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Assessing International Trade in Healthcare Services

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ABSTRACT

GROWING EVIDENCE INDICATES that international trade in healthcare services is growing. Nevertheless, a major literature gap exists with regard to the nature of international healthcare trade and its extent.

Taking a comprehensive approach, this research examines the magnitude, directions, patterns of specialisation, growth and other aspects related to international trade in healthcare services. Within this framework, trade is analysed with regard to cross border trade, consumption of healthcare by foreign nationals, commercial presence of healthcare services providers, as well as the movement of healthcare professionals across borders.

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Keywords: healthcare services, international trade, modes of supply, cross border trade, consumption abroad, commercial presence, movement of natural persons



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INTRODUCTION

MUCH HAS BEEN written in recent years about the growth of international trade in healthcare services. An abundance of stories and anecdotal evidence document patients travelling across the globe to receive healthcare services, such as medical and cosmetic surgeries, dental care and many other kinds of treatments. A great deal has also been written on the movement and relocation of health professionals, such as doctors, nurses or physiotherapists. In some countries, foreign health professionals constitute a major part of the health workforce. Furthermore, technological advancements enabling remote servicing of healthcare, offer new opportunities to provide complicated and often expensive treatments, such as surgeries, radiological examinations and even psychiatric consultancy, in places where such expertise is lacking.

The rise of international trade in healthcare services has largely been addressed in the medical and healthcare professional discourse as well as in the popular media. At the same time, it was largely neglected in academic literature, particularly with regard to analysis based on holistic and comprehensive approaches. It is indeed striking how very little is actually known on the extent to which health services are traded internationally. While some anecdotes exist with regard to the trade of specific narrow sub-sectors in healthcare, very modest knowledge exists on the magnitude of international trade in health services. A few scholars have attempted to provide a comprehensive analysis, however a literature gap remains (See Chanda 2001; Waeger 2007).

In an attempt to fill this void, this paper maps and analyses trends in international trade in health services, drawing on a wide range of sources to provide a comprehensive and systematic picture. In order to do so, it uses data covering developed and developing economies, although largely focusing on developed economies, notably OECD and EU member states.² The paper initially discusses in brief the general theme of measurement and classification of international trade in services. The remaining sections of the paper measure international trade in healthcare services through modes of service supply, concluding with an overall analysis of the findings.

1. MEASURING TRADE IN HEALTH SERVICES

SERVICES ARE INTERNATIONALLY traded in different dimensions which relate to the geographical location and proximity between consumers and producers, as well as factors of production (workers). These dimensions inhibit our ability to provide a single measurement which will capture the magnitude of international trade in services, as is often the case with regard to trade in goods.³ Stern and Hoekman define three dimensions: separated services, demander-located services and provider-located services (Stern and Hoekman 1987). While the first category relates to the trading of services across borders in the same manner in which goods are traded, the latter two categories relate to the specific location where exchange is conducted. Demander-located services refer to the mode of trade that require the presence of the supplier in close proximity to demand, while provider-located services necessitate the movement of consumers to the location of the suppliers. This definition has been widely adopted in the literature and provides also the conceptual and legally binding framework of the General Agreement on Trade in Services (GATS) of the World Trade Organisation (WTO) through the four modes of supply categorisation. Table 1 provides definitions, explanations and examples for each mode of supply.

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TABLE 1: THE FOUR MODES OF SERVICES SUPPLY

MODE	DEFINITION	EXPLANATION	EXAMPLE
1	Cross border supply	The service crosses the border, while the supplier and consumer remain in different territories.	Sale of translation services from country A to country B via the Internet or fax.
2	Consumption abroad	The consumer crosses the border to the territory of the supplier and consumes the service there.	The purchase of hotel accommodation (tourism services) by a tourist from country A when travelling in country B.
3	Commercial presence	The supplier crosses the border to the territory of consumption and establishes a commercial presence.	The local establishment of a branch of a bank from country A in country B.
4	Presence of natural persons	Temporary movement of labour to the consumer's territory. This movement can be either as an intra-corporate transferee, self-employment or salaried labour.	The employment of a person from country A as an engineer in country B.

Services are almost always supplied or traded through more than one mode. Technology renders feasible the supply of almost all services through cross border supply (mode 1) with very few exceptions (World Trade Organisation 1996). The distinction between modes 3 and 4 (i.e. demander-located services) is that while the supply of services through commercial presence is more focused on the local establishment of foreign legal entities, supply of services through the presence of natural persons⁴ is concerned with the country of origin of the person supplying the service.

An assessment of international trade in services in general and of healthcare services in particular, must address all possible avenues through which it is actually conducted. Practically, this approach has three main advantages. First, it offers a holistic analysis, which does not consider only cross-border trade or FDI. Second, in the absence of border measures such as tariffs, trade in services statistics account only partly for the degree to which trade has actually been internationalised. Third, such an observation can shed light on the linkages and tradeoffs that exist between modes of supply, enabling better understanding of the determinants and motivations of trade, as well as identification of barriers and impediments to trade in services.

Within this framework, measurements of international trade in services can be carried out with the use of proxy indicators that can reduce the statistical obstacles inherent in the quantification of trade in services.⁵ Its main limitation however stems from the fact that it pieces together different measurements which do not necessarily provide for cross modes of supply comparisons. Nevertheless, in the absence of a unified statistical approach, this framework improves on existing measurements, which only partly capture the level of international trade in services. It allows for a comprehensive examination as to the magnitude of internationalisation of services, using the best available data.

Health services include both health and medical services. Health services activities broadly correspond with the categorisation of health services as defined by Division 93 of the United Nations Central Product Classification (CPC). These services include human health services (CPC 931), veterinary services (CPC 932) and social services related to health (CPC 933). Since statistical classifications focus on the core of activity in each category, certain trade-related services are usually left out of the definition of specific trade in services categories. In the case of trade in health services, these include health education services and health insurance services. In order to

provide a wide and comprehensive perspective of the health sector, this study also includes health education services. Health insurance services are not included due to the lack of cross country comparable data.

Each of the next sections evaluates international trade through a different mode of service trade: cross-border trade, consumption abroad, commercial presence and the movement of natural persons. Several measurements are applied in each section to quantify the level of trade internationalisation. The final section concludes the chapter.

2 MODE 1: CROSS BORDER TRADE

2.1 What is it?

CROSS BORDER TRADE in services occurs when the service supplier and the service consumer remain in their respective countries, and only the service travels across the border as part of the transaction. This mode of trade somewhat represents the typical export-import mode common to trade in goods.

Trade in health services through mode 1 is in fact not a recent phenomenon. Traditionally, cross border trade of health services included services such as clinical consultation and shipment of laboratory samples. These were provided using mail, telephony and fax machines (Chanda 2001). Nevertheless, the development of modern Information and Communication Technologies (ICT) has enabled and increased the tradability of numerous health services, which in the past necessitated close proximity between the service provider and the patient (or the health consumer).⁶ Thus, while trade through mode 1 has been an old feature of healthcare services, it is considered to have risen significantly over the past 20 years. A US Federal report estimated in 2004 the telemedicine market in the US at 380 million dollars, with an annual growth rate of more than 15%.

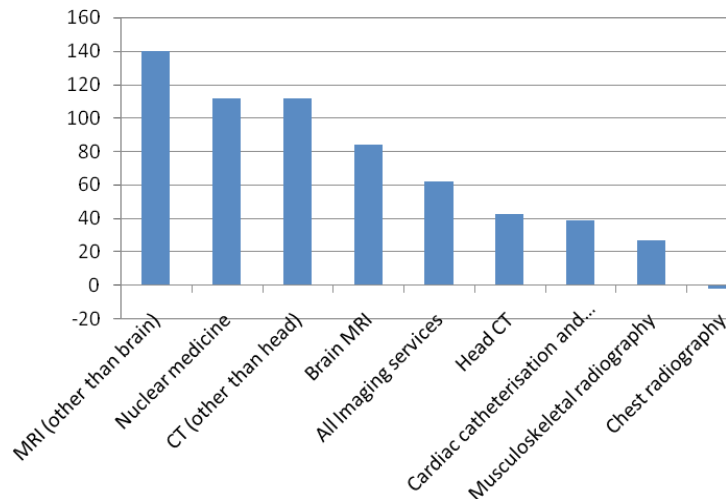
Examples of cross border trade in health services using ICT include, telemedicine, telepathology, telesurgery, telepsychiatry, teleradiology and other analysis and diagnosis of laboratory tests, remote consultations and surveillance, as well as remote education and the purchase of health insurance. Such trade allows greater healthcare availability from at least two perspectives. First, specialised treatments can be performed even in places where specialised medical professionals are not present. This has great potential for better delivery of healthcare services in developing countries, but also within developed countries, where specialists concentrate in larger hospitals, often located in big cities. Second, telemedicine enables provision of healthcare on a 24/7 basis all year round, and minimises the congestion for treatments, where the growth of demand has increased faster than the number of medical professionals.

Box 1: International Trade in Teleradiology

Teleradiology is the electronic transmission from one place to another of radiological images and data. Examples of teleradiology are X-Ray scans, Magnetic Resonance Imaging (MRI) and Computed Tomographies (CT). Teleradiology can have a key role in the provision of specialised radiological treatments, where specialists are scarce, such as neurology and paediatric radiology. Medical studies have reported that technical problems are rare and that cross border teleradiology services are rapid (often provided within 30 to 60 minutes) and precise (Wachter 2006; Steinbrook 2007). Companies have also been offering virtual medical record repositories, which enable on the one hand, patients to store their medical records, and on the other hand, medical facilities to transmit across secure networks, patients medical records and results (Boland 2008).

Studies have found that the demand for imaging services has significantly increased and that from 1999 to 2004, imaging services growth was 62%. Graph 1 summarises these findings (Ebbert, Meghea et al. 2007).

GRAPH 1: CUMULATIVE GROWTH IN VOLUME PER MEDICARE BENEFICIARY (%), 1999-2004



Source: (Steinbrook 2007)

However, even in markets where teleradiology is widely used, international trade in teleradiology remains very low. A 2003 study which included 78% of all radiologists in the US found that 67% of all radiology activities within the US were carried out using teleradiology (Ebbert, Meghea et al. 2007). At the same time, cross border teleradiology trade has been considerably low, despite growing supply of such services in places like India (Ebbert, Meghea et al. 2007; Boland 2008). Various barriers may account for this lack of international trade including legal provisions prohibiting such trade across the border, as well as licensing and qualifications requirements.

2.2 Cross border trade in services

CROSS BORDER TRADE in healthcare services is minimal and rather insignificant in absolute and relative terms, particularly with regard to the share of healthcare in countries' economies. The level of trade flows are low even in countries where appropriate infrastructure for these kinds of transactions exists. Furthermore, trade directions are often unpredictable and countries are at times net exporters and at others net importers. Trade is also low even among countries that are highly economically integrated, such as EU member states.

Table 2 summarises cross border export and import patterns for 16 OECD member states. The availability of data varies considerably between countries and across years, which makes it difficult to provide long term assessment. Nevertheless, it is possible to draw key findings concerning the internationalisation of healthcare services. First, trade is volatile and rather unpredictable, which makes it difficult to establish the directions of trade for individual countries. The Czech Republic and Slovenia are the only countries that can be regarded as net exporters of health services. At the same time, Australia is the only clear net importer of health services. Other countries are at times, in trade surplus and at other times in trade deficit, with an unclear trade orientation.

Second, trade volatility is not only a case of the direction of trade. For all countries, including both those who are net exporters and importers, the pattern of change in the levels of trade from one

year to another is highly unpredictable. For example, the volume of both exports and imports of Australia, Czech Republic, Italy, Luxembourg and Slovenia, the countries for which data is best available, are constantly changing. Thus, even if a country is a net exporter of health services, the degree to which it is exporting seems to randomly surge or decline. This finding is evident when growth of trade is calculated.⁷ In Italy, for example, exports rose in 2002 by 233.8% and then declined in the next years by 3%, 40.3% and 6.1% respectively. Similarly, Italian imports declined in 2002 by 2.2%, then in 2003 by 13% and then rose in 2004 by 48% and declined again in the following year by 10.1%.

Third, the level of trade for both exports and imports is significantly low in absolute terms. Exports and imports combined, as an index of trade activity, are marginal in terms of economic activity. Trade activity is highest in Italy (\$86.7 million) and Denmark (\$49.2 million), and is the lowest in Luxembourg (\$2.3 million), Lithuania (\$2.9 million) and Hungary (\$3.9 million). Even in large economies, such as the United Kingdom, Australia and Poland, trade activity reaches only \$29 million, \$25.1 million and \$20.7 million respectively.

TABLE 2: EXPORTS AND IMPORTS OF HEALTHCARE SERVICES: MODE 1 (MILLION USD)

COUNTRY	2000		2001		2002		2003		2004		2005	
	EX	IM	EX	IM	EX	IM	EX	IM	EX	IM	EX	IM
Australia	n.a.	11.02	5.172	9.83	3.803	9.78	10.38	12.32	11.77	24.27	6.109	32.07
Cyprus	0.291	0.097	3.248	3.717	7.58	8.466
Czech Republic	15.195	12.36	23.52	11.4	28.27	18.02	..	..	30.02	22.09	25.66	15.52
Denmark	25.51	23.68
Hungary	1.465	2.905	2.2	1.317
Italy	20.58	38.5	68.7	37.65	66.59	32.73	39.73	48.43	37.31	43.53
Korea *	2.8	3.6
Lithuania	2.877	0.04	7.316	..
Luxembourg	1.185	0.352	1.331	1.084	0.848	1.642	1.337	1.456
Malta	4.732	1.874	3.094	3.512
Poland	10.39	9.843	12.36	8.964
Portugal	4.734	11.8	5.647	11.29	7.9	7.9	..	..	..	..
Romania	8.72	4.983
Slovakia	11.12	5.448
Slovenia	6.673	3.839	6.386	4.083	10.41	5.529	10.09	6.284
United Kingdom	21.82	7.273

* Data for Korea is for 2006
Source: OECD Stat, UN

The low levels of international trade in healthcare services through cross border trade are striking when trade is measured in relation to several other parameters, as indicated in table 3. A first indication of the relative significant low trade in health services is the average ratio of total trade to GDP.⁸ On average trade in health services is as little as 0.01% of total GDP. The highest shares

of trade to GDP are found in the Czech Republic (0.33%) and Slovakia (0.35%), while the figures are much lower for other countries, such as the United Kingdom (0.001%), Italy (0.005%) and Hungary (0.003%).

When these findings are benchmarked against national healthcare expenditures, the assumption that cross border trade in health services should mirror the activity in this sector or at least follow its main trend, is not supported. Among the 16 countries examined, the proportion of total health expenditure as a percentage of GDP is on average 7.38%, and in several states reaches almost 10%. Furthermore, with private expenditure on healthcare services on the rise (well above 20% of total expenditure on healthcare), the potential for greater international trade is far from being fulfilled.

The findings in table 3 also show that compared with output in the healthcare services sector, trade is extremely minimal. Commonly used as a measurement of trade internationalisation or trade openness, the trade-to-output index provides an insight into the relative degree to which trade is conducted in terms of the overall production activity in a given sector (Krugman and Obstfeld 2006).⁹ With the exception of Slovakia, where the trade-output ratio is 4.48%, and Malta, where it is 1.71%, the index level is below 1% for all countries. In some economies, this ratio is as low as 0.06% (Australia, Hungary) and 0.02% (UK). The average for all countries is 0.71%.

TABLE 3: TRADE IN HEALTHCARE SERVICES IN MODE 1 AND HEALTHCARE ECONOMIC ACTIVITY

	SHARE OF AVERAGE TRADE IN HEALTH SERVICES OF GDP	SHARE OF TOTAL TRADE IN HEALTH SERVICES (EXPORTS AND IMPORTS) OF GROSS OUTPUT OF HEALTH SERVICES	SHARE OF TOTAL EXPENDITURE ON HEALTH OF GDP	SHARE OF PRIVATE EXPENDITURE ON HEALTH OF TOTAL EXPENDITURE ON HEALTH
Australia	0.00354%	0.06%	9.18%	32.31%
Cyprus	...	0.93%	5.88%	56.45%
Czech Republic	0.03304%	0.84%	7.03%	10.31%
Denmark	0.01902%	0.15%	8.84%	16.55%
Hungary	0.00361%	0.06%	7.78%	29.34%
Italy	0.00492%	0.08%	8.43%	25.22%
Korea	0.00081%	...	5.34%	47.94%
Lithuania	...	0.52%	6.24%	28.64%
Luxembourg	0.00632%	0.13%	7.12%	9.81%
Malta	...	1.71%	8.55%	24.39%
Poland	0.00717%	0.15%	6.07%	29.83%
Portugal	0.00896%	0.11%	9.38%	27.67%
Romania	...	...	5.15%	29.22%
Slovakia	0.03571%	4.48%	6.52%	21.26%
Slovenia	...	...	8.75%	23.83%
United Kingdom	0.00132%	0.02%	7.76%	15.64%

Source: Author's calculations based on data from OECD, UN, EU KLEMS, WHO NHA

The minimal role of trade in healthcare services in mode 1 is also evident with regard to closely integrated economies, such as European Union (EU) member states. Proxy variables on the usage

of ICT among general practitioners and physicians show that only a fraction of patient data stored is being cross-border transferred.¹⁰ The data shows that advanced e-health infrastructure widely exists throughout EU member states. Furthermore, the data also reveals that the vast majority of general practitioners in Europe (80%) are using this infrastructure for record and storage of individual administrative patient data, and that the lion's share of them are also using e-health infrastructure to record and store key medical data, such as medical history, basic medical parameters, symptoms and reasons for encounters, diagnoses, medications, laboratory results, ordered examinations and results, other measurements, treatment outcomes and to a lesser extent also radiological images (European Commission 2008).

Specific figures on EU patients' data reveal that on average only 0.7% of stored data is being cross border exchanged. Since this data represents trade and trade-like activity, it is striking that this number is significantly low, compared with existing high levels of e-health infrastructure and data storage. The Netherlands (4.7%), Malta (3.3%), Cyprus (2.8%), Denmark (1.9%), France (1.7%) and Sweden (1.5%) are the only countries where medical data exchanges across the border out of stored data are higher than 1% (European Commission 2008).¹¹

Table 4 measures the geographical concentration of EU member states' trade, using the Hirschmann-Herfindahl Index.¹² The findings show low degree of trade orientation towards the EU region. On average only less than 10% of member states' trade (exports and imports) is done within the EU. Italy and Denmark are exceptions with higher than average levels of imports from the EU, 39% and 29% respectively.

Finally, the low intensity of trade and the lack of specialisation among the member states are also reflected in the measurement of their revealed comparative advantages, as indicated by table 4. The index of Revealed Comparative Advantage (RCA)¹³ shows that specialisation is particularly low. On a scale of 1 to -1, whereby 1 indicates full comparative advantage and -1 indicates complete lack of it, Cyprus had an RCA score of 0.35, the highest among the member states. Other member states with positive RCA scores were Romania (0.33), Czech Republic (0.29), Poland (0.28), Slovakia (0.25) and Slovenia (0.16).

TABLE 4: HEALTHCARE CROSS-BORDER TRADE CONCENTRATION AND SPECIALISATION IN EU MEMBER STATES, 2005

	HIRSCHMANN-HERFINDAHL INDEX			RCA
	EX	IM	EX+IM	
Cyprus	0.06	0.03	0.05	0.35
Czech Republic	0.12	0.07	0.09	0.29
Denmark	0.11	0.27	0.19	-0.38
Hungary	0.01	0.01	0.01	-0.35
Italy	0.29	0.39	0.34	-0.12
Lithuania	0.05	n.a.	n.a.	n.a.
Luxembourg	0.02	0.02	0.02	-0.06
Poland	0.10	0.06	0.08	0.28
Romania	0.09	0.05	0.07	0.33
Slovakia	0.09	0.06	0.08	0.25
Slovenia	0.06	0.05	0.05	0.16

Source: Author's calculations based on United Nations Service Trade Statistics Database

3. MODE 2: CONSUMPTION ABROAD

3.1 What is it?

TRADE IN HEALTH services through consumption abroad takes place when the consumer crosses the border and consumes the service in the territory of the service provider. In contrast to cross-border trade in services, feasibility of mode 2 trade is not subject to the availability of appropriate enabling technology. In fact, ancient examples exist of people travelling to spa towns across Europe for what they believed were the healing effects of mineral water.

Mode 2 is best exemplified by consumption of tourism services abroad. Within this context, health tourism has been a common feature, though not necessarily well documented. Typical health tourism services include cardiac surgeries, plastic and cosmetic surgeries, dental treatments and fertility treatments.

Chief motivations for healthcare tourism are associated with rising costs of domestic healthcare, in particular for specialised services, long waiting times for treatment, and lack of public health insurance in certain countries (Ramesh 2005). Table 5 shows differences in the costs of several specialised medical treatments between the United States (an important source of health tourists) and three Asian countries. These differences, which at times are over 30% lower, are an important incentive in patients' decisions to receive treatment abroad. Other surveys comparing prices found for example that treatments such as hip replacement can be 70% lower for a treatment package including actual treatment, as well as travel and hotel lodging costs (Treatment Abroad 2006). Among the countries considered to be hubs of health tourism, are India, Thailand, Costa Rica, Columbia, Hungary, Poland, Lithuania, Malaysia, Jordan and Tunisia (Burne 2008; Einhorn 2008).

TABLE 5: MEDICAL COSTS: SPECIALISED TREATMENTS

	COSTS (IN USD)				COSTS COMPARED TO THE USA		
	USA	SINGAPORE	THAILAND	INDIA	SINGAPORE	THAILAND	INDIA
Heart Bypass	130000	18500	11000	10000	14.23%	8.46%	7.69%
Heart Valve Replacement	160000	12500	10000	9000	7.81%	6.25%	5.63%
Angioplasty	57000	13000	13000	11000	22.81%	22.81%	19.30%
Hip Replacement	43000	12000	12000	9000	27.91%	27.91%	20.93%
Hysterectomy	20000	6000	4500	3000	30.00%	22.50%	15.00%
Knee Replacement	40000	13000	10000	8500	32.50%	25.00%	21.25%
Spinal Fusion	62000	9000	7000	5500	14.52%	11.29%	8.87%

Source: Einhorn, 2008, Authors' calculations

Another important facet of consumption abroad of health services is health education. Certain countries have been a hub for international medical students from both developed and developing countries. Driving factors include language affinity, post-colonial ties, future migration incentives, as well as shortages of training infrastructure (hospitals), lack of knowledge and technical and technological capacity in the foreign student's home country (Khadria 2004; Gluszynski and Peters 2005).¹⁴

Data for Canada shows that 17.5% of all students in Canada studying life sciences¹⁵ were foreign or visa students (Gluszynski and Peters 2005). Similarly, the share of foreign students studying

health professions in the USA between 2005 and 2006 was almost 5%, representing an increase of 3.1% from the previous year (Institute of International Education 2006). In the United Kingdom the share of foreign students studying clinical medicine was 1.6% (HESA 2007).

3.2 CONSUMPTION ABROAD TRADE

CONSUMPTION OF HEALTHCARE services abroad is captured in trade statistics as the “Health-related expenditure” within the “Travel” category of EBOPS. Data on exports and imports of the consumption abroad of health services is summarised in Table 6. Trade data for this mode of supply is more readily available, though still lacking for several economies, such as the United Kingdom, where data is available only for 2005, or the United States, where data is not available at all.

Trade directions are much clearer for mode 2 than they are for mode 1. Table 6 shows that countries that are net exporters are Belgium, Croatia, Czech Republic, Estonia, Greece, Hungary, Italy and Turkey. Bulgaria has been a net importer until 2002 and since then became a net exporter. Net importing countries are Canada, Cyprus, Iceland and Luxembourg. These findings largely correspond with the assumption suggested above that price and currency differences incentivise the consumption abroad of health services.¹⁶

Average growth of trade in this mode of supply is relatively high, particularly when compared with trade in mode 1. Thus, while cross-border trade growth has been volatile and with no clear patterns, exports and imports combined in mode 2 for each country have been constantly rising. The average growth rate for the countries covered is 23.5%. On the whole, Bulgaria and Czech Republic have experienced exceptionally high growth rates, with an average of 32.86% and 43.24% respectively. Italy is the only exception, where average growth rate has been negative at -0.31%.

Table 6 also shows that in absolute and relative numbers, the magnitude of trade in health services is far more significant through consumption abroad than that of cross-border trade. Italy’s and the United Kingdom’s volumes of trade for the same year were \$238 million and \$233 million respectively, compared with \$87 million and \$25 million in cross-border trade. Trade through mode 2 is higher than trade in mode 1 by 20 to 30 times in several instances, and even higher in some cases, such as in Hungary.

TABLE 6: TOTAL EXPORTS AND IMPORTS OF HEALTH SERVICES (MODE 2, \$MILLION)

COUNTRY	2000		2001		2002		2003		2004		2005	
	EX	IM	EX	IM	EX	IM	EX	IM	EX	IM	EX	IM
Belgium					272.9	159.6	370.9	183.2	446.3	302.1	534.4	296.5
Bulgaria	1.7	1.7	2.4	3.2	2.1	2.9	3.7	1.9	3.9	3.9	7.1	5.3
Canada	63.3	213.4	63.3	237.7	63.7	231.8	73.5	249.0	81.4	263.5	90.8	283.1
Croatia									65.9	23.6	88.4	22.6
Cyprus		6.4		6.4	2.3	6.6	2.2	7.5	4.7	10.9	4.9	10.8
Czech Republic	28.7	12.6	83.4	13.7	94.5	19.0	117.5	27.1	146.2	34.1	166.2	36.2
Estonia							3.3	1.0	4.1	0.8	4.8	1.9
Germany				641.3		556.3		914.8		876.5		1035.2
Greece			15.9	56.6	42.5	17.0	58.7	27.0	73.1	19.0	61.1	20.0
Hungary									230.4	21.2	221.4	36.7
Iceland	0.5	7.4	0.4	6.3	0.2	5.1	0.8	7.1	0.2	8.6	0.1	9.1
Ireland												10.0
Italy	155.2	87.8	188.1	62.7	172.8	68.0	171.9	74.6	144.2	83.3	157.0	81.0
Latvia				1.6	0.0	1.6	1.8	1.8	0.0	3.7	0.0	1.8
Luxembourg					6.8	44.5	9.7	58.3	11.7	67.2	12.9	70.5
Korea*											50.9	98.5
Romania		2.0		4.0		2.0		1.1		1.2		2.5
Slovenia			6.0	10.3	12.1	10.2	12.8	12.4	15.8	13.3	11.2	13.9
Switzerland	569.8		585.5		689.5		696.4		889.7		897.9	
Turkey							168.9	45.0	215.9	54.0	402.5	146.2
United Kingdom											125.7	107.5

* Korea figures are for 2006
Source: OECD Stat, UN

Nevertheless, trade in health services in mode 2 is still significantly low when measured against output in the health sector. Table 10 shows that the annual average for the countries examined is 1.69%, with Greece and Luxembourg having the highest trade-to-output ratio of 3.8%. Italy and the United Kingdom are at the bottom levels of trade-to-output measurement with 0.24% and 0.09% respectively.

On average, consumption abroad of health services represents a small share of the total consumption of travel services, averaging 2.06%. Croatia is an exception and 7.75% of its travel services are attributed to health-related travel. The figures are exceptionally high with regard to the consumption of health services by Croatians abroad, which are 17.73% of travel imports. Iceland is also an exception in the opposite direction as 58.05% of its travel exports are attributed to consumption of health by foreigners. These figures are summarised in table 7.

As in mode 1, levels of trade in health services in mode 2 are also very low compared with total expenditure on health as a share of GDP and as a share of private expenditure. The low levels of

trade are particularly striking compared with the relatively high degree of the share of private expenditure on health of total expenditure on health, which is on average almost 30% in the countries under review. Table 7 benchmarks trade in mode 2 against the above indicators.

TABLE 7: TRADE IN HEALTH SERVICES IN MODE 2 AND SELECTED INDICATORS

	TOTAL TRADE IN HEALTH SERVICES (EXPORTS AND IMPORTS) AS A SHARE OF GROSS OUTPUT OF HEALTH SERVICES	AVERAGE SHARE OF HEALTH SERVICES (241) OF TRAVEL SERVICES (236)			TOTAL EXPENDITURE ON HEALTH AS % OF GDP	PRIVATE EXPENDITURE ON HEALTH AS % OF TOTAL EXPENDITURE ON HEALTH
		EX	IM	TRADE VOLUME		
Belgium	1.93%	4.69%	1.81%	2.96%	9.79%	28.30%
Bulgaria		0.44%	0.91%	0.60%	7.50%	41.28%
Canada		0.63%	1.79%	1.26%	9.50%	29.90%
Croatia		6.62%	17.73%	7.75%	8.13%	18.90%
Cyprus	1.79%	0.08%	0.76%	0.22%	5.88%	56.45%
Czech Republic	2.42%	2.88%	1.26%	2.33%	7.03%	10.31%
Estonia	0.97%	6.28%	4.06%	5.58%	5.12%	22.80%
Germany		0.17%	1.28%		10.58%	21.56%
Greece	0.76%	1.70%	0.90%	0.55%	9.77%	54.59%
Hungary	3.79%	0.01%	1.00%	3.62%	7.78%	29.34%
Iceland		58.06%	1.36%	0.92%	9.71%	17.66%
Ireland		0.05%	0.16%		7.12%	24.16%
Italy	0.24%	0.03%	0.42%	0.51%	8.43%	25.22%
Latvia		5.88%	0.38%		6.39%	47.05%
Luxembourg	3.83%	0.42%	2.35%	1.23%	7.12%	9.81%
Korea		12.04%			5.34%	47.94%
Romania			1.28%		5.15%	29.22%
Slovenia	1.06%	5.88%	1.57%	1.07%	8.75%	23.83%
Switzerland			0.93%		11.19%	42.11%
Turkey			3.74%	2.04%	7.40%	30.54%
United Kingdom	0.09%			0.26%	7.76%	15.64%

Source: Author's calculations based on data from OECD, UN, EU KLEMS, WHO NHA

Contrary to the findings in mode 1, closely economically integrated economies such as EU member states trade more with each other and develop specialisation patterns. These findings can be partially attributed to the existence of several directives facilitating the movement of patients in Europe as well as a growing body of case law against member states restricting the right of movement for European patients (Hazopoulos 2006). A strong indication towards market integration in Europe for healthcare services provided through mode 2 is given by the Hirschmann-Herfindahl index. As seen in table 8, Ireland had the lowest score in the index of 0.5 which indicates that half of its trade is oriented towards Europe. This score is higher than any score reported from cross-border trade. Other member states reported significantly higher scores, sometimes beyond 0.9, like in the case of both Belgium (0.94) and Luxembourg (0.93).

Finally, RCA scores (table 11) also point towards a clearer pattern of specialisation among the member states. Three countries achieved relatively high RCA scores: Hungary (0.81), Greece

(0.77) and the Czech Republic (0.72). Luxembourg shows a comparative disadvantage of (-0.67). The data concerning Italy is surprising because it suggests that Italy (0.32) has a mild comparative advantage in exporting healthcare services through mode 2 but a comparative disadvantage in mode 1.

TABLE 8: HEALTHCARE CONSUMPTION ABROAD TRADE WITHIN THE EU, 2005

	TRADE (MILLIONS USD)			TRADE GROWTH		HIRSCHMANN-HERFIN-DAHL INDEX ¹			RCA
	EX	IM	BALANCE	EX	IM	EX	IM	EX+IM	
Belgium	512.01	269.08	242.92	18.34%	-1.55%	0.96	0.91	0.94	0.31
Cyprus	2.59	7.58	-4.99	-9.50%	15.58%	0.53	0.70	0.65	-0.49
Czech Republic	110.00	17.97	92.03	11.10%	39.81%	0.66	0.50	0.63	0.72
Estonia	4.16	1.76	2.41	17.71%	176.18%	0.87	0.91	0.88	0.41
Germany	n.a.	802.27	-802.27	n.a.	28.80%	n.a.	0.77	0.77	n.a.
Greece	39.42	5.10	34.32	-25.49%	128.64%	0.65	0.25	0.55	0.77
Hungary	193.75	20.25	173.49	-4.45%	65.20%	0.88	0.55	0.83	0.81
Ireland	n.a.	4.98	-4.98	n.a.	n.a.		0.50	0.50	n.a.
Italy	107.13	54.81	52.32	-9.30%	33.60%	0.68	0.68	0.68	0.32
Luxembourg	12.87	65.34	-52.47	9.84%	13.29%	1.00	0.93	0.94	-0.67
Romania	n.a.	2.49	-2.49	n.a.	n.a.	n.a.	1.00	1.00	n.a.
Slovenia	9.14	3.92	5.22	-22.39%	288.47%	0.82	0.28	0.52	0.40
United Kingdom	58.30	65.59	-7.29	n.a.	n.a.	0.46	0.61	0.53	-0.06

¹ Romania's score of 1 should not be interpreted as complete EU trade orientation since it only reports trade statistics towards the EU (hence, EU=World)

Source: Author's calculations based on United Nations Service Trade Statistics Database

4. MODE 3: COMMERCIAL PRESENCE

4.1 What is it?

TRADE THROUGH COMMERCIAL presence involves the movement of the service supplier to the territory of the consumer. Most commonly, this is carried out through the establishment of some sort of legal entity, such as subsidiaries, branches, representative offices, joint ventures, partnerships and acquisitions of local companies. It overlaps to a large extent with foreign direct investment in services.

Foreign commercial presence in the healthcare service sector has not been significantly researched. The vast majority of the literature has focused on specific case studies, rather than accounting for the actual magnitude of internationalisation taking place through this mode of supply. In these studies, the United States has been regarded as an important source country for health care service firms establishing abroad, in particular in Latin America and the United Kingdom (Holden 2002; Jasso-Aguilar, Waitzkin et al. 2004). One particular study of the United Kingdom found that 22% of all independent hospital beds were owned by the United States (Mohan 1991: 857 cited in Holden 2002). According to a study using the Fortune Global 500 list for 2002 as a single year, direct health services providers were the least internationalised, while producers of goods were the most internationalised (Holden 2005).

Traditionally, data is not available for the trade of foreign companies within a country's domestic market. Foreign companies established are usually regarded as local entities and treated as such in national accounts and statistics. In recent years however, countries have begun to produce Foreign Affiliates Trade in Services Statistics (FATS) which cover a variety of indicators regarding the

activities of foreign companies established in the host country, including export, import, sales, turnover and employment. This data is still incomplete, yet taken together with other sources of information, can provide good knowledge as to the actual magnitude and patterns of trade in services through commercial presence. Other useful sources of data are the AMADEUS database, foreign direct investment statistics, UNCTAD's Transnationality Index and list of cross-border mergers and acquisitions, as well as the Fortune Global 500 index.

4.2 Commercial Presence

USING COMPANY DATA extracted from the AMADEUS¹⁷ database, it is evident that commercial presence constitutes a significant mode of international trade in healthcare services.¹⁸ Analysis of AMADEUS data provides cross country information regarding the level and nature of activity of foreign companies, and can thus serve as a good estimation for trade in services through commercial presence.

The findings, presented in table 9, indicate that international trade in Europe takes place through establishment and ownership of companies throughout the EU and the EEA. The share of total foreign companies within the healthcare service sector is 16.51%. This share rises to 18.21% when social work activities and veterinary activities are ignored. These figures are higher by far than the ratios of trade statistics reported for modes 1 and 2. These figures ought to be compared with similar ratios in other sub-sectors in the service industry, to allow a better understanding as to how far integration takes place through commercial presence. Nevertheless, even in the absence of comparable data, this ratio represents a high degree of foreign ownership, particularly as private healthcare provision is in competition with public provision and is restricted by it in many of the member states.

Foreign ownership in medical practice activities comprises 24.39% of all ownership, while foreign ownership in hospital activities is 10.38%. These figures seem to correlate with rising private expenditure on healthcare services, as well as with the growing tendency towards privatisation and outsourcing that takes place in public health provision. Table 9 shows disaggregated data on the share of foreign and domestic companies by sub-sector.

TABLE 9: DOMESTIC AND FOREIGN COMPANIES WITH ULTIMATE OWNERSHIP IN THE HEALTH SERVICES SECTOR

SUB-SECTOR	NACE 1.1 CLASSIFICATION	DOMESTIC	FOREIGN
Human health activities	8510	90.00%	10.00%
Hospital activities	8511	89.62%	10.38%
Medical practice activities	8512	75.61%	24.39%
Dental practice activities	8513	90.00%	10.00%
Other human health activities	8514	65.45%	34.55%
Veterinary activities	8520	50.00%	50.00%
Social work activities	8530	91.30%	7.97%
Total		83.49%	16.51%

Source: AMADEUS, Author's calculations

While evidence suggests that significant international trade in healthcare services takes place in Europe through commercial presence, less evidence supports that this is indeed a global trend. The data for both stocks and flows of FDI in health services suggest that they play a marginal role. The share of inward FDI stocks in health services of total FDI in services is constantly low at around 0.2% for developed economies. The figures are even lower for outward FDI stocks, where developed countries' position is 0.02%. Lower shares of inward and outward FDI in health services out of total FDI in services exist for FDI flows. Developing countries' FDI shares do not exceed 0.1% when measured in three different time intervals over the past two decades. However, while the share of FDI in health services is relatively low when compared with total FDI in services, it has been growing considerably over the last years. From 1990 to 2005, inward FDI stocks grew by 762% and outward stock by 380% in developed economies.

Healthcare companies are also absent from major internationalisation indices, such as the Transnationality and Internationalisation indices,¹⁹ which indicate further evidence for low international activity. Not a single healthcare company is listed in these indices for the years, 1993, 1994 and 1999 to 2006.²⁰

Limited indication with regard to key countries involved in commercial presence international trade in healthcare services can be found with data on cross-border mergers and acquisitions (M&A). M&A examine the degree to which foreign ownership of companies is spreading. The data shown in table 10 on global M&A have been extracted from UNCTAD's World Investment Report for the years 2004-2006, and details cross border M&A whose value exceeds \$1 billion. Five M&A are found between the years 2004 to 2006, with no M&A taking place in 2003. The share of those M&A out of total M&A is low, yet somewhat surprising given the lack of health services companies within the Transnationality Index. The yearly average value of M&A in health services for 2004-2006 is \$3.9 billion.

Two of the M&A have been in the nursing and personal care facilities. Other M&A took place in the surgical hospital industry, kidney analysis centres and drug stores and proprietary stores. The M&A in the drug store industry has been included in this survey due to its proximity to health services, though should not be viewed as part of the health services industry analysed here. All acquired companies were either US or British companies, with acquiring companies spread over three continents. With the exclusion of the drug stores M&A, all M&A were not concluded in the same sector, and none of the acquiring companies are health services companies.

TABLE 10: CROSS-BORDER M&A DEALS IN HEALTH SERVICES WITH VALUES OF OVER \$1 BILLION COMPLETED IN 2003-2006

	TOTAL NUMBER OF M&A	M&A IN HEALTH SERVICES		
		NUMBER	SHARE	VALUE (BILLION USD)
2003	56	0	0.00%	0
2004	75	2	2.67%	6.9
2005	141	1	0.71%	1.2
2006	172	2	1.16%	3.6
2003-2006	444	5	1.13%	11.7

Source: UNCTAD World Investment Reports 2004, 2005, 2006, 2007

Holden (2005) studied the internationalisation of health service firms by using Fortune's Global 500 Index for the year 2002. Fortune's Global 500 annually lists the world's biggest companies, taking revenues as the indicator of firm size.²¹ His inconclusive findings showed that health service firms' internationalisation is still low, though internationalisation is more prominent, to varying extents, in industries with proximity to health services. Such industries included insurance companies, pharmaceutical corporations and catering firms (Holden 2005).

While Fortune's Global 500 Index provides a good estimation for firm size, it is less attractive for the examination of companies' internationalisation into foreign markets. Hence, rather than measuring international activity, the index looks at firm size in terms of whether it is operating exclusively in a single market or not. Overcoming this problem and revisiting Holden's work, Fortune's Global 500 list has been analysed for the years 2005-2007 with an independent examination of each relevant company's profile to assess whether it is internationally spread in foreign markets or not.²² The results are detailed in table 11. Ten health services companies were on the Global 500 List in 2005 and nine companies were ranked in the following two years. The average ranking of health services companies was 298, 262 and 245 respectively for each year, positioning them around the middle of the index. Nine of the companies listed in the Index have appeared in all three years, with only one company leaving the Index after 2005. The highest rank in the Index (66) was achieved by UnitedHealth Group in 2007. However, a close examination reveals that only five of these companies are operating beyond a single market (United States). Three of them operate in several different markets, while two companies are established in the United Kingdom and Canada. This evidence suggests that internationalisation of large health firms is still at a low level. Table 14 summarises the findings from the Fortune Global 500 List.

TABLE 11: HEALTH SERVICES COMPANIES IN THE FORTUNE GLOBAL 500 LIST

YEAR	RANK IN YEAR	COMPANY	GLOBAL 500 RANK	REVENUES (\$MILLIONS)	PROFITS (\$MILLIONS)	INTERNATIONAL ORIENTATION
2007	1	UnitedHealth Group	66	71542	4159	International
2007	2	WellPoint	103	56953	3094.9	US only
2007	3	Medco Health Solutions	148	42543.7	630.2	US only
2007	4	Caremark Rx	172	36750.2	1074	US only
2007	5	Aetna	263	25568.6	1701.7	International
2007	6	HCA	265	25477	1036	US, UK
2007	7	Humana	332	21416.5	487.4	US only
2007	8	Express Scripts	411	17660	474.4	US, Canada
2007	9	Cigna	446	16547	1155	International
2006	1	UnitedHealth Group	116	45365	3300	International
2006	2	WellPoint	117	45136	2464	US only
2006	3	Medco Health Solutions	148	37871	602	US only
2006	4	Caremark Rx	173	32991	932	US only
2006	5	HCA	244	24455	1424	US, UK
2006	6	Aetna	271	22885	1635	International
2006	7	Cigna	399	16684	1625	International
2006	8	Express Scripts	413	16266	400	US, Canada
2006	9	Humana	473	14418	308	US only
2005	1	UnitedHealth Group	123	37218	2587	International
2005	2	Medco Health Solutions	137	35352	482	US only
2005	3	Caremark Rx	204	25801	600	US only
2005	4	HCA	228	23502	1246	US, UK
2005	5	WellPoint	280	20815	960	US only
2005	6	Aetna	298	19904	2245	International
2005	7	Cigna	333	18176	1438	International
2005	8	Express Scripts	405	15115	278	US, Canada
2005	9	Humana	474	13104	280	US only
2005	10	Tenet Healthcare	495	12496	-2640	US only

Source: Fortune Magazine, Individual companies' profiles.

5 MODE 4: MOVEMENT OF NATURAL PERSONS

5.1 What is it?

THE FINAL MODE of services supply takes place when labour moves between countries and produces the service in the consumer's home territory. The movement of natural persons can take place in various ways. First can be the movement of intra-corporate transfers, whereby employees of a certain company move between countries but are still employed within the same company.²³ Another can be the movement across the border of independent persons seeking work independently.

Health professionals can move permanently, or temporarily, for purposes such as working holidays (sabbatical), study visits for the acquisition of knowledge and techniques, as well as fixed-term contracts. Various push and pull factors have been surveyed in the health sector to explain

this. Push factors include low wages in the home country, poor working conditions, scarcity of resources and career development limitations. Among the pull factors are higher absolute and relative wages, better working conditions, career opportunities, greater availability of resources for work, the shortage of medical staff in many OECD countries and various policies enacted by OECD countries to attract physicians and nurses (Buchan 2006; Simoens and Hurst 2006; Buchan 2007).

5.2 Movement of Natural Persons

GENERALLY, STATISTICS ON the movement of natural persons leave a lot to be desired. Where they exist they are often incomplete and lack comparability between countries and sectors. Nevertheless, a growing body of literature in the medical field has been examining in recent years the magnitude and directions in the employment of health professionals and International Medical Graduates (IMG) outside of their home country.

Several conclusions can be drawn from OECD data on the composition of foreign-trained physicians in the workforce of several OECD member states (Simoens and Hurst 2006). First, great variety exists among the source countries of physicians working abroad in OECD countries. Source countries include most OECD member states, as well as other countries in Europe, Latin America, Asia and Africa. But, while source countries vary to a large extent, the magnitude of diversity is different across OECD countries. For example, while the United Kingdom and the United States attract physicians from numerous countries in different regions, some countries, like Denmark and Austria, are sourcing physicians from a limited range of countries.

Second, developing countries are an important source of physicians who are open to moving abroad. Physicians are moving to OECD economies from developing nations in Africa, Eastern Europe, the Middle East, Asia and more. India, Pakistan and South Africa play a significant role as source countries, particularly with regard to the Anglo-Saxon countries: Canada, United Kingdom and the United States.

Finally, despite the noticeable direction of exports from developing countries to developed countries, developed countries are often themselves source countries for exporting physician services through mode 4. Germany, United Kingdom and New Zealand are examples. The direction of the flow of physicians between countries is not one way. Several OECD countries are at the same time source and host countries to each other. Ireland and the United Kingdom, and Australia and the United Kingdom are examples.²⁴ Analysis of data gathered in several EU member states leads to key findings concerning movement of healthcare professionals.²⁵ First, the numbers and shares of foreign health professionals employed in many member states are growing. The United Kingdom reported in 2004 that over 9.37% of its healthcare labour force was staffed with foreign nationals. Specifically, 18.13% of its medical doctors were foreign nationals. These numbers are considered to be even higher today following the 2004 and 2007 enlargements of the EU and the abolition of barriers to cross-border movement of people within the EU (Blitz 2005; Research and Statistics Service 2006). In the same way, 13.93% of the Netherlands' healthcare professionals were foreign nationals (Ministry of Justice 2006).

Second, while foreign health professionals have a growing role in the provision of healthcare services in Europe, most of them are from non-EU countries. This evidence supports past findings indicating the significance of developing countries as a supply source for healthcare professionals employed in the EU (Simoens and Hurst 2006). For example, the share of health professionals employed in Germany from both the EU-25 and the EEA is only 1.42% compared with 2.35%

coming from outside the EU. This difference is much higher in the Netherlands, where only 4.04% of the health professionals came from the EU, compared with 9.89% who came from outside the EU. Similarly, only 2.36% of health professionals in the UK came from other EU countries, in contrast to almost 7% coming from outside the EU (Derst, Heß et al. 2006; Ministry of Justice 2006; Research and Statistics Service 2006).

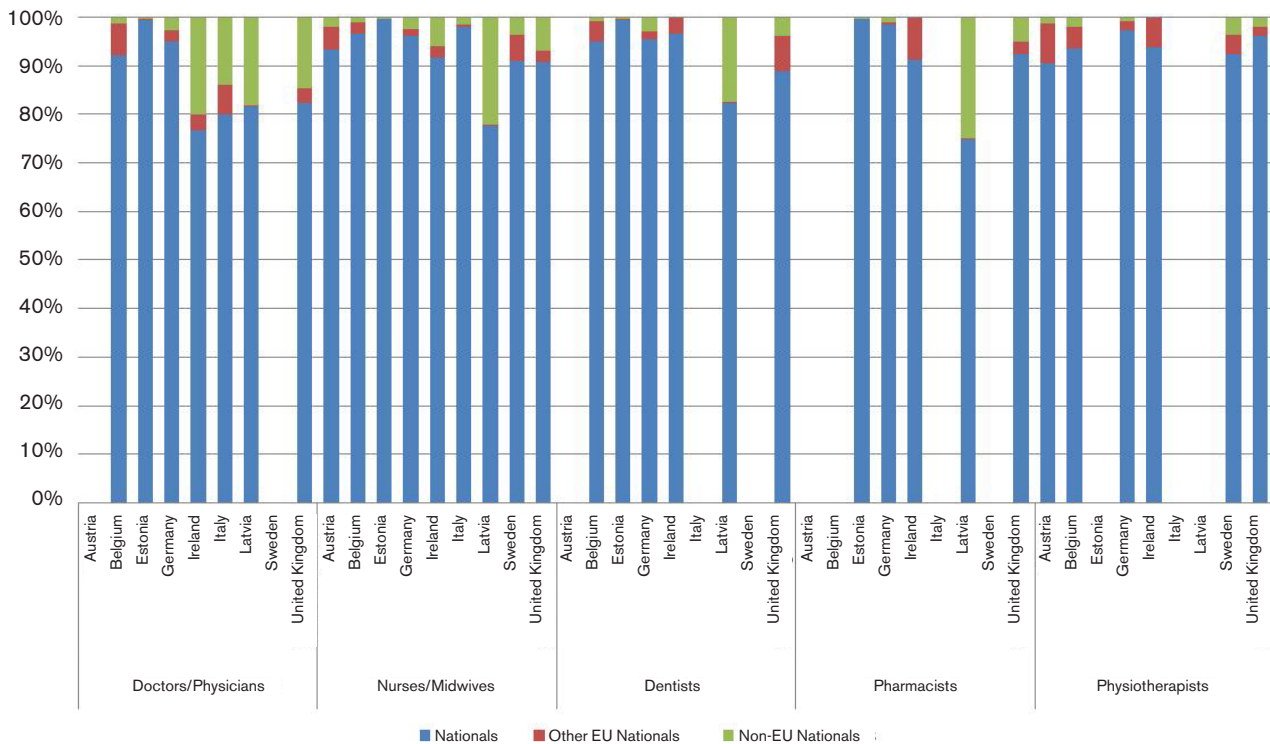
Third, in some of the member states that are a destination for EU health professionals, these EU health professionals take precedent over non-EU health professionals in specialised areas.

Fourth, in some specialised areas, EU health professionals moving to other member states represent a relatively large share of total professionals working in these fields, as well as significantly exceeding the share of non-EU professionals in these areas. In Austria, EU foreign nationals constitute 8.17% of all physiotherapists, 7.54% of occupational therapists, 6.27% of speech therapists, 6.94% of paediatric nurses and more.²⁶ In Belgium, 7.18% of medical doctors and 4.75% of physiotherapists were EU foreign nationals. 8.7% of the pharmacists and 8% of psychologists in Ireland came from other member states. In Sweden, 7.03% and 5.17% of medical specialists and nurses respectively were from other member states. Finally, 10.53% of all psychologists in the United Kingdom were foreign EU-nationals (Pacolet and Merckx 2006; Quinn 2006; Schutz 2006; Swedish EMN NCP 2006).

Fifth, somewhat surprisingly new member states' share of healthcare professionals moving to other member states is very low. In many cases, such as in Belgium, Germany, the Netherlands, Sweden and the United Kingdom, their share is below one percent. Since the data reported addresses 2004, the year in which the EU-10 acceded to the EU, there is a possibility that a bias exists in the data and that their actual share today is much higher. Some of the above findings are summarised in graph 2.

The data concerning the movement of health professionals suggests that rather than being influenced by legal and institutional developments at EU level to allow greater mobility for healthcare (and other) professionals, the mobility of EU health professionals to other member states is influenced by a broader international trend. This general trend in the EU is considered to be influenced by both shortages of healthcare professionals in many member states, as well as active recruitment policies of some of the latter (European Migration Network 2006).

GRAPH 2: OVERVIEW OF HEALTHCARE WORKERS IN SELECTED MEMBER STATES, 2004



Further data on medical graduates in the United States, the United Kingdom, Australia and Canada suggest that the magnitude of IMGs in physician workforce is significantly high. According to the data presented in table 12, in the United Kingdom in 2004, 28.3% of employed physicians were IMGs. The ratio of foreign physicians has considerably increased in the past two years, particularly for the United Kingdom, with the vast majority coming from developing countries. Developing countries contributed 75.2%, 60.2%, 43.4% and 40% to the United Kingdom, United States, Canada and Australia, respectively. In contrast, IMGs from these four countries accounted for 2.5%, 6.5%, 22.3% and 33.5% of the workforce (not counting the home country).²⁷ Table 12 reports the distribution and magnitude of IMGs in the physician workforce of those four OECD countries disaggregated to main source countries.

Data for the United States also shows the share of IMGs within the physician workforce according to specialisation areas. 36% of internal medicine physicians are IMGs. IMGs also account for 31.4% in psychiatry, 29% in anaesthesiology, 28% in paediatrics, 20% in general surgery, 18.8% in radiology, and 17.8% in both family medicine and obstetrics/gynaecology (American Medical Association 2007).

Although these findings should be interpreted with caution they suggest that, in contrast to other modes of supply, the magnitude of mode 4 trade in health services is high and significantly internationalised.

TABLE 12: IMGs IN THE PHYSICIAN WORKFORCES OF SELECTED OECD STATES

SOURCE COUNTRY	IMGs FROM SC1 (NO OF WORK-FORCE)	IMGs FROM SC1 (%WORKFORCE)	SOURCE COUNTRY	IMGs FROM SC1 (NO OF WORK-FORCE)	IMGs FROM SC1 (%WORKFORCE)
CANADA			AUSTRALIA		
United Kingdom	2,735	4	United Kingdom	4,664	8.6
South Africa	1,754	2.6	India	2,143	4
India	1,449	2.1	New Zealand	1,742	3.2
Ireland	1,164	1.7	South Africa	1,253	2.3
Saudi Arabia	658	1	Sri Lanka	627	1.2
Egypt	558	0.8	Egypt	545	1
United States	519	0.8	Singapore	438	0.8
Poland	441	0.6	Ireland	424	0.8
France	432	0.6	Hong Kong	312	0.6
Pakistan	320	0.5	Poland	189	0.3
Philippines	261	0.4	Philippines	157	0.3
Australia	247	0.4	Malaysia	152	0.3
Hong Kong	224	0.3	Pakistan	133	0.2
Vietnam	223	0.3	China	112	0.2
Taiwan	189	0.3	Vietnam	108	0.2
Romania	187	0.3	Germany	101	0.2
Jamaica	179	0.3	Myanmar	93	0.2
Sri Lanka	163	0.2	Hungary	85	0.2
Lebanon	161	0.2	Serbia & Montenegro	78	0.1
Kuwait	154	0.2	Slovakia	76	0.1
SOURCE COUNTRY	IMGs FROM SC1 (NO OF WORK-FORCE)	IMGs FROM SC1 (%WORKFORCE)	SOURCE COUNTRY	IMGs FROM SC1 (NO OF WORK-FORCE)	IMGs FROM SC1 (%WORKFORCE)
UNITED STATES			UNITED KINGDOM		
India	40,838	4.9	India	15,093	10.9
United States*	25,380	3	Ireland	2,845	2.1
Philippines	17,873	2.1	Pakistan	2,693	1.9
Pakistan	9,667	1.2	South Africa	1,980	1.4
Canada	8,990	1.1	Egypt	1,592	1.1
China	6,687	0.8	Nigeria	1,529	1.1
Former USSR	5,060	0.6	Germany	1,523	1.1
Egypt	4,593	0.5	Sri Lanka	1,422	1
Mexico	4,578	0.5	Iraq	1,248	0.9
South Korea	4,401	0.5	Australia	872	0.6
Iran	4,002	0.5	Spain	657	0.5
United Kingdom	3,439	0.4	Greece	596	0.4
Dominican Republic	3,232	0.4	Myanmar	487	0.4
Syria	3,219	0.4	Jamaica	472	0.3
Germany	3,071	0.4	Italy	464	0.3
Lebanon	2,556	0.3	Bangladesh	464	0.3
Nigeria	2,392	0.3	Netherlands	419	0.3
Argentina	2,374	0.3	Sudan	395	0.3
Poland	2,365	0.3	Libya	394	0.3
Colombia	2,362	0.3	New Zealand	305	0.2

1 Source Country

2 U.S. IMGs are US citizens who have gone abroad for medical education and returned to the United States to practice.

Source (Mullan 2005)

6. OVERALL PATTERNS OF HEALTHCARE TRADE

GRAPH 3 PROVIDES a graphical illustration of the overall magnitude of international trade in healthcare services, based on the data generated in this research. Each axis corresponds to a different mode of service supply and is a positive scale (modes 3 and 4 do not represent negative measurement). Since comparable data between different modes of supply is not available (with the exclusion of mode 1 and 2), each axis uses a different measurement for the level of international trade. The further the area covered is from the intersection of the axes, the higher the level of trade. The graph shows that most international trade in healthcare is conducted through the cross border movement of healthcare professionals and the commercial establishment of foreign firms. The graph also illustrates the trade-off often associated between cross border trade and commercial presence.

GRAPH 3: INTERNATIONAL TRADE IN HEALTHCARE SERVICES BY MODES OF SUPPLY

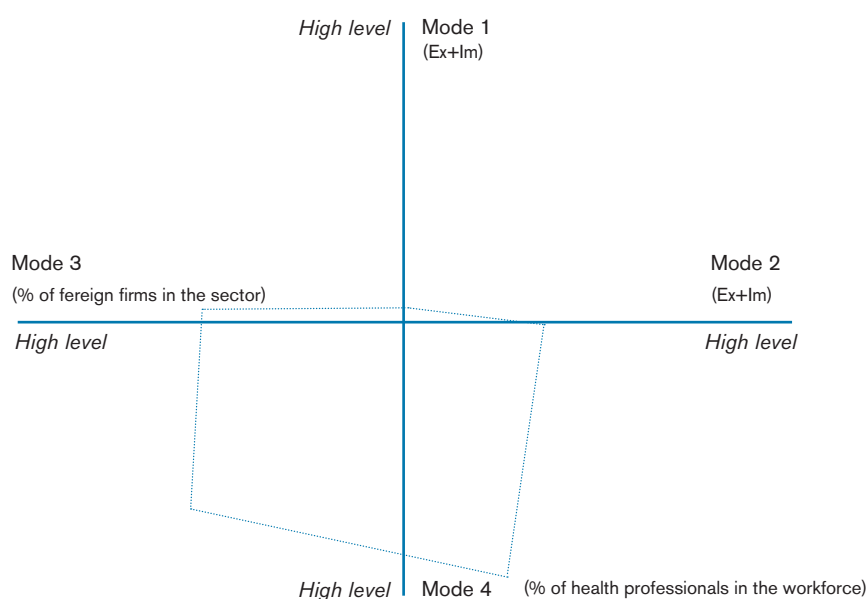


Table 16 provides a ranking for which countries are most active in these trading patterns, according to different modes of provision²⁸.

TABLE 16: LEADING COUNTRIES IN INTERNATIONAL HEALTHCARE TRADE ¹

RANKING	CROSS-BORDER TRADE	CONSUMPTION ABROAD	COMMERCIAL PRESENCE	MOVEMENT OF PROFESSIONALS ²
1	Italy	Germany	USA	Australia
2	Denmark	Switzerland	United Kingdom	Germany
3	Czech Republic	Belgium	Canada	India
4	Australia	Turkey		Ireland
5	United Kingdom	Canada		Norway
6	Poland	Hungary		Pakistan
7	Slovakia	Italy		Philippines
8	Slovenia	United Kingdom		South Africa
9	Cyprus	Czech Republic		United Kingdom
10	Romania	Korea		USA

¹ based on the availability of data

² Countries listed under the movement of professionals are not ranked against each other, but constitute key countries in this mode of trade, either exporting, importing or both. The listing is in alphabetical order.

CONCLUSION

ON THE BASIS of the availability of data this paper finds that a great deal of variation exists within different segments of international trade in healthcare services. For the most part, international trade is conducted through the movement of foreign health professionals between countries, as well as the presence of foreign healthcare firms in local markets. International trade through cross-border activity, whereby healthcare services are provided and consumed in different territories, remains very low. Trade based on the travel of healthcare consumers to foreign markets is also very low but is significantly higher than cross border trade.

With regard to the movement of healthcare professionals in the EU, the results are somewhat surprising. The high numbers of foreign healthcare professionals hosted in many member states come mainly from outside the EU. On the one hand the mobility of EU healthcare professionals is very low, particularly when compared with extra-EU health professionals. Even more surprising is that low levels of movement have been noted with regard to the new member states. However, EU healthcare professionals' mobility rates are still higher than the overall levels of cross-border labour mobility within the EU (Heinz and Ward-Warmedinger 2006). Furthermore, the data shows that concentration of EU healthcare professionals takes place in some specialised healthcare professions in several member states.

The directions of trade and specialisation patterns vary between modes of service provision and supply. Countries are at times net exporters of healthcare through one mode of provision and at the same time are net importers in another. Given that comparative advantage for each provision mode is influenced by different elements such as labour costs, technology, transportation costs, regulatory and legal frameworks (mobility, recognition of qualifications, etc.) and more, it is not surprising that specialisation patterns for the same country differ considerably between modes of supply.

Given the economic significance of the healthcare sector in overall economic activity, and in particular the high levels of both total and private expenditure on healthcare, it seems that there is scope and unexploited potential for greater international trade in healthcare services. Trade is growing in cross border trade, consumption abroad, commercial presence and movement of professionals. But the greatest potential lies in cross border provision and consumption abroad of services.

While not attempting to address these issues, this paper opens up several questions. First, what are the enabling market factors needed to support this trade? It is evident from the analysis of cross border trade that the availability of technological infrastructure is not a sufficient condition for such a provision. If technology is not enough, perhaps focus should be given to other elements in the market, such as the existence of economies of scale, level of education, language, labour unit costs and more. Furthermore, the issue of complementarities and trade-off between modes of supply merits further research. Second, what is the role of government policies in the provision of healthcare services? Government regulation and policy can have great effects on the ability of consumers and producers to move between countries, but even if physical mobility is unrestricted, it does not necessarily enable flexibility and mobility of social benefits, contributions or insurance, which are closely linked with consumer choice. Data confidentiality and transferability is another issue which may influence cross border trade and consumption abroad. Lastly, if trade negotiations have an effect on trade, the findings of this paper, particularly with regard to different aspects of healthcare trade, should be used to assess the current focus of negotiations, whether bilaterally or multilaterally.

2.7 BIBLIOGRAPHY

- American Medical Association. (2007). International Medical Graduates in the U.S. Workforce: Discussion Paper. [Online]. Available at: <http://www.ama-assn.org/ama1/pub/upload/mm/18/img-workforce-paper.pdf> [Accessed: March 11th 2009]
- Blitz, B., K. (2005). 'Brain circulation': the Spanish medical profession and international medical recruitment in the United Kingdom. *Journal of European Social Policy*, 15(4), 363-379.
- Boland, G.W. L. (2008). Teleradiology Coming of Age: Winners and Losers. *AJR*, 190(5), 1161-1162.
- Buchan, J. (2006). Migration of health workers in Europe: policy problem or policy solution? In C.A. Dubois, M. McKee and E. Nolte (Eds.), *Human resources for health in Europe*, 41-62.. UK: McGraw-Hill.
- Buchan, J. (2007). HealthWorkers Migration in Europe: Assessing the Policy Option. *Euro health*, 13(1), 6-8.
- Burne, J. (2008). A World of Medical Opportunity: Special Report on Health Tourism. [Online]. Available at: <http://www.treatmentabroad.net/medical-tourism/a-world-of-medical-opportunity/> [Accessed: March 11th 2009]
- Chanda, R. (2001). Trade in Health Services. CMH Working Paper Series, Commission on Macroeconomics and Health, World Health Organisation: Paper No. WG 4: 5.
- Derst, P., B. Heß, et al. (2006). Labour Market Participation of Non-Germans in the Health Sector in Germany. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed: March 11th 2009]
- Dorrenbacher, C. (2000). Measuring Corporate Internationalisation. [Online]. Available at: <http://skylla.wzb.eu/pdf/2000/i00-101.pdf> [Accessed: March 11th 2009]
- Ebbert, T. L., C. Meghea, et al. (2007). The State of Teleradiology in 2003 and Changes since 1999. *AJR* 188, 103-112.
- Einhorn, B. (2008). Top Medical Tourism Destinations. *Business Week*. [Online]. Available at: http://images.businessweek.com/ss/08/03/0317_hospitals/index_01.htm?technology+slideshows [Accessed: March 11th 2009]
- EurActiv. (2004). eHealth. [Online]. Available at: <http://www.euractiv.com/en/health/chealth/article-117474> [Accessed: March 11th 2009].
- EurActiv. (2008). Survey: EU doctors slow to adopt eHealth practices. [Online]. Available at: <http://www.euractiv.com/en/health/survey-eu-doctors-slow-adopt-chealth-practices/article-171978> [Accessed: March 11th 2009]
- European Commission. (2004). e-Health - making healthcare better for European citizens: An action plan for a European e-Health Area. COM (2004) 0356.
- European Commission. (2008). Benchmarking ICT use among General Practitioners in Europe: Final Report. [Online]. Available at: http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/gp_survey_final_report.pdf [Accessed: March 11th 2009]
- European Migration Network (2006). Managed Migration and the Labour Market - the

Health Sector. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed: March 11th 2009]

Gluszynski, T. and V. Peters (2005). Survey of Earned Doctorates: A Profile of Doctoral Degree Recipients. Statistics Canada. [Online]. Available at: <http://www.statcan.gc.ca/pub/81-595-m/81-595-m2005032-eng.pdf> [Accessed: March 11th 2009]

Hazopoulos, V. (2006). The ECJ Case Law on Cross Border Aspects of Health Services: Briefing Note Prepared for DG Internal Policies of the Union, Policy Department Economic and Scientific Policy. [Online]. Available at: http://www.europarl.europa.eu/comparl/imco/studies/0701_healthserv_ecj_en.pdf [Accessed: March 11th 2009]

Holden, C. (2002). The Internationalization of Long Term Care Provision. *Global Social Policy*, 2(1), 47-67.

Holden, C. (2005). The Internationalization of Corporate Healthcare: Extent and Emerging Trends. *Competition & Change*, 9(2), 185-203.

Ietto-Gilles, G. (1998). Different Conceptual Frameworks for the Assessment of the Degree of Internationalization: an Empirical Analysis of Various Indices for the Top 100 Transnational Corporations. *Transnational Corporations*, 7(1), 17-40.

Institute of International Education (2006). *Open Doors 2006: Report on International Educational Exchange*. New York: Institute of International Education.

Jasso-Aguilar, R., H. Waitzkin, et al. (2004). Multinational corporations and health care in the United States and Latin America: strategies, actions, and effects. *Journal of Health and Social Behavior*, 45(Extra Issue), 136-157.

Khadria, B. (2004). *Human Resources in Science and Technology in India and the International Mobility of Highly Skilled Indians*. STI Working Paper 2004/7. Paris: OECD.

Krugman, P. R. and M. Obstfeld (2006). *International Economics : theory and policy*. Boston: Addison Wesley.

Ministry of Justice (2006). *Small Scale Study II: Managed Migration and the Labour Market – The Health Sector, the Netherlands*. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Office of Citizenship and Migration Affairs (2006). *Managed Migration and the Labour Market - the Health Sector, Latvia*. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Pacolet, J. and S. Merckx (2006). *Managed Migration and the Labour Market - The Health Sector, The Belgian case*. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Quinn, E. (2006). *Managed Migration and the Labour Market - the Health Sector in Ireland*. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Ramesh, R. (01/02/2005). *Is Health Tourism the Future?* The Guardian. London.

Research and Statistics Service (2006). *EMN Small Scale Study II: Managed Migration and the*

Labour Market – the Health Sector, United Kingdom. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Schutz, B. (2006). Managed Migration and the Labour Market - the Health Sector, Austrian Report. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Simoens, S. and J. Hurst. (2006). The Supply of Physician Services in OECD Countries. OECD Health Working Papers. Paris: OECD.

Steinbrook, R. (2007). The Age of Teleradiology. New England Journal of Medicine, 357(1), 5-7.

Stern, R. M. and B. M. Hoekman. (1987). Issues and Data Needs for GATS Negotiations on Services. The World Economy, 10(1), 39-60.

Swedish EMN NCP (2006). Managed Migration and the Labour Market – the Health Sector, Sweden. [Online]. Available at: <http://emn.sarenet.es/Downloads/prepareShowFiles.do?directoryID=71> [Accessed March 11th 2009]

Treatment Abroad. (2006). Treatment Abroad Price Watch 2006. [Online]. Available at: <http://www.treatmentabroad.com/about/pricewatch-survey-2006/> [Accessed: March 11th 2009]

Wachter, R. M. (2006). International Teleradiology. North England Journal of Medicine, 354(7), 662-663.

Waeger, P. (2007). Trade in Health Services: An Analytical Framework. Advanced Studies in International Economic Policy Research. Kiel, Kiel Institute for the World Economy: Working Paper no. 441.

World Trade Organisation. (2006). The General Agreement on Trade in Services: An Introduction. [Online]. Available at: www.wto.org/english/tratop_e/serv_e/gsintr_e.doc [Accessed: March 11th 2009]

FOOTNOTES

1. I would like to thank Lucy Davis, Fredrik Erixon and Razeen Sally for their thoughtful comments. The usual disclaimer applies.
2. The normative question, whether healthcare should be traded in the first place, falls outside the scope of this paper.
3. International trade in goods is usually measured in a single number which relates to the value of units of goods sold. A good is usually first produced and then sold, locally or internationally, autonomously from its production process.
4. The usage of the term "natural persons" is a legal convention in describing the above movement of labour. It is used to differentiate between people who are natural and unnatural entities such as corporations.
5. Measurement of services activity is by far more difficult than that of goods, and suffers from numerous statistical flaws, that mainly derive from the intangible nature of many services. A great deal of services transactions are not measured since they are cross-border traded without any inspection or counting, such as in the case of e-commerce. Another reason is that transactions which bundle together goods and services are usually measured solely as goods transactions, thus many companies whose core activity is in manufacturing, perform services activities, but are statistically regarded as being in the manufacturing sector (Porter, 1998). For a comprehensive discussion see: Lipsey, R. E. (2006). *Measuring International Trade in Services*, NBER Working Paper No. 12271, Cambridge: NBER

6. Many health service activities form part of what is referred to as e-health: “the application of information and communications technologies across a whole range of functions that affect the health sector, from the doctor to the hospital manager and from data processing to social security administrators and the patient” (EurActiv 2004). While e-Health is part of the general modernisation of the health sector, it is considered to be an important infrastructure for cross border trade of services.
7. Growth of trade is calculated as either exports in a given year over the exports of the previous year: $\frac{EX_{n+1}}{EX_n} - 1$, or as imports in a given year over imports of the previous year $\frac{IM_{n+1}}{IM_n} - 1$
8. Calculated as $\frac{\sum_{2000}^{2006} EX_i^n + IM_i^n}{n} / \frac{\sum_{2000}^{2006} GDP_i^n}{n}$, whereby EX and IM respectively denote total exports and total imports, i represents country and n the number of years calculated.
9. The index is calculated for each individual years and countries as $\frac{(EX_i^n + IM_i^n)}{GO_i^n}$ whereby EX and IM respectively represent total exports and imports, GO indicates gross output of health services, i denotes country and n represents year.
10. Although these proxy variables do not cover the whole span of activities within the health sector, they nevertheless represent an important part of it. General Practitioners are in most instances the first stop for patients seeking health and serve as a “service junction” between patients and health professionals. Nevertheless, this data should be taken as indicative and complementary to the above analysis of trade statistics.
11. The data is based on a research commissioned by the European Commission on the usage of ICT among general practitioners in Europe. The survey covers 6,789 observations obtained from comprehensive interviews, conducted in all 27 EU member states, as well as in Norway and Iceland.
12. The Hirschmann-Herfindahl Index (HHI) is given $HHI = \frac{\sum_d (\sum_s X_{sd})^2}{\sum_{sw} X_{sw}}$ by and measures the geographical concentration of trade (exports, imports or a combination of both) by reporting the degree to which a country’s or a region’s trade is dispersed across various destinations. The index takes values between 0 to 1, whereby higher values indicate greater concentration. In the index, d is the destination, s is the source country or region, w is the set of countries in the world and X is the bilateral flow of exports from source to destination. According to the direction of trade measured, X can be substituted by I (imports) or TT (total trade).
13. Revealed Comparative Advantage is calculated as $RCA_{bj} = \frac{M_{bj} - X_{bj}}{M_{bj} + X_{bj}}$ whereby it is the difference between imports (I) of country a from country b in sector j and the exports (X) of country a from country b in sector j, over the sum of imports (I) of country a from country b in sector j and the exports (X) of country a from country b in sector j.
14. The actual magnitude of consumption abroad of health education services has not been well quantified in the literature and consists of anecdotes rather than systematic measurement.
15. Life sciences comprising of health, agriculture and biology.
16. Although reported for only a single year, the figures for the UK seem to at least partially contradict the views that the UK is an importer of health tourism. Various figures in the media report that 50,000 United Kingdom citizens travelled overseas for medical treatment in 2007 and that 75,000 are expected to travel in 2008, reaching an expected figure of 200,000 people travelling out of the United Kingdom for health consumption by 2010 (Ramesh 2005; Burne 2008)
17. Analyse Major Databases from European Sources (AMADEUS). AMADEUS database covers in-depth financial information for some 10 million companies in Europe. The data contains information for both private and public companies, across countries and industries. Companies’ financial data is accompanied with figures and records of ownership and subsidiary data, stock prices for listed companies, mergers and acquisitions information as well as market research and news.
18. The survey conducted was carried out on 3,974 companies within the EU, the European Economic Area (EEA) and Croatia. A sample size of 773 companies is used for the study following data cleanup

to ensure accuracy and comparability. The parameters examined included company's name, industry sub-sector, headcount (number of employees), annual turnover, annual balance sheet total, ultimate ownership, ultimate ownership's country, and percentage of ultimate ownership out of total ownership. Ultimate ownership is regarded as a single entity holding 25% or more of total direct or indirect ownership.

19. The UNCTAD Transnationality Index is a scale for measuring internationalisation of transnational companies. The Index focuses on firms' foreign assets and is calculated as the average of three ratios: foreign assets to total assets; foreign sales to total sales; and foreign employment to total employment. The Transnationality Index ranks the top 100 non-financial transnational companies. In conjunction with the Index UNCTAD also provides the Internationalisation Index, which calculates the number of foreign affiliates divided by the number of all affiliates (Letto-Gilles 1998) and (Dorrenbacher 2000).
20. The absence of healthcare service companies from the indices should not be interpreted as a lack of commercial presence by these companies in international trade since the indices measure the extent to which internationalisation takes place, rather than its actual occurrence.
21. Firms are categorised according to industries, and the index reports various financial parameters for each company.
22. Assessment of Fortune's Global 500 was motivated by the fact that it covers 500 companies annually and thus has greater coverage than provided by the Transnationality and Internationalisation indices.
23. Intra-corporate transference is also popularly referred to as "relocation".
24. It is also noticeable that language affinity plays an important role and physicians tend to move between countries with similar languages.
25. The data were assembled in 11 case studies conducted under the European Migration Network. Member states that participated in the studies include: Austria, Belgium, Estonia, Germany, Greece, Ireland, Italy, Latvia, the Netherlands, Sweden and the United Kingdom. In almost all cases the year of reference is 2004. For the final report, see: European Migration Network, 2006.
26. The data for Austria does not include medical doctors.
27. For each country, the combined share of the other three reporting countries is calculated, omitting the host country itself.
28. Data limitations might explain why the United Kingdom is the only country that appears in all modes of supply.