CHAPTER 3

STRUCTURE AND TRENDS IN SOUTH AFRICA-US INTRA-INDUSTRY TRADE IN SERVICES

Good data analysis…involves a theory-inspired dialogue in which data play an active role in the process of arriving at an appropriate specification of a model, and not just in testing.

Mukherjee, White and Wuyts (1998:3)

3.1 INTRODUCTION

This chapter provides a descriptive analysis of South Africa-US IIT in services with a view to identifying some stylised facts. The chapter is organised as follows. Section 3.2 briefly analyses problems in service trade data in the context of South Africa-US trade in services. Section 3.3 presents, a descriptive analysis of the structure and trends in South Africa-US trade in services over the period 1992-2003. Firstly, an analysis is done to reveal some trends in exports and imports flows in thirty sectors over the period 1992-2003. Secondly, the thirty sectors are sorted out using a methodology suggested by Abd-el-Rahman (1991) to identify service sectors with "genuine" IIT. In this process only thirteen sectors are identified for further analysis. Thirdly, Grubel and Lloyd (GL) IIT indices are computed for both unaffiliated and affiliated services. Finally, Section 3.4 presents the main insights and concluding remarks.

3.2 SERVICES TRADE DATA ISSUES

3.2.1 Overview of data problems

As pointed out by Hoekman (1995), data collection for international trade in services provides less detail and there is lack of consistency as compared to merchandise trade.

This can be attributed to a number of factors. Firstly, services were regarded as non-tradable intangible goods. Indeed, it is because of this that international trade theory (both the traditional school and new trade theory) largely neglected trade in services as a peripheral activity.

Secondly, international trade in services is difficult to measure. Services are intangible products that are produced and absorbed simultaneously. Consequently, international trade flows are difficult to capture in balance of payment statistics as no physical object crosses the customs points.

Thirdly, it is only recent with the advent of MSITS and extended BMP5 that detailed universal international standards on what should be classified as services came out and is not yet in use in many countries. Thus for a long time, services data have been collected on the basis of the BMP5, which has many limitations, notably the lack of bilateral trade flow data. The following problems are based on Hoekman (1995) analysis.

3.2.1.1 Aggregation, consistency and coverage

It is not very easy to know whether a particular classification is consistently applied across countries (e.g. classification used by SARB and the US Bureau for Economic Analysis). Moreover, the level of aggregation available in data on services is limited in comparison with merchandise, which makes the computation of IIT indices prone to sectoral aggregation bias.

3.2.1.2 Real vs. nominal international trade data

Data for international trade in services are available in nominal value terms (rands or US dollars). There are no quantities or prices, which makes it difficult to interpret growth of trade in services because the price effects cannot be factored out. Moreover, data on quality improvements in service products, a crucial element in technological improvement over time, is not available.

3.2.1.3 Concordance with sectoral GDP and employment data from national income accounts

The classification of service trade data is not concordant with that of domestic value-added (GDP) and employment. Although BMP5, which has been the basis of data collection for most countries since 1993, attempted to deal with the problem of inconsistency and aggregation, much still needs to be done. Firstly, trade data is not reported on an "origin" and "destination" basis and this makes it difficult to model IIT in services without suffering from geographical aggregation bias. Secondly, some items of service trade in BMP5 have no counterparts in the national accounts and employment produced by national data collecting agencies such as STATSSA in South Africa. This is true for the categories "travel"; "government services not included elsewhere" and "royalties and license fees", among others.

It is against this background that mirrored exports and imports data from the US Bureau for Economic Analysis for the period 1992-2003 is used in this study.

3.2.2 Data from the US Bureau for Economic Analysis (BEA)

BEA is the primary collector of data on US international transactions in private services. The BEA classification is based on broad "standard components" in BMP5. Many of the categories in the surveys also correspond to the categories in other classification system for trade in services e.g. MSITS. The BEA system includes all of the manuals' components for services, but with further breakdowns within some groups.

According to US department of commerce (1998), the definitions that underlie the transactions in private services covered by the BEA's surveys are the same as those that underlie the balance of payments accounts. Thus an international transaction is a transaction between a resident and a non-resident, or foreigner. Affiliates of multinational companies are regarded as residents of the countries where they are located

rather than the countries of the owners. For instance, Coca Cola South Africa is regarded as resident in South Africa and not the US.

This data is consistent and is more disaggregated than data from SARB or BMP5. However, there are some limitations, such as lack of price data and difficulties in relating with the national accounts data in South Africa. The detailed description of service industries is presented in Tables A.13 through A.16 in the appendix.

3.2.3 Nominal Vs real data

In the long run if prices of services are not distorted by government intervention, perfectly competitive markets will ensure that nominal exports indicate the minimal attainable resource costs of a service. However, in the short-run under conditions of imperfect competition, price differences that reflect international inter-sectoral differences in competitiveness may distort the picture of actual relative resource costs and specialisation. Similarly, high variability in nominal exchange rates and domestic inflation may make the nominal unit values not reflect the resource costs of production.

However, the calculation of real exports and imports data requires information on sectoral price indices. This data is not available for South Africa. Since using the overall price index would distort the data, the study uses nominal data.

3.3 SOUTH AFRICA-US TRADE IN SERVICES: STRUCTURE AND TRENDS

3.3.1 Trends in South Africa-US total exports and imports of services

Figure 3.1 shows a number of stylised facts about South Africa's trade in services with the US during the period 1992-2003. Firstly, South Africa has a negative trade balance in services with the US. Secondly, exports and imports of services exhibited the same trend in the period 1992-2003. There was a general rise in both nominal exports and

imports until 1999, reflecting the effects of South Africa's readmission into the world community following the new political dispensation in 1994. However, the rising trend was reversed during the period 2000-2002. In 2003, both exports and imports increased reflecting the recovery of the US economy.

3.3.2 Sectoral performance of South Africa-US exports of services

Table 3.1 shows the performance of South Africa's exports of services to the US in the period 1992-2003. Tourism (travel) sector is the leading industry and accounted for 44.1 per cent of unaffiliated exports in 2003. The sector grew from US $ 101 million in 1992 to US $ 360 million in 2003.

The transport sector is the second after tourism and accounted for 38 per cent of unaffiliated trade in 2003. Passenger fares dominate the transport sector, accounting for 79 per cent of transport exports to the US in 2003.

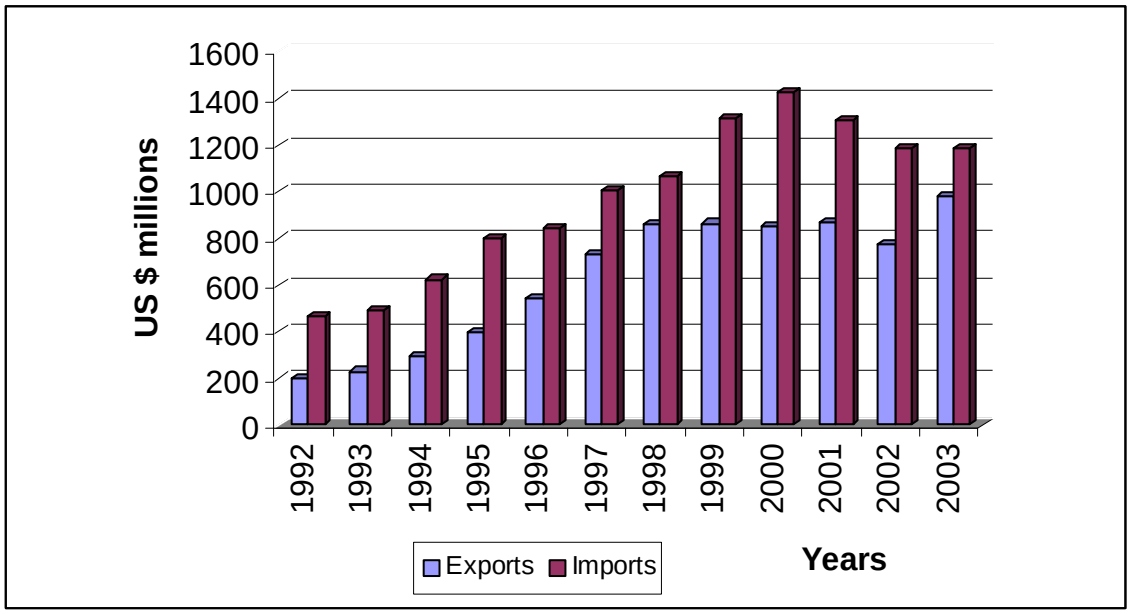
The other private services category is important for South Africa since it plays a development role in the economy. In this category, the leading service industries are business, professional, and technical services; financial services; education and training services; and telecommunication services.

There are services within this category, where South Africa had negligible or no exports to the US in the period 1992-2003: insurance services; database and other information services; industrial engineering; and operating leasing. This sector also had services in which data was not disclosed in order to avoid disclosure of specific company information e.g. database and other information and industrial engineering. These are indicated by (D).

Exports of services under the category royalties and fees are negligible. The only service sectors within this category where South Africa exported to the US are industrial

processes; books records and tapes (1994, 1995 and 1996) and general use computer software.

Figure 3.1: South Africa-US total exports and imports of services in the period 1992-2003



Source: US Bureau for Economic Analysis, http://www.bea.gov/bea/di/1001serv/intlserv.htm

The US BEA reported aggregated data on affiliated services in other private services and royalties and fees. Moreover in a number of years, the data is concealed (i.e. indicated with D) to avoid disclosure of individual companies. This is not surprising given the fact that affiliated services entail trade with related parties (American parents and affiliates located in South Africa). Nonetheless, it is apparent from Table 3.1 that South African affiliates receive more from their US parents than the South Africa's parents receive from the US affiliates.

Table 3.2 shows imports of services from the US in the period 1992-2003. The structure of imports is similar to the one of exports. The leading service industries are transport; travel; and other private services. In the period 1992-2003, South Africa's imports in

service industries witnessed growth in tourism; airport services; telecommunications; financial services; education and training etc. This could be the result of the readmission of South Africa into the international trading world. South Africa also reduced imports of services from the US in industrial processes; ocean freight services; construction, engineering, architectural and mining services; other intangibles; books, records and tapes etc.

Although it is problematic to discern trends on affiliated services due to unreported data, payments to US parents by South African affiliates are more than payments to US affiliates by South African parents. This means that there are more American affiliates in South Africa than the latter in the former.

Despite the fact that South Africa has trade deficits in most services with the US, passenger fares recorded a surplus.

3.3.3 Threshold of overlap trade (genuine IIT)

The GL index and its variants do not give an explicit methodology to separate inter-industry from IIT because the index basically focuses on trade overlap. This implies that any service that has a GL index greater than zero will be deemed two-way trade (IIT). Andresen (2003), following the work of Abd-el-Rahman (1991) and Fontagné and Freudenberg (1997), argues that trade within a commodity classification is considered IIT when the value of the minority trade flow represents at least some threshold percentage of the majority trade flows. Specifically, trade is considered IIT if;

$$\frac{Min(X,M)}{Max(X,M)} > \gamma\% \qquad (3.1)$$

Where X and M are exports and imports respectively, while γ is the threshold percentage. Most studies (for instance Fontagné and Freudenberg, 1997) use 10 per cent.

Table 3.1: South Africa's exports of services to the US in the period 1992-2003(nominal US $ millions)

Service sector	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Unaffiliated services												
Travel services	101.0	127.0	141.0	198.0	268.0	272.0	362.0	250.0	272.0	285.0	250.0	360.0
Transport services	**55.0**	**55.0**	**94.0**	**141.0**	**142.0**	**268.0**	**309.0**	**369.0**	**308.0**	**299.0**	**278.0**	**311.0**
Passenger fares	28.0	45.0	77.0	119.0	124.0	239.0	273.0	305.0	254.0	261.0	227.0	247.0
Ocean freight	0.0	0.0	6.0	8.0	5.0	14.0	21.0	45.0	35.0	18.0	27.0	30.0
Airfreight	2.0	4.0	4.0	5.0	5.0	8.0	8.0	9.0	9.0	8.0	8.0	11.0
Ocean port services	23.0	5.0	6.0	6.0	4.0	2.0	2.0	4.0	5.0	6.0	4.0	8.0
Airport services	2.0	1.0	1.0	3.0	4.0	5.0	5.0	6.0	5.0	6.0	12.0	15.0
Other private services	**41.6**	**48.6**	**49.8**	**56.5**	**(D)**	**(D)**	**99.5**	**101.8**	**(D)**	**(D)**	**(D)**	**144.0**
Education and training services	0.4	0.4	1.1	0.8	7.3	4.4	6.5	8.3	9.7	13.3	15.2	21.4
Financial services	1.6	2.0	3.1	4.6	7.0	9.0	9.0	12.0	16.0	14.0	19.0	23.0
Insurance services	0.0	0.0	0.0	-0.1	0.2	0.2	0.2	0.3	0.5	0.0	0.0	0.0
Telecommunications services	27.0	35.0	30.0	33.0	52.0	54.0	60.0	52.0	40.0	31.0	16.0	17.0
Business, professional and technical services:	11.0	10.0	14.0	17.0	19.0	20.0	23.0	28.0	31.0	59.0	109.0	80.0
(i)Advertising	0.0	1.0	1.0	1.0	3.0	3.0	5.0	3.0	4.0	5.0	3.0	5.0
(ii)Computer and data processing	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	(D)	15.0	5.0
(iii)Database and other information	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
(iv)Research, development, and testing	1.0	1.0	2.0	3.0	2.0	1.0	1.0	6.0	19.0	32.0	15.0	9.0
(v)Management, consulting, and public relations	2.0	0.0	1.0	1.0	1.0	2.0	1.0	2.0	5.0	3.0	6.0	7.0
(vi)Legal services	1.0	1.0	1.0	2.0	2.0	2.0	3.0	2.0	3.0	3.0	3.0	5.0
(vii)Construction, engineering, architectural and mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.0
(viii)Industrial engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(D)	(D)	0.0	0.0
(ix)Installation, maintenance, and repair of equipment	0.0	0.0	0.0	2.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	9.0
(x)Operating leasing										0.0	0.0	0.0
(xi)Other business, professional and testing services	7.0	7.0	9.0	8.0	11.0	10.0	11.0	15.0	(D)	16.0	66.0	38.0
Other	1.6	1.2	1.6	1.2	(D)	(D)	0.8	1.2	1.6	1.6	(D)	2.6
Royalties and fees	**0.0**	**0.0**	**2.0**	**1.0**	**5.0**	**9.0**	**0.0**	**(D)**	**0.0**	**1.0**	**2.0**	**2.0**
Industrial processes	0.0	0.0	1.0	0.0	4.0	5.0	0.0	0.0	0.0	0.0	1.0	1.0
Books, records, and tapes	0.0	0.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broadcasting and recording of live events	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Franchise fees	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trademarks			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
General use computer software							0.0	(D)	0.0	1.0	1.0	1.0
Other intangibles	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0
Affiliated services												
Other private services	**1.0**	**0.0**	**7.0**	**5.0**	**(D)**	**(D)**	**85.0**	**137.0**	**134.0**	**107.0**	**(D)**	**(D)**
Receipts by South African affiliates from US parents	1.0	0.0	1.0	3.0	24.0	57.0	85.0	131.0	133.0	107.0	(D)	(D)
Receipts by South African parents from US affiliates	0.0	0.0	6.0	2.0	(D)	(D)	0.0	6.0	1.0	0.0	3.0	(D)
Royalties and fees	**1.0**	**0.0**	**3.0**	**0.0**	**1.0**	**1.0**	**1.0**	**(D)**	**2.0**	**2.0**	**2.0**	**3.0**
Receipts by South African affiliates from US parents	1.0	0.0	3.0	0.0	1.0	1.0	1.0	4.0	2.0	2.0	2.0	3.0
Receipts by South African parents from US affiliates	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(D)	0.0	0.0	0.0	0.0
Summary												
Total unaffiliated trade	**197.6**	**230.6**	**286.8**	**396.5**	**(D)**	**(D)**	**770.5**	**(D)**	**(D)**	**(D)**	**(D)**	**817.0**
Total affiliated trade	**2.0**	**0.0**	**10.0**	**5.0**	**(D)**	**(D)**	**86.0**	**(D)**	**136.0**	**109.0**	**(D)**	**(D)**
Grand total*	**202.0**	**230.0**	**294.0**	**400.0**	**543.0**	**728.0**	**858.0**	**864.0**	**855.0**	**870.0**	**777.0**	**977.0**

Source: Data from the US BEA, http://www.bea.gov/bea/di/1001serv/intlserv.htm

Notes: (i) (D) means that the US BEA suppressed the data to avoid disclosure of individual companies
(ii) Exports flows of less than US $ 500,000 is rounded downwards to US $ 0 million
(iii) The column totals do not necessarily sum to the grand total. The grand total is taken directly from the US BEA web site.

Table 3.2: South Africa's imports of services from the US in the period 1992-2003

Service sector	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Unaffiliated services												
Travel services	151.0	203.0	288.0	344.0	285.0	370.0	386.0	386.0	429.0	342.0	248.0	252.0
Transport Services	**98.0**	**33.0**	**48.0**	**84.0**	**91.0**	**132.0**	**77.0**	**107.0**	**138.0**	**138.0**	**130.0**	**170.0**
Passenger fares		1.0	14.0	1.0	7.0			9.0	11.0	10.0	9.0	20.0
Ocean freight	75.0	7.0	6.0	5.0	8.0	4.0	5.0	8.0	5.0	8.0	8.0	8.0
Airfreight	3.0	3.0	3.0	4.0	3.0	3.0	5.0	6.0	4.0	5.0	4.0	4.0
Other freight	1.0	2.0	3.0	7.0	7.0	9.0	8.0	8.0	8.0	8.0	8.0	8.0
Ocean port services	0.0	0.0	2.0	2.0	3.0	6.0	7.0	21.0	16.0	6.0	10.0	11.0
Airport services	19.0	20.0	20.0	65.0	63.0	110.0	52.0	55.0	94.0	101.0	91.0	119.0
Other private services	**129.2**	**155.4**	**169.8**	**198.7**	**(D)**	**290.7**	**343.3**	**463.0**	**(D)**	**(D)**	**486.8**	**474.7**
Education and training Services	1.0	29.9	31.4	33.9	35.2	35.9	37.1	39.5	43.7	49.6	54.6	52.4
Financial services	15.0	15.3	13.9	20.0	26.0	27.0	40.0	39.0	48.0	53.0	58.0	43.0
Insurance services	0.3	0.1	0.0	0.2	1.0	1.8	2.6	1.4	2.1	3.0	2.8	7.6
Telecommunications services	16.0	18.0	17.0	28.0	51.0	60.0	69.0	78.0	73.0	109.0	57.0	68.0
Business, professional and technical services:	68.0	72.0	77.0	81.0	(D)	118.0	129.0	209.0	(D)	(D)	178.0	213.0
(i)Advertising	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	2.0	1.0
(ii)Computer and data processing	9.0	7.0	16.0	18.0	12.0	23.0	16.0	85.0	80.0	85.0	82.0	97.0
(iii)Database and other information	4.0	2.0	14.0	25.0	(D)	30.0	44.0	49.0	55.0	(D)	8.0	20.0
(iv)Research, development, and testing	0.0	1.0	0.0	3.0	5.0	4.0	3.0	5.0	(D)	42.0	9.0	11.0
(v)Management, consulting, and public relations	3.0	5.0	5.0	9.0	8.0	12.0	15.0	25.0	21.0	19.0	20.0	26.0
(vi)Legal services	2.0	2.0	3.0	3.0	8.0	4.0	5.0	6.0	16.0	9.0	9.0	10.0
(vii)Construction,engineering,architectural and mining	28.0	36.0	15.0	3.0	10.0	9.0	7.0	4.0	(D)	9.0	10.0	3.0
(viii)Industrial engineering	0.0	0.0	0.0	0.0	(D)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(ix)Installation, maintenance, and repair of equipment	14.0	11.0	16.0	9.0	8.0	16.0	12.0	16.0	13.0	18.0	18.0	13.0
(x)Operating leasing										1.0	0.0	0.0
(xi)Other	7.0	7.0	7.0	10.0	(D)	19.0	26.0	19.0	15.0	(D)	20.0	32.0
Other	28.9	20.1	30.5	35.6	(D)	48.0	65.6	96.1	88.1	98.0	136.4	90.7
Royalties and fees	**62.0**	**56.0**	**55.0**	**66.0**	**60.0**	**(D)**	**(D)**	**(D)**	**(D)**	**70.0**	**(D)**	**(D)**
Industrial processes	22.0	32.0	23.0	28.0	23.0	11.0	14.0	16.0	7.0	7.0	10.0	13.0
Books, records, and tapes	22.0	4.0	6.0	8.0	4.0	3.0	4.0	5.0	5.0	5.0	4.0	3.0
Broadcasting and recording of live events	0.0	4.0	1.0	1.0	1.0	2.0	1.0	3.0	1.0	0.0	3.0	(D)
Franchise fees	3.0	3.0	2.0	2.0	3.0	(D)	5.0	4.0	5.0	5.0	(D)	5.0
Trademarks			12.0	13.0	11.0	9.0	(D)	(D)	(D)	4.0	5.0	8.0
General use computer software							39.0	43.0	45.0	49.0	30.0	28.0
Other intangibles	15.0	13.0	11.0	14.0	18.0	(D)	0.0	0.0	0.0	0.0	0.0	0.0
Affiliated services												
Other private services	**14.0**	**13.0**	**16.0**	**19.0**	**(D)**	**50.0**	**73.0**	**88.0**	**83.0**	**83.0**	**69.0**	**70.0**
Payments to US parents by South African affiliates	14.0	13.0	16.0	16.0	17.0	47.0	72.0	82.0	81.0	75.0	67.0	62.0
Payments to US affiliates by South African parents	0.0	0.0	0.0	3.0	(D)	3.0	1.0	6.0	2.0	8.0	2.0	8.0
Royalties and fees	**30.0**	**32.0**	**46.0**	**85.0**	**102.0**	**97.0**	**(D)**	**(D)**	**(D)**	**129.0**	**(D)**	**(D)**
Payments to US parents by South African affiliates	30.0	31.0	45.0	84.0	102.0	97.0	98.0	158.0	127.0	125.0	105.0	156.0
Payments to US affiliates by South African parents	0.0	1.0	1.0	1.0	0.0	0.0	(D)	(D)	(D)	4.0	(D)	(D)
Summary												
Total Unaffiliated services	**440.2**	**447.4**	**560.8**	**692.7**	**(D)**	**(D)**	**(D)**	**(D)**	**(D)**	**(D)**	**(D)**	**(D)**
Total affiliated services	**44.0**	**45.0**	**62.0**	**104.0**	**(D)**	**147.0**	**(D)**	**(D)**	**(D)**	**212.0**	**(D)**	**(D)**
Grand total*	**462**	**493**	**624**	**797**	**842**	**1003**	**1068**	**1317**	**1425**	**1304**	**1183**	**1188**

(nominal US $ millions)

Source: Data from the US BEA, http://www.bea.gov/bea/di/1001serv/intlserv.htm

Notes:(i) (D) means that the US BEA suppressed the data to avoid disclosure of individual companies
(ii) Imports flows of less than US $ 500,000 is rounded downwards to US $ 0 million
(iii) The column totals do not necessarily sum to the grand total. The grand total is taken directly from the US BEA web site.

A threshold level of 12 per cent is used in this study to cut off borderline cases. Below this threshold level, the minority flow would not be considered significant since it does not represent a structural feature of trade.

Table 3.3 shows unaffiliated minority service trade flow as a percentage of majority services flow. The last column shows the average for each service industry over the period 1992-2003 (excluding those years marked N/A or D).

Those service sectors where minority flow, as a percentage of majority flow is greater than 12 per cent have the average value shaded and it shows that IIT is a structural feature of South Africa-US trade.

The rest of the services have the contribution of minority flow to majority flow below the threshold value of 12 per cent. For these services, IIT is not a structural feature of trade and they are excluded from the subsequent analysis of IIT.

Table 3.4 shows affiliated minority service flow as a percentage of majority service. Although the other private service flows meet the threshold criterion of 12 per cent, the high figure is attributed to categorical aggregation bias.

Table 3.3: Unaffiliated minority service flow as a percentage of majority service flow

Service sector	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Aver.
Travel services	66.9	62.6	49.0	57.6	94.0	73.5	93.8	64.8	63.4	83.3	99.2	70.0	73.2
Transport services													
Passenger fares	100.0	2.2	18.2	0.8	5.6	100.0	100.0	3.0	4.3	3.8	4.0	8.1	29.2
Ocean freight	0.0	0.0	100.0	62.5	62.5	28.6	23.8	17.8	14.3	44.4	29.6	26.7	34.2
Air freight	66.7	75.0	75.0	80.0	60.0	37.5	62.5	66.7	44.4	62.5	50.0	36.4	59.7
Other freight	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ocean port services	0.0	0.0	33.3	33.3	75.0	33.3	28.6	19.0	31.3	100.0	40.0	72.7	38.9
Airport services	10.5	5.0	5.0	4.6	6.3	4.5	9.6	10.9	5.3	5.9	13.2	12.6	7.8
Other private services													
Education and training Services	40.0	1.3	3.5	2.4	20.7	12.3	17.5	21.0	22.2	26.8	27.8	40.8	19.7
Financial services	10.7	13.1	22.3	23.0	26.9	33.3	22.5	30.8	33.3	26.4	32.8	53.5	27.4
Insurance services	0.0	0.0	N/A	-50.0	20.0	11.1	7.7	21.4	23.8	0.0	0.0	0.0	3.1
Telecommunications services	59.3	51.4	56.7	84.8	98.1	90.0	87.0	66.7	54.8	28.4	28.1	25.0	60.9
Business, professional and technical services:													
(i) Advertising	0.0	100.0	100.0	100.0	0.0	33.3	20.0	0.0	25.0	20.0	66.7	20.0	40.4
(ii)Computer and data processing	0.0	0.0	0.0	0.0	0.0	4.3	6.3	0.0	0.0	100.0	18.3	5.2	11.2
(iii)Database and other information	0.0	0.0	0.0	0.0	(D)	3.3	0.0	0.0	0.0	(D)	0.0	0.0	0.3
(iv)Research, development, and testing	0.0	100.0	0.0	100.0	40.0	25.0	33.3	83.3	100.0	76.2	60.0	81.8	58.3
(v)Management, consulting, and public relations	66.7	0.0	20.0	11.1	12.5	16.7	6.7	8.0	23.8	15.8	30.0	26.9	19.8
(vi)Legal services	50.0	50.0	33.3	66.7	25.0	50.0	60.0	33.3	18.8	33.3	33.3	50.0	42.0
(vii)Construction, engineering, architectural and mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(D)	0.0	10.0	66.7	N/A
(viii)Industrial engineering	N/A	N/A	N/A	N/A	(D)	N/A	N/A	N/A	(D)	(D)	N/A	N/A	N/A
(ix)Installation, maintenance, and repair of equipment	0.0	0.0	0.0	22.2	0.0	0.0	8.3	0.0	0.0	0.0	0.0	69.2	8.3
(x)Operating leasing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(xi)Other business, professional and technical services	100.0	100.0	77.8	80.0	(D)	52.6	42.3	78.9	(D)	(D)	30.3	84.2	71.8
Other private services	5.5	6.0	5.2	3.4	(D)	100.0	1.2	1.2	1.8	1.6	100.0	2.9	20.8
Royalties and fees													
Industrial processes	0.0	0.0	4.3	0.0	17.4	45.5	0.0	0.0	0.0	0.0	10.0	7.7	7.1
Books, records, and tapes	0.0	0.0	16.7	12.5	25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5
Broadcasting and recording of live events	N/A	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	N/A	0.0	N/A	N/A
Franchise fees	0.0	0.0	0.0	0.0	0.0	(D)	0.0	0.0	0.0	0.0	(D)	0.0	0.0
Trademarks	N/A	N/A	0.0	0.0	0.0	0.0	(D)	(D)	(D)	0.0	0.0	0.0	N/A
General use computer software	N/A	N/A	N/A	N/A	N/A	N/A	0.0	(D)	0.0	2.0	3.3	3.6	N/A
Other intangibles	0.0	0.0	0.0	0.0	0.0	(D)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Data from the US BEA, http://www.bea.gov/bea/di/1001serv/intlserv.htm

Notes:(i) "D" means that the US BEA suppressed the data to avoid disclosure of individual companies
(i) "N/A" means that minority flows, as a percentage of majority flows could not be computed due to situations where it requires division by 0
(iii) Shaded cells show that the service sector in question meet the threshold requirement of 12 per cent

Table 3.4: Affiliated minority service flow as a percentage of majority service flow

Service sector	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Aver.
Other private services													
Payments to US parents by South African affiliates	7.1	0.0	6.3	18.8	70.8	82.5	84.7	62.6	60.9	70.1	100.0	100.0	55.3
Payments to US affiliates by South African parents	N/A	N/A	0.0	66.7	(D)	100.0	0.0	100.0	50.0	0.0	66.7	100.0	53.7
Royalties and fees													
Payments to US parents by South African affiliates	3.3	0.0	6.7	0.0	1.0	1.0	1.0	2.5	1.6	1.6	1.9	1.9	1.9
Payments to US affiliates by South African parents	N/A	0.0	0.0	0.0	N/A	N/A	(D)	(D)	(D)	0.0	(D)	(D)	N/A

Source: Data from the US BEA, http://www.bea.gov/bea/di/1001serv/intlserv.htm

Notes:(i) "D" means that the US BEA suppressed the data to avoid disclosure of individual companies
(i) "N/A" means that minority flows, as a percentage of majority flows could not be computed due to situations where it requires division by 0
(iii) Shaded cells show that the service sector in question meets the threshold requirement of 12 per cent

3.3.4 South Africa-US IIT in services

Having selected service sectors where IIT is a significant feature of trade, it is imperative to adjust the data for two features. Firstly, it is important to disentangle HIIT from VIIT since they have different determinants and consequences. Secondly, it is important to separate "extended" IIT so as to take into account the fact that arms-length IIT and cross-border production may be complements rather than substitutes.

However, these two concerns are not explicitly addressed in this study due to lack of data. Consequently, total IIT in unaffiliated services is computed using unadjusted GL index in Equation 2.21. The GL indices in Table 3.5 have been calculated while being cognisant of the need to minimise potential biases. Firstly, the indices are computed on a strict bilateral basis thus avoiding geographical aggregation bias highlighted in Section 2.6.1.2.2. Secondly, sectoral aggregation bias is minimised in most service sectors except travel, where IIT is calculated at the most aggregated level. It is assumed that the classification used by US BEA defines an "industry" in an economically meaningful way and does not artificially lump together services.

Table 3.5: Unadjusted GL index of South Africa-US IIT in unaffiliated services in the period 1992-2003

Service sector	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
Travel(tourism) services	0.80	0.77	0.66	0.73	0.97	0.85	0.97	0.79	0.78	0.91	1.00	0.82	**0.84**
Other business, professional and technical services	1.00	1.00	0.88	0.89	(D)	0.69	0.59	0.88	(D)	(D)	0.47	0.91	**0.81**
Airfreight services	0.80	0.86	0.86	0.89	0.75	0.55	0.77	0.80	0.62	0.77	0.67	0.53	**0.74**
Telecommunications services	0.74	0.68	0.72	0.92	0.99	0.95	0.93	0.80	0.71	0.44	0.44	0.40	**0.73**
Research, development, and testing services	0.00	1.00	0.67	1.00	0.57	0.40	0.50	0.91	(D)	0.86	0.75	0.90	**0.69**
Legal services	0.67	0.67	0.50	0.80	0.40	0.67	0.75	0.50	0.32	0.50	0.50	0.67	**0.58**
Ocean port services	0.00	0.00	0.50	0.50	0.86	0.50	0.44	0.32	0.48	1.00	0.57	0.84	**0.50**
Advertising	0.00	1.00	1.00	1.00	0.00	0.50	0.33	0.00	0.40	0.33	0.80	0.33	**0.47**
Ocean freight Services	0.00	0.00	1.00	0.77	0.77	0.44	0.38	0.30	0.25	0.62	0.46	0.42	**0.45**
Financial services	0.19	0.23	0.36	0.37	0.42	0.50	0.37	0.47	0.50	0.42	0.49	0.70	**0.42**
Education and training services	0.57	0.03	0.07	0.05	0.34	0.22	0.30	0.35	0.36	0.42	0.44	0.58	**0.31**
Management, consulting, and public relations services	0.80	0.00	0.33	0.20	0.22	0.29	0.13	0.15	0.38	0.27	0.46	0.42	**0.30**
Passenger fares	0.00	0.04	0.31	0.02	0.11	0.00	0.00	0.06	0.08	0.07	0.08	0.15	**0.08**

Source: Data from the US BEA, http://www.bea.gov/bea/di/1001serv/intlserv.htm

Notes: "D" means that the IIT could not be computed due to missing data

The last column shows the unweighted average IIT over the period 1992-2003, excluding those years where the US Bureau for Economic Analysis did not disclose data (indicated by D).

The service industries are ranked in decreasing order using the last column. There is considerable difference among industries. Tourism sector is the leading in terms of IIT followed by "other business, professional and testing services". Passenger fares has the lowest level of IIT. The high IIT in travel services shows that South Africa has some competitive advantage relative to the US and this is a structural feature of most middle-income countries.

It is, however, imperative to note some GL index limitations when comparing trade over time. The GL index is homogeneous of degree zero. Caves (1981) and Hamilton and Kniest (1991), underscore this characteristic by arguing that an equal increase in service

exports and imports within an industry owing to trade liberalisation, would raise the quantity of IIT, but its proportion measured by the GL index would remain the same.

If the changes in exports and imports are different, the GL index may give results, which are counterintuitive. For instance, as pointed out by Andresen (2003), the GL index may increase following an imposition of a trade barrier. This does not mean that the GL index is flawed; rather it should be interpreted cautiously.

3.4 MAIN INSIGHTS AND CONCLUDING REMARKS

This chapter sought to provide some descriptive analysis of South Africa-US trade in services. The following facts emerge from the analyses. Firstly, international trade in services data from SARB or BMP5 are unreliable due to lack of bilateral trade flows and insufficient aggregation. In view of this, the study uses mirrored exports and imports data from US BEA. The data is consistent and disaggregated at a higher level than the SARB and BMP5 but there are still problems with lack of unit values and difficulty in concordance with national accounts data from STATSSA.

Secondly, South has an unfavourable trade balance in services with the US. There are however, sectors whose deficits have increased substantially in the recent past. A case in point is telecommunications sector. Thirdly, in terms of the ranking, tourism, transport and other private services are the leading exports and imports service sectors. Fourthly, although it is difficulty to discern trends in affiliated services due to unreported data, it is possible to see that there are more American affiliates in South Africa than South African affiliates in the US. Specifically, South African affiliates receive more from their US parents than the former receive from the latter's affiliates. In the same vein, payments to US parents by South African affiliates are more than payments to US affiliates by South African parents.

Fifthly, although there are thirty service sectors, only thirteen of them meet the 12 per cent threshold of minority as a percentage of majority flows. IIT analysis is conducted on these thirteen sectors only.

Sixthly, it is important to disentangle HIIT from VIIT and "extended IIT" because theoretically they have different determinants and labour market adjustment consequences. However, this process is frustrated by the lack of appropriate data and it is because of this that the thesis constructs "total" South Africa-US IIT in services indices. These indices do not show the extent of horizontally (variety) differentiated, vertically (quality) differentiated and extended intra-industry trade flows. An attempt is made in Chapter 5 to infer whether HIIT or VIIT is the dominant form of differentiation by using IIT theories such as the CHO.

Seventhly, despite the data problems, IIT indices are computed while being cognisant of the need to minimise potential biases. In this regard, the indices are computed on a strict bilateral basis (South Africa Vs US) thus avoiding geographical aggregation bias. Moreover, sectoral aggregation bias is minimised in most service sectors except travel, where IIT is calculated at the most aggregated level. It is assumed that the classification used by US BEA defines an "industry" in an economically meaningful way and does not artificially lump together services. It is also noted that real and nominal data leads to the same GL index since this index is homogenous of degree zero.

Chapter 4 basically builds on the descriptive analysis in Chapter 3 and analyses barriers to trade in services in South Africa and the US. This is important because services face a lot of market access (MA) and national treatment (NT) restrictions in most countries. Although the study is concerned with barriers that inhibit South Africa-US IIT in services, the most favoured nation (MFN) principle implies that they affect all WTO members[13].

[13] Unless South Africa or the US has scheduled it as exempted under annex to Article II of the GATS (World Trade Organization, 2002:308)