

Langhammer, Rolf J.

Book Part — Digitized Version

North-South trade in services: Some empirical evidence

Provided in Cooperation with:

Kiel Institute for the World Economy – Leibniz Center for Research on Global Economic Challenges

Suggested Citation: Langhammer, Rolf J. (1989) : North-South trade in services: Some empirical evidence, In: Giersch, Herbert (Ed.): Services in world economic growth, ISBN 3-16-345482-8, Mohr, Tübingen, pp. 248-271

This Version is available at:

<https://hdl.handle.net/10419/1992>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

IV. SERVICES AND INTERNATIONAL DIVISION OF LABOUR

Rolf J. Langhammer

North-South Trade in Services: Some Empirical Evidence

1. Introduction

During the last two decades the rapid progress of many developing countries to restructure their export supply from primary commodities towards manufactures and to gain sizeable shares in growing world markets has been widely documented and explained. As a contrast, however, very little information exists on global North-South trade in services because of considerable barriers to both concept and documentation.¹

On the other hand, scattered facts on specific service industries, for instance transport and travel, suggest that services contain an important element of continued structural change in developing countries' export supply. For instance, shipping lines and airlines operating in

¹ To mention only two of various relevant barriers, a clear-cut definition of what would be subsumed under "services" is still lacking. Controversies mainly exist with respect to foreign direct investment (FDI) and its income. Income derived from FDI can be interpreted as a remuneration for firm-specific skill advantages crossing the border [Rugman, 1987, p. 662] but it is usually not subsumed under internationally-traded services taken out of consideration [Lee, Naya, 1988; Grubel, 1987; Sapir, 1982; 1985; Gray, 1983; Arndt, 1987, p. 713]. Thus, it is mostly trade in service industries rather than trade in services which is dealt with. Yet, even in more narrowly defined service industries, there is no unanimity whether in addition to "visible" services (travel, transport) so-called "non-visible" services (fees and royalties and "other services") should also be included. Next to conceptual problems, data problems are the second large barrier. Only very few national balance of-payments statistics are regionally disaggregated, because in many countries detailed data on transactions with non-residents are not collected through the banking system. Furthermore, unlike in merchandise trade, services are often registered not on the basis of transactions crossing borders but on that of financial flows between residents and non-residents. Overlaps between both concepts of documentation seem to be large in "visible" services but they decrease rapidly along with a growing importance of "non-visible" services.

developing countries have succeeded in capturing rising parts of the World's merchandise and passenger transport [Böhme, 1986; Sichel-schmidt, 1986]. Furthermore, evidence on international design contracts confirms that sizeable shares of contracts have been awarded to firms in Brazil, India, Korea, and Taiwan [Sapir, 1986, Table 3]. With respect to imports, it was mainly the rapidly growing demand of countries in the Gulf region and other OPEC member states for construction services and related activities which opened up new markets for both Northern and Southern suppliers.

This paper will try to summarize information on trade in services with developing countries of four OECD countries, that is, the United States, Japan, France, and West Germany. These four countries publish regionalized balance-of-payments statistics on goods and services so that the development of trade in services can be viewed against the performance in merchandise trade.

In Section 2, major trends and patterns of the four OECD countries' trade in services with developing countries are exposed. In Section 3, some hypotheses concerning the regional and sectoral pattern are introduced. Section 4 presents some in-depth analysis on the link between West German trade in manufactures and in services with developing countries. Section 5 summarizes the results.

2. Trends and Patterns in US, Japanese, French, and West German Trade in Services with Developing Countries

In this paper, services are defined as private services only. Thus, government services and income from foreign direct investment (FDI) are excluded for both conceptual and practical reasons. Government services comprise non-market transactions and do not signal competitiveness in international trade. With respect to income from FDI, most developing countries are net importers of private risk capital and do not yet figure as recipients of investment income. "Non-visible" services (fees, royalties), as far as they are recorded in the national balance-of-payments statistics, are taken into consideration.

a. US Trade in Services

Table 1 records US merchandise and service trade with developing countries in total, two sub-regions (Latin America, Africa and Asia) and for two periods, 1974/75 and 1985/86. Several findings are worth special notice.

Firstly, US service exports to developing countries grew faster than US merchandise exports, and developing countries account for roughly the same share in US exports of services as in goods, that is, about one third.

Secondly, while Latin American countries still absorbed one half of US exports of services to developing countries in 1985/86, Asian and African countries have proven to be the most rapidly growing export market for US services. Very probably, this record has to be booked on the account of Asian countries only. So-called "disembodied" services¹ - in the terminology introduced by Bhagwati [1984] - such as management fees, insurance, communications, summarized under "other private services", form the export stronghold of the US in terms of growth rates.

Thirdly, services still play a minor role in total US exports of goods and services to developing countries (about 17 per cent in 1985/86), but this is not a peculiarity of North-South exports. It holds true for US world exports of services as well.²

Fourthly, important US export markets for merchandise and services are not identical. Asian (and African) developing countries were by far the major LDC export markets for US goods in the mid-1970s and mid-1980s, whereas they were at the same level as Latin America as regard to services. One may suggest that the activities of US commercial banks

¹ Bhagwati has coined the term "embodiment" for traditional person-to-person related services (transport, travel) and "disembodiment" for services which are characterized by the availability of modern information and communication techniques. As such techniques are mainly available in industrialized countries, the hypothesis that these countries are internationally competitive in disembodied services, seems plausible. Furthermore, "disembodied" services enjoy decreasing transaction costs because of the advance of modern technology and thus may rapidly expand in future.

² As will be shown below, this percentage is in the range of shares in other OECD countries, too.

Table 1 - US Trade in Goods and Services with Developing Countries, 1974/75 and 1985/86 (a) (mill. US \$)

	World		Latin America(b)			LDCs in Asia and Africa			Total LDCs		Share of LDCs in US world trade			
	1974/75	1985/86	Growth rate	1974/75	1985/86	Growth rate	1974/75	1985/86	Growth rate	1974/75	1985/86	Growth rate	1974/75	1985/86
	US exports													
Merchandise(c)	106110	227287	7.2	16565	31239	5.9	20437	46468	7.8	37002	77707	7.0	34.9	34.2
Services (credits)	17723	46228	9.1	3634	7859	7.3	2237	7655	11.8	5871	15514	9.2	33.1	33.6
travel	4454	12296	9.7	1797	3650	6.7	173	962	16.9	1970	4612	8.0	44.2	37.5
passenger fares	1084	3185	10.3	175	525	10.5	143	343	8.3	318	868	9.6	29.3	27.3
other transportation fees, royalties(d)	5707	14340	8.7	716	1804	8.8	1041	3701	12.2	1757	5505	10.9	30.8	38.4
other private services(e)	4045	6318	4.1	427	242	-5.0	347	367	0.5	774	609	-2.2	19.1	9.6
Total exports of goods and services	2433	10090	13.8	520	1639	11.0	534	2284	14.1	1054	3923	12.7	43.3	38.9
	123833	273515	7.5	20199	39097	6.2	22674	54123	8.2	42873	93220	7.3	34.6	34.1
	US imports													
Merchandise(c)	105764	366111	12.0	17646	44154	8.7	25139	77132	10.7	42785	121286	9.9	40.5	33.1
Services (debits)	15486	44575	10.1	3626	10551	10.2	1320	5653	14.1	4946	16203	11.4	31.9	36.3
travel	6195	17146	9.7	2518	6117	8.4	455	1435	11.0	2973	7552	8.8	48.0	44.0
passenger fares	2196	7078	11.2	188	667	12.2	129	523	13.6	317	1190	12.8	14.4	16.8
other transportation fees, royalties(d)	5451	16221	10.4	514	1757	11.8	655	3740	17.2	1168	5497	15.1	21.4	33.9
other private services(e)	416	968	8.0	12	32	9.3	5	-3(f)	-	17	29	5.0	4.1	3.0
Total imports of goods and services	1228	3163	9.0	395	1978	15.8	77	-43(f)	-	471	1935	13.7	38.4	61.2
	121249	410686	11.7	21272	54705	9.0	26459	82785	10.9	47731	137490	10.1	39.4	33.5

(a) Two-year average. - (b) Including Central America and the Caribbean. - (c) Including military sales and purchases. - (d) Receipts and payments for the use or sale of intangible property rights, including patents, industrial processes, trade-marks, copyrights, franchises, designs, know-how, formulas, techniques and manufacturing rights. - (e) Includes non-merchandise insurance, communications, processing and repairs, advertising, brokerage, leasing, fees for management, professional and technical services. - (f) Credits.

Source: US Department of Commerce [September 1975; September 1976; March 1987]; own calculations.

in Caribbean banking centres, the debt issue and the concomitant drain on US services needed for debt management have contributed to this result.

Fifthly, the US turned from a surplus country in trade in services with developing countries to a deficit country during the decade under observation. As a matter of fact, US service imports from developing countries grew much faster. Asia, as a supplier of services, clearly outstripped Latin America in terms of growth rates. Nevertheless, Latin America has still remained the major source of services supplied by developing countries. While travel and transportation are the backbones of services exported to the US from both regions, a growing number of transactions under "other private services" have been credited to Latin American residents. Given the heterogeneity of this segment of services and the large element of "disembodiment", this figure is not easy to interpret.

To summarize, in terms of growth rates US exports and imports of services have risen faster than trade flows in goods. It is basically in "embodied" services such as passenger and other transportation where developing countries have demonstrated their competitiveness, whereas on the US export side other private services seem to have gained momentum compared with the traditional "smokestack" service industries.

It is not surprising that in a comparative setting Asian exporters have performed better than Latin American ones. As transportation services are to a large extent by-products of merchandise trade, fast rising US merchandise imports from Asia stimulate imports of related services. In addition, a rapidly expanding infrastructure for tourism in Asia and very competitive Asian airlines seem to have challenged the locational advantages of Caribbean and South American tourist sites.

"Disembodied" other private services which in a two-way trade are expanding with Latin America may have their roots in a strong involvement of US commercial banks in Latin American borrowing. Yet, the statistical basis does not allow for any verification of this assumption.

b. Japanese Trade in Services

Japan's regionalized balance-of-payments statistics allow for but a cursory view on trade in services with developing countries.¹ Available data for two periods in the 1980s, however, suggest that an even larger share of exports and imports of services than in the US case is directed towards or originate from developing countries (Table 2). In 1985/86 about 38 per cent of Japanese world imports of services (and 35 per cent of its exports) stemmed from developing countries (and were absorbed by developing countries). Services supplied by developing countries accounted for one fifth of total Japanese imports (including merchandise) from this group of countries, whereas only 11 per cent of Japanese total exports can be attributed to services. As a result, Japan has been a clear net importer of services in its bilateral trade with developing countries, and this is probably due to the shipment of primary commodities mostly under "flags of convenience" to Japan. In 1985/86, more than 50 per cent of total Japanese imports of services in transportation industries were credited to the accounts of residents in developing countries. Japanese tourism in neighbouring Asian developing countries and a relatively large amount of payments of fees, royalties and non-merchandise insurance premia to developing countries have also contributed to the Japanese trade deficit in services. Whether the latter source of this deficit is related to large Japanese FDI and trading activities in Asian developing countries and to payments received by firms in which Japanese parent companies hold minority equity shares, cannot be verified here but could provide scope for further research.

¹ Developing countries do not appear as explicit entities in the Japanese regionalized balance-of-payments statistics. They are labelled "other countries" besides OECD countries, Communist bloc countries and international institutions. There is no regional disaggregation within developing countries, and the sectoral composition of services is much broader than in the US case, comprising only three groups of services.

Table 2 - Japan's Trade in Goods and Services with Developing Countries, 1982-1986 (mill. US \$)

	World		LDCs		Share of LDCs in Japan's world trade	
	1982/83(a)	1985/86(a)	1982/83(a)	1985/86(a)	1982/83	1985/86
	Japanese exports					
Merchandise	141565	189803	62491	59715	44.1	31.5
Services	20081	21173	8113	7488	40.4	35.4
transportation(b)	12764	11880	5414	4424	42.4	37.2
travel	790	1300	313	452	39.6	34.8
other private services(c)	6527	7993	2386	2838	36.6	35.5
Total exports of goods and services	161646	210976	70604	67203	43.7	31.9
	Japanese imports					
Merchandise	116799	115396	67940	58831	58.2	51.0
Services	33941	35791	13899	13505	41.0	37.7
transportation(b)	16114	14473	7949	7396	49.3	51.0
travel	4272	6021	1424	1822	33.3	30.3
other private services(c)	13555	16297	4526	4286	33.4	26.3
Total imports of goods and services	150740	152188	81839	72336	54.3	47.5
(a) Two-years average. - (b) Freight, insurance on international shipments, port disbursements, passenger fares, time charters, ocean vessels, aircraft. - (c) Management fees, patents, royalties, fees, agent's fees, advertising, film rentals, non-merchandise insurance.						

Source: The Bank of Japan [current April issues]; own calculations.

c. French Trade in Services

The decomposition of French trade in services by regions faces a number of problems of compatibility due to two different concepts of measurement applied.¹ Hence, the regional breakdown of trade flows presented in Tables 3 and A1 should be evaluated with caution.

As far as two sub-regions of developing countries, OPEC countries and Latin America, are concerned, the OPEC region proved to be an important importer of French construction services. After the end of the oil price boom, this importance slowed down. Yet, in 1985/86, still more than 26 per cent of total French exports of construction services were directed to OPEC countries. It is due to this flourishing demand that OPEC countries accounted for a larger share in French world service exports than in French world merchandise exports. On the other hand, the Latin American market has proven just as sluggish for French exports of services as for goods.

On the import side, the relatively large share of construction services "imported" from OPEC countries (about 13 per cent of French world imports in this service industry in 1985/86) deserves attention. One may assume that this "import" either reflects the participation of foreign firms registered in OPEC countries in large turn-key infrastructure projects, as a "local content" substitute, or payments of subscription fees to OPEC residents.

More important partner regions of France for trade in services than Latin America are the three Maghreb states Algeria, Tunisia, and Morocco, and especially the francophone African member states of the

¹ Whereas the global balance-of-payments statistics record "transactions", bilateral balance-of-payments statistics (with regions of individual countries) are compiled on the basis of "règlements bilatéraux" between residents of the partner country (credits and debits). Differences between real flows of goods and services and financial flows may basically arise if trade is financed by credits. Furthermore, bilaterally, there is no record on trade between France and "developing countries". This group can only be formed as a residual from the global balance of payments (based on transactions) minus two bilateral balance of payments with the OECD countries and Socialist countries (both in terms of "règlements"). For subgroups of developing countries, bilateral balance of payments, again in terms of "règlements" with OPEC countries, Latin America, Maghreb states and member countries of the Franc Zone (basically francophone Sub-Saharan African countries) are published.

Table 3 - Share of OPEC, Latin American Countries and Franc Zone Countries in French World Exports and Imports of Goods and Services, 1979/80 and 1985/86 (a)

	OPEC		Latin American countries		Franc Zone countries		Share of all LDCs in French world trade(b)	
	1980	1985/1986	1979/1980	1985/1986	1979/1980	1985/1986	1979/1980	1985/1986
	French exports							
Merchandise	10.6	7.7	3.5	2.3	3.9	3.6	16.5	15.6
Total services	10.6	8.4	1.8	1.8	10.2	6.8	36.1	31.3
freight	6.6	11.4	0.8	3.4	12.6	5.3	74.3	27.0
transport	6.3	5.3	1.7	1.1	9.7	5.4	25.8	42.9
insurance	3.1	3.7	3.3	1.5	6.8	4.0	18.3	20.3
travel	4.9	4.1	0.7	0.6	9.4	7.1	13.6	11.3
construction	31.8	26.3	4.0	4.8	10.9	10.8	65.3	62.3
patents, licences	0.5	2.2	1.1	0.7	2.9	2.6	8.8	7.3
other services	5.8	4.7	1.3	1.7	11.2	6.7	27.7	24.1
Total exports of goods and services	10.6	7.9	3.1	2.2	5.1	4.3	20.2	18.8
	French imports							
Merchandise	22.4	9.6	1.9	2.4	3.9	4.0	26.4	18.0
Total services	3.2	3.9	1.9	1.6	4.9	3.7	25.6	25.6
freight	2.2	7.8	2.0	2.1	0.5	1.7	52.8	20.2
transport	3.1	4.5	3.4	2.4	6.0	4.3	20.4	43.3
insurance	1.8	1.0	1.9	1.0	1.3	1.8	8.1	15.1
travel	0.7	0.8	0.6	0.4	2.8	5.3	15.8	17.7
construction	12.1	12.9	2.9	3.1	11.0	6.0	38.8	37.0
patents, licences	0.1	0.1	0.2	0.1	0.2	0.2	0.5	0.7
other services	4.9	2.3	1.4	1.3	10.7	2.6	21.4	12.0
Total imports of goods and services	19.5	8.6	1.9	2.3	4.0	3.9	26.3	19.3
<p>(a) Two-year average. - (b) Estimated as a residual of total French external transactions minus "règlements" (financial flows) with OECD countries and socialist countries.</p>								

Source: Ministère de l'Economie [1979; 1980; 1985; 1986]; own calculations.

Franc Zone.¹ This mirrors the relatively strong links in merchandise trade and monetary relations between the francophone countries and the former Metropolitan country.

As far as French exports in services to all developing countries are concerned, a similar figure as in the US case emerges. That means that about one third of total services sold abroad was directed to developing countries.

In general, developing countries accounted for higher shares in both French exports and imports of services than in merchandise trade. There are strong parallels between growth rates of trade in goods and services with specific developing regions. As an example, after the end of the two oil-price hikes service exports to the OPEC countries slowed down considerably compared to other developing regions and so did merchandise exports.

With respect to imports, France seems to have been more absorptive to services originating from developing countries than to goods. Between 1979/80 and 1985/86, merchandise imports from developing countries rose by 4 per cent annually whereas imports in services (mainly transport and travel) grew by almost 13 per cent annually. There is much evidence from the French trade pattern that developing countries captured rising shares in the international transport market at a time when excess capacities were high and freight rate competition was very aggressive. In 1979/80 as well as 1985/86, about 25 per cent of total French imports in services stemmed from developing countries but an overproportionate share of more than 40 per cent was gained in maritime and air transport (Table 3).

d. West German Trade in Services

Figures presented on West German trade in services with developing countries are the most detailed ones among the four OECD countries. In addition to published data on trade with the developing countries in total, unpublished data for 16 major developing countries have been made

¹ In 1985/86, about 7 per cent of French service exports and 4 per cent of imports were with Franc Zone countries.

Table 4 - West German Trade in Goods and Services with Developing Countries (per cent)

	Average annual growth rate				Share of all developing countries in West German world trade			
	World	Four Asian NICs(a)	Latin American Six(a)	All developing countries				
	1971/86	1971/86	1971/86	1971/86	1971	1975	1980	1986
	West German exports							
Merchandise	8.6	13.8	4.8	8.1	11.7	16.7	15.2	11.0
Services	9.2	16.5	6.3	11.6	12.4	17.6	21.8	17.1
travel	6.5	24.9	6.6	16.8	1.7	5.9	7.1	6.7
total transport	6.6	13.7	6.0	7.2	16.7	20.7	19.0	18.2
freight	5.0	11.1	7.2	4.3	19.4	24.7	20.1	17.6
passenger fares	8.0	16.4	5.5	10.8	16.1	20.5	24.2	23.6
port services	8.8	23.9	4.1	12.0	9.3	10.5	13.0	14.2
repairs	9.6	4.7	-1.9	n.a.	17.4	14.2	n.a.	n.a.
other transport	3.7	n.a.	n.a.	11.2	0.0	1.1	11.9	18.0
insurance	14.0	12.9	7.2	8.1	12.7	14.0	10.8	5.7
other private services	13.4	21.6	6.5	15.9	16.7	21.8	33.5	23.0
Total exports of goods and services	8.6	14.1	5.0	8.6	11.8	18.5	16.2	11.7
	West German imports							
Merchandise	7.8	16.2	8.2	11.8	7.4	18.9	20.5	12.7
Services	7.9	16.5	6.1	9.3	10.7	11.7	13.7	12.9
travel	8.1	20.1	10.9	17.1	2.3	3.2	5.8	7.6
total transport	4.8	14.5	7.3	4.9	17.0	15.0	17.0	17.2
freight	3.2	11.4	7.2	4.4	14.7	16.5	16.0	17.5
passengers								
fares	8.6	28.0	11.1	16.9	5.0	8.5	14.7	15.2
port services	6.5	12.2	4.0	6.7	15.4	15.1	16.7	15.8
repairs	6.0	n.a.	n.a.	n.a.	1.8	11.1	n.a.	n.a.
other transport	-0.7	24.3	10.5	-3.5	60.1	21.7	32.8	33.6
insurance	12.9	12.9	2.1	13.2	9.7	9.9	13.3	10.0
other private services	9.5	17.6	4.4	10.6	13.8	18.7	21.5	16.2
Total imports of goods and services	7.9	16.2	7.8	11.2	8.1	17.1	19.1	12.8
(a) Four Asian NICs: Hong Kong, Singapore, South Korea, Taiwan. Latin American Six: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela.								

Source: Deutsche Bundesbank [No. 7, July 1973; No. 7, July 1978; No. 7, July 1983; No. 6, June 1988]; Deutsche Bundesbank (Unpublished data); own calculations.

available. Tables 4 and A2 provide a breakdown of West German merchandise and service trade with the world, developing countries and two important subgroups, the four Asian NICs (Hong Kong, Singapore, South Korea, and Taiwan) and the six largest Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela). It emerges that:

- West Germany has been a net importer of services from developing countries during the 1970s and 1980s whereas it used to be a net exporter of goods except for 1980 when the second oil-price hike had its impact on imports (in value terms);
- developing countries turned out to be more important export markets for West German services than suppliers of services (in 1986 about 17 per cent of West German service exports were directed to developing countries whereas about 13 per cent of West German imports originated from developing countries; cf. Table 4);
- services rather than goods make up a more dynamic segment of total West German exports to developing countries;
- on the import side, services supplied by developing countries kept growing after the end of the oil-price boom in the 1980s whereas merchandise imports in value terms declined as commodity prices decreased;
- there is no clear evidence of inter-industry specialization except for travel, fares, advertising, and fees where West Germany appears to be a clear net importer and for construction where it is a net exporter. In transportation services, West German exports and imports have by and large been balanced;
- in regional terms, the four Asian NICs outstripped the other major LDC group, the six large Latin American countries. Whereas in 1971, the latter group comprised about 22 per cent of West German imports in services from developing countries compared to only 6 per cent for the Asian NICs, the relation drastically turned by 1986 to 14 and 15 per cent respectively. Strongholds of the NICs which started their catch-up process in the late 1970s and early 1980s were not only the traditional services such as travel and transport, but also management activities and construction services summarized under "other services" (Table 5).

Table 5 - Composition of West German Exports and Imports in Services with Selected Developing Countries, 1971-1986 (per cent) (a)

Trading partners		Travel				Transport				Insurance				Other services			
		1971	1975	1980	1986	1971	1975	1980	1986	1971	1975	1980	1986	1971	1975	1980	1986
Singapore	exports	7.7	4.0	3.3	12.1	76.9	74.0	68.9	32.3	7.7	4.0	3.3	1.7	7.7	18.0	24.6	53.9
	imports	13.5	7.7	14.7	13.7	43.2	47.9	5.0	37.2	2.7	2.1	1.6	1.6	40.5	42.3	26.7	47.5
ASEAN	exports	7.3	2.1	3.8	7.3	66.9	38.5	57.0	37.2	5.6	3.3	4.4	2.7	20.2	56.1	34.9	52.7
	imports	8.9	12.9	18.1	18.2	45.7	32.1	43.9	38.0	1.3	1.6	2.5	1.7	44.0	53.3	35.5	42.1
Hong Kong	exports	5.9	2.4	5.5	18.3	86.3	78.4	66.0	61.3	3.9	4.0	2.0	1.5	3.9	15.2	26.5	18.8
	imports	10.3	8.4	19.5	21.8	43.1	18.5	30.3	26.1	6.0	2.2	6.2	3.0	40.5	70.9	44.1	49.1
South Korea	exports	0.0	0.0	2.6	1.2	37.0	78.9	64.5	49.6	3.7	7.9	3.9	2.3	59.3	28.9	28.9	46.9
	imports	3.0	3.8	3.1	3.9	15.2	55.1	40.4	27.5	3.0	5.1	9.9	3.9	78.8	35.9	46.6	64.8
Taiwan	exports	0.0	1.4	0.9	0.5	81.5	81.9	55.7	54.9	3.7	6.9	5.7	9.2	14.8	9.7	37.7	35.4
	imports	3.0	2.0	1.5	2.9	57.6	47.5	43.1	39.7	6.1	5.1	5.0	5.5	33.3	45.5	50.5	51.9
India	exports	2.4	3.5	2.8	2.3	71.4	65.9	55.4	53.7	6.0	5.9	2.3	3.8	20.2	27.4	39.5	40.3
	imports	13.7	15.3	38.9	37.5	42.5	55.0	28.2	17.7	8.2	3.6	6.3	3.1	35.6	26.1	26.6	41.7
Saudi Arabia	exports	0.6	2.2	0.3	2.8	6.1	12.5	6.0	11.1	0.6	1.3	0.5	1.6	92.7	84.0	93.1	84.4
	imports	8.0	10.3	2.9	9.8	17.5	26.3	11.6	8.4	0.7	1.7	1.1	1.2	73.7	61.6	84.5	80.6
Argentina	exports	14.3	13.9	9.4	11.0	42.9	62.0	40.9	26.7	1.7	1.9	0.6	1.3	41.2	22.2	49.1	61.0
	imports	4.0	3.9	3.6	5.0	28.0	25.5	20.7	54.1	2.0	1.3	1.2	1.8	66.0	69.3	74.6	39.2
Brazil	exports	9.9	8.1	9.4	10.8	41.8	57.9	48.8	50.1	1.4	1.9	1.2	1.6	46.8	32.2	40.6	37.6
	imports	4.8	7.6	8.6	12.8	49.1	44.5	50.4	60.0	3.3	1.6	1.7	2.2	42.7	46.3	39.3	24.9
Mexico	exports	11.5	3.0	8.4	10.8	46.0	36.6	46.6	46.2	16.1	6.9	6.0	12.8	26.4	53.4	39.0	30.3
	imports	16.2	15.8	25.7	16.2	12.1	13.8	15.4	9.7	8.1	6.6	10.3	26.2	63.6	63.8	48.6	47.9
Venezuela	exports	9.0	5.5	8.6	6.4	32.8	46.6	36.9	51.2	6.0	5.5	6.3	13.4	52.2	42.3	48.2	29.1
	imports	3.5	5.7	8.3	4.6	42.1	29.3	22.1	36.4	1.8	5.1	11.1	8.1	52.6	59.9	58.5	50.9
LDC Sample	exports	7.1	4.3	3.0	6.8	48.3	47.0	26.3	39.4	3.8	3.2	1.6	3.2	40.8	45.5	69.1	50.6
	imports	7.3	9.1	10.8	15.4	39.1	32.8	28.9	32.2	3.3	2.8	3.4	3.8	50.4	55.3	56.9	48.6

(a) Deviations from 100 are due to rounding.

Source: Deutsche Bundesbank (unpublished data); own calculations.

3. Hypotheses Derived from Main Empirical Observations

Given the extraordinary conceptual and statistical barriers, it comes as no surprise that empirically-tested hypotheses on determinants of North-South trade in services are very rare. Basically, the few studies available lend support to the use of the same set of analytical tools to explain trade in services as they are well-established in merchandise trade.¹ The empirical evidence presented here cannot add more to this literature as the factor content of services is disregarded in this paper. The following hypotheses derived from the four OECD countries' bilateral or regional balance of payments hence refer to the direction of trade in services rather than to its structure.

Firstly, developing countries have no reason to be concerned about their participation in world trade in services as they seem to suggest in the Uruguay Round of the GATT [Bhagwati, 1987]. Quite a number of them have proven to be very competitive and successful on OECD markets. On the other hand, they are important markets for OECD countries' exports. In some cases growth rates of trade in services have exceeded those in merchandise trade, and this is not always the result of a low initial level.

Secondly, as argued by Sapir and Lutz, Lall and others, inter-industry specialization seems to be more dominant in North-South trade in services than intra-industry specialization. Disaggregated data on US, French and especially West German trade in services lend support to the view that industries in which developing countries are clear net exporters can be separated from those in which they are net importers. "Embodied" services such as travel and maritime transport form the core of

¹ The pioneer study in this respect has been the study by Sapir and Lutz [1981] which takes a strong parallel to factor proportions theory as it has been applied for North-South trade in goods. Capital abundance and the availability of human capital are exposed to be the main determinants of comparative advantages for instance in freight and passenger services. This view is basically supported by Lall [1986] who argues that developing countries can be net exporters of relatively physical capital-intensive services, if this stock of physical capital has been built up in the course of developing a competitive manufacturing base. Simultaneously, developing countries can be net importers of those services being at the upper end of the human-capital intensity scale. Hence, inter-industry specialization is said to be dominant instead of intra-industry specialization.

the first group; management activities and construction industries belong to the latter one. Peculiarities such as the temporarily high OPEC demand for construction services and concomitant payments to non-residents in OPEC countries booked as "imports" do not change this general pattern. Yet, this hypothesis requires much more in-depth analysis in order to be consolidated.

Thirdly, in regional terms, there is much overlap between the groups of major exporters of manufactures and successful suppliers of services among the developing countries. This is probably the most important result and has to be specified further. Both the US and West German data suggest that South-East and East Asian NICs were able to surpass Latin American countries in terms of export growth rates both in goods and services. This supports Lall's view of a dynamic manufactured export base as an important determinant of a similar service infrastructure [Lall, 1986, p. 136].

The concrete relationships between LDC exports of goods and services can be hypothesized as follows:

- (i) Trade in services is not autonomous but is induced to some extent by merchandise trade. This mainly refers to transport and merchandise insurance. If factor availability allows for building up own transport facilities for own exports, government interventions such as adherence to strict cargo-sharing principles agreed upon in liner conferences between importing and exporting countries contribute to tighten this link (UNCTAD Shipping Code). Such government interventions in this industry may lead to a bias in bilateral trade relations towards intra-industry specialization.
- (ii) To be successful, relatively outward-oriented trade strategies in the goods sector require the permanent exploration of new foreign output markets and the knowledge of competitive input markets. Both foreign and local investors can offer such services if close connection to local producers and their needs is maintained. Successful production centres for merchandise are therefore also service centres on a national as well as international scale. Singapore which owes its existence to the role of a service centre is a case in point.
- (iii) It is empirically well-founded that trade relations between partners are relatively strong where flows of FDI are strong as well. For-

foreign investors and their subsidiaries are per se excellent producers and transmitters of services, no matter whether investment is in the service or manufacturing sector.

- (iv) Business travel, conferences, fairs, and leisure tours are by-products of intensive international exchange of goods. Successful LDC suppliers of goods have hence invested extensively also in travel and aviation services in order to offer both information on new goods and facilities for recreational activities in their countries.
- (v) Capital requirements for shipping and shipping-related services are such that the minimum economic size is rather large. Only those countries with a rapidly growing volume of trade can achieve such minimum levels, and these are exporters of manufactures rather than of commodities. An additional argument for regarding service exports and imports of an individual country as a by-product of its manufactured trade is that manufactures are mostly shipped by direct liner services (including air cargo transport). Such services are subject to bilateral bargaining between exporting and importing countries and their agencies, i.e. pool services, so that bilateral flows of goods are commensurate with bilateral flows of related services. This overlap may be much smaller in trade with commodities where tramp services have a larger importance.

4. The Directionality of North-South Trade in Goods and Services: The Case of West Germany

Trade in manufactures between individual countries is expected to create trade in related service activities between the same trading partners. This hypothesis assumes developing countries to be successful suppliers of service activities if they are able to compete on world markets with manufactures. Such success, however, cannot only be the outcome of comparative advantages but may also be influenced by governmental interventions into the distribution of related services between the trading partners (i.e. cargo preferences).

To test the link between trade in manufactures and services, several cross-country regressions were run with changes in per capita income

Table 6 - West German Trade in Manufactures and Services with Developing Countries (Cross-Country Regression Results on Changes in Trade Shares)

Endogenous variable	Constant	Exogenous variable		\bar{R}^2	F
change between 1971 and 1986					
Δx_i^S	-0.13 (-1.97)**	$0.0001\Delta y_i$ (4.59)*	$+0.41\Delta x_i^G$ (2.07)**	0.57	10.87*
change between 1975 and 1986					
Δx_i^S	-0.10 (-1.42)	$0.00006\Delta y_i$ (1.91)**	$+0.7\Delta x_i^G$ (3.63)*	0.53	9.48*
change between 1971 and 1986					
Δm_i^S	-0.08 (-1.10)	$0.00006\Delta y_i$ (3.28)*	$+0.20\Delta m_i^G$ (1.33)	0.40	6.01*
change between 1971 and 1986					
$\Delta x_i^S + \Delta m_i^S$	-0.25 (-1.99)**	$0.00002\Delta y_i$ (4.44)*	$+0.42(\Delta x_i^G + \Delta m_i^G)$ (2.14)**	0.56	10.68*
change between 1975 and 1986					
$\Delta x_i^S + \Delta m_i^S$	-0.15 (-1.39)	$0.00001\Delta y_i$ (2.00)**	$+0.91(\Delta x_i^G + \Delta m_i^G)$ (3.76)*	0.55	10.17*
<p>Note: Δx_i^S = absolute change in the share of country i in West German exports of services between ...</p> <p>Δx_i^G = absolute change in the share of country i in West German manufactured exports between ...</p> <p>Δy_i = absolute change in the per capita income of country i (in US \$) between ...</p> <p>$\Delta m_i^S$ = absolute change in the share of country i in West German imports of services between ...</p> <p>Δm_i^G = absolute change in the share of country i in West German manufactured imports between ...</p>					
<p>* Statistically significant at the 5 per cent level. - ** Statistically significant at the 10 per cent level. - t-statistics in brackets.</p>					

Source: As for Table 4; own calculations.

and country shares in West German manufactured exports and imports as independent variables, and changes in country shares in West German exports and imports of services as dependent variables. The sample covers 16 major developing countries.¹ Both regression coefficients are hypothesized to be positive. The change in per capita income is a catch-all proxy for various demand and supply factors, such as rising absorptive capacity, human and physical capital formation and development level, whereas the change as supplier and purchaser of manufactures reflects the changing openness of the economy, skill availability and the demand for trade-related services.

In general, the regression results confirm the hypothesis (Table 6). Yet, the catch-all variable of changes in per capita income has always a stronger impact on changes in shares of service trade than shares in manufactured trade and their changes. Furthermore, the relationships are more stable on the export side than on the import side. Finally, it is mainly the period of the mid-1970s to mid-1980, where links between trade shares in services and manufactures can be measured, not the earlier period of 1971-1975. Hence, this link is a recent phenomenon directly related to the process of rising income levels and the concomitant capital formation. The intensity of trade relations in general (including trade in commodities) and not only of manufactured trade seems to influence trade in services positively. This is supported by the observation that West German residents credited relatively large amounts under service accounts to resource-rich developing countries such as Saudi Arabia and Venezuela, both of them did not export manufactures worth mentioning during the reference period.

5. Final Remarks

North-South trade in services is neither quantitatively negligible nor exclusively a "transport and travel" topic. Exports of developing countries still have their strongholds in these two service industries

¹ In addition to the four Asian NICs and the six largest Latin American countries listed in Table A2, the four ASEAN member states Indonesia, Malaysia, Philippines, and Thailand as well as India and Saudi Arabia have been included.

which are strongly related to merchandise trade. Yet, other private services have become more relevant too. Unfortunately, very little is known about their underlying determinants and the concrete nature of the transactions. In addition, given their high degree of "disembodiment" it is debatable whether one can force them into bilateral matrices of partner and reporting countries as in merchandise trade.

Regional balance-of-payments statistics presented in this paper are at best useful for finding very broad relationships between merchandise trade balances and those in services. Though the analyses of at least three OECD countries' data suggest more inter-industry specialization in services than intra-industry specialization, the results are not fully conclusive. Parallels to merchandise trade appear strong with respect to regional shifts in trade. Asian developing countries, including the four NICs Hong Kong, South Korea, Singapore, and Taiwan, proceeded more rapidly in exports of services than Latin American countries, and this has also been a key element of recent developments in merchandise trade.

Wide differences emerge between the four OECD countries as far as the importance of developing countries in total and certain subregions for their service exports is concerned. Countries like the US and Japan which have strong merchandise export bases in neighbouring developing countries and operate in these countries with a large number of FDI subsidiaries, also direct a sizeable share of their total exports in services to developing countries. France sells a large share of its services to francophone Mediterranean and Sub-Saharan African countries where it still keeps a dominant trading position as a former Metropolitan country. West Germany seems to have profited especially from high import demand for services in OPEC countries which in 1986 accounted for more than 40 per cent of its total service exports to developing countries.

In general, such surveys are no substitute for industry studies because sectoral aggregation is very high in the balance-of-payments statistics and because serious accounting problems emerge especially in modern "disembodied" services. Only detailed studies on international activities of service industries can provide the basis for analyzing to what extent flows of services between developing and developed countries are determined by the relative factor endowment and which part is generated by policy interventions.

Appendix Tables

Table A1 - French Trade in Goods and Services with Developing Countries, 1979/80 and 1985/86 (mill. Francs) (a)

	OPEC		Latin American countries		Franc Zone countries(b)		All developing countries(c)	
	1980	1985/86	1979/80	1985/86	1979/80	1985/86	1979/80	1985/86
	French exports							
Merchandise	58212	74595	17764	22165	19845	35234	84422	150990
Total services	13879	20547	2116	4370	12228	16563	43273	76305
freight	1113	1335	115	400	1924	617	11372	3152
transport	1798	3495	457	709	2546	3551	6742	28063
insurance	164	634	164	256	340	691	921	3469
travel	1688	2836	210	435	3005	4914	4352	7862
construction	8103	10477	939	1925	2552	4289	15270	24831
patents, licences	10	104	22	33	56	119	172	342
other services	1003	1668	211	613	1805	2382	4447	8537
Total exports of goods and services	72091	95142	19880	26535	32073	51797	127695	227295
	French imports							
Merchandise	134740	95631	10155	24277	20927	39616	142537	179309
Total services	3412	7921	1893	3201	4774	7434	25158	51401
freight	458	1613	364	430	93	344	9702	4208
transport	835	2772	834	1462	1445	2620	4955	26629
insurance	101	168	98	162	65	285	412	2448
travel	174	352	143	177	671	2278	3752	7620
construction	1032	2225	235	537	883	1024	3100	6394
patents, licences	3	11	9	9	6	21	19	60
other services	809	782	212	426	1611	862	3220	4043
Total imports of goods and services	138152	103552	12047	27478	25701	47050	167695	230709
	(a) Two-year average. - (b) Benin, Cameroon, Comoros, Ivory Coast, Gabon, Equatorial Guinea, Upper Volta, Mali, Niger, Central African Republic, Senegal, Chad, Togo. - (c) Estimated as a residual of total French external transactions minus "règlements" (financial flows) with OECD countries and socialist countries.							

Source: Ministère de l'Economie [1979; 1980; 1985; 1986]; own calculations.

Table A2 - West German Trade in Goods and Services with Developing Countries, 1971, 1975, 1980, and 1986 (mill. DM)

	World				Four Asian NICs			
	1971	1975	1980	1986	1971	1975	1980	1986
<i>West German exports</i>								
Merchandise	145054	214794	335232	497246	1230	2197	4348	8584
Services	19456	32782	53806	73103	131	285	504	1291
travel	5340	7014	11539	13685	5	6	18	140
total transport(c)	8526	12329	18122	22146	96	224	224	663
freight	5067	7346	9770	10554	69	176	195	334
passenger fares	1606	2187	3493	5091	18	33	68	175
port services	1491	2275	4061	5308	6	12	53	150
repairs	253	344	537	1003	2	4	5	4
other transport	109	177	261	189	n.a.	n.a.	n.a.	n.a.
insurance	843	1501	2723	6033	6	13	17	37
other private services(c)	4747	11938	21422	31239	24	42	145	451
fees, advertising, fairs	529	841	1743	3237	0	5	16	50
licences, patents	545	796	1101	1981	1	2	20	26
wages and salaries received from non-residents	1569	2447	4209	6145	2	2	12	40
construction, assembly	1219	3057	7056	7536	12	17	47	122
overhead costs (receipts)(d)	301	829	1015	1253	0	0	12	47
receipts of repayments, discounts, liability, payments	318	413	649	893	4	4	3	11
miscellaneous(e)	266	3555	5649	10193	3	10	31	156
Total	164510	247576	389038	570349	1361	2482	4852	9875
<i>West German imports</i>								
Merchandise	122395	174528	320578	380130	1254	3754	8319	11893
Services	35521	56208	88855	111314	219	724	1163	2175
travel	12292	20940	36609	39384	19	50	143	297
total transport(c)	11223	13126	18929	22738	90	233	509	690
freight	6353	6485	8711	10224	54	101	194	273
passenger fares	1703	2337	3860	5903	5	16	43	204
port services	2196	3422	5154	5658	28	81	119	158
repairs	56	45	79	134	n.a.	n.a.	4	4
other transport	914	837	1124	818	2	34	49	52
insurance	1129	2424	3747	6990	11	21	56	68
other private services(c)	10877	19718	29570	42202	99	420	455	1120
fees, advertising, fairs	3164	5122	7297	10224	58	107	199	501
licences, patents	1483	2052	2624	4159	1	0	1	1
wages and salaries paid to non-residents(f)	2767	3877	6774	8557	10	14	33	90
construction, assembly	1694	3058	4823	4764	3	211	37	102
overhead costs (payments)(g)	370	1389	2237	1955	4	13	28	84
repayments, discounts, liability payments	970	1786	2261	3937	19	14	32	71
miscellaneous	429	2435	3555	8607	4	62	126	273
Total	157916	230736	409433	491444	1473	4478	9482	14068

(a) Four Asian NICs: Hong Kong, Singapore, South Korea, Taiwan. - (b) Latin American Six: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela. - (c) Deviations from the sum of sub-items are due to rounding and to missing information on sub-items - (d) Payments of foreign subsidiaries to parent companies for participation in overhead costs. - (e) Mainly wages received in outward processing and services of the West German postal service. - (f) Excluding payments to guestworkers which are defined as residents. - (g) Grants of parent companies to foreign subsidiaries. - n.a.: Not available.

Table A2 (continued)

	Latin American Six				Developing countries			
	1971	1975	1980	1986	1971	1975	1980	1986
<i>West German exports</i>								
Merchandise	4164	6508	9429	8435	16977	35953	51121	54478
Services	680	1118	1690	1704	2411	5776	11729	12495
travel	72	76	142	189	89	414	821	920
total transport(c)	325	621	807	780	1423	2550	3435	4031
freight	166	347	429	468	982	1815	1968	1858
passenger fares	94	139	222	210	258	448	845	1204
port services	49	117	133	90	138	238	527	754
repairs	16	18	24	12	44	49	n.a.	n.a.
other transport	n.a.	n.a.	n.a.	n.a.	0	2	95	215
insurance	28	40	47	80	107	210	294	344
other private services(c)	255	381	694	655	792	2602	7179	7200
fees, advertising, fairs	16	18	80	79	49	74	227	409
licences, patents	94	98	39	70	115	154	129	180
wages and salaries received								
from non-residents	11	30	116	67	36	178	554	858
construction, assembly	103	172	290	284	531	2031	5725	4633
overhead costs (receipts)(d)	3	7	14	14	16	32	91	179
receipts of repayments,								
discounts, liability payments	8	11	15	17	30	26	67	70
miscellaneous(e)	10	42	138	125	16	106	384	871
Total	4844	7626	11119	10139	19388	45729	62850	66973
<i>West German imports</i>								
Merchandise	3351	4813	7817	10899	9038	32931	65814	48459
Services	816	1158	1665	1982	3795	6573	12205	14414
travel	46	100	161	216	280	675	2124	2980
total transport(c)	327	396	581	937	1906	1967	3212	3901
freight	217	237	257	616	932	1068	1390	1789
passenger fares	29	64	86	140	86	198	568	900
port services	79	92	136	143	338	516	860	892
repairs	n.a.	n.a.	n.a.	n.a.	1	5	n.a.	n.a.
other transport	2	3	2	9	549	182	394	320
insurance	30	37	78	41	109	240	500	698
other private services(c)	413	625	845	88	1500	3691	6369	6835
fees, advertising, fairs	245	391	511	456	740	1601	2259	2639
licences, patents	1	0	2	2	5	5	13	8
wages and salaries paid								
to non-residents(f)	36	41	79	89	122	146	499	544
construction, assembly	76	85	84	60	407	1138	2295	2023
overhead costs (payments)(g)	13	17	89	44	56	447	656	265
repayments, discounts,								
liability payments	39	58	51	88	150	234	353	485
miscellaneous	1	30	31	51	20	118	293	869
Total	4167	5971	9482	12881	12833	39504	78019	62873

(a) Four Asian NICs: Hong Kong, Singapore, South Korea, Taiwan. - (b) Latin American Six: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela. - (c) Deviations from the sum of sub-items are due to rounding and to missing information on sub-items. - (d) Payments of foreign subsidiaries to parent companies for participation in overhead costs. - (e) Mainly wages received in outward processing and services of the West German postal service. - (f) Excluding payments to guestworkers which are defined as residents. - (g) Grants of parent companies to foreign subsidiaries. - n.a.: Not available.

Source: Deutsche Bundesbank [No. 7, July 1973; No. 7, July 1978; No. 7, July 1983; No. 6, June 1988]; Deutsche Bundesbank (unpublished data); own calculations.

Bibliography

- ARNDT, Heinz W., "GATT and the Developing Countries: Agenda for a New Trade Round". *Weltwirtschaftliches Archiv*, Vol. 123, 1987, pp. 705-718.
- THE BANK OF JAPAN, Balance of Payments. Tokyo, various issues.
- BHAGWATI, Jagdish, "Splintering and Disembodiment of Services and Developing Nations". *The World Economy*, Vol. 7, 1984, pp. 133-143.
- , "Trade in Services and the Multilateral Trade Negotiations". *The World Bank Economic Review*, Vol. 1, 1987, pp. 549-569.
- BÖHME, Hans, "Weltseeverkehr: Kein Ende der Krise?" *Die Weltwirtschaft*, 1986, H. 2, pp. 144-167.
- DEUTSCHE BUNDESBANK, Reihe 3: Zahlungsbilanzstatistik. Supplement to Monatsberichte der Deutschen Bundesbank. Frankfurt/M, various issues.
- GRAY, H. Peter, "A Negotiating Strategy for Trade in Services". *Journal of World Trade Law*, Vol. 17, 1983, pp. 377-388.
- GRUBEL, Herbert G., "All Traded Services are Embodied in Materials or People". *The World Economy*, Vol. 10, 1987, pp. 319-330.
- LALL, Sanjaya, "The Third World and Comparative Advantages in Trade Services". In: Sanjaya LALL, Frances STEWART (Eds.), *Theory and Reality in Development*. London 1986, pp. 122-138.
- LEE, Chung H., Seiji NAYA, "U.S.-ASEAN Trade and Investment in Services: The American Viewpoint". In: Loong-Hoe TAN, Narongchai AKRASANEE (Eds.), *ASEAN-U.S. Economic Relations: Changes in the Economic Environment and Opportunities*. Institute of Southeast Asian Studies, Singapore 1988, pp. 146-173.
- MINISTERE DE L'ECONOMIE, DES FINANCES ET DE LA PRIVATISATION, La Balance des Paiements de la France. Paris, various issues.
- RUGMAN, Alan M., "Multinationals and Trade in Services: A Transaction Cost Approach". *Weltwirtschaftliches Archiv*, Vol. 123, 1987, pp. 651-667.
- SAPIR, André, "North-South Issues in Trade in Services". *The World Economy*, Vol. 8, 1985, pp. 27-42.
- , "Trade in Services: Policy Issues for the Eighties". *The Columbia Journal of World Business*, Vol. 17, 1982, pp. 77-85.
- , "Trade in Investment-Related Technological Services". *World Development*, Vol. 14, 1986, pp. 605-622.

SAPIR, André, Ernst LUTZ, Trade in Services: Economic Determinants and Development Related Issues. World Bank Staff Working Papers, 480, Washington 1981.

SICHELSCHMIDT, Henning, "Weltluftverkehr: Verlangsamte Zunahme des Personenverkehrs". Die Weltwirtschaft, 1986, H. 2, pp. 168-178.

US DEPARTMENT OF COMMERCE, Survey of Current Business. Washington, various issues.