with as such in the present report.

### 1.2.2. *Shipping of manufactured goods*

4. The manufacturing industry produces a wide range of goods. The use of shipping means that manufacturers must package their products for shipment either in loading or transport units such as boxes on pallets, or in the form of other units that are themselves loaded into containers or road vehicles<sup>3</sup>.

5. The containers are mostly transported by fully cellular container vessels<sup>4</sup>, and road vehicles (trailers and rigs) are carried by Ro-Ro ships<sup>5</sup>.

6. Products whose manufacture had been relocated to distant areas are transported by long-distance container vessels on routes linking Asia and North America, Asia and Europe, South America and Europe, etc.

7. Those relocated to areas closer nearby are often transported by land, e.g. Mexico to the USA, Eastern Europe to Western Europe. When the transport includes a maritime leg, it is over a short distance and may take the form, sometimes in competition with other modes, of container or Ro-Ro transport, as in the Caribbean and the Mediterranean. The maritime leg in such cases is simply one of the links in an end-to-end movement comparable, in terms of transit time, to inland transport (few days maximum). Unlike long-distance movements, the impact of the maritime “cost” factor cannot be measured in isolation in the transport chain.

8. Manufactured goods shipped in other forms include cars and other assembled vehicle, which are usually transported by specialised vessels<sup>6</sup>, as well as industrial products shipped in lots (pipes, forged steel components, plastics, etc.). These trade flows do not fall within the scope of the relocation process observed here, apart from the automobile industry which is analysed through parts and components (shipped in containers).

### 1.2.3. *Technological advances*

9. Technological advances in the shipping of manufactured goods fall into the following two basic categories:

- Changes in the supply of maritime transport: conditions for the provision of transport (technical resources, costs and efficiency, etc.).
- Changes relating intrinsically to demand: logistics processes and methods affecting the conditions of shipment and delivery.

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<sup>3</sup> ITU (Intermodal Transport Unit) or ILU (Intermodal Loading Unit): containers, swap bodies or trailers that can be carried by several modes of transport as part of a door-to-door service.

<sup>4</sup> A cell or slot is the space for one container measured in TFE (twenty-foot equivalent container) or FEE (forty-foot equivalent container). The capacity of the first container vessels was measured in TEU (up to 9 000 today).  
See too container sizes and loading capacities.

<sup>5</sup> Horizontally loaded Ro-Ro (Roll on/Roll off) vessels onto which vehicles are driven, as opposed to Lo-Lo (Lift on/Lift off) vessels loaded vertically (notably for containers).

<sup>6</sup> Car-carriers or PCTCs (Pure Car/Truck Carriers).

10. These advances may relate to both “hardware” (types of container, vessel, port, etc.) and “software” (organisation, ICTs, etc.). It is the latter type, i.e. advances with regard to demand for the transport of manufactured goods, that is analysed in section 3 of this report.

11. Advances in the supply of transport over the period primarily consisted in expanding capacity:

- Container-vessel fleet, unit size of vessels (on average +50% in TEU on the routes considered at average sailing speeds).
- Port terminals, in order to cope with increased traffic volumes.

## 2. SELECTION OF MARKETS

### 2.1. Sourcing areas: China as the benchmark

- Changes in world trade over the past ten years, and even more in recent years, show that China is the main field for observing goods generated by industrial relocation that are shipped by sea:
  - It is the only area whose market share of world exports has increased, at a percentage rate that more than doubled in monetary terms (USD) between 1993 and 2002.
  - Flows carried in maritime containers, the method use for exports of manufactured goods, grew by 120% in Chinese ports between 2000 and 2003<sup>7</sup>, compared a growth rate of around 10% in North American and European ports.
  - Chinese exports have supplied all continents, starting with the Asian region and OECD area markets, but also in regions where they had hitherto remained limited (Middle East, Latin America, Africa, etc.).

#### 1993-2002: Emergence of China in world trade (USD)

% of trade	Exports		Imports	
	1993	2002	1993	2002
Value in USD billions <sup>8</sup>	3 671	6 272	3 768	6 510
North America	16.6	15.1	19.7	22.0
Latin America	4.4	5.6	5.1	5.4
Western Europe	44.0	42.4	43.0	40.8
Asia				
Japan	9.9	6.6	23.3	22.4
China	2.5	5.2	6.4	5.2
6 "traders"	9.7	9.6	9.9	8.4

Source: WTO.

<sup>7</sup> A period marked by the slowdown at the end of 2001 and in 2002. Growth picked up in 2004 with double-digit rates in almost all ports worldwide.

<sup>8</sup> There are several reasons for the differences between Exports and Imports, the main one being the account taken of FOB and CIF/CF values.

**1995 - 2000 - 2003: The explosive growth in container traffic in Chinese ports (TEU)**

TEU millions	1995	2000	2003
Hong Kong	12.55	18.10	20.45
Shanghai	1.53	5.61	11.28
Shenzhen	0.37	3.99	10.65
Qinydao	0.60	2.12	4.24
Tian Jin	0.70	1.71	3.01
Quanzhou	0.51	1.43	2.76
Ningbo	0.16	0.90	2.76
Xiamen	0.33	1.08	2.33
Dalian	0.37	1.01	1.68
Others	-	0.34	1.29
Total China excluding Hong Kong	4.58	18.20	39.26
Total China including Hong Kong	17.13	36.30	59.71
Total North America <sup>(1)</sup>	20.90	29.73	32.50
Total Europe <sup>(1)</sup>	24.75	41.20	45.20

<sup>(1)</sup> Estimate based on 2002 figures - Source: Press review.

- The choice of the Asian continent as a benchmark region for observation of the link between relocation and shipping is all the more apposite in that:
  - The major development during the period was the emergence of Chinese exports, which are the main determinant of recent and on-going changes in the shipping sector.
  - For the purposes of our analysis from the standpoint of shipping, industrial relocation to countries that are geographically close to their consumer markets cannot be compared with relocation to distant countries or regions in that:
    - Relocation to nearby destinations does not require shipping services, or if it does only in the form of short-sea shipping and for reduced transit times comparable to those for inland transport (China Sea, Mediterranean, Caribbean) (see 1.2.2.).
    - The goods involved supplied on a just-in-time basis in a short Supply Chain in which orders are placed quickly for part consignments that do not really lend themselves to forward planning and delivery schedules long enough to accommodate transport times of several weeks.
    - Relocated goods can also be covered by regimes differing from the common international trade regime, for example goods manufactured under specific customs agreements (intra-Americas, intra-Asia, Europe and the ACP countries, and European association agreements) associated with inputs (finishing products) or quotas.
  - It is therefore the time factor and resultant transit times which differentiate between distant relocation and nearby relocation, in that the other differences (conditions of access, type of good) have been significantly attenuated since the creation of the WTO and exceptionally

strong and long-lasting growth in sourcing from China. These differences have, in at least two major regions, led to a redistribution of the markets for the manufactured goods most concerned by these developments:

- A decline in the relative shares, and in some instances the absolute shares, of exports from Mexico and other countries in the Caribbean region to the United States and Canada.
- A shift in the pattern of flows within the Asian region, with the substitution of South-East Asia industries by Chinese industries and strong growth in intra-Asian trade of around 1 to 5 days between ports within the same trading basin.

## 2.2. *Choice of goods: sectors that have for the most part relocated*

12. The goods listed in Annex A (Scope of the study) as possible examples to take for an impact analysis are those produced by the automobile, IT, textile or chemicals industries.

13. The statistical analysis by classification chapter of products imported by the United States in 1999 and 2003 provides a basis on which to refine and endorse this choice<sup>9</sup> by highlighting sectors where growth (in USD) in imports from offshore activities were higher than those for imports as a whole.

### US imports of manufactured goods

Chapter	Total Imports 2003 (USD billion)	% 2003/1999	Of which China + ASEAN	Of which Latin America <sup>(1)</sup>	Total offshored (USD billion)	% offshored
Plastic goods	22 852	+ 37	+ 61	+ 51	7 989	35
Leather goods and luggage	7 500	+ 24	+ 38	-	5 772	77
Clothing	62 908	+ 20	+ 31	-	41 598	66
Shoes	15 603	+ 11	+ 21	- 1	13 093	84
Furniture...	29 722	+ 46	+ 75	+ 66	20 322	68
Toys, art. sport	21 044	+ 15	+ 40	- 15	18 166	86
Electrical/electronic goods	328 355	+ 5	+ 26	+ 2	178 426	54
Automobiles, motorcycles	175 165	+ 18	+ 65	+ 30	30 726	18

<sup>(1)</sup> Mexico, Central America and Brazil, apart from leather goods and clothing.

14. This selection of US imports, detailed in Annex B, also applies to imports to other OECD member countries, and makes it possible in particular to identify:

- Sectors where relocation is the most advanced – even more so than in other OECD markets and particularly when it has achieved largely predominating market shares.

<sup>9</sup> Annex B – Trends in US imports 1999-2003 – based on <http://strategis.ic.gc.ca>.

- The relative proportions and trends in exports from the Asia and Latin America regions, which confirm the relevance of focusing the analysis primarily on the former, and in particular China.

15. Other statistics, relating to imports to European countries, also endorses the choice of Asia, and China in particular, as a market for the sourcing of manufactured goods shipped by sea to OECD countries. Exports from countries located near to the latter are not relevant to the present study since they do not use shipping, or if they do then in the form of short-sea shipping which is not comparable to intercontinental transport:

- Mexico to the USA, which has lost significant market share over the period.
- Eastern Europe and the Maghreb to Western Europe.
- Intra-Asian region, with a redirecting of flows reflecting strong growth in regional relocations.

### **3. CHANGES IN RELOCATION AND LOGISTICS/TRANSPORT PROCESSES**

N.B. The following analysis, based on trends over the period studied, also takes account of the structural characteristics of the logistics relating to goods produced by “offshore” industry.

#### **3.1. *Changes in relocation practices and transport demand***

16. Relocation was first used by very large firms to meet internal sourcing goals. These industrial or trading conglomerates continue to play a major role in the process, either through production or sales, although there have been some further developments:

- A direct role for some industrial firms which only have a commercial relationship with their customers (and therefore find themselves indirectly relocated), as well as large purchasing groups.
- The adoption of relocation by medium-sized firms<sup>10</sup>.

17. The outcome is continuing massive, although more fragmented, demand for transport, involving a greater variety of goods, more final customers, and greater diversity in terms of origins and destinations. Another outcome is a greater role for suppliers of logistics services.

18. This recent expansion of the sphere of activity of relocating firms has not been examined in any particular detail from the standpoint of transport, although every indication would seem to be that, as in the 1996 study, cost and operational quality are not an obstacle to the decision to more offshore, which still remains contingent on the main factors listed in section 7 below.

19. However, what we can note, according to the views expressed by logistics firms, are:<sup>11</sup>

- A need to know under what conditions goods will be transported from the point of shipment to that of reception, regardless of the routes and modes of transport used; this expectation is particularly strong when outsourced products are delivered to the point of shipment (INCOTERM E or F), and is less pronounced when the supplier is able to deal with price conditions and delivery schedules himself (INCOTERMS D or C).

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<sup>10</sup> The Outsourcing Times, January 2005.

<sup>11</sup> Websites for the supply of logistics services, the press and professional brochures.

- The desire to make shipments secure by giving priority to financial, customs or fiscal aspects and, in terms of transport, compliance with pick-up and delivery schedules, quality (conformity, no breakages), security (no losses), and therefore traceability (tracking/tracing).
- Less stringent requirements than major shipping agents in terms of freight rates, and the almost systematic use of external suppliers for the organisation of transport and logistics.
- A positive percent of price levels for maritime transport compared with those for inland transport, particularly when movements include a lengthy road segment, although there are negative reactions to fluctuations in freight rates due to surcharges.

### **3.2. *Supply Chain and relocation***

20. Changing logistics processes and management methods have therefore been accompanied by trends producing contradictory impacts, depending upon product characteristics:

- Mass production of relatively undifferentiated, low value goods continues: toys, soft toys, certain segments of the clothing sector, low-quality shoes, basic household articles, manual tools, etc. Sourcing methods for these goods have evolved in response to new distribution techniques: shipment to storage platforms, adjustment of deliveries according to the level of sales and stocks, with or without smoothing to take account of seasonal peaks, etc.
- Shipping movements are dealt with through channels established between the major buyers (buying syndicates, distribution groups, etc.), in large, regular shipments subject to trading conditions established in a pre-established general framework (specifications): services (bookings, supply of containers, etc.), the level and adjustment of freight rates, and schedule of payments.
- These same methods are used, after certain adjustments, for higher-value goods requiring greater precautions (packing, container stuffing and stripping, etc.), and also for standardised products (limited number of models or options): video games, some types of electronic and electrical goods, small household appliances, common sports articles, or even furniture and DIY and gardening products that will eventually be retailed through specialised or general distribution chains, etc., and more generally all long-lived products that are regularly renewed. Buying practices for products and related services (including transport), which stem from order management procedures, are similar to those followed previously. The main concern is not so much the cost of transport (which is obviously more of a determining factor for low-value goods) as the security and quality of services up to final delivery to shops and warehouse, whether they are specialised or not.
- The rationale for this behaviour changes and the situation becomes more complicated when:
  - The life cycle for product sourcing is shorter.
  - Markets are more fragmented and orders less uniform, due to product differentiation (ranges, colours, formats/sizes, packaging, etc.).
  - Purchase orders apply to several products of different types and packaging that are shipped simultaneously.

21. The trend towards product customisation, as opposed to the mass production seen in the previous product families, has led to changes in the logistics model and logistics practices as a result of:

- Smaller orders which require shorter delivery times and which are more constraining in terms of punctuality and adjustment to fluctuations in demand or the renewal of product ranges or references.
- Smaller and less regular shipments.
- More sophisticated logistical support requirements than those for mass-production industries (services, IT solutions, traceability, etc.).

22. Advanced Supply Chain processes encourage logistics operators/transport organisers, more so than transport operators, to supply an extensive range of services from purchase order management to production planning, sourcing, stock management, distribution, etc. And these services, which to a very large extent rely on sophisticated IT tools, go far beyond the physical operations of transport, storage and handling which constitute the hardware component.

23. The outsourcing of these tasks by industry and distributors has within a few years become the dominant model, with firms already sub-contracting 94% of their international transport operations<sup>12</sup> and 65% of their distribution, and with 3 PL and 4 PL<sup>13</sup> becoming, either indirectly or directly, the real purchasers of transport services.

#### **Offshore production = Mass production**

	Low-value products	High-value products
<b>Product characteristics</b>		
Unit volume (article)	Reduced	Reduced
Number of units/containers	High	High
Range renewal	Slow	Programmed
Circuits	Long	Medium
<b>Characteristics of SCM/sourcing</b>		
<b>Sourcing</b>		
Model	Push chains	Push chains and pull chains
Volumes	Large	Large
Variations	Low/marginal	According to success of range
Seasonality	High according to case	High
<b>Impact on transport logistics</b>		
Order times	Long	Long and short
Storage	Long (smoothed) to reduced	Highly reduced
Warehousing	Distribution	Finishing prior to distribution
<b>Packaging</b>		
Packing	Simple or none	Precautions/risks
Loading	Pallets/bulk	Pallet/boxes
Container (main type)	40' Ordinary	40' high cube

<sup>12</sup> Ernst & Young.

<sup>13</sup> 3 PL: Third Party Logistic Providers, suppliers of “hard” services (transport/warehousing).  
4 PL: Fourth Party Logistic Providers, suppliers of SCM solutions.

#### 4. ANALYSIS BY SECTOR

24. The industries chosen on the basis of the analysis of trade in relocated production in the US market (see section 2 above) are also those which supply other OECD markets and beyond that the entire global market.

25. Their behaviour with regard to relocation and the resultant impact on their logistics processes (see section 3 above) are similar in that shipments are made in mass. The main factor that differentiates between them is product value, at least in most of these markets<sup>14</sup>.

26. The model applied by the few “token” SMEs presented here is in reality very similar to that adopted by sectors that typify the process of industrial relocation (Annex B).

##### 4.1. *The automobile sector*

- **The Supply Chain and transport of parts and components**

27. The automobile industry offers a prime example of policies towards location that combine facilities in production and assembly areas for export and facilities in consumer areas, not to mention the complexity of parts and components sourcing or sub-contracted assembly work.

28. The sector’s internationalisation and relocation rates are only high for certain components and parts, usually “basic” products and mass-produced items (batteries, shock absorbers, etc.). These are supplied to plants on very strict just-in-time schedules with highly penalising consequences in the event of breaks. The forms of organisations that tend to have become widespread since the 1990s therefore require parts suppliers to maintain their stock inventories at locations close to production sites.

29. The impacts of these processes in terms of transport logistics<sup>15</sup> are as follows:

- Parts must be available on a just-in-time basis, with reduced stocks maintained close to production plants, “floating” stocks (in transit), and stocks ready for shipment (on supplier’s premises). The outcome is that most orders are smoothed and it is the management of fluctuations and breaks in supply that poses the most problems.
- Management is planned, and often shared, by several suppliers to the same automobile manufacturers and production sites, which assemble, for both economic and commercial reasons, similar models under different makes.
- This mass sourcing is contracted out to industry specialists, suppliers to the industry, giving them the negotiating power to obtain favourable conditions;
- Shipments by air in the event of a break in the surface transport chain, for high-value, low unit volume goods.
- In shipping, 20’ containers are used for dense products (+15 tonnes/container) with a high metal content, and 40’ containers for light products containing plastic. Loads are generally uniform and optimised, with good spatial occupation.

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<sup>14</sup> Industrial relocation by small and medium-sized firms, which generates smaller traffic flows outside the consolidated sourcing circuits set up by major conglomerates or brands, have received little attention from analysts. Only a few interviews with SMEs sometimes reveal such flows and confirm that their transport logistics are determined by the dominant models applied by major multinationals, for which in most cases they work.

<sup>15</sup> Upstream logistics as opposed to downstream (distribution) logistics.

- **Assembled vehicles**

30. A handful of maritime transport operators with specialised high-capacity (up to over 7 000 vehicles) car-carriers<sup>16</sup> transport flows of assembled vehicles on long-haul routes.

31. The number of actors is small on both the supply and the demand side. The fleet is operated under direct contracts between forwarding industries and the maritime operators (who are themselves logistics suppliers in the automobile sector and sometimes even sister firms in the car-manufacturing industry). Prices, which are confidential or sometimes in-house only, can be worked through production costs (cost of purchasing and operating vessels, port fees, etc.); they vary according to the volume of flows and in particular the destinations, as well as, for example, the scope for balancing loads (return trips or triangular services).

32. The average cost of shipping in the retail price of a vehicle is generally acknowledged to amount to around 0.25% to 1.20%, depending upon the vehicle model, the market and the costs of port fees relating to the freight.

- **Managing sourcing times**

33. Time has become a crucial factor in throughout the Supply Chain (order, assembly and delivery). The time schedules of manufacturing/assembly plants are imposed on parts and components suppliers who, in recent production models, locate their own receiving and storage sites, if not some of their own production, in the immediate vicinity of plants;

34. Firms in the sector cite shipping transit times rather than transport costs as the reason for their decision to locate their sites close to the place of final sale, even though the site location/offshoring/relocation characteristics of the automobile industry are both varied and evolving, particularly in response to rapid market changes brought about by growth in new markets.

35. The following table, which shows assembly times for new vehicles, explains these differences in behaviour and changes in choice of location.

<b>Comparative sequence of lead times for manufacturing new vehicles</b>			
Days/process	Long-distance maritime transport	Short-sea shipping	Road
	Asia - Europe	Intra-Europe	Intra-Europe
- Placement of order	1 - 2	1 - 2	1 - 2
- Manufacture	8	6 - 8	6 - 8
- Packaging/shipment	3	1 - 2	1 - 2
- Transit time in port	7	1 - 2	} 2
- Shipping	12 - 25	2	
- Unloading/Customs	3 - 5	1	} 2
- Delivery	1 - 2	1 - 2	
TOTAL number of days	35 - 54	13 - 19	12 - 16

<sup>16</sup> PCTC: Pure Car/Truck Carriers.

#### **4.2. Consumer electronics, TVs and videos, hi-fi systems**

36. The relocation of these product families to South-East Asian countries dates back to the 1970s. While production from plants set up directly by US or European firms was originally aimed at exports, the markets have gradually been extended to the entire world. Investment in development and various capital redistributions then gave rise to relocations within the Asian region and well as higher volumes of export flows, which are still largely dominated by the North-American and European regions, while covering all continents, and then to growing import flows of components, transported either by sea or by air (for high-value, low volume goods).

37. The attributes of the transport logistics of this sector are therefore:

- High-volume flows of shipment of mass-produced finished products for the consumer market, mainly distributed through large general distributors or specialised chains (IT, music, etc.).
- Sourcing of components for assembly in the countries where production is located and also, depending on the configuration, the consumer countries where spare parts and accessories are also delivered.

38. The manufacture of small-sized products, which became widespread in the 1980s and 1990s, has increased the unit value of container shipments, as may be seen in the ratios of less than 1% (minimum) and 3% (maximum) between the shipping costs and product values given in the summary table.

39. Conversely, the commercialisation of large consumer goods (home-cinemas) has increased this ratio (maritime freight: 2% to 6% of product value).

#### **4.3. Household appliances: the different impact of transport according to unit volumes**

40. This sector is of particular interest to the analysis of the impact of shipping. Differentiating between small household appliances and white goods reveals the following sourcing and transport logistics characteristics:

- The production of small appliances (less than 0.10 m<sup>3</sup>, i.e. maximum unit dimensions of 60 cm x 40 x 40 and, in most cases, less than 0.05 m<sup>3</sup>) has been relocated for two reasons – manufacturing and market – as a single brand or through sub-brands.
- The manufacture of bulky products such as refrigerators, cookers, or in other words white goods, tends to remain located in the regions where they are sold, and commercial flows consist in trade with relatively nearby locations, with less shipping.

41. This double structure, in which markets are differentiated according to the unit volume of products, raises the issue of the potential constraints, or even obstacles, relating to distance and transport costs.

42. The summary table of maritime transport costs and product values is instructive in this respect: when the commercial value of the goods shipped from Asia to the USA or Europe is low, and the value/volume or value/unit sold ratio is low, the “maritime freight” cost component accounts for a large share of this value (from 6% to 20%). When the other costs of logistics and marketing of imported products are similar to those for products of regional origin, these additional costs become determining. Relocation is only of interest if the direct and induced costs of the great distance are over-compensated by the gains obtained from other factors of production, and if the latter remain sufficiently attractive (notably labour).

43. The case of white goods (shipping cost = 14% of the value) and bulky furniture (+21%) exemplify this conclusion, since the two segments of household goods and furniture are rarely relocated to distant regions when unit costs are high. Indeed, it is worth noting that, when production is relocated, the host countries are the least remote possible and have the best and quickest transport links (Eastern Europe for Western Europe).

#### 4.4. *Textile and clothing sectors*

44. The flagship sectors for industrial relocation, textiles and clothing have strengthened their positions even further since abolition of GATT agreement quotas on 1 January 2005.

45. Sourcing from manufacturing sites that are distant from the centres of consumption is a long-standing and widespread practice for all “basic” items such as underwear, everyday clothes (other than fashion items which frequently change), sports clothing, etc.

46. In these production ranges, the recent past and current period have been marked by offshoring, primarily to the benefit of Chinese industry, as shown by market trends in imports of textile machinery.

#### **Capital purchases of textile machinery by exporting countries**

Imports in USD billions	1998	2003
China	1.4	5.1
Asia excluding China	2.1	2.3
Latin America	2.2	1.4
Eastern Europe/Turkey	2.0	1.9

Source: OECD.

47. Since the late 1990s, exports of machinery and equipment for the textile industry have increasingly been directed towards offshore countries that are distant from consumer markets, whereas those to the countries closest to these markets have declined. The correlation between the boom in purchases of textile machinery by China and those of exports from that country has been confirmed. This trend is also apparent in indicators of world exports of textile fibres, both natural (primarily cotton) and artificial, which are used in the manufacture of the clothing exported.

48. Logistics practices in the sector are similar to those described in section 3 above, and the ratio of the costs of maritime transport to the price of products from the sector sold in the market is given in section 7.

49. Experts on the sector<sup>17</sup> think that the total gain from relocation must amount to at least 50% of manufacturing costs before shipment to final markets. In practice, this rate would seem to have been largely exceeded, with orders of magnitude of up to 70-80%.

50. The cost of transport from production sites to distribution platforms in North America or Europe will obviously reduce this margin, and will be perceived by the shipping agent as a loss of value added, although the latter will still remain largely determining.

<sup>17</sup> Professional textile organisations (in Europe).

51. An assessment of surcharges arising from freight and transport times in the sector was carried out in 2002 in the OECD study “A New World Map in Textiles and Clothing: Adjusting to Change”<sup>18</sup>.

52. In particular, it makes a comparative analysis of these factors between different offshore destination countries. These percentages should be compared with the production cost differentials given below.

**Sourcing of textiles and clothing  
Surcharges arising from transit times and freight transport**

% of surcharges	Time factor	Freight factor	Total
Mexico	1.0%	0.6%	1.6%
Dominican Republic	2.5%	1.7%	4.2%
China	6.0%	5.8%	11.8%
Hong Kong	6.0%	3.1%	9.1%
South Africa	12.5%	5.0%	17.5%

Source: OECD 2002.

**45. Other sectors**

53. The calculated impact of maritime freight on major sectors with offshore activities, discussed in section 7 below, are based on logistics processes comparable to those discussed earlier. The trend descriptions given in section 5 above have also been observed.

54. Among the sectors with the highest rates of relocation, the following are commonly referred to as subject to the same impacts:

- Toy sector.
- Sports footwear.
- Sports items.
- Gardening and DIY products.
- Plastic items of all kinds for all sectors.
- Flat-pack furniture.
- Bicycles and parts, etc.

55. In some of the above sectors, the sourcing practices with regard to major manufacturing conglomerates that have directly set up offshore facilities (and have not simply “relocated” in the strict sense of the term) are starting to become more widespread.

56. Some of these sectors have logistics practices that it is worth noting in view of their impact on transport demand:

- Orders for low-value goods, consumed in a short period of time, are generally staggered over time, which implies long storage periods. For example, while 80% of total sales of some toys take place at the end of the year, sourcing is planned well in advance to avoid the risk of bottlenecks, breaks in supply and surcharges for transport at the approach of this critical

<sup>18</sup> Chapter V – Business facilitation. The factors are associated with customs dues, which are not listed here in the Table of surcharges.

period. This generates stock management costs in addition to transport costs, and financial requirements smoothed out over the course of the year, turnover and cash-flow are concentrated on a period of less than three months.

- Import-distribution groups manage container flows as if they were stocks, not only during their transit time (a few weeks, during part of which they are treated as “floating” stocks), but also in the vicinity of retail sites, which allows them to make savings on storage<sup>19</sup>.

Lastly it should be noted that, as in the case of household goods and furniture, compact (or high density) products are easier to relocate than bulky goods, whose value by weight is lower.

#### **4.6 A sector apart – counterfeit goods**

57. Studies on the trade in counterfeit goods<sup>20</sup> only address transport issues obliquely, or through analysis of seizures of containers in destination countries or the results of investigations and control measures.

58. Public information on these markets primarily concerns most of the sectors subject to industrial relocation: copies of clothing or toys, spare parts for automobiles, consumer electronics, etc.

59. Official statistics on trade in such goods are intrinsically unreliable, and the main positions on this issue adopted by transport companies, port authorities, customs administrations and other players or experts in the transport chain<sup>21</sup> can be summed up as follows:

- Most relocated products are imported by or on behalf of major firms who put their own label on the goods or that of their distribution network, and therefore their image. The checks that are made on the origin and quality of these goods preclude the admission of counterfeit goods into these distribution circuits.
- Counterfeit goods are not meant to be exported to the country of origin of brands, and their trading in local markets has become more important than it is at the international level.
- Goods whose value primarily derives from that of the brand name imitated and which are destined for sale in illegal circuits are usually transported by conventional means, but are covered by false declarations and other precautionary measures to avoid detection by customs authorities.

60. It goes without saying that the commercial conditions applicable to the shipping of such goods are similar to those of the goods they imitate.

### **5. CHANGES IN FREIGHT RATES**

61. Freight rates and surcharges on the major maritime transport routes are listed in detail in the following tables and in Annexes D and E.

62. These data have been used in section 6 to calculate freight/product value ratios.

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<sup>19</sup> Some shipping agents refer to containers as “storage units”.

<sup>20</sup> For example, the McKinsey Report on spare parts for the automobile industry and consumer electronics.

<sup>21</sup> These tend to be made occasionally at international conferences, notably with regard to false declarations and the means of combating this phenomenon.

### **5.1. Trends and fluctuations**

63. Container freight rates steadily declined after the initial introduction of containerisation<sup>22</sup> until the late 1990s, and on practically all cargo routes, with some occasional breaks due to circumstances or local conditions (congested ports, seasonal tensions, etc.). The trend reversed in 1999 with a spectacular increase in the direction Asia to the United States (over a third according to the CI indicator), and to a lesser extent Asia to Europe (+10% - 15%).

64. This recovery was followed by a short period of stability that lasted until 2001, the year in which the decline resumed, notably at the end of the year due to the events in September, and continued until the second quarter of 2002. Since then, markets have been rising again, this time more markedly in the direction Asia to Europe (+50% in two years) than in the direction Asia to the United States (+25%).

65. The period observed has therefore been more turbulent than any other time in the past thirty years, with a rising medium-term trend for transport demand driven by exports from China, interrupted by the events of 11 September.

### **5.2. Levels by route and direction of traffic**

66. Observation of rate fluctuations over the period, for each of the two major global routes observed and in both directions, as shown in the Graph below, provides the following information<sup>23</sup>:

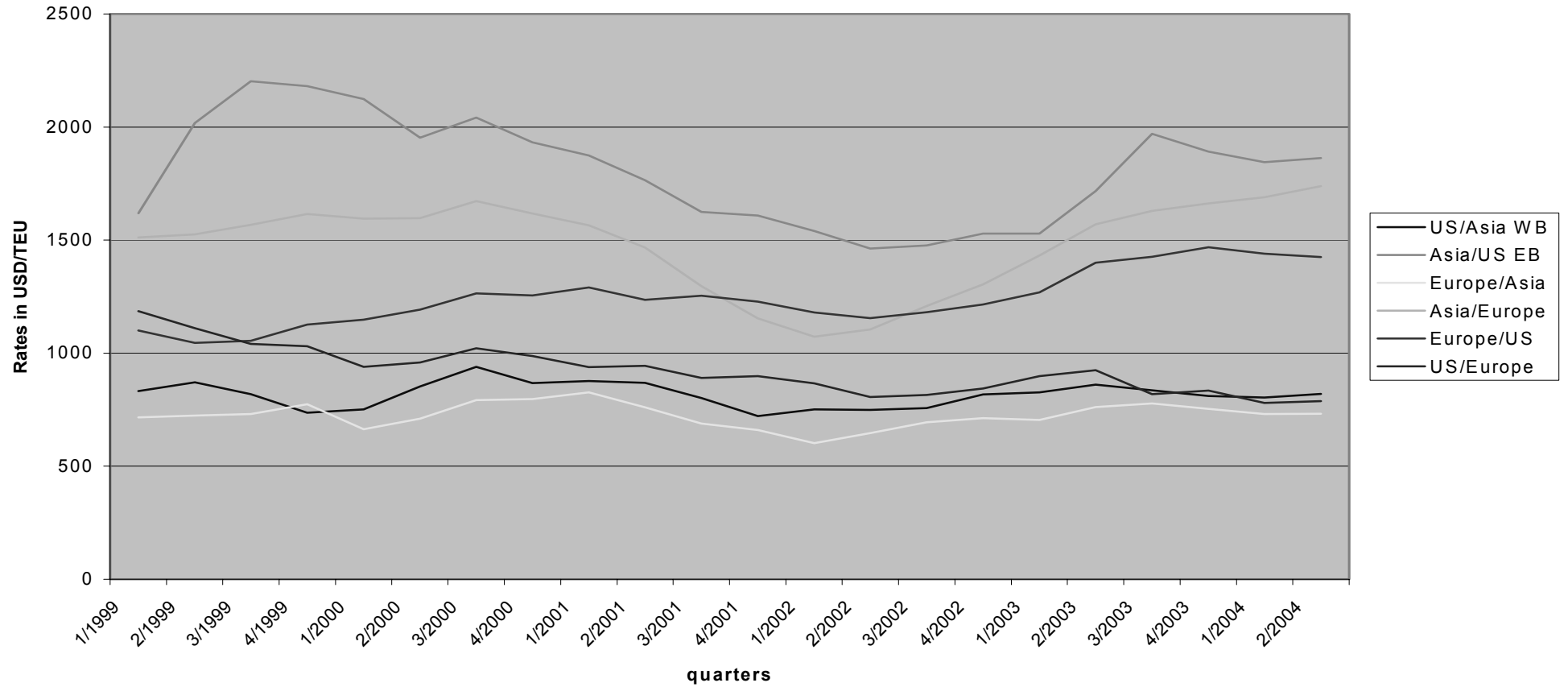
- For outbound traffic, whose levels are higher than inbound traffic (Asia to North America or Asia to Europe), average freight rates are lower to those in the “return direction” with ratios varying between:
  - 1.87 and 2.96 on the Asia/USA route;
  - 1.74 and 2.38 on the Asia/Europe route.
- Rates to the USA are also higher than those to Europe, and in both directions in the case of trade with Asia.
- The gap between rates on these two routes has narrowed since 2002. Freight rates for a container (TEU) shipped from Asia to the USA or Europe tended to converge to a difference of around USD 100-150 in 2004, after differences in some previous years of up to USD 500. This trend can be attributed to the trend in USD exchange rates in that the gap was larger when the dollar was strong but has sharply narrowed now with a strong euro (see 5.3. Table of exchange rates).
- There is no correlation between exchange rate variations due to the economic climate in both directions on a given route: rates may be simultaneously rising or falling, but may also be following opposing directions. The main trend nonetheless remains determined by the main direction.

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<sup>22</sup> See previous study.

<sup>23</sup> Annex D. Trend in ocean freight rates 1999-2004, according to Containerisation International (CI). Rates include THC/Terminal Handling Charges and ocean shipping. These are the average rates observed, which are the those that are the most closely matched to the rates applied to manufactured goods, after account is taken of marginal differences between products.

**LINER FREIGHT RATES 3 MAIN ROUTES 1999/2004 (C I)**



**LINER FREIGHT RATES US/ASIA, WB, EB, WB+EB 1999/2004 (C I) (USD/TEU)**

	US/Asia WB	Asia/US EB	EB/WB.
1/1999	832	1619	195
2/1999	871	2018	232
3/1999	818	2203	269
4/1999	736	2181	296
1/2000	751	2125	283
2/2000	852	1953	229
3/2000	939	2041	217
4/2000	867	1932	223
1/2001	877	1874	214
2/2001	869	1765	203
3/2001	801	1624	203
4/2001	721	1608	223
1/2002	751	1540	205
2/2002	749	1463	195
3/2002	757	1476	195
4/2002	817	1529	187
1/2003	826	1529	185
2/2003	861	1717	199
3/2003	835	1970	236
4/2003	810	1892	234
1/2004	803	1844	230
2/2004	819	1863	227

**LINER FREIGHT RATES EUROPE/ASIA, EB, WB, EB+WB, 1999/2004 (C I)**

	Europe/Asia EB	Asia/Europe WB	WB/EB.
1/1999	716	1512	211
2/1999	723	1525	211
3/1999	730	1568	215
4/1999	774	1615	209
1/2000	664	1594	240
2/2000	710	1597	225
3/2000	793	1673	211
4/2000	797	1618	203
1/2001	826	1566	190
2/2001	760	1468	193
3/2001	688	1296	188
4/2001	660	1153	175
1/2002	601	1073	179
2/2002	646	1105	171
3/2002	694	1208	174
4/2002	712	1304	183
1/2003	704	1432	203
2/2003	762	1570	206
3/2003	778	1629	209
4/2003	754	1662	220
1/2004	730	1690	232
2/2004	731	1738	238

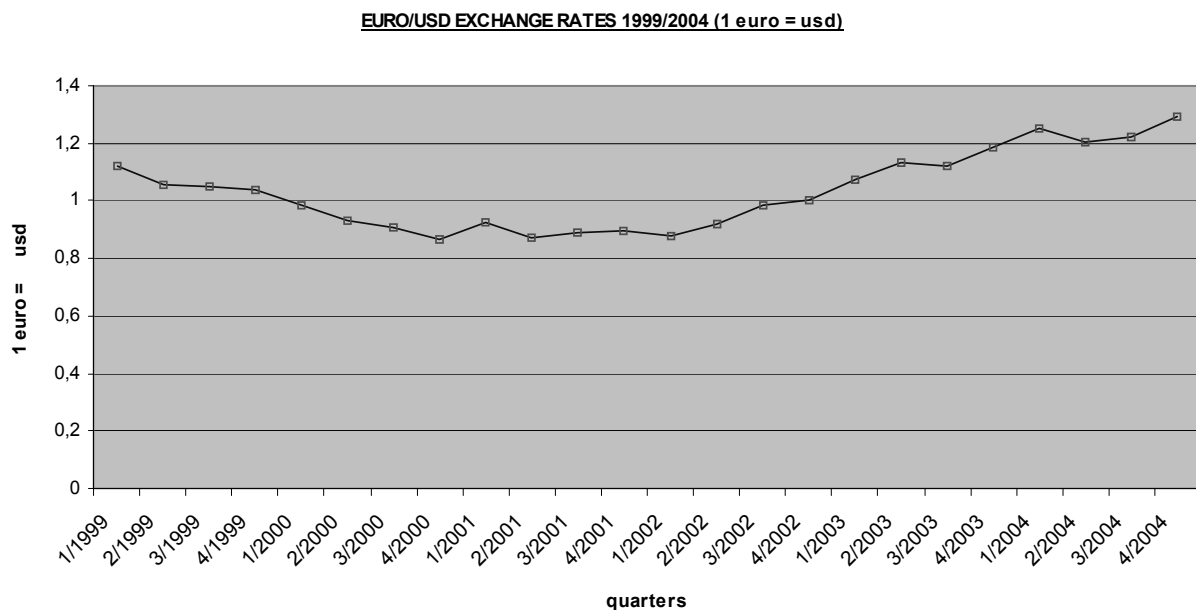
### 5.3. Freight rates and exchange rates

67. Transactions involving products manufactured offshore are expressed in USD in almost all the markets supplied by Asia and Latin America. In European markets they are expressed in euros by suppliers that are geographically or commercially close to those markets (Mediterranean).

68. In import markets in US dollars, the stability of parity rates with the currencies of the main offshore countries/products (Chinese yuan and other Asian currencies, Mexican peso, etc.) is not affected by freight rates, which are also expressed in US dollars.

69. The situation is different for products imported in to the euro zone<sup>24</sup> where the impact of the strength of the euro against the US dollar on the price of imported products has been -10% (minus 10%) in constant values between 1999 and 2004, with much larger gaps between maximum and minimum levels according to period.

70. Ocean freight rates in US dollars have also benefited, all things being equal (that is to say without any increases or decreases in rates), from a relative decline in the same proportions. This trend in the exchange rate has nonetheless been offset by “monetary” surcharges of the CAF (Currency Adjustment Factor) type, and even in part from fuel surcharges designed to compensate for losses or surcharges on US dollar exchanges (the currency in which rates are quoted) and fuel (for which the market is in US dollars).



71. For shipping agents importing manufactured goods, the purchase prices of products and costs of maritime transport are practically unaffected on the Asia/USA route, given that the currencies for these markets are interdependent. The same conditions do not apply to the Asia/Europe route where both purchase prices and transport costs have fallen in euro terms.

<sup>24</sup> In the broad sense of Euroland + the other EU Member States.

72. For maritime carriers, the degree of internationalisation (in US dollars) and the weight of each currency in production costs are major factors in profitability<sup>25</sup>, to which CAFs contribute.

#### **5.4 Fuel costs**

73. Bunker Surcharges (BS), Bunker Adjustment Factors (BAF) and other Interim Fuel Participations (IFP), included in the prices analysed above and listed in Annex E, have become a non-negligible component of these levels.

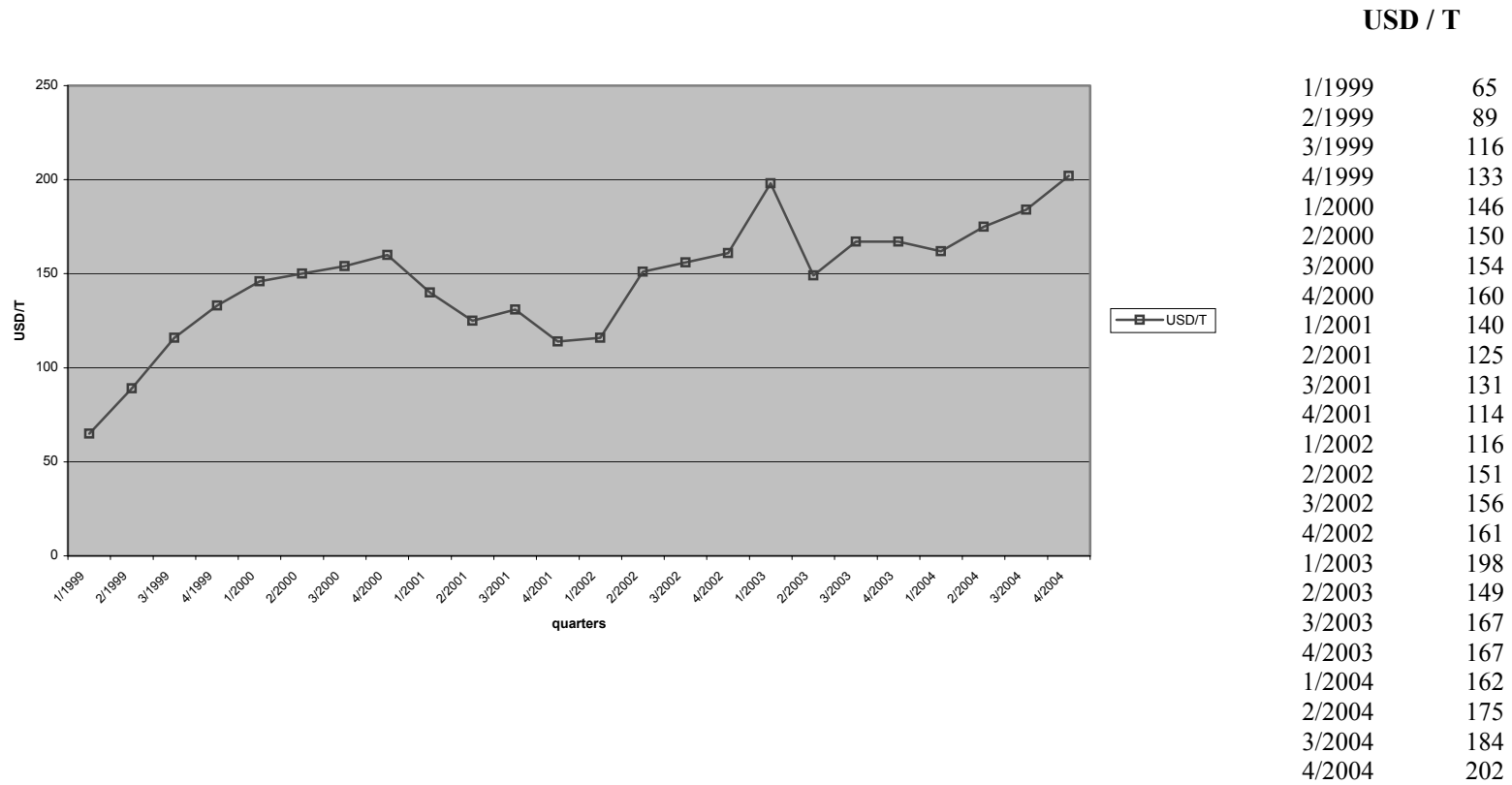
74. The period has seen several sudden rising trends, which have driven shipping production costs to a long-lasting level that is two to three times higher than that in the preceding period.

75. In the opinion of carriers and their customers, the resultant surcharges of around USD 200 per TEU in 2004 have generally been properly applied during the period of high exchange rates.

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<sup>25</sup> Even with load risk coverage mechanisms.

**BUNKER EVOLUTION based on Cristobal PLATT's 380 - 1999/2004 (USD/T)**



## 6. SUMMARY: IMPACT OF SHIPPING ON RELOCATIONS

### 6.1. *Analysis of the maritime freight/retail price ratio*

76. The Table overleaf presents a summary, for each of the main offshore manufacturing sectors (with some counter-examples of products that are only offshored to a limited extent) of the share of freight rates in the retail value of products.

77. These results were obtained by the following method:

- Selection of samples of mass-produced products within each sector, e.g. T-shirts or underwear in the clothing sector.
- Determination of the number of items or sale units contained in an ordinary 40' container (FEU) (8'6" high) or high cube (9'6") based on the weight and volume limits of the container.
- Set of low and high (averaged to exclude products with very high prices and margins) commercial values, based on retail prices including taxes in US dollars in major general and specialised retail outlets in the United States and Western Union. For example, sales of clothing in supermarkets, furniture in specialised chains.

N.B. The differences in retail prices between the United States and Europe, or between European countries, are smaller in large supermarkets and large distribution networks than in small and medium-sized stores, and retail prices are lower in the United States. For some identical types of product, the difference can range by a factor of 1 to 1.35, according to exchange rates and taxes. The outside supply, with ranges between low and high levels, enables these differences to be eliminated.

- Application of low and high freight rates on the two routes considered, namely Asia/USA and Asia/Europe, on the basis of maritime freight + surcharges + THC<sup>26</sup> for a 40' container (FEU) on average smoothed for 2004.
- Calculation of freight/commercial value ratios:  
Low ratio: low freight/high value;  
High ratio: high freight/low value.

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<sup>26</sup> The benchmark levels used here are primarily those of CI, cross-correlated and adjusted by other publications and by data obtained from surveys of maritime operators.

**Shipping costs and product values  
(Values and freight rates in USD 2004)**

Products	Items/FEU <sup>(1)</sup>		Retail value <sup>(2)</sup>		Freight/Value <sup>(3)</sup>		Observations
	Units		USD		%		
	Low	High	Low	High	Low	High	
Low-value clothing	90 000	130 000	225 000	520 000	0.56	1.91	Packed for sale by consignor or at destination. High rate of offshoring: high margins.
Medium-range clothing	25 000	60 000	500 000	3 600 000	0.08	0.86	
Sports shoes	18 000	28 000	350 000	2 520 000	0.12	0.23	
Bicycles	1 200	1 600	240 000	480 000	0.60	1.79	Assembled on arrival at destination.
Toys, low quality	20 000	60 000	60 000	720 000	0.40	7.17	In bulk or packaged.
Consumer electronics, TV, hi-fi - small items	2 800	3 600	170 000	430 000	0.67	2.53	Correlation between offshoring/number of units. Assembled on arrival at destination.
- large items (TVs)	240	480	70 000	140 000	2.07	6.14	
Small household appliances	600	1 200	45 000	100 000	2.90	9.56	
Large household appliances (white goods)	100	130	30 000	65 000	4.16	14.33	Low rate of offshoring.
Furniture assembled -	250	600	20 000	150 000	1.93	21.50	Optimisation of volumes/containers
- flat pack	1 000	3 000	70 000	360 000	0.80	6.14	
Automobile spare parts	600	15 000	50 000	375 000	0.77	8.60	Excluding electronics

(1) Average number of items or units per 40' container (standard and high cube = Forty-foot Equivalent Unit).

(2) Evaluation of retail prices in major outlets or chains (= low 2004 averages).

(3) Freight base rate/FEU (Asia/US and Asia/Europe) – Principal source CI + cross-correlation of interviews with operators and shipping agents/professional press.

## 6.2. *Shipping and factors in industrial relocation*

78. International outsourcing is held by managers to secure<sup>27</sup>:
- A policy aimed at making savings and therefore rapidly improving results and strengthening competition when the quality of the goods supplied is ensured.
  - Good control over market fluctuations when operational efficiency and flexibility make it possible to respond rapidly to customer demands.

### *Production costs, a major factor in relocation*

All the surveys show that reducing production or purchasing costs is the main determinant in any decision regarding industrial relocation. This is the first reason given in all replies to the question. Not surprisingly, the wage component of the productive combination is a determinant of the attractiveness of the country to which production is relocated. The many books and studies dealing directly or indirectly with the offshoring process contain countless examples of comparisons of wage costs<sup>28</sup>.

This criterion can be looked at in both quantitative (gross hourly remuneration, number of hours worked, etc.) and qualitative terms (yield in terms of number of parts/products, reject rate, etc.). This therefore includes a proper match between skills and tasks (level of qualification, specialisation, adaptability, etc.). Unlike certain straightforward mass-produced items, for which these qualitative aspects are less important, labour costs alone are therefore not sufficient.

### *Administrative and economic environment*

This category embraces criteria relating to administrative formalities or taxes and dues, seen as a barrier to competitiveness if there are too many administrative formalities or if taxes are too high. The formalities also include shipping procedures, which correspondents in all surveys look upon unfavourably.

### *Is maritime freight a handicap for competition?*

Firms that have relocated their production of manufactured goods do not see shipping costs as an obstacle. Under comparable conditions for comparable firms, it does not seem to be a deterrent to firms that have not yet opted to relocate.

The cases in which shipping is cited as a barrier are those relating to transit times, and therefore to distance, in terms of speed of transport, and not to freight costs.

N.B. Annex F lists the best transit times between regions generating flows of offshore products and consumer regions. These times mostly amount to between 15 and 25 days, to which the time required for inland transport, receiving, transit through ports and delivery must be added. The total times therefore amount to between 20 and 40 days, compared with transit times of 2 to 8 days between regions linked by road.

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<sup>27</sup> Accenture survey of 300 European firms.

<sup>28</sup> See in particular the reports by major consultancies such as KPMG.

*Distance as a deterrent to relocation (excluding transport conditions)*

Generally, distance between the place where an order is placed and the place where goods are manufactured is not a barrier to offshoring. It can be, however, if the party placing the order and the manufacturer need to be physically close to one another, as for example in cases where the party placing the order needs direct contact with the production process. Industrial groups<sup>29</sup> cite this constraint as a limiting factor on relocation in that it can slow adjustments and even innovation, even to the point of prompting relocation to a closer destination.

*The importance of transport networks*

The quality of transport and logistics networks is a factor in the environment of firms that can lessen the attractiveness of offshoring, or at least modify the country chosen. In practical terms, secure sourcing for production (inputs) and scope to organise exports are both prerequisites for a transfer of production facilities. Shortcomings in this area, combined with an unstable legal environment and unreliable administrative services, explain the low rate or lack of relocation to certain countries that nonetheless offer attractive labour costs<sup>30</sup>, as well as certain case histories of offshored activities being brought back to the country of origin.

**6.3. Standpoint of users of shipping services<sup>31</sup>**

79. Various official statements<sup>32</sup>, websites and the specialised press provide an indication of the positions and perceptions of shipping agents/customers of shipping services.

80. The growth in the volume of containerised traffic is constantly commented upon and analysed by international, regional and national professional organisations representing the actors in the shipping sector. Even though these standpoints are not focused on the issue of relocation and shipping, it is possible to glimpse some of the key issues for various parties in this area.

81. As is customary, collective public positions often call for change: while on the one hand they stress that the global containerised maritime transport system plays an important and useful role in the intercontinental transport of industrial goods, on the other they generally contest certain commercial and pricing practices of maritime carriers, particularly when these practices are discussed in forums such as Conferences.

82. The individual positions of the major shipping agents are less dogmatic and often more positive. They reflect commercial relations embodied in service contracts. These arrangements, developed since the 1990s in response to regulations in the United States, have become widespread in shipping relations that do not involve the North American market. They allow the two parties (shipping agent-customer and maritime/multimodal carrier-supplier) to negotiate and organise the conditions of transport, with freight rates as the determining element, increasingly often in place of the unilateral rates system put in place by maritime Conferences. The latter still often remain the benchmark for the level and structure of maritime transport pricing, although the degree to which their system is actually used has fallen dramatically, with

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<sup>29</sup> Glass-making, plastics, mechanical engineering industries.

<sup>30</sup> A.T. Kearney.

<sup>31</sup> Summary based primarily on Containerisation International.

<sup>32</sup> Notably in recurrent public debates over the application of the rules of competition at Maritime Conferences and other collusive practices by maritime carriers.

the exception of Terminal Handling Charges (THCs) and surcharges (monetary/CAF, fuel/BBAF-IF, etc.). These components of transport prices are in fact those that are the most contested.

## **7. TRENDS AND OUTLOOK**

### **7.1. Trade: the continuation of structural trends**

83. The current acceleration in Chinese exports of manufactured goods has led to extensive growth in sourcing of a wide variety of goods from Chinese industry:

- Diversification of product ranges due to the two related phenomena of international standardisation and mass production, at present consolidated by strong national and regional potentials. The forecast made by major firms and professional groups<sup>33</sup> in the OECD area is that the recent model of industrial offshoring will continue or may even become more widespread, using the double leverage of exports and domestic markets (whereas the “historical” model of recent decades focused solely on exports).
- Increase in flows which until now had been constrained by restricted access to markets(*e.g.* relocation of the textile and clothing sectors).
- Sustained growth in Chinese exports, due to the above two factors.

### **7.2. Transport and logistics: firmly entrenched distribution models**

84. The widespread adoption of major distribution models by several purchasing groups and buying syndicates in order to centralise control of sourcing has led to a massive increase in product orders. The outcome of this trend, in terms of potential creation of facilities, the Supply Chain and transport, are as follows:

- The growing influence wielded by buying syndicates, as well as the distribution groups for which they work, with regard to manufacturers. Even though the situation varies from one sector to another, this stand-off puts pressure on prices which in turn prompts:
  - Suppliers to seek ways to lower their production costs, notably by relocating more of their output.
  - Purchasers to look for the cheapest sources of goods.
- An increase in the number of references for standard manufactured goods produced in large volumes for globalising markets: more products for more markets.
- A snowball effect in terms of the impacts on production costs, as a result of economies of scale and also savings in logistics costs, from the organisation of shipments to transport as such, the conditions of which are negotiated directly by major purchasers with their logistics service suppliers and with global carriers who can offer standard services by virtue of their flow volumes and the reproducibility of processes.

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<sup>33</sup> Textile and clothing industry, mechanical engineering, manufactured plastic goods, etc.

**LIST OF ANNEXES**

No	Contents
A	Scope of study
B	US imports of manufactured goods
C	Geographical breakdown of world exports
D	Trend in ocean freight rates 1999-2004
E	Trends in freight rates 2003-2004
F	Comparison of transit times

## ANNEX 1

Technological advances in transport modes and logistics and overall declining transport costs have been one of the factors facilitating the international relocation of OECD manufacturing and services activities. In the context of the envisaged study on “The Role of Changing Transport Costs and Technology in Industrial Relocation”, a special study is to be prepared which would:

- i) Track global trends in maritime freight in volume terms (excluding bulk goods) and freight rates over the period 1999-2004 and, if possible, their composition.
- ii) Examine the impact of changes in shipping and technological progress in this area (containerisation, just-in-time delivery, etc.) on trends in outsourcing and the relocation of activities by firms in the OECD area.
- iii) Study the relative weight, in firms’ decisions, of the costs of maritime transport compared with those of other economic factors such as labour costs, market access and information technologies.
- iv) Analyse the impact of the factors studied in (ii) and (iii) above in different sectors, such as the automobile, IT, textiles and chemicals industries.

In view of the above, the report should follow, as closely as possible, the structure and layout of the 1996 report entitled “Industrial relocation and maritime transport”.

**TRENDS IN US IMPORTS OVER THE PERIOD 1999-2003****Ch. 42 Articles of leather, saddlery and harness, travel goods, handbags**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	3 265	5 236	+ 60
ASEAN	909	536	- 41
Sub-total (1)	4 174	5 772	+ 38
Total for all countries (2)	6 038	7 500	+ 24
% (1)/(2)	69	77	

**Ch. 61 Articles of apparel and clothing accessories, knitted or crocheted**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	5 406	6 132	+ 13
ASEAN	3 084	4 837	+ 57
Mexico	3 310	2 928	- 12
Central America	4 776	5 951	+ 25
Sub-total (1)	16 576	19 848	+ 20
Total for all countries (2)	23 714	29 719	+ 25
% (1)/(2)	70	67	

**Ch. 62 Articles of apparel and clothing accessories, not knitted or crocheted**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	6 567	7 997	+ 22
ASEAN	3 918	5 886	+ 50
Mexico	4 429	4 170	- 6
Central America	4 038	3 697	- 8
Sub-total (1)	18 950	21 750	+ 15
Total for all countries (2)	28 691	33 189	+ 16
% (1)/(2)	66	66	

**Ch. 63 Other made up textile articles; sets; worn clothing and worn textile articles; rags**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	1 215	2 556	+ 110
Mexico	582	713	+ 22
Central America	54	115	+ 120
Brazil	51	203	+ 298
Sub-total (1)	1 902	3 587	+ 89
Total for all countries (2)	Nd	Nd	
% (1)/(2)			

**TRENDS IN US IMPORTS OVER THE PERIOD 1999-2003****Ch. 61+62 Articles of apparel and clothing accessories, not knitted or crocheted  
Other made up textile articles; sets; worn clothing and worn textile articles; rags**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	11 972	14 129	+ 18
ASEAN	7 002	10 723	+ 53
Mexico	7 739	7 098	- 8
Central America	8 813	9 648	+ 9
Sub-total (1)	35 526	41 598	+ 17
Total for all countries (2)	52 405	62 908	+ 20
% (1)/(2)	68	66	

**Ch. 64 Footwear**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	8 603	10 702	+ 24
ASEAN	1 234	1 195	- 3
Central America	259	149	- 42
Brazil	961	1 047	+ 9
Sub-total (1)	11 057	13 093	+ 18
Total for all countries (2)	14 064	15 603	+ 11
% (1)/(2)	79	84	

**Ch. 44 Wood and articles of wood; wood charcoal**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	736	1 379	+ 87
ASEAN	968	803	- 17
Brazil	538	944	+ 75
Sub-total (1)	2 242	3 126	+ 39
Total for all countries (2)	16 012	16 563	+ 3
% (1)/(2)	14	19	

**Ch. 94 Furniture; lamps and lighting fittings, prefabricated buildings**

Value in USD billions	1999 value	2003 value	% variation
<i>China</i>	6 963	12 932	+ 86
ASEAN	1 534	1 960	+ 28
Mexico	3 336	5 058	+ 52
Central America	75	78	+ 4
Brazil	92	294	+ 220
Sub-total (1)	12 000	20 322	+ 69

<b>Total for all countries (2)</b>	20 382	29 722	+ 46
<b>% (1)/(2)</b>	59	68	

**TRENDS IN US IMPORTS OVER THE PERIOD 1999-2003**

**Ch. 95 Toys, games and sports requisites**

<b>Value in USD billions</b>	<b>1999 value</b>	<b>2003 value</b>	<b>% variation</b>
<i>China</i>	12 009	16 983	+ 41
<b>ASEAN</b>	570	586	+ 3
<b>Mexico</b>	725	597	- 15
<b>Sub-total (1)</b>	13 304	18 166	+ 37
<b>Total for all countries (2)</b>	18 225	21 044	+ 15
<b>% (1)/(2)</b>	73	86	

**Ch. 84+85 Nuclear reactors, machinery, electrical machinery and equipment, electronics**

<b>Value in USD billions</b>	<b>1999 value</b>	<b>2003 value</b>	<b>% variation</b>
<i>China</i>	48 860	78 420	+ 61
<b>ASEAN</b>	48 496	44 564	- 8
<b>Mexico</b>	43 115	50 269	+ 17
<b>Central America</b>	2 279	1 578	- 31
<b>Brazil</b>	1 828	3 173	+ 74
<b>Sub-total (1)</b>	144 578	178 426	+ 23
<b>Total for all countries (2)</b>	311 508	328 355	+ 5
<b>% (1)/(2)</b>	46	54	

**Ch. 87 Motor vehicles, trailers, bicycles, motorcycles, other**

<b>Value in USD billions</b>	<b>1999 value</b>	<b>2003 value</b>	<b>% variation</b>
<i>China</i>	2 280	3 897	+ 71
<b>ASEAN</b>	264	300	+ 14
<b>Mexico</b>	19 955	25 392	+ 27
<b>Brazil</b>	507	1 137	+ 124
<b>Sub-total (1)</b>	23 006	30 726	+ 34
<b>Total for all countries (2)</b>	147 851	175 165	+ 18
<b>% (1)/(2)</b>	16	18	

**GEOGRAPHICAL BREAKDOWN OF WORLD EXPORTS****42 – Leather goods**

Years	1999	2003	%
<b>Main exporting countries</b>			
China	5 236 420 096	9 511 142 400	81.63%
China Hong Kong	5 064 473 088	4 708 555 776	-7.03%
Italy	1 743 234 432	2 554 580 736	46.54%
France	1 519 508 224	2 365 921 024	55.70%
India	823 867 456	987 488 203	19.86%
Germany	602 284 160	835 614 016	38.74%
Belgium	532 610 784	789 770 880	48.28%
USA	635 809 856	678 970 624	6.79%
UK	351 255 584	439 413 206	25.10%
Spain	262 826 192	420 021 189	59.81%
Thailand	655 336 448	343 932 128	-47.52%
Turkey	265 095 584	316 284 736	19.31%
Netherlands	282 238 112	315 237 216	11.69%
Switzerland	145 091 104	249 911 456	72.24%
Austria	149 020 560	209 748 800	40.75%
Mexico	315 861 568	195 510 240	-38.10%
Poland	91 120 000	180 560 992	100.00%
Korea	572 462 976	162 648 960	-71.59%
Indonesia	223 481 055	144 478 338	-35.35%

Source: UNCTAD/Comtrade.

**61 - Articles of apparel and clothing accessories, knitted or crocheted**

Years	1999	2003	%
<b>Main exporting countries</b>			
China	11 753 823 232	20 678 070 272	75.93%
China Hong Kong	10 663 145 472	11 161 207 808	4.67%
Italy	5 451 043 328	5 744 414 208	5.38%
Turkey	3 787 213 312	5 732 566 016	51.37%
Germany	2 393 175 040	3 481 782 016	45.49%
USA	4 120 246 272	3 029 488 128	-26.47%
Mexico	3 068 152 064	3 010 713 088	-1.87%
France	2 246 561 280	2 770 990 080	23.34%
India	1 587 078 912	2 668 294 869	68.13%
Portugal	1 964 265 728	2 252 589 966	14.68%
Belgium	1 643 411 840	2 022 920 264	23.09%
Bangladesh		1 923 481 216	100.00%
Korea	2 392 482 560	1 886 803 840	-21.14%
UK	1 639 091 200	1 811 365 819	10.51%
Thailand	1 687 840 256	1 605 578 752	-4.87%
Spain	775 437 312	1 462 573 097	88.61%
Pakistan		1 457 890 944	100.00%
Netherlands	1 194 621 696	1 390 440 448	16.39%
Indonesia	1 288 175 895	1 368 138 913	6.21%

Source: UNCTAD/Comtrade.

## 62 - Textiles

Years	1999	2003	%
<b>Main exporting countries</b>			
China	15 572 868 096	25 079 033 856	61.04%
China Hong Kong	10 472 129 536	10 546 225 152	0.71%
Italy	7 430 646 272	9 320 308 736	25.43%
Germany	4 938 948 096	5 646 157 824	14.32%
Mexico	4 490 838 016	4 206 821 120	-6.32%
Turkey	2 413 676 288	3 813 872 128	58.01%
France	3 152 768 256	3 809 142 528	20.82%
India	3 175 225 600	3 497 516 203	10.15%
Belgium	2 211 390 208	3 074 012 160	39.01%
Romania	1 571 197 952	2 990 140 928	90.31%
Indonesia	2 446 886 621	2 614 320 499	6.84%
UK	2 346 169 344	2 329 937 595	-0.69%
Tunisia		2 135 454 976	100.00%
USA	3 682 921 984	2 084 619 904	-43.40%
Spain	1 155 932 672	1 983 939 599	71.63%
Morocco		1 964 695 732	100.00%
Netherlands	1 578 132 480	1 801 394 816	14.15%
Bangladesh		1 672 812 800	100.00%
Poland	1 703 369 984	1 515 459 968	-11.03%

Source: UNCTAD/Comtrade.

## 63 – Textile articles

Years	1999	2003	%
<b>Main exporting countries</b>			
China	2 881 486 848	6 168 990 208	114.09%
Pakistan		2 345 388 032	100.00%
Turkey	944 157 696	1 631 923 968	72.84%
India	906 940 224	1 605 012 159	76.97%
Germany	896 161 408	1 141 065 984	27.33%
USA	1 016 747 392	987 583 360	-2.87%
Portugal	828 154 560	827 538 113	-0.07%
Mexico	947 911 808	826 688 128	-12.79%
Belgium	562 987 648	728 992 640	29.49%
Italy	522 241 280	601 390 976	15.16%
France	456 680 032	591 764 416	29.58%
UK	489 691 488	541 900 442	10.66%
Poland	317 623 008	523 311 008	64.76%
Korea	444 001 248	505 977 440	13.96%
Netherlands	422 481 792	450 441 344	6.62%
China Hong Kong	543 772 480	412 627 648	-24.12%
Czech Republic	237 537 136	352 958 176	48.59%
Brazil	231 316 656	334 258 432	52.59%
Spain	268 821 632	307 299 728	24.34%

Source: UNCTAD/Comtrade.

**64 - Footwear**

Years	1999	2003	%
<b>Main exporting countries</b>			
China	8 678 819 840	12 954 804 224	49.27%
Italy	7 296 503 296	8 375 819 264	14.79%
China Hong Kong	6 171 922 944	5 745 205 248	-6.91%
Spain	2 003 438 464	2 297 419 824	14.67%
Germany	1 423 944 448	1 862 390 016	30.79%
Belgium	1 477 791 744	1 663 346 944	12.56%
Portugal	1 686 579 200	1 626 057 233	-3.59%
Brazil	1 342 277 376	1 622 241 408	20.86%
Romania	678147008	1 420 673 024	109.49%
France	1 052 576 320	1 276 531 712	21.28%
Indonesia	1 601 765 944	1 182 185 015	-26.19%
Netherlands	674 822 464	1 132 262 656	67.79%
Thailand	854 368 576	802 266 112	-6.10%
India	606 205 440	758 210 814	25.07%
USA	838 993 472	693 623 104	-17.33%
UK	854 463 488	690 901 175	-19.14%
Austria	529 207 424	642 535 552	21.41%
Korea	798 941 056	509 171 680	-36.27%

Source: UNCTAD/Comtrade.

**85 – Electronic equipment and electronics**

Years	1999	2003	%
<b>Main exporting countries</b>			
USA	121 600 794 624	112 842 448 896	-7.20%
Japan	97 125 048 320	104 615 493 632	7.71%
China	32 949 583 872	90 864 132 096	175.77%
Germany	61 187 248 128	81 923 244 032	33.89%
China Hong Kong	41 174 941 696	71 968 432 128	74.79%
Korea	38 373 617 664	55 073 296 384	43.52%
Singapore	40 048 033 792	54 864 445 440	37.00%
Mexico	38 098 468 864	41 667 842 048	9.37%
Malaysia	32 270 569 472	39 652 544 512	22.88%
UK	37 423 714 304	36 217 474 522	-3.22%
France	34 437 689 344	35 061 096 448	1.81%
Netherlands	18 736 283 648	24 032 139 264	28.27%
Italy	15 965 832 192	18 896 742 400	18.36%
Philippines		18 386 024 448	100.00%
Thailand	11 748 035 584	17 143 038 976	45.92%
Sweden	16 480 391 168	13 760 471 040	-16.50%
Belgium	11 070 553 088	13 126 966 272	18.58%
Hungary		12 566 038 528	100.00%

Source: UNCTAD / Comtrade

**87 - Vehicles**

Years	1999	2003	%
<b>Main exporting countries</b>			
USA	58 563 096 576	65 180 692 480	11.30%
Germany	92 518 187 008	136 909 406 208	47.98%
Japan	83 616 423 936	104 237 932 544	24.66%
UK	26 101 446 656	30 324 590 922	16.18%
France	37 326 368 768	51 919 601 664	39.10%
Italy	20 408 100 765	24 983 511 040	22.42%
Mexico	23 396 515 840	27 305 826 304	16.71%
Belgium	25 350 311 936	35 751 768 064	41.03%
Korea	13 144 855 552	23 024 611 328	75.16%
Canada	58 302 656 512	55 363 731 456	-5.04%
Spain	26 236 315 648	37 165 414 625	41.66%

Source: UNCTAD/Comtrade.

**94 – Prefabricated equipment. signals**

Years	1999	2003	%
<b>Main exporting countries</b>			
China	5 403 177 984	12 895 122 432	138.66%
Italy	9 920 336 896	11 261 423 616	13.52%
Germany	6 539 096 064	8 075 643 904	23.50%
USA	5 910 183 424	5 650 064 896	-4.40%
Canada	5 134 785 024	5 645 399 552	9.94%
Mexico	2 887 644 928	4 792 414 720	65.96%
Poland	2 120 701 056	4 116 239 104	94.10%
France	3 301 414 656	3 459 354 368	4.78%
Denmark	2 230 813 440	2 752 253 184	23.37%
Belgium	2 450 726 400	2 743 712 768	11.96%
Spain	2 001 052 160	2 345 348 345	17.21%
Austria	1 553 977 344	2 111 560 448	35.88%
UK	2 167 866 112	2 095 632 755	-3.33%
Sweden	1 781 847 168	2 059 407 232	15.58%
China Hong Kong	2 488 148 992	2 031 305 216	-18.36%
Malaysia	1 463 763 072	1 673 410 816	14.32%
Czech Republic	987 353 536	1 618 395 136	63.91%
Indonesia	1 270 949 025	1 603 365 578	26.15%
Netherlands	1 364 877 824	1 481 333 376	8.53%

Source: UNCTAD/Comtrade.

## 95 – Toys, games

Years	1 999	2 003	%
<b>Main exporting countries</b>			
China	7 703 478 272	13 279 360 000	72.38%
China Hong Kong	11 639 252 992	10 972 038 144	-5.73%
USA	3 902 943 232	3 966 202 624	1.62%
Germany	1 641 031 168	3 019 246 080	83.98%
Japan	4 726 508 032	1 822 432 384	-61.44%
France	1 057 854 976	1 363 197 056	28.86%
UK	1 237 221 760	1 350 495 629	9.16%
Italy	1 252 004 992	1 331 191 808	7.87%
Netherlands	1 094 265 472	1 158 960 256	21.65%
Austria	654 102 656	1 034 996 096	77.18%
Canada	878 269 440	1 028 634 816	17.84%
Belgium	646 317 376	992 801 536	59.15%
Spain	618 567 808	850 569 565	60.50%
Mexico	896 015 744	652 858 752	-5.07%
Thailand	498 067 264	544 082 816	31.08%
Korea	587 818 112	439 517 152	-7.44%
Switzerland	369 559 360	294 332 832	-20.36%

Source: UNCTAD/Comtrade.

## 96 – Miscellaneous manufactured articles

Years	1999	2003	%
<b>Main exporting countries</b>			
China	1 385 201 920	2 305 617 920	66.45%
Germany	1 504 252 928	1 732 667 008	15.18%
Japan	1 861 249 024	1 548 489 728	-16.80%
China Hong Kong	1 356 308 992	1 154 914 304	-14.85%
USA	1 174 835 072	1 087 476 480	-7.44%
France	890 627 264	1 022 002 880	14.75%
Italy	714 731 200	803 086 976	12.36%
UK	572 174 912	556 723 732	-2.70%
Mexico	380 501 120	555 173 568	45.91%
Korea	636 754 688	536 554 272	-15.74%
Belgium	273 534 112	375 896 000	37.42%
Spain	227 426 816	310 487 759	36.52%
Netherlands	248 953 088	304 306 080	22.23%
Switzerland	202 176 944	298 777 408	47.78%

Source: UNCTAD/Comtrade.

## 60 – Knitted and crocheted articles

Years	1999	2003	%
<b>Main exporting countries</b>			
Korea	2 169 919 232	2 758 320 384	27.12%
China Hong Kong	1 947 435 520	2 547 895 296	30.83%
China	977 369 920	2 508 292 352	156.64%
USA	629 280 832	1 418 874 624	125.48%
Italy	971 599 296	1 076 184 704	10.76%
Germany	1 043 038 848	1 053 180 992	0.97%
France	639 291 392	572 633 728	-10.43%
Japan	428 422 592	484 947 648	13.19%
Spain	302 273 984	349 799 208	15.72%
Turkey	223 142 656	343 558 720	53.96%
Canada	274 037 248	264 599 200	-3.44%
UK	252 434 240	229 210 181	-9.20%
Austria	214 866 208	165 936 096	-22.77%
Belgium	155 046 912	152 091 680	-1.91%
Denmark	121 547 216	140 048 560	15.22%
Netherlands	109 254 560	117 797 640	7.82%
Singapore	128 651 304	114 570 808	-10.94%
Malaysia	111 761 592	98 700 864	-11.69%

Source: UNCTAD/Comtrade.

## 55 - Fibres

Years	1999	2003	%
<b>Main exporting countries</b>			
China	2 307 925 760	2 786 986 496	20.76%
Germany	2 278 940 416	2 173 080 064	-4.65%
USA	1 411 937 792	1 570 102 144	11.20%
Italy	1 511 200 640	1 422 408 064	-5.88%
Japan	1 392 858 880	1 330 340 480	-4.49%
Korea	1 422 369 536	1 288 156 800	-9.44%
China Hong Kong	1 415 847 168	1 219 976 960	-13.83%
France	1 211 671 680	960 891 008	-20.70%
Indonesia	861 982 413	882 169 568	2.34%
UK	483 812 672	860 954 401	77.95%
Turkey	605 281 472	767 027 136	26.72%
Belgium	856 207 872	737 332 544	-13.88%
Thailand	667 126 976	734 962 624	10.17%
India	378 493 952	711 943 010	88.10%
Spain	634 073 216	692 868 755	9.27%
Austria	498 246 208	639 379 648	28.33%
Netherlands	315 801 536	295 755 712	-6.35%
Mexico	260 048 992	273 327 552	5.11%
Canada	298 175 392	252 285 392	-15.39%

Source: UNCTAD/Comtrade.

## 54 – Man-made filaments

Years	1999	2003	%
<b>Main exporting countries</b>			
China	832 251 328	3 751 615 744	350.78%
Korea	4 609 973 760	3 508 891 904	-23.88%
Germany	2 106 990 848	2 103 987 968	-0.14%
Japan	2 504 048 640	2 101 897 984	-16.06%
Italy	1 930 117 632	2 010 348 672	4.16%
USA	2 047 672 960	1 779 147 392	-13.11%
China Hong Kong	2 045 551 104	1 716 677 632	-16.08%
France	1 180 879 104	1 234 513 664	4.54%
UK	654 662 592	1 168 810 986	78.54%
Indonesia	1 053 709 170	995 404 020	-5.53%
India	369 041 024	858 589 413	132.65%
Belgium	806 740 480	738 950 272	-8.40%
Spain	615 202 816	719 227 405	16.91%
Netherlands	289 040 352	699 862 592	100.00%
Turkey	404 100 544	638 822 848	58.09%
Canada	535 726 368	546 640 832	2.04%
Malaysia	470 209 504	467 206 784	-0.64%
Thailand	361 147 392	423 434 720	17.25%
Mexico	370 706 784	387 723 840	4.59%
Switzerland	332 200 288	280 864 352	-15.45%

Source: UNCTAD/Comtrade.

**TRENDS IN OCEAN FREIGHT RATES  
1999-2004  
ASIA-USA-ASIA**

<i>Period</i>	<i>UNITED STATES/ASIA (WB)</i>		<i>ASIA/UNITED STATES (EB)</i>	
	<i>Freight rates in USD/TEU</i>	<i>% change</i>	<i>Freight rates USD/TEU</i>	<i>% change</i>
<i>1st quarter 1999</i>	832	- 1.2	1 619	+ 0.3
<i>2<sup>nd</sup> quarter 1999</i>	871	+ 4.7	2 018	+ 24.6
<i>3<sup>rd</sup> quarter 1999</i>	818	- 6.1	2 203	+ 9.2
<i>4th quarter 1999</i>	736	- 10	2 181	- 1.0
<i>1st quarter 2000</i>	751	+ 2	2 125	- 3
<i>2nd quarter 2000</i>	852	+ 13	1 953	- 8
<i>3rd quarter 2000</i>	939	+ 10	2 041	+ 5
<i>4th quarter 2000</i>	867	- 7.7	1 932	- 5.3
<i>1st quarter 2001</i>	877	+ 1.1	1 874	- 3
<i>2nd quarter 2001</i>	869	- 1	1 765	- 5. 8
<i>3rd quarter 2001</i>	801	- 7.8	1 624	- 8
<i>4th quarter 2001</i>	721	- 10	1 608	- 1
<i>1st quarter 2002</i>	751	+ 4.2	1 540	- 4.2
<i>2nd quarter 2002</i>	749	- 0.3	1 463	- 5
<i>3rd quarter 2002</i>	757	+ 1	1 476	+ 0.8
<i>4th quarter 2002</i>	817	+ 7.9	1 529	+ 3.6
<i>1st quarter 2003</i>	826	+ 1.1	1 529	0
<i>2nd quarter 2003</i>	861	+ 4.2	1 717	+ 12
<i>3rd quarter 2003</i>	835	+ 3	1 970	+ 15
<i>4th quarter 2003</i>	810	- 3	1 892	- 4
<i>1st quarter 2004</i>	803	- 1	1 844	- 2.5
<i>2nd quarter 2004</i>	819	+ 2	1 863	+ 1

**TREND IN OCEAN FREIGHT RATES  
1999-2004  
ASIA-EUROPE-ASIA**

<i><u>Period</u></i>	<i><u>ASIA/EUROPE (WB)</u></i>		<i><u>EUROPE/ASIA (EB)</u></i>	
	<i><u>Freight rates in USD/TEU</u></i>	<i><u>% change</u></i>	<i><u>Freight rates in USD/TEU</u></i>	<i><u>% change</u></i>
<i>1st quarter 1999</i>	<i>1 512</i>	<i>+ 3.2</i>	<i>716</i>	<i>- 11.3</i>
<i>2nd quarter 1999</i>	<i>1 525</i>	<i>+ 0.9</i>	<i>723</i>	<i>+ 1</i>
<i>3rd quarter 1999</i>	<i>1 568</i>	<i>+ 2.8</i>	<i>730</i>	<i>+ 1</i>
<i>4th quarter 1999</i>	<i>1 615</i>	<i>+ 3</i>	<i>774</i>	<i>+ 6</i>
<i>1st quarter 2000</i>	<i>1 594</i>	<i>- 1</i>	<i>664</i>	<i>- 14</i>
<i>2nd quarter 2000</i>	<i>1 597</i>	<i>0</i>	<i>710</i>	<i>+ 7</i>
<i>3rd quarter 2000</i>	<i>1 673</i>	<i>+ 5</i>	<i>793</i>	<i>+12</i>
<i>4th quarter 2000</i>	<i>1 618</i>	<i>- 3.3</i>	<i>797</i>	<i>+ 0.5</i>
<i>1st quarter 2001</i>	<i>1 566</i>	<i>- 3.2</i>	<i>826</i>	<i>+ 3.6</i>
<i>2nd quarter 2001</i>	<i>1 468</i>	<i>- 6.2</i>	<i>760</i>	<i>- 7.9</i>
<i>3rd quarter 2001</i>	<i>1 296</i>	<i>- 11.7</i>	<i>688</i>	<i>- 9.5</i>
<i>4th quarter 2001</i>	<i>1 153</i>	<i>- 11</i>	<i>660</i>	<i>- 4</i>
<i>1st quarter 2002</i>	<i>1 073</i>	<i>- 6.9</i>	<i>601</i>	<i>- 8.9</i>
<i>2nd quarter 2002</i>	<i>1 105</i>	<i>+ 3</i>	<i>646</i>	<i>+ 7.5</i>
<i>3rd quarter 2002</i>	<i>1 208</i>	<i>+ 9.3</i>	<i>694</i>	<i>+ 7.4</i>
<i>4th quarter 2002</i>	<i>1 304</i>	<i>+ 7.9</i>	<i>712</i>	<i>+ 2.6</i>
<i>1st quarter 2003</i>	<i>1 432</i>	<i>+ 9.8</i>	<i>704</i>	<i>- 1.1</i>
<i>2nd quarter 2003</i>	<i>1 570</i>	<i>+ 9.6</i>	<i>762</i>	<i>+ 8.2</i>
<i>3rd quarter 2003</i>	<i>1 629</i>	<i>+ 3.7</i>	<i>778</i>	<i>+ 3</i>
<i>4th quarter 2003</i>	<i>1 662</i>	<i>+ 2</i>	<i>754</i>	<i>- 3</i>
<i>1st quarter 2004</i>	<i>1 690</i>	<i>+ 2</i>	<i>730</i>	<i>- 3</i>
<i>2nd quarter 2004</i>	<i>1 738</i>	<i>+ 3</i>	<i>731</i>	<i>0</i>

### TRENDS IN TARIFFS 2003-2004

**N.B.** The information contained in this document is based on the report published in 2004 by Drewry Shipping Consultants Ltd, entitled “The Drewry Annual Container Market Review and Forecast 2004/2005. It has been supplemented and redrafted by the Consultant.

#### 1) Reference zones

The reference agreement chosen for each region is the one that seemed to be the most significant.

##### a) Transpacific

**TSA:** Transpacific Stabilization Agreement  
trade lane: Asia/US

**WTSA:** Westbound Transpacific Stabilization Agreement  
trade lane: US/Asia [Japan, Korea, Chinese Taipei, Hong Kong, China, Singapore, Malaysia, Thailand, Indonesia, Philippines, Vietnam, Cambodia, Laos, Myanmar (Burma), India, Pakistan, Sri Lanka, Bangladesh and Russia Far East].

**CTSA:** Canada Transpacific Stabilization Agreement  
trade lane: Asia/Canada

**CWTSA:** Canada Westbound Transpacific Stabilization Agreement  
trade lane: Canada/Asia

##### b) Europe/Far East

**F.E.F.C.:** Far Eastern Freight Conference  
trade lane: Northern Europe, including UK/Ireland, Nordic countries, Baltic States, Mediterranean including North Africa, Asia from the Northern border of Myanmar to the North of Japan.

Sub-sections:

Asia Westbound Rate Agreement  
trade lane: Asia excluding Japan/Europe

Eastbound Management Agreement  
trade lane: Northern Europe/Far East

Mediterranean Rate Agreement  
trade lane: Med/Far East/Med

**J.E.F.C.:** Japan Europe Freight Conference  
trade lane: Japan/Northern Europe and Mediterranean

**c) East/West**

**IPBCC:** India Pakistan Bangladesh Ceylon Conference  
trade lane: Europe/India, Pakistan, Bangladesh, Sri Lanka/Europe

**d) Transatlantic**

**TACA:** Trans-Atlantic Conference Agreement  
trade lane: US Atlantic seaboard and Gulf ports, Pacific coast/Northern Europe, Scandinavia/Baltic States and UK/Ireland

**USSEC:** United States South Europe Conference  
trade lane US Atlantic seaboard and Gulf ports/Southern Europe (Italy, France med., Spain including Ceuta and Melilla, Spanish Mediterranean islands and Canaries, Portugal including Madeira and the Azores, Greek islands, Cyprus and Crete).

**Canada Conferences:**

Canada-UK Freight Conference and Canadian North Atlantic WB Freight Conference  
trade lane: Canada Great Lakes, St Laurent, Eastern Canada/GB, Ireland

Canada Continental EB Freight Conference and Continental Canadian WB Freight Conference  
trade lane: Canada Great Lakes, St Laurent, Eastern Canada/Continental Europe (Antwerp, Bremerhaven, Hamburg, Le Havre, Rotterdam and Zeebrugge)

Mediterranean-Canadian Conference:  
trade lane: Italy, Spain, Southern France/Canada

**2) Acronyms used**

BAF	Bunker Adjustment Factor
IFP	Interim Fuel Participation
CAF	Currency Adjustment Factor
TEU	Twenty Equivalent Unit = 20'
FEU	Forty Equivalent Unit = 40'
ISPS	International Ship and Port Facility Security
GRI	General Rate Increase
EB	Eastbound
WB	Westbound

Tariff trends 2003-2004

**“Official” increases in Asian freight rates**

<u>Route</u>	<u>Conferences/services</u>	<u>Zone concerned/direction of traffic</u>	<u>Amount</u>	<u>Date of validity</u>	<u>Nature of increase</u>
<b>Transpacific</b>	TSA	Westbound	\$ 700/FEU	April/May 03	All tariff and service contracts WC cargo
		EB	\$ 900/FEU	April/May 03	All tariff and service contracts intermodal
	WTSA-CTSA	EB	\$ 450/600 FEU	May 04	All tariff and service contracts
<b>Europe/Far East</b>	FEFC	Asia/Northern Europe	\$ 250/TEU	Jan 03	Rate restoration
	FEFC	Asia/Med	\$ 250/TEU	Jan 03	Rate restoration
	FEFC	Asia/Northern Europe	\$ 150/TEU	April 03	Rate restoration
	FEFC	Asia/Med	\$ 150/TEU	April 03	Rate restoration
	FEFC	Asia/Northern Europe	\$ 250 - 300/TEU	July 03/Sept 03	<b><i>RATE RESTORATION</i></b>
	FEFC	Asia/Europe	\$ 350/TEU	July 03/Dec 03	"Interim tariffs"
	FEFC	Asia/Northern Europe	\$ 150/TEU	Jan 04	Rate restoration
	FEFC	Asia/Med	\$ 150/TEU	Jan 04	Rate restoration
	FEFC	Asia/Med	\$ 150/TEU	April 04	Rate restoration
	FEFC	Asia/Northern Europe	\$ 150/TEU	April 04	Rate restoration
	FEFC	Asia/Med	\$ 300/TEU	June 04	Rate restoration
	FEFC	Asia/Northern Europe	\$ 300/TEU	July 04	Rate restoration
	FEFC	Asia/Northern Europe	\$ 150/TEU	Oct 04	Rate restoration

<sup>(1)</sup> N.B. These measures are by no means evenly applied. The tariff adjustments announced often serve as a benchmark and indicator of the direction in which freight rates are moving.

**Tariff surcharges on Asian freight rates**

<b><u>Route</u></b>	<b><u>Conferences/services</u></b>	<b><u>Amount</u></b>	<b><u>Date of validity</u></b>	<b><u>Nature of surcharge</u></b>
<b>Transpacific</b>	CTSA	\$ 190/TEU \$ 250/FEU	Jan 04	Intermodal surcharge
	CTSA	\$ 140/TEU \$ 185/FEU	Jan 04	Fuel recovery charge
	TSA	\$ 400/FEU	June 04/Oct 04	Peak Season Surcharge
	CTSA	\$ 400/FEU	June 04/Oct 04	Peak Season Surcharge
	CWTSA	\$ 50/BL	Oct 04	Doc. fee (Singapore)
	CWTSA	\$ 184/TEU	Oct 04	BAF
<b>Europe/Far East</b>	FEFC	\$ 56 /TEU	Jan 03	BAF
	FEFC	\$ 70 /TEU	Feb 03	BAF
	FEFC	\$ 97 /TEU	March 03	BAF
	FEFC	\$ 112 /TEU	April 03	BAF
	FEFC	\$ 99 /TEU	May 03	BAF
	FEFC	\$ 71 /TEU	June 03	BAF
	FEFC	\$ 69 /TEU	Jul 03	BAF
	FEFC	\$ 87 /TEU	Sept 03	BAF
	FEFC	\$ 82 /TEU	Oct 03	BAF
	FEFC	\$\$GD 50 per BL	Oct 03	Singapore fee
	FEFC	\$ 72/TEU	Nov 03	BAF
	FEFC	\$ 79/TEU	Dec 03	BAF
	FEFC	\$ 74/TEU	Feb 04	BAF
	FEFC	\$ 84/TEU	March 04	BAF
	FEFC	+ 5.40 %	June 04	CAF

<sup>(1)</sup> Fluctuations reported in 2003-2004.

<u>Route</u>	<u>Conferences/services</u>	<u>Amount</u>	<u>Date of validity</u>	<u>Nature of surcharge</u>
<b>Europe/Far East .../...</b>				
	FEFC	\$ 90/TEU	June 04	BAF
	FEFC	\$ 109/TEU	Jul 04	BAF
	FEFC	Nil	Jul 04	CAF
	FEFC	\$ 350	Jul 04	Surcharge High-cube
	FEFC	\$ 104/TEU	Aug 04	BAF
	FEFC	+ 5.6 %	Aug 04	CAF
	FEFC	+ 5.9 %	Sept 04	CAF
	FEFC	€ 5 - £ 3.50/container -	Sept 04	ISPS charge (Security)
	FEFC	\$ 120/TEU	Oct 04	BAF
	FEFC	+ 5.5 %	Oct 04	CAF
	FEFC	\$ 120/TEU	Nov 04	BAF
	FEFC	+ 5.4 %	Nov 04	CAF
	FEFC	\$ 142/TEU	Dec 04	BAF
	FEFC	+ 6.2 %	Dec 04	CAF

**Transit times (days)**

	<b>Los Angeles</b>	<b>New York</b>	<b>Rotterdam</b>	<b>Hamburg</b>	<b>Valence</b>
<b>Hong Kong</b>	6 363 12-15 22	11 207 22-32 21	9 748 19-24 21	10 001 22-29 19	8 143 17-28 20
<b>Singapore</b>	7 669 13-19 24	10 133 29-36* 14	8 288 15-20 23	8 541 21-22 17	6 683 13-23 21
<b>Djakarta</b>	7 899 17-21* 19	10 393 31-43* 14	8 548 26-29 14	8 801 25-28 15	6 943 26-31* 11
<b>Manilla</b>	6 533 24-40* 11	11 366 30-41* 16	9 629 30-45* 13	9 822 31-34* 13	8 024 27-39* 12
<b>Mumbai</b>	10 051 28-33 15	8 143 21-38 16	6 298 16-27 16	6 551 15-27 18	4 693 15-23 13
<b>Santos</b>	7 384 19-38 16	4 930 14-20 15	5 430 10-16 23	5 683 18-19 13	4 764 13-14 15

NB - **\*transit time including 2 transport legs and a transshipment.**  
**Distances expressed in nautical miles.**  
**Average speed for the shortest transit time.**