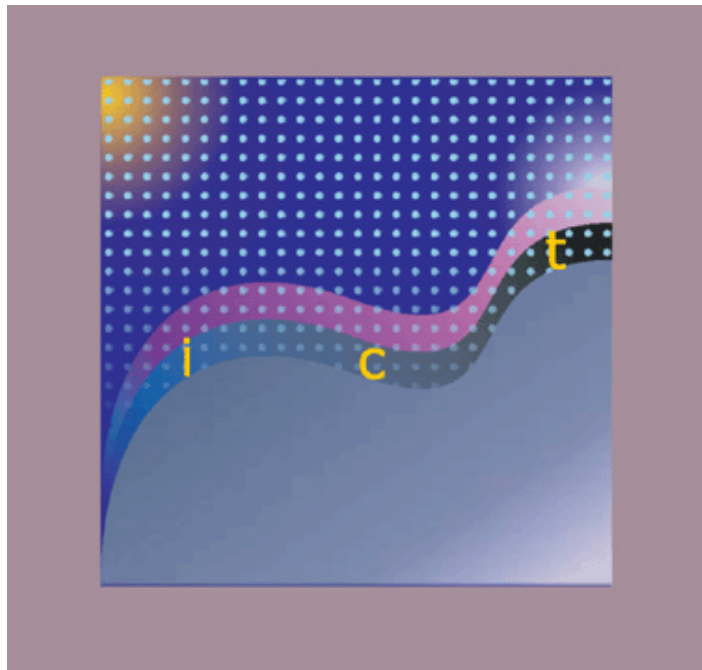


United Nations Conference on Trade and Development

# E-COMMERCE AND DEVELOPMENT REPORT 2002

Internet version prepared by the UNCTAD secretariat



**United Nations**  
New York and Geneva, 2002

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## Chapter 9

# EXPORT PERFORMANCE AND E-SERVICES

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### A. Introduction

Information and communications technologies (ICT) and electronic commerce (e-commerce) have been particularly influential in the services industries. For example, the Internet makes it possible to sell a variety of services, airline tickets, financial or insurance products, customer support, data processing or legal, health, education or software consultancy, to name only a few, rapidly, around the clock, and from anywhere in the world. This form of e-commerce is profoundly reshaping many of the existing services industries and creating new services as related technologies develop. The increasing demand for ICT has also generated major growth in communication services, which are expanding in all countries. Through e-commerce, the services industries have enjoyed an increase particularly in cross-border trade. The digitization of business processes, coupled with the universality of the Internet, has allowed companies to outsource activities and services to more cost-effective locations as well as to access new clients in foreign markets.

As a result of these changes in the global services market, an increasing number of countries, including developing ones, are directing their efforts towards expanding their services exports. Their objective is to increase export capacities in services that are increasingly in demand on the global market, and to become more competitive in exporting these services. But which sectors have been most affected by these changes? How much are services exports really growing, and in which sectors? Which countries have succeeded in gaining competitive advantage in their services exports?

The role of manufactured goods exports in enhancing a country's global competitiveness has been widely acknowledged, as numerous studies show.<sup>1</sup> Using trade flow analysis as a standard approach for assessing competitiveness, these studies have found that countries which have succeeded in gaining market

share over a sustained time period are also gaining competitive advantage.

By contrast, few studies have examined exports of commercial services as indicators of increasing competitiveness, despite the fact that services trade accounts for 20 per cent of total world trade and has grown as rapidly as merchandise trade (8.5%) over the past 15 years. In particular, the increasing use of ICT in the services sector has played an important role in enhancing international trade in services.

This chapter analyses the contribution of ICT and e-commerce to the services exports and export competitiveness of a country. More specifically, it focuses on services that have been substantially affected by ICT developments (such as computer-related services, financial services or communications services) and identifies their role as dynamic export services contributing to the competitiveness of a country. The chapter also uses examples from developing countries that have developed ICT-related export services and discusses various factors that have led to their success.

The chapter is structured as follows: section B first discusses the role of ICT in services exports and then briefly reviews the concepts and indicators used to assess export competitiveness and their application to the services industries. The empirical part of the chapter begins with section C, which gives an overview of international trade in services data and then applies existing methodologies to measuring export competitiveness in the services sectors, particularly e-services. Section D presents two countries (Costa Rica and India) that have diversified their exports into e-services in the software and IT-enabled services sector. The final section draws some conclusions and gives recommendations regarding the role of services exports in enhancing competitiveness in ICT-based sectors.

## B. Information technology and services export performance

Studies on the impact of ICT and e-commerce on productivity growth in the United States have shown that labour productivity growth in the services sectors (measured by value added per full-time employee) has been particularly high in sectors such as wholesale and retail trade and financial and personal services. Other studies based on macroeconomic or computable general equilibrium (CGE) models have supported the argument that e-commerce has a positive impact on productivity and growth (UNCTAD, 2001a).<sup>2</sup>

Knowledge- and information-based services, such as communications, computer, financial, insurance and royalty services, are contributing an increasing share of GDP in many OECD countries (UNCTAD, 2001b). For example:

- In Canada, the value added of telecommunications services increased by 19 per cent from 1998 to 1999, accounting for 2.5 per cent of total GDP, up from 1.9 per cent in 1990 (Industry Canada, 2000)
- In the Republic of Korea, the share of the IT industry (20 per cent of which is based on IT services) in GDP increased from 8.6 per cent (1997) to 13 per cent (2000)<sup>3</sup>
- In the Philippines, the share of communication services (combined with transportation and storage) in GDP increased by 4.6 per cent from 1999 to 2000, to 9.9 per cent, largely due to the growing use of cellular phones and the increasing accessibility of Internet and cable services (NSCB, 2000).

Export performance and competitiveness are closely related. Traditionally, the competitiveness of a country has been identified with the performance of its exports. A country's firms and industries are considered competitive in products in which they are increasing world market share. Furthermore, countries that provide a favourable environment for companies to operate in, which allows them to develop innovations and exploit new market opportunities, also tend to be successful exporters (IDB, 2001). The dynamism and performance of exports often explain the conditions under which firms operate and the difficulties they face. As most firms are price takers in international markets, gaining market share over a sustained period of time usually requires the achievement of competi-

tive advantage. In this sense, export performance is a good indicator of competitiveness.

Export performance can be measured in a number of ways. This chapter will use two of the most common approaches and indicators for measuring export competitiveness:

- The revealed comparative advantage (RCA) index, which measures relative export performance by country and industry or product, defined as a country's share of world exports of a good divided by its share of total world trade; and
- Dynamism of demand, measured by changes in the world market shares (WMS) of a given product over a certain period of time; the rate of growth over alternative periods; and the rate of growth in a product's share in world exports.

A detailed description of the calculation and interpretation of the various measures and indicators used in this chapter is provided in annex I.

Services activities contribute a major share to national output. For example, services value added contributed 71 per cent to Europe's GDP in 1999 and 67 per cent to Canada's (World Bank, 2001). While these figures are globally the highest, it can safely be said that the share of services value added increased between 1990 and 1999 in all regions. In 1999, it comprised 62 per cent of GDP in Latin America, 41 per cent in East Asia and 56 per cent in Sub-Saharan Africa. Hence, services activities are an increasingly important sector for economic development and growth.

At the same time, exports of services are becoming increasingly important. Between 1990 and 2000, world trade in services grew at an annual average rate of 6.6 per cent, which almost equals the rate for merchandise trade (6.8%). Growth rates in developing countries' services exports were particularly high, accounting for 10.1 per cent over the 10-year period, compared to 9.5 per cent annual growth in merchandise trade exports (table 31). The share of services in world exports amounted to 19.6 per cent in 1999. Developing countries also account for a growing share of world trade in services. While in 1990 their share in world exports amounted to 15.7 per cent, it had increased to 21.2 per cent by 2000. Over the same period, their share in

### Box 27

#### Limited statistics on international trade in services

Statistics on merchandise trade are collected at the border and reflected in customs returns. These packaged goods are accompanied by detailed information regarding their content (including an international commodity code), quantity, value, origin and destination.

Data on international trade in services, on the other hand, are more difficult to define and collect. The main source of data on international trade in services is currently the International Monetary Fund (IMF) Balance of Payment statistics, which have some limits. For example, countries use different methods for collecting the data, such as surveys, government sources or simply estimates. The data may come from business accounting or be reported by individuals, and the reporting of major flows is often based on net items, such as premiums less claims in insurance transactions.

The international standard for classifying trade in services is currently the fifth edition of the IMF's Balance of Payment Manual (BPM5), which is usually highly aggregated, and disaggregation varies considerably among reporting countries. The OECD and Eurostat are making efforts to improve the quality of the data and have further disaggregated BPM5 in their Joint Classification. A new Manual on Statistics in International Trade in Services has been developed jointly by the United Nations, Eurostat, the IMF, the OECD, the WTO and UNCTAD, introducing the Extended Balance of Payment Services classification (EBOPS) to include the value of services provided through foreign affiliates established abroad (see [www.oecd.org](http://www.oecd.org)).

BPM5 captures mainly one mode of supply used in services trade, namely cross-border, and to some extent consumption abroad and movement of natural persons, whereas the "commercial presence" is not captured. Hence, the vast majority of trade reflected in the statistics is that between residents and non-residents of countries, whereas, for example, foreign affiliate trade in services is not documented (WTO, 2001a).

world imports increased from 20 per cent (1990) to 22.7 per cent (2000).

Given the limitations of currently available statistics on trade in services (box 27), the data on the services exports of developing countries presented in the following sections should be considered as approximations, describing trends rather than providing absolute figures.

### C. Measuring export performance in the services sectors

This section will apply to services trade the methodologies previously applied to measuring competitiveness in merchandise trade. First, it will provide an overview of trade flows in international services trade. Then, it will identify dynamic export services, using the above definition, for both developed and developing countries. Next, it will identify ICT-related services, or e-services, among those services previously identified as dynamic. Finally, using the above-mentioned methodologies and indicators (RCA, world market shares, dynamic products), it will assess the countries' competitiveness in these e-services sectors. The data anal-

ysis will largely focus on developing countries, provided the data are available.

#### 1. Services exports: global trends

Table 31 presents data on international trade in goods and services. On the export side, in 2000, developed countries accounted for 79 per cent of world exports in services and 72 per cent of exports in goods. However, their share in both goods and services exports is shrinking as developing countries are gaining international market share. The services exports of the latter grew at an annual average rate of more than 10 per cent between 1990 and 2000, and their merchandise exports at a rate of 9.5 per cent. Developed countries' exports, on the other hand, grew by only 5.9 per cent (merchandise exports) and 5.4 per cent (services exports) during the same period.

As far as imports are concerned, the developing countries' share in the world market is similar to their export share, 27 per cent in merchandise imports and 23.6 per cent in services imports. However, the developing countries' share has not increased as much in imports as in exports over the 10-year period; their annual growth rates for services imports are 7.9 per cent (compared to 10 per cent for exports) and for merchandise imports 8.7 per cent (compared to 9.5%

**Table 31**  
**World exports and imports in goods and services**

	Merchandise						Services					
	World		Developed countries		Developing countries		World		Developed countries		Developing countries	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
Value 2000 (\$ billions)	5 784	6 230	4 50	4 553	1 633	1 677	1 462	1 442	1 154	1 099	308	323
Share of world exports/ imports 2000 (%)	..	..	71.7	73.1	28.2	26.9	..	..	78.9	77.3	21.1	22.7
Value 1990 (\$ billions)	3 137	3 326	2 478	2 616	659	710	797	824	672	659	125	165
Share of world exports/ imports 1990 (%)	..	..	79.0	45.2	21.0	12.3	..	..	84.	14.5	15.7	3.6
1990-2000 annual growth rate	6.8	6.8	5.9	6.2	9.5	8.7	6.6	6.0	5.4	5.2	10.1	7.6
1995-2000 annual growth rate	3.6	4.0	2.8	4.7	5.9	2.4	3.9	3.6	3.7	3.8	5.5	3.5

Source: IMF Balance of Payments Statistics.

for exports). Based on this, we can conclude that developing countries' services exports account for the most dynamic changes in world trade in the past 10 years.

The main exporter of services is the United States, which accounted for 20 per cent of the global market in 2000 (see detailed table in annex II). It is followed by the United Kingdom, Germany, France and Japan, which combined account for almost half of all services exports. Among the developing countries, major services exporters are Hong Kong (China), China, the Republic of Korea, Singapore, Turkey and India. On the importing side, the United States, followed by Germany, Japan, the United Kingdom and France, dominate 44 per cent of the world market. The main developing-country services importers are China, the Republic of Korea, Hong Kong (China), Saudi Arabia, Singapore and India. In fact, developing Asia accounts for almost two-thirds of all developing-country services exports, whereas Africa's share is minimal, partly due to the scant statistics available from the region.

Table 32 shows services exports according to the major categories contained in the BPM5 classification. Travel, transportation and other business services<sup>4</sup> constitute by far the most important services exports (75% of total trade in services) and also reflect the main services exports in developed countries. In developing countries, travel takes the largest share of exports, followed by other business services and transport services. The table also clearly shows the traditional distribution of services exports in the developing countries, which have very small market shares in

the newly emerging services such as royalties and license fees, computer and information services, and financial and insurance services, whereas they take 23 per cent of the world market in travel services. An interesting exception is the 20 per cent market share of the developing countries in communication services exports, a fairly recent development. This and other dynamic changes in services exports will be discussed in the following sections.

## 2. Dynamic export services

Exports experiencing above-average growth over a certain time period are considered "dynamic" (see annex I). Table 33 presents average annual growth rates for different types of services exports for the period 1990-2000 and 1995-2000.<sup>5</sup> For all services exports, these were 6.6 per cent (10 years) and 4 per cent (five years). Based on these averages and the above definition, the following services can be considered to have been dynamic at the global level during the 10-year period (annual growth rates in parentheses):

- Computer-related services<sup>6</sup> (31%)
- Personal, cultural and recreational services<sup>7</sup> (20%)
- Communication services<sup>8</sup> (15%)
- Financial services (10.6%)
- Royalties and license fees<sup>9</sup> (10.4%)
- Construction services (8.8%).



**Table 32**  
**Services exports by major category, 2000**

	World	Developing countries		Developed countries		World (AGR)		Developing C.		Developed C.	
	(US\$'000)	(US\$'000)	Market share (%)	(US\$'000)	Market share (%)	10 Years	5 Years	10 Years	5 Years	10 Years	5 Years
Transportation	313 810 084	51 651 558	16.5	262 158 526	83.5	5.1	1.9	5.9	1.2	4.9	2.1
Travel	442 002 946	102 290 473	23.1	339 712 473	76.9	6.3	2.6	8.5	2.9	5.7	2.5
Communication services	28 955 934	5 832 095	20.1	23 123 839	79.9	14.8	5.1	23.2	1.3	13.4	6.1
Construction services	29 039 749	2 402 103	8.3	26 637 647	91.7	8.8	-2.9	17.0	4.4	8.2	-3.5
Insurance services	28 181 323	4 503 820	16.0	23 677 503	84.0	5.4	3.7	6.2	4.6	5.3	3.7
Financial services	79 531 818	2 290 594	2.9	77 241 225	97.1	10.6	13.0	41.1	10.0	10.3	13.1
Computer and information services	30 758 896	811 463	2.6	29 947 433	97.4	31.3	25.6	58.4	45.3	31.1	25.3
Royalties and license fees	72 375 424	1 513 862	2.1	70 861 562	97.9	10.4	5.9	19.6	16.1	10.3	5.7
Other business services	320 998 468	68 813 436	21.4	252 185 032	78.6	6.2	2.4	9.4	-0.5	5.3	3.3
Personal, cultural and recreational services	20 009 693	3 289 496	16.4	16 720 198	83.6	19.7	15.3	53.4	15.5	18.7	15.7
Government services	40 952 452	7 000 529	17.1	33 951 923	82.9	-1.0	-2.3	-0.4	0.2	-1.1	-2.8
<b>SERVICES</b>	<b>1 450 649 731</b>	<b>294 431 941</b>	<b>20.3</b>	<b>1 156 217 790</b>	<b>79.7</b>	<b>6.6</b>	<b>4.0</b>	<b>10.2</b>	<b>5.7</b>	<b>5.8</b>	<b>3.6</b>

Source: IMF Balance of Payments Statistics.

At the five-year level, the same types of services can be identified as dynamic, with the exception of construction services, which experienced negative growth between 1995 and 2000. Overall, export growth slowed during the five-year period, with the exception of financial services exports, which grew at an annual rate of 13 per cent, compared to 10.6 per cent over the 10-year period.

A comparison of developing and developed countries' growth rates for different types of services exports reveals that the developing countries' services growth rates were higher than the world average for all of the dynamic services, and particularly high for three services: computer and information services (58%), personal, cultural and recreational services (53%) and financial services (41%). It is important to keep in mind, though, that the global market shares of developing countries in computer and financial services trade are still very low (less than 3% respectively).

In order to account for high growth rates resulting from a low initial base, growth rates of *shares* in world services exports were considered. As a result, all of the dynamic services saw their shares in world exports increase during the 10-year period, whereas all of the non-dynamic services (i.e. those with below-average value growth rates) saw their shares in the world export market decrease (table 33). Hence, the growth rates of shares confirm the dynamic services identified

based on value growth rates. They also confirm that computer-related services are by far the most dynamic export service: this sector gained 23.3 per cent market share between 1990 and 2000.

### 3. E-services and export competitiveness

Box 28 compares those services that can be easily provided electronically, and are thus most affected by ICT and e-commerce, with those previously identified as "dynamic" export services.<sup>10</sup>

Except for construction services, all of the dynamic services are ones that can easily be provided electronically. Hence one can safely conclude that, except for insurance services<sup>11</sup> and other business services,<sup>12</sup> all services that can be provided electronically – so-called "e-services" – are also dynamic export services. This supports the notion that e-commerce and ICT have an important role to play in changing the pattern of international trade in services.

Which countries have a comparative advantage in the export of e-services? Which countries are gaining ground in the international markets for dynamic services? To answer the first question, the following discussion will first present a calculation of the revealed comparative advantage (RCA) index. Then, to address

**Table 33**  
**Growth rate of selected service products' share in world export**

Service Category	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	10-year growth
Transportation	25.0	25.1	23.9	23.6	24.0	23.7	22.7	22.4	22.1	21.9	22.3	-1.4
Travel	32.9	31.3	32.1	32.2	32.2	32.3	32.5	31.6	31.5	31.9	31.4	-0.2
Communication services	1.0	1.2	1.3	1.3	1.6	1.9	2.0	2.0	2.2	2.1	2.1	7.8
Construction services	1.6	2.2	2.5	2.5	2.6	2.9	2.8	2.9	2.9	2.5	2.1	2.1
Insurance services	2.1	2.0	2.2	2.4	2.1	2.0	2.0	1.9	2.0	2.1	2.0	-1.0
Financial services	3.6	3.5	4.3	3.9	3.4	3.6	3.9	4.2	4.5	5.1	5.7	3.9
Computer and information services	0.3	0.5	0.4	0.5	0.6	0.9	1.1	1.3	2.0	2.2	2.2	23.3
Royalties and license fees	3.6	3.8	3.9	4.1	4.6	4.6	4.7	4.7	4.9	5.1	5.1	3.6
Other business services	23.4	24.4	23.5	23.7	23.9	23.3	23.9	24.6	23.3	22.9	22.8	-0.3
Personal, cultural and recreational services	0.4	0.4	0.7	0.7	0.8	0.9	0.8	1.0	1.3	1.3	1.4	12.4
Government services	6.0	5.7	5.1	4.9	4.2	3.9	3.7	3.4	3.5	3.1	2.9	-7.0

Source: IMF Balance of Payments Statistics.

the second question, it will look at changes in countries' world market shares (WMS) during the five-year period to identify which countries have improved their export competitiveness in dynamic e-services. The services categories focused on include communication, financial, computer, royalties and license fees and personal, cultural and recreational services.

#### 4. Revealed comparative advantage in e-services exports

Table 34 shows developing and developed countries' RCA indices for each of the identified e-service sectors. According to the definition provided earlier (see annex I for details), an RCA of greater than one indicates a region's (country's) specialization or compara-

tive advantage in exporting a particular service.<sup>13</sup> Interestingly, developing countries (as a group) have a comparative advantage in exporting communication services, whereas developed countries have a comparative advantage in all the other selected services. This also reflects the rapid growth that communication services exports have experienced in the developing countries during the 10-year period (23%). A closer look at the five-year period reveals that in both insurance services and personal, cultural and recreational services, developing countries have an index very close to one, and in some years their RCA was even greater than one. Hence, in these services they are close to gaining comparative advantage, whereas in others, such as computer-related services and royalties, they (as a group) have no comparative advantage.

### Box 28

#### Dynamic e-services

The following e-services saw above-average export growth rates during the 1990-2000 period:

<i>Communication services</i>	<i>dynamic</i>
Insurance services	--
<i>Financial services</i>	<i>dynamic</i>
<i>Computer-related services</i>	<i>dynamic</i>
<i>Royalties and license fees</i>	<i>dynamic</i>
Other business services	--
<i>Personal, cultural and recreational services</i>	<i>dynamic</i>



**Table 34**  
**RCA by service sector for developing and developed countries**

	1995	1996	1997	1998	1999	2000
Communication services						
Developed countries	0.94	0.95	0.97	0.98	0.98	0.98
Developing countries	1.25	1.22	1.11	1.07	1.07	1.07
Insurance services						
Developed countries	0.98	1.07	1.11	1.03	1.04	1.02
Developing countries	1.07	0.69	0.57	0.85	0.83	0.93
Financial services						
Developed countries	1.19	1.20	1.21	1.19	1.19	1.20
Developing countries	0.21	0.15	0.14	0.17	0.18	0.16
Computer and information services						
Developed countries	1.22	1.22	1.23	1.21	1.20	1.21
Developing countries	0.06	0.04	0.07	0.06	0.1	0.12
Royalties and license fees						
Developed countries	1.22	1.22	1.23	1.20	1.20	1.21
Developing countries	0.07	0.08	0.09	0.09	0.1	0.11
Personal, cultural and recreational services						
Developed countries	0.96	1.11	1.02	0.94	1.00	1.03
Developing countries	1.18	0.55	0.93	1.25	0.98	0.89

Source: IMF Balance of Payment Statistics

Since these figures look only at two very large groupings (developed and developing countries) and do not provide much information on individual countries' comparative advantage in the export of specific services, table 35 provides the RCA index for the year 2000 by country, as well as RCA trend growth rates during the 1995-2000 period.<sup>14</sup> Growth rates of RCA indices demonstrate whether a country has gained or lost comparative advantage in exporting a service over the five-year period. The following can be observed.

First, countries with RCA indices of  $>1$  and positive RCA growth rates are the most competitive in the sector and are discussed separately below. Some countries have low RCA indices but (high) positive growth rates, meaning that they are gaining competitive advantage. Others have RCA indices of  $>1$  but (high) negative growth rates, meaning that they are losing competitiveness. The least competitive countries are those with both RCA indices  $<1$  and (high) negative growth rates.

Second, few developing countries have a comparative advantage in more than one sector. Exceptions include Mexico (communications and personal, cultural and

recreational services), Panama (financial and computer services), Ecuador (communications and personal, cultural and recreational services, but a strong negative trend), and Costa Rica (communications and computer services).

Third, it is important to keep in mind that some countries (mainly from the developing world) do not report in certain services subcategories and hence are not considered here.

Since this chapter aims to identify those developing countries which have gained comparative advantage in e-services exports, Table 36 lists all countries with RCA indices of  $>1$  and positive RCA growth rates over the five-year period. While in most of the services categories the developed countries clearly dominate, the communications services category includes many developing countries. As was pointed out earlier, developing countries' exports in communications services have grown strongly during the past decade, and, as this table demonstrates, many developing countries have specialized in the export of this service.

Another case worthwhile mentioning is that of the Eastern European countries, including Bulgaria, the

**Table 35**  
**RCA indices and growth rates by country**

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Albania	2.14	-8.14	0.04	-43.60	0.04	-22.49	..	..	..	..
Angola	..	..	..	..	..	..	0.3 *	-28.4 *	..	..
Anguilla	..	..	0.40	..	0.40	..	..	..	..	..
Antigua and Barbuda	..	..	0.24	..	0.24	..	..	..	..	..
Argentina	1.45	-22.18	0.03	-15.02	0.03	21.99	0.1	-0.2	0.08	-13.06
Aruba	0.22	4.10	0.10	-27.97	0.10	-21.01 #	..	..	..	..
Australia	2.43	4.06	0.47	-7.63	0.47	5.71	0.4	4.2	3.36	16.57
Austria	0.78	10.38	0.87	6.74	0.87	-7.08	0.1	-3.2	0.47	-4.43
Bangladesh	1.32	-10.54 #	0.32	-8.4 #	0.32	17.25 #	0.0	..	0.05	20.96 #
Barbados	1.30	-3.07	1.35 *	-3.93 *	0.73 *	-25.45 *	0.0	..	0.02 *	-1.5 *
Belgium+Luxembourg	2.13	6.15	3.31	0.53	3.31	-15.01	0.4	-1.4	1.04	-0.37
Belize	1.94	-13.76	..	..	..	..	..	..	..	..
Benin	2.08	77.24	0.63	-6.90	0.63	..	..	..	0.00	..
Bolivia	7.92	-16.5 #	0.40	6.74 #	0.40	..	0.1	..	0.36	..
Botswana	0.10	125.63 #	0.05	-42.1 #	0.05	..	..	..	..	..
Brazil	0.19	-25.22	0.79	-26.20	0.79	-19.64	0.3	13.3	0.49	-17.60
Bulgaria	1.04	3.7 #	0.12	-57.25 #	0.12	..	0.0	..	0.75	..
Cambodia	7.54	-1.27	..	..	..	..	..	..	..	..
Canada	1.64	-7.53	0.66	-2.22	0.66	-15.49	0.7	15.4	2.42	-6.66
Cape Verde	2.15	-17.99	..	..	..	..	..	..	..	..
Chile	2.60	-1.01	..	..	..	..	0.5	75.3	..	..
China	2.22	7.24	0.05	35.19 #	0.05	29.49 #	0.1	3.0 #	0.03	-18.09 #
Colombia	4.42	-11.87	0.71	-13.70	0.71	-11.08	0.0	64.4 #	0.80	27.26
Costa Rica	3.05	-2.56	0.27	97.75	1.59	919.66 #	0.0	-27.3	..	..
Côte d'Ivoire	4.11	61.97	0.85	-13.13	0.85	-29.22 #	0.0	-6.4	..	..
Cyprus	0.43	14.57	..	..	..	..	..	..	0.01	..
Czech Republic	0.91	-9.27	1.10	29.88	1.10	38.22	0.1	19.6	2.05	16.67
Dominica	..	..	0.20	..	0.20	..	0.0	..	..	..
Dominican Republic	2.16	-19.64	..	..	..	..	..	..	..	..
Ecuador	3.60	-10.30	..	..	..	..	..	..	3.36	-7.02
Egypt	1.57	3.75	0.10	-9.74	0.10	56.06	0.1	-2.0	0.11	29.85
El Salvador	6.42	-10.01	0.20	-12.56 #	0.20	..	0.1	..	0.07	..
Estonia	0.69	-2.36	0.14	3.90	0.14	14.51	0.0	-2.9	0.04	5.34
Ethiopia	1.76	-10.44	0.14	-3.11	0.14	11.90	..	..	0.21	153.89 #
Fiji	0.52	16.85	..	..	..	..	..	..	..	..
Finland	1.68	5.57	0.08	-36.30	0.08	-0.98	3.7	89.2	0.04	-54.32
France	0.81	22.20	0.30	-18.11	0.30	-1.76	0.6	1.9	1.42	-5.05
Gabon	0.28	-8.74	..	..	..	..	..	..	3.25	-2.76
Germany	0.86	-7.44	0.96	2.93	0.96	0.00	0.7	-4.7	0.18	-8.99
Greece	0.67	11.50	0.11	-50.21	0.11	-47.23	0.0	..	0.94	-14.16
Grenada	..	..	0.92	11.59 #	0.92	..	..	..	..	..
Guatemala	0.02	-76.85	0.12	-35.99	0.12	-8.59	..	..	..	..

Table 35 (continued)

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Honduras	10.16	-9.32	0.00	..	0.00	..	..	..	..	..
Hungary	0.55	10.84	0.46	-10.53	0.46	-12.5 #	0.4	15.0	2.42	24.26 #
Iceland	0.49	-25.28	..	..	0.00	-8.04 #	..	..	0.76	16.47
India	..	..	..	..	..	..	0.1	59.6	..	..
Indonesia	0.83	-11.45	..	..	..	..	..	..	..	..
Ireland	0.98	9.47	2.43	27.58	2.43	79.79	0.6	2.7	0.71	-4.44
Israel	0.59	-28.85	..	..	..	..	0.7	9.8	..	..
Italy	1.14	33.29	0.15	-38.28	0.15	3.49	0.2	6.3	0.71	-0.18
Jamaica	5.18	-0.97	0.12	3.83	0.12	-16.86	0.1	2.5	0.35	-7.73
Japan	0.60	0.81	0.81	24.19	0.81	-13.08 #	2.9	7.8	0.12	-6.64
Kenya	1.14	-12.21	0.00	..	0.00	..	0.1	-13.7	0.00	..
Korea, Republic of	0.65	-14.12	0.47	30.20	0.47	-14.46	0.5	13.5	0.34	155.36 #
Lao People's Dem. Rep.	0.18	-2.03	..	..	..	..	..	..	..	..
Latvia	1.91	26.98	0.56	-4.78	0.56	93.06	0.0	164.8 #	0.05	51.61
Lithuania	1.67	-8.00	0.06	-11.16	0.06	95.28	0.0	-70 #	0.78	55.93 #
Madagascar	0.89	0.61	0.05	-21.99 #	0.05	..	0.0	-16.4	0.02	..
Maldives	..	..	..	..	..	..	0.2	9.7	..	..
Malta	0.94	2.03	..	..	..	..	..	..	..	..
Mexico	4.42	0.57	..	..	..	..	0.1	-26.5	1.74	120.08
Moldova, Republic of	4.41	28.01	0.22	-28.31	0.22	13.51	0.1	..	0.13	..
Morocco	1.88	10.57	..	..	..	..	0.2	36.6	..	..
Myanmar	0.02	..	..	..	..	..	0.0	..	..	..
Namibia	0.75	-12.76	0.44	3.81	0.44	-16.39	0.4	113.7	..	..
Netherlands	1.34	16.17	0.29	3.33	0.29	-7.25	0.8	-5.7	0.76	-9.01
New Zealand	2.11	..	0.19	11.77	0.19	10.89	0.2	38.9	0.70	6.83
Nicaragua	4.19	-15.67	..	..	..	..	..	..	..	..
Norway	0.95	8.61	0.07	-6.50	0.07	-12.72	0.2	-2.8	0.51	-9.43
Oman	6.44	2 #	..	..	..	..	..	..	..	..
Panama	0.92	-3.76	1.51	8.11	1.51	..	..	..	..	..
Paraguay	0.98	-5.29	0.21	-11.53	0.21	1.77	6.7	5.4	..	..
Peru	2.71	-20.11	..	..	..	..	0.0	..	..	..
Philippines	2.19	..	0.38	..	0.38	..	0.0	..	0.75	..
Poland	1.13	-1.81	0.20	-12.37	0.20	7.28	0.1	33.9	0.36	7.05
Portugal	1.05	-14.80	0.57	-9.17	0.57	-6.93	0.0	1.1	1.17	-7.42
Romania	4.12	12.29	1.23	-1.10	1.23	58.08	0.0	-9.6 #	3.15	0.74
Russian Federation	2.01	-1.39	0.20	3.56	0.20	..	0.2	36.0	..	..
Saint Kitts and Nevis	..	..	1.40	..	1.40	..	..	..	..	..
Saint Vincent and the Grenadines	..	..	2.32	24.46 #	2.32	..	..	..	..	..
Senegal	..	..	..	..	..	..	0.1	54.8	..	..
Slovakia	1.15	-13.30	0.32	-27.09	0.32	32.83 #	0.1	2.5	1.77	10.69 #
Slovenia	0.66	18.02	0.08	-7.60	0.08	11.49	0.1	20.5	0.53	11.64
South Africa	0.56	-0.98	..	..	..	..	0.2	1.4	..	..

Table 35 (concluded)

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFORMATION SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND RECREATIONAL SERVICES	
	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)	RCA 2000	RCA 5-yr growth (%)
Spain	0.63	-4.96	0.51	4.46	0.51	-9.95	0.1	6.8	0.73	2.77
Swaziland	1.10	4.18	..	..	..	-44.11	0.1	1.7		
Sweden	1.60	-14.05	0.67	4.45	0.67	34.03	1.2	0.9	0.41	-4.78
Switzerland	1.61	10.31	6.20	-0.16	6.20	..	..	..	0.02	-21.55
Thailand	0.48	-8.42	..	..	..	..	0.0	36.7		
The former Yugoslav Republic of Macedonia	6.45	1.88 #	0.12	-37.98 #	0.12	-10.79	0.2	6.3 #	0.34	-34.38 #
Tunisia	0.22	-14.33	0.24	-1.46	0.24	25.42	0.1	68.4	0.08	-8.85
Turkey			0.41	-0.94	0.41	..	..	..	9.72	-4.31
Ukraine	1.17	-13.79	0.11	-26.29	0.11	..	0.0	..	0.06	..
United Kingdom	1.07	0.92	3.08	-1.30	3.08	-3.97	1.2	-5.4	1.06	-8.27
United Republic of Tanzania	2.18	4.77	0.66	2.27 #	0.66	..	0.0	-60.5 #	0.02	..
United States	0.71	-2.51	1.15	5.02	1.15	-9.11	2.6	-3.1	1.62	4.62
Uruguay	1.16	-13.54	0.92	-4.1 #	0.92	..	0.0	..	0.01	..
Venezuela	0.45	-17.40	..	..	..	..	..	..	..	..
Yemen	16.58	-2.40	..	..	..	..	..	..	..	..

Source: UNCTAD calculation based on IMF Balance-of-Payment Statistics.

Notes: # 3- or 4-year data.

\* Year 2000 data estimate.

Czech Republic, Hungary, Latvia, Macedonia, Romania and Slovakia, all of which appear in this most dynamic and competitive group of services exporters.

Finally, it should be noted that many developing countries, while not yet having a comparative advantage in exporting e-services, showed positive RCA growth rates during the five-year period, indicating that they are gaining comparative advantage. Some of them are likely to join the most dynamic group of e-services exporters within a few years.

## 5. Changes in world market shares

While the RCA index provides information about a country's comparative advantage in exporting a certain product (and changes in the index indicate whether a country gained or lost comparative advantage), the calculation of WMS indices allows the identification of countries that have gained world market shares in the export of specific services during a certain time period. Hence, while the RCA considers only the country's exports and its degree of specialization, the

WMS places these exports in the context of the world market. An increase or decrease in WMS thus indicates whether a country is becoming more or less competitive at the global level.

Table 37 provides the average WMS index over the five-year period, by country and service sector. Recalling the definition of the WMS index and the formula used for its calculation (see annex I), an index of 1 indicates no change in WMS, an index of >1 indicates an increase in WMS and an index of <1 indicates a decrease in WMS. Again, a change in the WMS index as measured here does not reflect the actual percentage share of a country's export product in the world market, but only the factor by which this share has changed. In other words, a country with a very small share in world exports could have a positive or high average WMS index over the five-year period. The purpose of this exercise is not to show which countries are the main exporters but to identify those that gained market share and thus increased their competitiveness.

**Table 36**  
**Countries with RCA indices >1 and positive growth rates**

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Australia	Belgium and Luxembourg	Costa Rica	Finland	Australia
Belgium and Luxembourg	Czech Republic	Czech Republic	Japan	Czech Republic
Benin	Ireland	Ireland	Paraguay	Hungary
Bulgaria	Panama	Romania	Sweden	Mexico
China	Saint Vincent and the Grenadines			Romania
Côte d'Ivoire	United States			Slovakia
Egypt				United States
Finland				
Italy				
Latvia				
Mexico				
Moldova, Republic of				
Morocco				
Netherlands				
Oman				
Romania				
Swaziland				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

To complement the WMS index indicator, Table 37 also shows the average percentage increases in actual world market shares, measured as a country's share of an export product in the global market for this product.

Many developing countries have WMS indices of > 1 (five-year average), meaning that they have gained WMS in the export of e-services. A number of developing countries have experienced double-digit growth rates in world market share, notably Moldova and Côte d'Ivoire (communications services), China and Costa Rica (financial services), Costa Rica and Egypt (computer services), Chile and Tunisia (royalty services) and Mexico and Ethiopia (personal and cultural services, especially audiovisual services).

As in the earlier analysis of the RCA, the most dynamic countries (i.e. those with average WMS >1 and positive WMS trend growth between 1995 and

2000) have been selected (Table 38). These countries have been the most successful in increasing their WMS in the export of e-services and thus have become more competitive. They include many developing countries, which in particular account for 50 per cent of communications and financial services exports and about 40 per cent of royalty services exports. Also noteworthy is the dominance of the Eastern European countries, many of which have successfully increased their WMS in the export of e-services.

## 6. Combining comparative advantage and world market shares: identifying the most dynamic e-services exporters

So far this chapter has focused on countries' performance in exporting dynamic e-services as measured by comparative advantage or world market share. The next and final step in the analysis will be to compare

**Table 37**  
**WMS 5-year average and growth rates by country**

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SERVICES	
	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)
Albania	1.19	18.41	1.16	-27.30	1.05	-0.09	..	..	..	..
Angola	..	..	..	..	..	..	0.98 *	-30.78 *	..	..
Argentina	0.80	-22.28	0.91	-15.13	1.29	21.83	0.98	-0.30	1.11	-13.17
Aruba	1.15	10.25	2.39	-23.72	1.04 #	-17.02 #	..	..	..	..
Australia	1.02	1.49	0.91	-9.91	1.07	3.10	1.03	1.59	1.38	13.69
Austria	1.05	5.02	1.07	1.56	0.91	-11.59	1.03	-7.89	0.94	-9.07
Bangladesh	1.01 #	-6.57 #	0.97 #	-4.33 #	1.57 #	22.46 #	..	..	1.55 #	26.33 #
Barbados	0.98	-2.36	1 *	-3.23 *	0.79 *	-24.91 *	..	..	1.95 *	-0.61 *
Belgium+Luxembourg	1.09	7.65	1.01	1.95	0.88	-13.81	1.00	0.03	1.04	1.03
Belize	0.94	-12.23	..	..	..	..	..	..	..	..
Benin	9.69	75.89	1.01	-7.60	..	..	..	..	0.39 * #	-69.18 * #
Bolivia	0.79 #	-20.95 #	1.01 #	1.05 #	..	..	..	..	..	..
Botswana	6.13 #	175.1 #	1 #	-29.4 #	..	..	..	..	..	..
Brazil	1.76	-19.71	0.81	-20.76	1.23	-13.72	1.32	21.65	1.09	-11.52
Bulgaria	1.19 #	16.6 #	0.5 #	-51.93 #	..	..	..	..	..	..
Cambodia	1.04	-1.92	..	..	..	..	..	..	..	..
Canada	0.95	-4.40	1.03	1.09	0.88	-12.63	1.29	19.35	0.99	-3.50
Cape Verde	0.87	-13.55	..	..	..	..	..	..	..	..
Chile	0.98	-1.71	..	..	..	..	6.94	74.01	..	..
China	1.38	13.02	1.71 #	41.4 #	1.35 #	35.44 #	1.07 #	7.77 #	1.02 #	-14.32 #
Colombia	0.89	-13.89	0.83	-15.68	0.87	-13.12	1.65 #	35.93 #	1.55	24.34
Costa Rica	1.08	5.64	6.81	114.38	37.81	1'028.90	1.59	-21.14	..	..
Côte d'Ivoire	2.57	52.94	0.82	-17.97	0.67 #	-34.65 #	0.88	-11.60	..	..
Cyprus	1.11	12.99	..	..	..	..	..	..	..	..
Czech Republic	0.94	-13.39	1.39	23.98	1.76	31.94	1.40	14.12	1.15	11.37
Dominican Republic	0.86	-14.39	..	..	..	..	..	..	..	..
Ecuador	0.90	-10.87	..	..	..	..	..	..	1.18	-7.61
Egypt	1.04	2.01	0.89	-11.26	1.89	53.45	1.00	-3.66	1.58	27.67
El Salvador	1.00	-1.86	0.98 #	-3.69 #	..	..	..	..	..	..
Estonia	1.06	4.88	1.68	11.60	1.30	23.00	1.08	4.29	1.20	13.15
Ethiopia	0.93	-6.47	1.27	1.18	1.21	16.86	..	..	25.63 #	166.77 #
Fiji	1.53	9.87	..	..	..	..	..	..	..	..
Finland	0.99	-1.56	0.65	-40.60	0.95	-7.67	2.18	76.41	0.60	-57.40
France	1.18	17.70	0.78	-21.13	0.96	-5.39	0.99	-1.89	0.96	-8.55
Gabon	2.71	-6.48	..	..	..	..	..	..	1.06	-0.35
Germany	0.90	-10.10	0.99	-0.03	1.00	-2.87	0.93	-7.47	0.92	-11.60
Greece	1.35	25.65	0.76	-43.88	0.91	-40.53	..	..	2.91	-3.26
Grenada	..	..	1.24 #	23.23 #	..	..	..	..	..	..
Guatemala	0.70	-76.48	0.84	-34.97	1.15	-7.13	..	..	..	..
Honduras	1.05	0.46	..	..	..	..	..	..	..	..
Hungary	1.11	9.64	1.07	-11.50	0.94 #	-14.33 #	1.37	13.78	1.3 #	21.66 #
Iceland	0.84	-21.68	..	..	1.06 #	-3.83 #	..	..	1.32	22.07



Table 37 (continued)

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SERVICES	
	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)	WMS 5-yr average	WMS 5-yr growth (%)
Indonesia	1.06	-18.62	..	..	..	..	..	..	..	..
Ireland	1.52	40.90	1.90	64.21	5.84	131.40	1.31	32.14	1.32	22.99
Israel	0.81	-22.65	..	..	..	..	1.26	19.36	..	..
Italy	1.33	25.99	0.72	-41.66	1.00	-2.18	1.00	0.45	0.97	-5.65
Jamaica	1.03	0.97	1.05	5.86	0.86	-15.23	1.07	4.50	0.95	-5.93
Japan	1.20	-2.88	2.34	19.64	0.89 #	-16.23 #	1.05	3.81	0.97	-10.06
Kenya	0.83	-16.06	..	..	..	..	1.96	-17.49	..	..
Korea, Republic of	0.90	-12.94	1.44	32.00	1.13	-13.28	1.19	15.10	2.8 #	158.32 #
Lao People's Dem. Rep.	1.04	4.36	..	..	..	..	..	..	..	..
Latvia	1.88	31.45	1.08	-1.43	3.20	99.85	3.77 #	160.97 #	8.21	56.94
Lithuania	1.08	2.36	1.23	-1.16	7.09	117.26	0.57 #	-70.7 #	3.39 #	52.47 #
Madagascar	1.06	4.23	0.86 #	-16.29 #	..	..	1.01	-13.37	..	..
Maldives	..	..	..	..	..	..	1.30	14.18	..	..
Malta	1.04	0.66	..	..	..	..	..	..	..	..
Mexico	1.04	2.90	..	..	..	..	0.85	-24.80	11.00	125.18
Moldova, Republic of	1.27	28.34	1.30	-28.13	1.27	13.80	..	..	..	..
Morocco	1.15	13.78	..	..	..	..	2.16	40.52	..	..
Myanmar	..	..	..	..	..	..	..	..	..	..
Namibia	0.89	-12.18	1.40	4.51	0.90	-15.83	47.20	115.10	..	..
Netherlands	1.15	15.55	1.05	2.78	0.92	-7.74	0.93	-6.25	0.93	-9.49
New Zealand	..	..	1.12	6.38	1.08	5.54	1.33	32.18	1.03	1.68
Nicaragua	0.96	-4.81	..	..	..	..	..	..	..	..
Norway	1.05	6.58	0.96	-8.25	0.91	-14.36	1.06	-4.61	0.97	-11.13
Oman	1.18 #	2.97 #	..	..	..	..	..	..	..	..
Panama	0.97	-3.30	1.08	8.63	..	..	..	..	..	..
Paraguay	0.93	-8.86	0.95	-14.86	1.04	-2.06	1.02	1.41	..	..
Peru	0.83	-17.99	..	..	..	..	..	..	..	..
Poland	0.93	-6.14	0.91	-16.24	1.23	2.54	1.94	28.01	1.07	2.32
Portugal	0.85	-16.61	0.90	-11.10	0.93	-8.91	1.02	-1.03	0.92	-9.39
Romania	1.13	9.21	1.22	-3.82	1.61	53.74	..	-9.51 #	1.03	-2.02
Russian Federation	0.92	-9.28	1.00	-4.73	..	..	8.22	25.16	..	..
Saint Vincent and the Grenadines	..	..	1.31 #	30.62 #	..	..	..	..	..	..
Senegal	1.07 * #	5.14 * #	2.08 * #	101.79 * #	..	..	17.33	46.52	..	..
Slovakia	1.00	-17.35	0.72	-30.50	1.3 #	29.49 #	1.05	-2.26	1.16 #	7.91 #
Slovenia	1.12	11.77	0.90	-12.49	1.15	5.59	1.22	14.16	1.12	5.73
South Africa	1.06	-2.89	..	..	..	..	1.02	-0.53	..	..
Spain	1.00	-2.48	1.06	7.18	0.93	-7.61	1.10	9.55	1.06	5.45
Swaziland	0.91	-9.38	..	..	0.87	-51.38	0.88	-11.55	..	..
Sweden	0.97	-12.53	1.43	6.30	1.44	36.39	1.02	2.67	1.39	-3.11
Switzerland	1.07	7.96	0.97	-2.29	..	..	..	..	0.84	-23.22
Thailand	0.89	-13.88	..	..	..	..	8.66	28.53	..	..

Table 37 (concluded)

Country	COMMUNICATION SERVICES		FINANCIAL SERVICES		COMPUTER AND INFO SERVICES		ROYALTIES AND LICENSE FEES		PERSONAL, CULTURAL AND REC. SERVICES	
	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS	WMS
	5-yr average	5-yr growth (%)	5-yr average	5-yr growth (%)	5-yr average	5-yr growth (%)	5-yr average	5-yr growth (%)	5-yr average	5-yr growth (%)
The former Yugoslav Republic of Macedonia	1.22 #	21.07 #	0.98 #	-26.29 #	1.36 #	6.01 #	1.35 #	26.33 #	0.85 #	-22.02 #
Togo	1.23 * #	1.18 * #	1.41 * #	37.04 * #	..	..	..	..	..	..
Tunisia	0.84	-15.12	0.99	-2.37	1.36	24.25	2.88	66.82	1.03	-9.70
Turkey			1.07	2.31	..	..	..	..	1.03	-1.17
Ukraine	0.84	-15.28	0.77	-27.57	..	..	..	..	..	..
United Kingdom	1.05	5.97	1.04	3.63	1.01	0.83	0.98	-0.69	0.97	-3.68
United Republic of Tanzania	1.08	2.64	1.02 #	1.96 #	..	..	0.42 #	-58.51 #	..	..
United States	1.00	-0.61	1.06	7.07	0.94	-7.34	0.99	-1.20	1.07	6.67
Uruguay	0.82	-17.38	0.96 #	-8.53 #	..	..	..	..	..	..
Venezuela	0.81	-24.73	..	..	..	..	..	..	..	..
Yemen	1.22	-5.11	..	..	..	..	..	..	..	..

Source: UNCTAD calculation based on IMF Balance-of-Payment Statistics.

Notes: # 3- or 4-year data.

\* Year 2000 data estimate.

and combine these two indices of export competitiveness. This will allow the ranking of countries' competitiveness as far as their exports of e-services are concerned. Accordingly, those that have gained market share and comparative advantage *and* have values of > 1 for both RCA and (average) WMS indices are the most dynamic and competitive countries for a particular export sector (see table 39). By contrast, those that have lost market share and comparative advantage *and* have values < 1 for both RCA and (average) WMS indices are the least dynamic and least competitive countries for a particular export sector. Most countries, in fact, are somewhere in between, meaning that they are gaining market share or competitiveness but have no revealed comparative advantage (yet), or that they have a declining revealed comparative advantage or are losing market share, or any other combination of the indices provided and discussed in this analysis.

Table 39 lists those countries that are characterized by the optimal combination of all indicators considered here. Accordingly, the countries listed under the specific services category are those that in this particular e-service sector possess a combination of the following indicators: an RCA index of >1, positive RCA growth rates over the five-year period, an average WMS index of >1 and positive WMS growth between

1995 and 2000. These are the "rising stars", the countries which have been the most dynamic and most competitive in these services sector exports during the past five years.

Significantly, table 39 includes almost all countries with an RCA index of >1 and positive RCA growth rates, except for Romania in the personal and recreational services category (see table 36). In other words, all countries that meet these two criteria also have positive WMS indices and are gaining world market share. On the other hand, not all countries meeting the latter two criteria (see table 38) also meet the former two. This seems logical, as countries that have specialized in the export of a particular service (i.e. gained comparative advantage) and have increased these exports must also have gained market share. On the other hand, countries may have gained market share but not comparative advantage if they increased their exports in a number of other services at the same time.

As the table indicates, there are developing countries in all of the services sectors, although the developed countries and Eastern Europe clearly dominate the table. In communication services, both China and Morocco had rapid growth in their comparative advantage and market share indicators during the five

Table 38

## Countries with WMS 5-year average &gt;1 and positive growth rates

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Albania	Austria	Argentina	Australia	Australia
Aruba	Belgium and Luxembourg	Australia	Belgium and Luxembourg	Bangladesh
Australia	Bolivia	Bangladesh	Brazil	Belgium and Luxembourg
Austria	Canada	China	Canada	Colombia
Belgium and Luxembourg	China	Costa Rica	Chile	Czech Republic
Benin	Costa Rica	Czech Republic	China	Egypt
Botswana	Czech Republic	Egypt	Colombia	Estonia
Bulgaria	Estonia	Estonia	Czech Republic	Ethiopia
China	Ethiopia	Ethiopia	Estonia	Hungary
Costa Rica	Grenada	Ireland	Finland	Iceland
Côte d'Ivoire	Ireland	Latvia	Hungary	Ireland
Cyprus	Jamaica	Lithuania	Ireland	Latvia
Egypt	Japan	Moldova, Republic of	Israel	Mexico
Estonia	Korea, Republic of	New Zealand	Jamaica	New Zealand
Fiji	Namibia	Poland	Japan	Poland
France	Netherlands	Romania	Korea, Republic of	Slovakia
Greece	New Zealand	Slovakia	Latvia	Slovenia
Honduras	Panama	Slovenia	Maldives	Spain
Hungary	Saint Vincent and the Grenadines	Sweden	Morocco	United States
Ireland	Spain	The former Yugoslav Republic of Macedonia	Namibia	
Italy	Sweden	Tunisia	New Zealand	
Jamaica	Togo	United Kingdom	Paraguay	
Lao People's Dem. Rep.	Turkey		Poland	
Latvia	United Kingdom		Russian Federation	
Lithuania	United Republic of Tanzania		Senegal	
Madagascar	United States		Slovenia	
Malta			Spain	
Mexico			Sweden	
Moldova, Republic of			Thailand	
Morocco			The former Yugoslav Republic of Macedonia	
Netherlands			Tunisia	
Norway				
Oman				
Romania				
Slovenia				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

**Table 39**  
**Countries with WMS 5-year average >1, RCA indices >1**  
**and positive growth rates in both**

COMMUNICATION SERVICES	FINANCIAL SERVICES	COMPUTER AND INFORMATION SERVICES	ROYALTIES AND LICENSE FEES	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
Australia	Belgium+Luxemburg	Costa Rica	Finland	Australia
Belgium and Luxembourg	Czech Republic	Czech Republic	Japan	Czech Republic
Benin	Ireland	Ireland	Paraguay	Hungary
Bulgaria	Panama	Romania	Sweden	Slovakia
China	Saint Vincent and the Grenadines			United States
Côte d'Ivoire	United States			
Egypt				
Italy				
Latvia				
Mexico				
Moldova, Republic of				
Morocco				
Netherlands				
Oman				
Romania				
Switzerland				
The former Yugoslav Republic of Macedonia				
United Kingdom				
United Republic of Tanzania				

years in question. In financial services, a small island nation – Saint Vincent and the Grenadines – succeeded in substantially increasing its competitiveness in the world market. Among computer and information services, Costa Rica is clearly the outstanding case and will be considered in more detail below. As far as royalty services exports are concerned, the case of Paraguay is special, since its indicators are largely based on the export of hydropower. In the area of personal and cultural services, Mexico has experienced the most dynamic growth in gaining competitiveness and market share (mainly in audiovisual services).

Unlike these “rising stars”, many countries fall in the middle range. They may be gaining competitiveness, characterized by positive growth of either their RCA or their WMS indices; or they may have a comparative

advantage and high market share but negative trends (e.g. losing market share and competitiveness in the short to medium term). Finally, as was mentioned in section C, losses in market share in one product or service may be accompanied by gains in market share in other products; hence, each case needs to be interpreted individually.

## 7. Summary of main findings

The empirical analysis provided in this section has shown the following:

- Almost all export services that can be defined as dynamic services can also be defined as e-services.

- Developing countries have experienced the highest growth rates in the exports of e-services during the period 1990-2000.
- Computer-related services exports from developing countries were the most dynamic exports during this time period.
- While developed countries have a comparative advantage in the export of most e-services, an increasing number of developing countries are gaining comparative advantage in some e-services.
- A large number of developing countries are gaining world market share (in both relative and absolute terms) in the export of e-services, notably in communications services, financial services and royalty services.
- “Rising stars” (i.e. the most dynamic and competitive exporters) consist largely of developed and transition economies, but also include a few developing countries. However, given the high growth rates in a number of developing countries, their share in this category is expected to increase in the near future.

#### D. Case studies from developing countries: computer-related services exports

The statistics presented in the previous section demonstrated that computer-related services were the most dynamic services export sector during the past decade, in particular for developing countries and countries in transition. Although developing countries still account for a small share in total exports of these services, their share is growing and will even become more visible once they start to further disaggregate their services statistics (currently in some countries computer-related services are hidden in other categories).<sup>15</sup>

Computer-related services play a key role in the development of knowledge-based services because they produce high-value-added services. Although the developed countries dominate the computer industry, some developing countries have been successful in tapping into the computer-related service market, providing software and IT-enabled services, and showing high export growth rates in these sectors (UNCTAD, 2001b; ITU, 2001). Besides their potential role in

export-led growth, computer software and services also play an important economic role in facilitating growth and development in other domestic industries, which increasingly depend on software as a core component in their design, production and distribution processes.

Given the importance of this sector for increasing export competitiveness, this section focuses on two developing countries (Costa Rica and India) that have been successful in developing their computer-related services (and in particular their software and IT-enabled services) and discusses some of their achievements and the difficulties they have faced during this process.

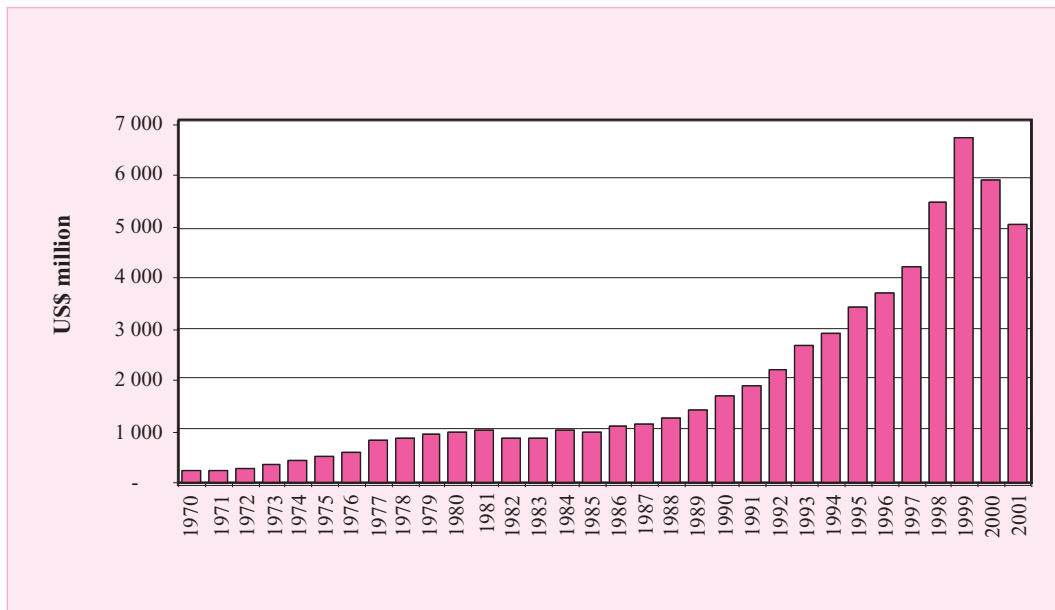
#### 1. Costa Rica: From IT production to IT services

Costa Rica is well known for an export-driven development strategy based on the ICT sector. As chart 34 shows, exports grew exponentially during the 1990s, from \$ 1.6 billion (1990) to \$ 6.7 billion (1999), followed by a decrease in 2001/02. During the same period, there was a clear shift from traditional to non-traditional exports, largely based on the exports of IT-related products, which experienced annual growth rates of up to 500 per cent (1998). While “office and telecommunications equipment” accounted for only 0.1 per cent of exports in 1995, this share had increased to 41 per cent of exports by 1999 (WTO, 2001b). By 2001, one product category (computer parts/modular circuits) accounted for the largest share in exports (15.6%), followed by bananas (10%).<sup>16</sup> This development resulted largely from the establishment in Costa Rica of Intel, one of world’s largest producers of electronic components.<sup>17</sup>

The success of the Costa Rican IT industry (and the ability of the country to attract foreign investment in this sector) can be explained by a number of factors, such as the country’s geographic location, its political stability, its educated workforce and its advanced infrastructure, coupled with policies that improved the telecommunications infrastructure and services, attracted foreign investment and, generally, heavily promoted the country’s assets abroad.

While the development and growth of the IT-producing industry in Costa Rica is well researched, little attention has been paid thus far to another fast-growing export sector of the Costa Rican economy: exports of computer- and information-related services. These will be the focus of this section.

**Chart 34**  
**Costa Rica: Total exports (1970-2001)**



Source: PROCOMER, IMF

The previous analysis (section C) already identified Costa Rica as a rising star in computer-related services exports, one with a strong and rapidly growing revealed comparative advantage in this export sector as well as a sharp increase in world market share over the past five years. More specifically, chart 35 shows the exponential growth of computer-related services exports during the past few years, from \$16,000 (1997) to \$60 million (2000). The share of computer-related services exports in Costa Rica's total services exports has thus increased from almost 0 to 3.2 per cent in just three years. Computer-related services exports account for an important share of total exports and have overtaken sugar exports (their share is double that of sugar exports).

What prompted this extraordinary development? One explanation can be found in the fact that the growth of the domestic IT industry and the favourable environment it brought about also led an increasing number of companies to use ICT in their business activities, moving rapidly into e-commerce, e-banking or e-tourism. In particular, the past decade saw the creation of a significant number of enterprises (small to large) offering computer-related (in particular software) services and products.

The computer-related service industry started to develop in Costa Rica in the 1980s, but really took off in the early 1990s (IDD, 2001). 30 per cent of the companies were created during the 1980s and 70 per cent

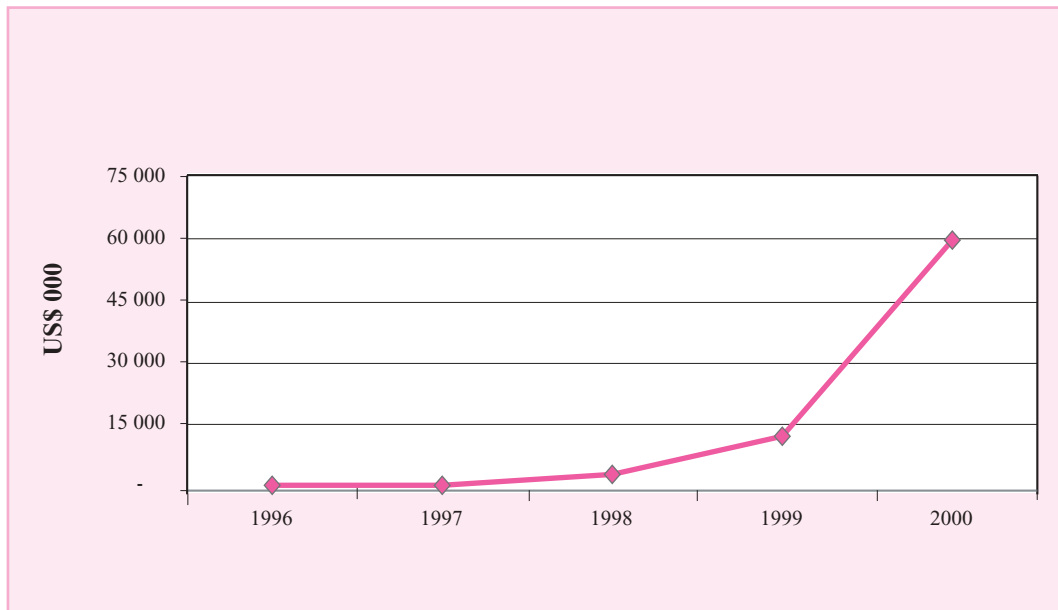
during the 1990s, mainly with domestic capital. Over 80 per cent of the companies are locally owned and about half of them export their services. While initially most of the companies produced for the domestic market, beginning in 1999 they rapidly expanded into the international market.

So far, computer-related services have been dominated by software services.<sup>18</sup> It has been estimated that software production has a national value added exceeding 90 per cent (Mata and Vartanián, 2001). The Costa Rican software production derives mainly from small and medium-sized enterprises producing tailor-made applications or providing advisory services in the area of software development for other companies. A survey by Mata and Vartanián (2001) indicated that 88 per cent of the software companies offer tailor-made software services, 60 per cent software packages, 39 per cent software consulting and 22 per cent other services. The sector is characterized by rapid sales growth: between 1997 and 2000, 30 per cent of the companies doubled their sales. Even faster growth was predicted for the next few years: 55 per cent of the companies expect their sales to double between 2000 and 2003.

Initially, most software companies served the domestic market. As of 2000, half of the companies produced for export, but only 16 per cent (mainly the larger companies) exclusively served the export market. Only 9 per cent of the companies exported more



**Chart 35**  
**Costa Rica: Computer-related services exports (1996-2000)**



Source: Balance of Payments Department, Central Bank of Costa Rica.

than \$1 million per year (28% exported between \$100,000 and 500,000 and 53% less than \$100,000). Hence, the rapid export growth during the three-year period is likely to be based on exports by large companies. According to the survey, export growth rates accelerated between 1997 and 1999: 14 per cent of the companies increased their exports by more than 100 per cent, 26 per cent by more than 51 per cent and 45 per cent by more than 30 per cent. Estimates for the years 2000-2003 were even higher, and, as the latest figures demonstrate (see chart 35), they probably exceeded all expectations.

The software sector is essentially a knowledge-based industry requiring highly skilled professionals, and a large pool of educated labour has allowed Costa Rican companies to successfully enter this sector. The government has played an important role in creating an educated population by continuously expanding the education system and including IT in the curriculum. This policy has been pursued actively by the government in its channelling of defence spending to education (after abolition of the armed forces in 1949). Costa Rica has a tradition of investing heavily in education and is currently spending 6 per cent of its GDP on education (Tacsan, 2001). According to the survey of software companies cited earlier, the key factors influencing the development of the software sector are the availability of highly skilled employees, possibilities for training and capacity building, the number of IT

professionals available and the legal framework in the country.

Acknowledging the sector's dynamism and growth potential, the Inter-American Development Bank (IDB) in 1999 approved a project to develop the software sector in Costa Rica. The project aims to improve the sector's competitiveness in the global market as well as make local software companies engines of economic development by helping them produce hard-currency revenue and create high-paying jobs. The project emphasizes training and curriculum building for software technicians to improve the overall technical capabilities in the country and to enable local software producers to compete in the international market.<sup>19</sup> The project, which is ongoing, is carried out in cooperation with PROCOMER (Promotora del Comercio Exterior de Costa Rica), CAPROSOFT (Cámara de Productores de Software) and CENAT (Centro de Alta Tecnología), each of which contributes financially to the project and participate actively in it.

#### *Challenges faced by exporting companies*

Given the small size of the domestic market, Costa Rican software companies aim at the export market. The advantages enjoyed by Costa Rica in comparison with other Latin American countries also developing their software sector include a pool of low-cost skilled

IT workers and current trade agreements in the North American market.

Nevertheless, software exporters face a number of challenges in their efforts to increase their software services and exports, such as growing competition in the global market, the unavailability of export financing and the lack of an existing structure to support their clients in the export market. The expensive air travel within the region, barriers faced in foreign markets,<sup>20</sup> the lack of export marketing and distribution channels and the migration from proprietary systems to open platforms are further obstacles mentioned by software exporters (IDD, 2001).

## 2. India: business process outsourcing (BPO) – the new panacea?

The Indian software sector has been studied extensively because of its breathtaking growth during the past decade (Heeks, 1998; OECD, 2000; ILO, 2001; DOI, 2001).<sup>21</sup> As chart 36 shows, exports of software and related services have increased from less than \$500 million (1994/95) to almost \$8 billion (2001/02). Between 1999/00 and 2001/02, exports grew from \$3.9 billion to \$6.2 billion, an increase of almost 60 per cent. Software exports now comprise more than 16 per cent of India's total exports.<sup>22</sup> A revised version of an often-cited NASSCOM-McKinsey study estimates

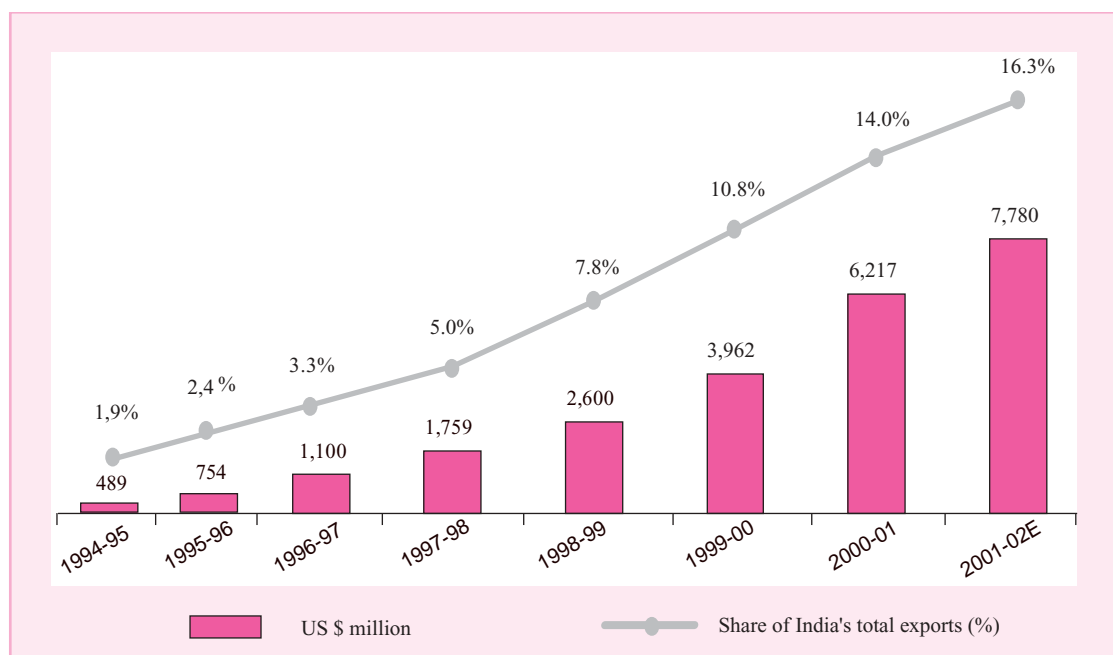
that IT services exports will reach \$77 billion by 2008, contributing 10 per cent to the country's GDP (up from 2% in 2002) and 30 per cent of all foreign exchange (up from 8%) and creating four million new (direct and indirect) jobs.<sup>23</sup>

These figures comprise both software services and IT-enabled services<sup>24</sup> – increasingly called business process outsourcing (BPO) – such as those related to customer interaction centers, back-office operations, revenue accounting, data entry and transcription services or GIS (geographic information system) services (see table 40). Revenues are expected to reach \$1.5 billion by the end of 2002. IT-enabled services exports grew at over 45 per cent annually in 1999 and 2000 and 70 per cent annually during 2001 and 2002. The number of jobs created by this sector is expected to increase from 107,000 (2001-02) to 1.1 million (2008), generating revenues of \$21 – 24 billion. Hence, this is the most dynamic segment of India's IT-related services export sector and will be the focus of this section.

### Business process outsourcing (BPO)

Overshadowed by the exponentially growing software sector during the 1990s, BPO in India received little attention from researchers or the business community until the start of the new millennium. It has now become the new buzzword, reflecting this sector's great potential for creating new business opportunities

**Chart 36**  
**India: Software and services exports**



Source: www.nasscom.org

**Table 40**  
**Indian software and services exports: Key service lines (US\$millions)**

	2000-01	2001-02
<b>Software and services</b>	<b>4 750</b>	<b>5 780</b>
Legacy application management, maintenance, migrations	1 700	2 100
Custom application development	1 950	2 350
Packaged software integration	300	350
E-business solutions	550	600
Wireless integration	75	100
System integration	75	110
Network infrastructure management services	50	65
Consulting	50	55
<b>IT-enabled services</b>	<b>900</b>	<b>1 475</b>
Customer interaction centers	185	350
Back-office operations/revenue accounting/data entry and conversion	295	600
GIS/engineering services/content development	350	450
Others	70	75
<b>R&amp;D services</b>	<b>550</b>	<b>575</b>
<b>Total</b>	<b>6 200</b>	<b>7 780</b>

Source: www.nasscom.org

and suggesting that the sector will grow quickly in the short to medium term.

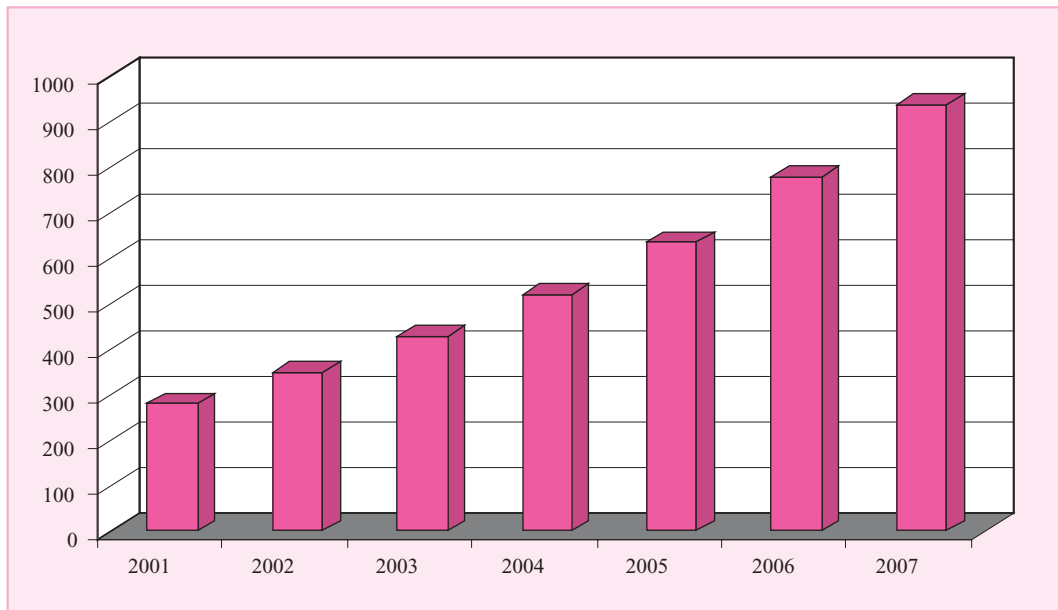
BPO refers to outsourcing (often, but not necessarily, by big multinational companies) of business processes and functions in the areas of administration, finance, human resources, distribution logistics, manufacturing services, sales, marketing and customer care to locations that can provide these services at a lower cost through high-speed data communication links, which guarantee timely delivery of the data and services. BPO often involves large-scale data processing (such as that required by banks, insurance companies and airlines) – for example, in revenue accounting and payroll processing. These IT-intensive outsourced tasks range from routine business processes to strategic tasks directly affecting revenues. As a result of the improved global telecommunications infrastructure, companies now have the choice to outsource their business processes to service providers located (almost) anywhere in the world. This allows management to focus on building core business activities and cut back spending on office facilities and computer systems. While BPO is clearly a cost-driven process, the potential to continuously improve processes as well as service levels is an additional reason for outsourcing.

Projections for the BPO market are extremely high: it is expected to grow from less than \$300 billion (2001)

to close to \$1 trillion by 2007 (chart 37). Today, distribution and logistics take the largest share of the market (29%), followed by human resources (24%) and payment services (16%).<sup>25</sup> According to a survey by Forrester (2002) with 57 Global 3,500 firms, more than 50 per cent of the companies reported spending more than \$1 million annually on BPO. Forrester predicts that the BPO market in the United States will increase annually by 70 per cent (2000-6). Even if these figures are exaggerated, there is undoubtedly huge business potential in the BPO market.

India is planning to capture a significant share of the BPO world market by 2007-08.<sup>26</sup> However, the Indian BPO sector is still in its initial stages, often capturing outsourced overflow work from international BPO service providers rather than receiving direct contracts.<sup>27</sup> Many of the large BPO providers are foreign affiliates working from India (such as GE, Dell or American Express) and staffed and managed by Indians. According to NASSCOM, the IT industry's national association, there are currently 204 Indian companies providing IT-enabled services. Most of them focus on financial, telecommunications and manufacturing services. The latest NASSCOM-McKinsey report cited earlier suggests that the banking and insurance sectors are likely to provide the greatest opportunities in offshore BPO, followed by the telecommunications, retail, utilities, automotive, computer and pharmaceuticals sectors.<sup>28</sup>

**Chart 37**  
**Expected business process outsourcing market (US\$ billion)**



Source: Gartner, McKinsey, Dataquest, as cited at [www.nasscom.org](http://www.nasscom.org).

India is building heavily on its already well-established software and IT-enabled service industries. The initial phase of IT-enabled services in India was dominated by customer contact centers (e.g. call centers) and transaction-intensive services (e.g. back-office operations and data processing, medical transcriptions, content development and administration). These services are considered to be lower in the value chain than more specialized services like research and development (R&D) or customized business services. Like the latter, BPO is viewed as being higher in the value chain, since it involves the complete management of a process.<sup>29</sup>

Indian companies are planning to develop the quality of their BPO services by applying a new business framework created by Carnegie Mellon University (CMU) of the United States. This so-called eServices Capability Model (escm) employs best practices for measuring and improving the value of outsourcing relationships, such as increased productivity, reduced cycle time, decreased transaction costs and improved time to the market (Hyder et al., 2001). CMU also provides certification of service providers' capabilities and performance, which assures clients of high quality and reduced risk when they do business with a certified provider.

#### *Advantages enjoyed by BPO providers in India*

Companies based in the United States or Europe increasingly look to India in their efforts to outsource part of their software development to more cost-effective locations. NASSCOM estimates that during the period 2000-2001, one in four of the global majors outsourced its key software development to India; they also report that 82 per cent of United States companies rank India as their first choice for software outsourcing.

The reputation built over the past decade is one key reason why companies look to India for BPO. Other advantages include the large pool of English-speaking IT and engineering graduates, which the Government is augmenting by taking steps, such as establishing Indian Institutes of Technology in various cities, to triple the number of engineering students by 2008. Furthermore, India's time zone vis-à-vis the United States encourages BPO with the latter as it allows, for example, companies based on the United States East Coast to provide customer services 24 hours a day.

The potential for India to become a hub for IT-enabled services (particularly BPO) has been recognized by the Indian Government and NASSCOM, both of which have started a dialogue aimed at defining and creating a favourable environment for each segment of the IT-enabled services sector. These efforts include

actions in the areas of tax exemption,<sup>30</sup> telecommunications infrastructure, financial assistance for start-ups, establishment of a venture capital (VC) fund, training and the promotion of entrepreneurship and teleworking for women in the IT-enabled sector.

### *Challenges BPO exporters face*

Business based on outsourcing is highly dependent on the volatility of foreign markets. As Indian BPO exporters are largely focused on the United States market, a downturn in their main export market could negatively affect their business. For example, in the software sector (which is equally dependent on the United States market), the Nasdaq crash led to cuts in IT investment, which directly affected Indian programmers and led to an oversupply of IT professionals in India. Fortunately, IT-enabled services were less affected by the recession in the United States because they are the indispensable back-office processes of brick-and-mortar companies. By contrast, the slowdown of the United States economy has prompted an increasing number of companies to outsource to India to maintain their margins.<sup>31</sup>

New market entrants such as China and the Philippines may pose serious competition to Indian BPO providers within a few years' time. In particular, if the BPO business model is based primarily on cost advantage and low labour cost, it can be easily replicated elsewhere, leading to a constant decrease in profit margins. Therefore, Indian companies have a great interest in working continuously to develop more sophisticated, specialized and higher-value-added BPO services to safeguard their current leadership position in the world market. This will require specialists not only in the IT and engineering professions but also in other areas such as medicine, law, accountancy, statistics and human resource management.

International telephony was deregulated on 1 April 2002, and since then prices have dropped significantly, favouring IT-enabled services such as call centres. However, to respond to the needs of the emerging BPO sector, deregulation should go further and allow interconnectivity between networks and different Internet service providers, the establishment of international gateways by the IT-enabling industry and deregulation of international bandwidth to allow companies to buy high-capacity cable and satellite connectivity at competitive prices.

## **E. Conclusions and policy implications**

The empirical research presented in this chapter revealed that most e-services sectors are also dynamic export sectors, characterized by above-average growth rates in the world market. Significantly, developing countries' exports of e-services experienced the highest growth rates during the past decade and computer-related services exports from developing countries were the most dynamic export sector during this period.

At the same time, developing countries' global share in e-services exports is still small and few of them have a comparative advantage in this area. However, many developing countries are gaining world market share in the export of, for example, communication services and, to a lesser extent, financial services and royalty services. This trend, coupled with the rapid growth of e-services exports, is likely to increase the number of developing countries among the "rising stars" (i.e. the most dynamic and competitive exporters worldwide). Although the methods employed in this study do not provide for forecasting, one can assume that developing countries that export dynamic services are less likely to face saturation of their export markets in the short to medium term, compared to those that export services less in demand on the world market. One can also conclude that, given the higher growth rate of services exports in the developing countries, the potential impact of e-commerce is much greater than their current share of world trade or the size of their services trade indicates.

### *Case studies: lessons learned?*

Two rising stars in the export of computer-related services are Costa Rica and India. What do their cases demonstrate, and do they offer lessons for other countries that are currently developing this export sector?

What is remarkable about the two countries is that they greatly differ in size, political structure and institutions, cultural background, geographic location (also vis-à-vis their main export markets, with Costa Rica being close to the United States and India far away) and languages. Despite these differences, both countries have successfully developed their domestic IT capacities and their IT-related export sectors. It is therefore worth noting what both countries have in common: an educated workforce, IT know-how, long-time experience in high-tech development, contacts in their major export markets and a good reputation abroad. In addition, both countries have received large



amounts of foreign capital for establishing a domestic IT sector.

The availability of skilled labour (including employees with foreign-language literacy) is important for all ICT-driven export services, as business processes are increasingly being carried out digitally and are based on the exchange of knowledge and information rather than on activities requiring physical skills. Both Costa Rica and India have benefited from a highly skilled labour force and a large pool of IT professionals. Hence, in their cases, investment in education has proved beneficial for the development of the IT sector.

Business process outsourcing may in the future play an increasingly important role for developing countries. More and more traditional industries, including in the retail, energy, transportation and manufacturing sectors, will outsource parts of their services. This will increase international trade in services, as most of these business processes will be outsourced to foreign providers. These knowledge-intensive services offer a great opportunity to developing countries with abundant labour. But to what extent will companies from developing countries be able to compete for outsourcing contracts with those in industrialized countries and transition economies? Not only do they need skilled labour, world-class telecommunication services and a stable political environment, but identifying new business opportunities abroad will be a challenging task for many companies from poorer countries. Both Costa Rica and India have been able to build a national brand in the global market by heavily advertising their assets abroad. Some companies in India have been able to compete with foreign software companies for direct, higher-value-added contracts, rather than the usual outsourcing that has dominated most of the software services thus far. Most newcomers on the market, however, will depend on subcontracts from foreign firms, which are less stable and less profitable.

### *Export promotion as a strategy?*

Focusing on the export of dynamic services may not always be the best strategy, as it is difficult to predict future demand for particular products and services. Experience in Latin America has shown that the countries with the best export performance do not always owe their success to the export of dynamic products, but often to increased market access opportunities (IDB, 2001). In order for developing countries to increase their services exports by taking advantage of new technologies and e-commerce, open markets are needed in the potential importing countries.<sup>32</sup>

Moreover, in certain software services, close interaction with the client is necessary, including on-site visits.<sup>33</sup> While some interaction with clients can be carried out remotely, other services require face-to-face meetings. This could be accomplished by employing foreign workers or temporarily sending local engineers abroad. However, only 4 to 7 per cent of WTO members have made full commitments on market access for the presence of natural persons in computer-related services (WTO, 2002).

Apart from these market entry barriers, e-services exporters face a number of other (domestic) obstacles, including those related to technology, payments, infrastructure (telecommunications) and standards, most of which have been extensively covered in other chapters of this report as well as in the *E-Commerce and Development Report 2001*. While many of the recommendations made for addressing these obstacles could be implemented to support exporters of e-services, Governments would do well to consider the following measures:

- Facilitating foreign investment by reducing regulatory and procedural bottlenecks;
- Reducing customs duties on imports of IT-related products;
- Encouraging the establishment of venture capital funds for IT-related companies;
- Encouraging competition in the telecommunications sector;
- Taking all measures necessary to ensure a fast, high-capacity, reliable and cost-effective data communication infrastructure in the country and setting up technology parks compatible with world-class infrastructure;
- Adopting e-government practices, especially in the procurement of IT services;
- Harmonizing and ensuring consistency in taxation policies;
- Developing the country brand internationally and informing potential export markets and foreign investors of the capacities available domestically; and
- Stepping up efforts to enhance IT literacy, IT education and the number of IT professionals in the country; coordinating with private training institutes to increase course offerings in all technical and engineering fields; and encouraging the specialized training needed by the BPO sector.



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## Notes

- 1 See, for example, Lall and Wignaraja (1998), OECD (1992), UNCTAD (1997), Lall (2000), Mahmood (1999), Bhattacharyya (2001), IDB (2001) and OECD (1998).
- 2 The latest productivity figures from the United States show 4.2 per cent growth from 2001 to 2002 (first quarter). Since the United States is emerging from a recession, it has been suggested that the increase is based on trend productivity growth linked to investments in the IT sector (The Economist, 11 May 2002).
- 3 Ministry of Information and Communication, Korea. See [www.mic.go.kr](http://www.mic.go.kr).
- 4 “Other business services” include merchanting, operational leasing, legal services, accounting, management consulting, advertising, research and development, and architectural agricultural services. A number of developing countries do not yet classify their services using all of the major BPM5 categories; instead, they include many of their services statistics under “other business services”.
- 5 It is important to note that this table excludes Hong Kong (China), which reports only total services, not subcategories. Since Hong Kong is one of the major developing-country services exporter – in 2000 it accounted for \$41 billion (almost 3% of world exports and 14% of developing country exports) – all developing-country export values and market share figures are significantly lower in this table than in the tables providing total services export figures.
- 6 Include computer (hardware- and software-related) and information services. It should be noted that the database does not include countries (e.g. India) which have classified computer-related services as “other business services” and hence do not provide any data under this category.
- 7 Include audiovisual, educational and health services.
- 8 Include postal and courier services and telecommunication services.
- 9 Include franchises and similar rights such as those related to registered trademarks; and payments for the authorized use of copyrights, patents, industrial processes and designs. Furthermore, royalties and license fees include those related to software transactions; hence, some of the computer-related services (i.e. software) are included in royalties. A survey carried out by the OECD on the measurement of software in the national accounts revealed that in the countries responding to the question, royalties as a proportion of total software trade (including software goods) ranged between 6 per cent and 62 per cent (median 25%) (exports) and 22 per cent and 59 per cent (imports) (OECD, 2002). Hence, royalties play an important role in identifying and measuring trade in software services.
- 10 According to the BPM5 classification, purchases by individuals that are paid for by credit card are usually classified as “travel”. Hence, most of the business-to-consumer e-commerce is not captured in the different categories of services trade.
- 11 While the insurance sector has the potential to be greatly transformed by ICT, it is also heavily concentrated on domestic markets, which explains its low export growth rates compared to other e-services. See chapter 8.
- 12 Include merchanting, legal, advertising, accounting, taxation, research, medical, architectural, consulting, agricultural and waste treatment services.
- 13 An RCA of more than indicates services that account for a larger share of the country’s exports than the share these services account for in world trade.
- 14 Much of the following analysis is based on growth rates during the five-year period 1995-2000. It should be noted that during this time period there was a general slowdown in world exports of services, including all of the services discussed here (except for financial services). In addition, many Asian countries were severely affected by the Asian financial crisis of 1997. At the same time, data for the 10-year period are not available for most of the countries; hence the five-year period was chosen.
- 15 Some countries (e.g. India) include computer-related services in “other business services”; or, as was mentioned earlier, the “royalties and license fee” category may also cover software trade to some extent (see OECD, 2002).
- 16 Data provided to UNCTAD by Costa Rica’s Ministry of Foreign Trade.
- 17 In 1998, Intel built a \$500 million, 400,000-square-foot manufacturing plant outside San José, employing 2,000 workers producing primarily Pentium II microprocessors. Other high-tech and IT companies followed, taking advantage of Costa

Rica's investment-friendly environment. For more information on foreign direct investment and Intel's operation in Costa Rica, see DOI (2001), Tacsan (2001), [www.offshorecostarica.com](http://www.offshorecostarica.com) and [www.american.edu/carmel/LD4718A/Computer.html](http://www.american.edu/carmel/LD4718A/Computer.html).

- 18 IT-enabled services are also growing: in 1998, Acer, a computer and IT company based in Taiwan Province of China, moved its technical support call center from California to one of the Costa Rican free export zones, creating employment for around 600 workers.
- 19 The plan aims at obtaining the internationally recognized ISO 9000 quality certification for locally produced software. See [www.iadb.org](http://www.iadb.org) for further details.
- 20 These include discriminatory tax treatment for foreigners, excessive capital transfer and/or repatriation taxes, and restrictions on or excessive requirements for temporary entry and exit of specialized technical personnel (WTO, 2001c).
- 21 India's software industry is largely based on software services. According to an estimate by Heeks (1998), less than 5 per cent of India's software exports are based on packaged software. In 2002, India has only been able to capture 0.2 per cent of the United States software package/product market. Until the late 1990s, the majority of software exports (more than 50%) were provided on-site (i.e. based on the movement of labour to foreign sites); today, an increasing share of software services is being provided "off-shore" (i.e. from within the country) ("NASSCOM forecasts Indian software exports to clock 30% growth in financial year 2002-2003", available at [www.nasscom.org](http://www.nasscom.org)).
- 22 In our previous analysis (section C), India does not appear in the statistics. This is explained by the fact that India does not report "computer-related services" as a separate services category; instead, it includes software-related services in the "other business services" category, which, as a result, has experienced average annual growth of 22 per cent (1990-2000) or 47 per cent (1995-2000). In other words, software exports have been India's most dynamic export sector.
- 23 "NASSCOM – McKinsey Report 2002", press release, available at [www.nasscom.org](http://www.nasscom.org)
- 24 NASSCOM (2001) defines IT-enabled services as "business processes and services performed or provided from a location different to that of their users to beneficiaries and delivered over telecommunication networks and the Internet".
- 25 See *Indiatimes Infotech* "BPO: Nuts and Bolts", [www.infotech.indiatimes.com/enterprise/emergintech/bpo.htm](http://www.infotech.indiatimes.com/enterprise/emergintech/bpo.htm)
- 26 Based on IDC estimates (as provided in "The BPO Boom", *Businessworld*, 14 January 2002), India's share could go up to 3.8 per cent; this would be significantly higher than the estimate for IT-enabled services provided by NASSCOM-McKinsey.
- 27 At the end of 2001, General Electric Capital Services India was the largest IT-enabled service provider in India, employing 10,000 workers. See [www.renodis.com/media/siliconindia/SiliconIndia 4.htm](http://www.renodis.com/media/siliconindia/SiliconIndia 4.htm).
- 28 See [www.nasscom.org/mediaroom/press-releases.asp](http://www.nasscom.org/mediaroom/press-releases.asp).
- 29 It is expected that in the future firms will outsource, for example, not only their payroll function but their whole human resources department ("IT-enabled services hitch on to BPO bandwagon", 25 March 2002, at [www.express-computer.com](http://www.express-computer.com)).
- 30 In September 2000, the Ministry of Finance of the Government of India issued a notification listing a large number of IT-enabled services that would be exempted from income taxation. For details see [www.nasscom.org/it\\_industry/gov\\_incentives.asp](http://www.nasscom.org/it_industry/gov_incentives.asp).
- 31 "IT enabled services not perturbed by recession", [www.careerindia.com/careerhub/news/may/16shift.html](http://www.careerindia.com/careerhub/news/may/16shift.html).
- 32 This would require commitments to be taken under the GATS on market access (for example, the removal of quantitative restrictions) and national treatment (for example, the removal of discriminatory taxation). For example, in computer-related services, only about 50 countries made commitments in mode 1 (cross-border supply), and of those only half made full commitments, meaning unrestricted market access and full national treatment (Mattoo and Schuknecht, 2000). In data-processing services, 66 WTO members have made commitments, 61 per cent of which are full commitments; in accounting, auditing and bookkeeping services, 67 members have made commitments, 24 per cent of which are full commitments; and in legal services, 56 members have made commitments, 14 per cent of which are full commitments (Thompson, 1999).
- 33 It has been estimated that the professionals-to-clients ratio in software packages is 1:1000, whereas in software services it is 1:25 (UNCTAD, 2001).

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## ANNEX I

### METHODOLOGIES EMPLOYED FOR MEASURING EXPORT COMPETITIVENESS

#### *Revealed comparative advantage (RCA)*

Revealed comparative advantage (RCA) is an indicator used to demonstrate the relative export performance of a country and an industry or product. It goes back to Balassa (1965), who defines RCA as a country's share of world exports of a good divided by its share of total world exports. RCA indicates the relative specialization and performance of manufacturing export industries.

If  $x_{ij}$  is the value of country  $i$ 's exports of product  $j$  and  $X_{it}$  the value of country  $i$ 's total exports, then the country's RCA index is calculated as follows:

$$RCA = (x_{ij} / X_{it}) / (X_{wj} / X_{wt})$$

where  $w$  denotes the world total. If the RCA is  $> 1$ , the country has a comparative advantage in the export of the product under consideration.

By comparing past export performance, the RCA allows the analysis of changing patterns of exports and thus identification of structural changes in the economy. It indicates shifts in specialization between industries, which, combined with an analysis of export market shares, can provide a good indication of a country's competitiveness.

Of course, the RCA measure has certain limitations. For example, it does not provide any information about future trends and potential shifts or about intra-firm cross-border exchanges, and it is calculated based on current prices. It is best used for products whose export figures are not distorted by incentives or trade barriers, which could affect the country's real comparative advantage. (Similar limitations apply for most trade indicators.)

#### *Dynamic Export Products*

Another common approach to measuring export competitiveness is to examine the composition of exports according to dynamism of demand. Goods with high dynamism of demand are considered as enhancing a country's competitiveness, whereas those with low dynamism are considered to negatively affect competitiveness. Dynamic products are defined as export products experiencing above-average growth rates (for all products) over a certain period. Another measure of dynamism is the growth rate of a product's share in world exports (Mayer, Butkevicius and Kadri, 2002). This takes into account the possibility that high growth rates based on export values may simply reflect an initial low base.

Measuring changes in a country's world market share (WMS) of dynamic products is a good way to assess its competitiveness. Changes in WMS are typically calculated as follows (ITC, 1999b, p.32):

$$\text{Changes in WMS}_{C,p,t} = \frac{\text{Exports}_{C,p,t} / \text{World exports}_{p,t}}{\text{Exports}_{C,p,t-1} / \text{World exports}_{p,t-1}}$$

where  $C$  is the country,  $p$  the product,  $t$  the year under review and  $t-1$  the previous year. If the index is  $> 1$ , the country has gained world market share, if it is  $< 1$ , it has lost WMS for the product under consideration.

Apart from looking at the change in WMS from one year to another (i.e. the WMS index), it is also useful to compare the actual percentage change in a country's WMS in exports of a particular product and analyse the trend share over a certain period. This analysis, combined with the WMS index, provides good insight into changes in the country's WMS over a certain time period.

“Rising stars” are countries that are gaining market shares in (globally) fast-growing products, the most desirable position according to this measurement. On the other hand, careful interpretation is necessary since in some cases losses in market share for one product can be accompanied by gains in market share for other products and thus a desirable change in competitiveness.

### *Technology content of exports*

Since the early 1980s, high-technology goods have been the most dynamic export products worldwide, and a clear association between technology content and export dynamism has been observed. Therefore, studies analysing trends in manufacturing exports have usually focused on levels of technology as an indicator of competitiveness of industries.

One of the most common ways of characterizing levels of technology is by level of research and development (R&D) intensity, where high-technology industries are characterized by high R&D intensity and vice versa (Pavitt, 1984; OECD, 1992). Another classification used by the OECD is based on major factors affecting competitiveness in particular industries, such as access to natural resources, labour costs, the length of production runs, tailoring of products to demand and application of scientific advances. These variables are then used to classify industries into different groupings and examine changes in their export structure, using the above-mentioned methodologies, as a way of analysing the export competitiveness of particular industries and countries.



## ANNEX II

## INTERNATIONAL TRADE IN SERVICES, 2000

Country/Economy	Exports			Imports		
	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
United States	290 880	7.0	20.1	217 070	6.6	15.2
United Kingdom	117 437	8.7	8.1	95 162	7.9	6.7
Germany	83 886	3.6	5.8	134 018	5.5	9.4
France	81 740	0.2	5.6	62 628	0.0	4.4
Japan	69 238	4.8	4.8	116 864	3.7	8.2
Italy	56 116	2.4	3.9	56 172	2.6	3.9
Spain	53 382	7.3	3.7	31 151	6.7	2.2
Netherlands	53 299	6.2	3.7	53 517	5.5	3.8
Belgium	43 743	3.5	3.0	38 701	2.9	2.7
Hong Kong (China)	41 331	..	2.9	25 420	..	1.8
Canada	37 248	7.3	2.6	41 773	3.7	2.9
China	30 431	18.0	2.1	36 031	24.2	2.5
Austria	30 223	2.5	2.1	29 182	8.2	2.0
Korea, Republic of	29 697	13.4	2.1	33 423	12.2	2.3
Switzerland	27 450	4.0	1.9	15 481	4.0	1.1
Singapore	27 040	7.2	1.9	21 408	10.2	1.5
Denmark	20 489	3.4	1.4	18 297	5.9	1.3
Sweden	20 252	4.0	1.4	23 440	3.7	1.6
Turkey	19 484	10.8	1.3	8 149	13.6	0.6
Greece	19 239	..	1.3	11 286	..	0.8
Australia	18 346	6.6	1.3	18 025	3.8	1.3
India	18 331	14.7	1.3	19 913	13.7	1.4
Ireland	16 788	19.1	1.2	28 745	21.2	2.0
Norway	15 114	1.6	1.0	14 625	2.3	1.0
Israel	14 342	10.9	1.0	12 347	9.6	0.9
Luxembourg	13 877	..	1.0	10 520	..	0.7
Thailand	13 868	8.3	1.0	15 460	7.5	1.1
Mexico	13 756	4.6	0.9	17 437	3.6	1.2
Malaysia	13 511	14.7	0.9	16 726	11.8	1.2
Poland	10 392	13.1	0.7	9 000	11.6	0.6
Egypt	9 803	4.1	0.7	7 513	6.8	0.5
Russian Federation	9 632	..	0.7	17 352	..	1.2
Brazil	9 382	9.8	0.6	16 956	9.9	1.2
Portugal	8 415	6.0	0.6	6 652	5.6	0.5
Czech Republic	6 726	..	0.5	5 414	..	0.4
Hungary	6 252	10.3	0.4	4 476	7.8	0.3
Finland	6 061	5.0	0.4	8 347	1.2	0.6
Indonesia	5 213	7.5	0.4	15 011	8.8	1.1
South Africa	5 088	6.1	0.4	5 615	4.6	0.4
Saudi Arabia	4 785	5.6	0.3	25 262	-3.4	1.8
Argentina	4 536	7.4	0.3	8 871	10.0	0.6
New Zealand	4 326	6.5	0.3	4 511	3.9	0.3
Philippines	4 170	6.3	0.3	6 084	20.0	0.4

## ANNEX II (continued)

Country/Economy	Exports			Imports		
	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
Croatia	4 084	..	0.3	1 827	..	0.1
Chile	3 931	8.5	0.3	4 488	8.7	0.3
Ukraine	3 800	..	0.3	3 173	..	0.2
Dominican Republic	3 228	11.3	0.2	1 373	12.6	0.1
Cyprus	3 200	5.1	0.2	1 160	5.9	0.1
Morocco	3 034	5.8	0.2	1 884	3.3	0.1
Tunisia	2 767	6.6	0.2	1 219	3.0	0.1
Viet Nam	2 702	..	0.2	3 252	..	0.2
Slovakia	2 241	..	0.2	1 805	..	0.1
Bulgaria	2 175	12.2	0.2	1 669	9.6	0.1
Colombia	2 058	1.7	0.1	3 295	7.6	0.2
Kuwait	2 041	5.0	0.1	4 939	2.7	0.3
Jamaica	2 026	7.8	0.1	1 432	8.6	0.1
Bahamas	2 023	2.9	0.1	975	7.3	0.1
Slovenia	1 886	..	0.1	1 450	..	0.1
Panama	1 830	5.6	0.1	1 138	4.7	0.1
Romania	1 767	11.2	0.1	2 021	11.4	0.1
Syrian Arab Republic	1 700	5.4	0.1	1 667	5.6	0.1
Peru	1 572	9.3	0.1	2 355	8.4	0.2
Estonia	1 499	..	0.1	959	..	0.1
Uruguay	1 354	9.9	0.1	900	7.9	0.1
Venezuela	1 237	0.9	0.1	4 255	3.7	0.3
Latvia	1 212	..	0.1	770	..	0.1
Kazakhstan	1 135	..	0.1	2 165	..	0.2
Malta	1 104	4.5	0.1	873	5.5	0.1
Mauritius	1 071	8.9	0.1	746	6.0	0.1
Lithuania	1 059	..	0.1	679	..	0.0
Iceland	1 049	7.0	0.1	1 165	7.7	0.1
Aruba	1 032	9.2	0.1	679	21.5	0.0
Belarus	993	..	0.1	432	..	0.0
Kenya	968	-2.1	0.1	725	1.2	0.1
Sri Lanka	939	7.4	0.1	1 621	9.1	0.1
Ecuador	849	3.5	0.1	1 256	4.0	0.1
Bahrain	830	6.8	0.1	683	2.7	0.0
Bangladesh	815	7.3	0.1	1 620	8.6	0.1
Guatemala	810	5.1	0.1	842	8.1	0.1
El Salvador	674	8.0	0.0	952	12.1	0.1
United Republic of Tanzania	615	18.3	0.0	670	11.5	0.0
Paraguay	589	5.2	0.0	425	1.0	0.0
Myanmar	526	25.0	0.0	514	26.9	0.0
Bosnia and Herzegovina	508	..	0.0	347	..	0.0
Ethiopia	506	6.7	0.0	491	4.7	0.0
Nepal	506	12.4	0.0	200	0.6	0.0
Ghana	504	19.0	0.0	597	7.7	0.0
Honduras	462	12.7	0.0	577	9.8	0.0
Albania	448	32.8	0.0	429	20.6	0.0

**ANNEX II (concluded)**

Country/Economy	Exports			Imports		
	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world exports (%)	Value (\$ millions)	1990 - 2000 annual growth (%)	Share in world imports (%)
Côte d'Ivoire	436	-1.9	0.0	1,216	-0.6	0.1
Antigua and Barbuda	415	3.3	0.0	164	5.5	0.0
Madagascar	364	9.6	0.0	522	8.2	0.0
Maldives	349	14.4	0.0	110	12.0	0.0
Mozambique	325	10.9	0.0	446	7.4	0.0
Saint Lucia	309	7.9	0.0	118	5.3	0.0
Yugoslavia	303	..	0.0	358	..	0.0
Nicaragua	300	18.5	0.0	339	11.6	0.0
Oman	283	32.8	0.0	1,501	7.8	0.1
Azerbaijan	260	..	0.0	485	..	0.0
Bolivia	224	5.6	0.0	468	4.8	0.0
Georgia	206	..	0.0	216	..	0.0
Belize	172	2.8	0.0	120	5.5	0.0
Cambodia	170	..	0.0	244	..	0.0
Moldova, Republic of	164	..	0.0	207	..	0.0
Grenada	151	8.5	0.0	83	10.0	0.0
Saint Vincent and the Grenadines	126	11.9	0.0	60	8.1	0.0
Saint Kitts and Nevis	97	5.1	0.0	74	9.1	0.0
Suriname	91	10.2	0.0	216	2.4	0.0
Dominica	88	11.9	0.0	51	7.3	0.0
Swaziland	74	-0.7	0.0	177	0.4	0.0
Anguilla	65	5.8	0.0	41	10.0	0.0
Kyrgyzstan	62	..	0.0	149	..	0.0
Rwanda	62	..	0.0	181	6.0	0.0
Lesotho	43	2.9	0.0	43	-6.1	0.0
Sudan	27	-15.0	0.0	648	6.9	0.0
Montserrat	16	-2.7	0.0	19	6.4	0.0
Burundi	6	-12.4	0.0	43	-14.4	0.0
<b>Developing Countries</b>	<b>308 210</b>	<b>10.1</b>	<b>21.1</b>	<b>340 211</b>	<b>7.9</b>	<b>23.6</b>
<b>Developed Countries</b>	<b>1 153 654</b>	<b>5.8</b>	<b>78.9</b>	<b>1 098 811</b>	<b>5.6</b>	<b>76.4</b>
<b>World</b>	<b>1 461 865</b>	<b>6.6</b>	<b>100.0</b>	<b>1 439 022</b>	<b>6.1</b>	<b>100.0</b>

Source: IMF Balance-of-Payments Statistics.