CHAPTER FOUR: QUALITATIVE SECTORAL ANALYSIS

4.1 Introduction

Botswana's economic growth trend since independence in 1966 has been remarkable. Contrasting the periods soon after 1966 and today, significant differences can be noted. For instance, at independence, the country was one of the poorest whose developmental and recurrent expenditures were dependent on foreign aid. On the other hand, over the years, the contemporary Botswana has experienced self-sustainable economic growth, with a gross domestic product (GDP) per capita of above US$11 000 as of 2008, making it an upper middle income country by World Bank classification. In fact, it is considered the richest non-oil producing country in Africa with even greater per capita income than Turkey, Thailand, or Brazil (Todaro and Smith, 2006).

Historical economic activity indicates that in 1966, 40% of the Botswana economy's GDP and 90% of employment were mainly from the agriculture sector. This agricultural sector's contribution has however declined sharply over the years to such an extent that the sector only contributed only about 4% and 16%, respectively by the mid 1990s. These contributions further declined to less than 3% and 8% respectively, by the end of 2006. On the other hand, the mining sector has taken an important role in contributing towards the country's economic activities, especially during the beginning of the 1990s. Other important sectors which provide meaningful contributions towards the country's export earnings are the textiles, and meat and meat products.

Whilst no firm empirical conclusions will be provided in this chapter, the major contribution of this chapter is to provide the main features of the three sectors under study. These sectors are: (i) diamond, (ii) textile, and (iii) meat and meat products. The sectoral profiles will help in that when empirical analysis is presented in the subsequent chapters the reader will be familiar with the main characteristics of these sectors. Thus, the main objectives of this chapter are to:

a) Provide detailed profiles of the three export sectors in terms of their contribution to export revenue, employment and GDP;

b) Present respective sectoral trade arrangements under which these exports are traded; and

c) Summarize the trade liberalization arrangements in which the country is involved.

Although the contribution from textiles, and meat and meat products sectors towards the country's export revenue has been relatively low or declining in the past few years, the country still considers them as important sectors (products) whose exportation need to be promoted. The country's recent 2008 national export strategy (Republic of Botswana, 2008), which sets strategies on how best to encourage traditional and non-traditional exports, also investigates these two sectoral products. Thus, in line with the importance that these products are given by Botswana in terms of its future export development, and the fact that they also contribute significantly to employment, and rural livelihood and food security when one considers meat and meat products, this study includes these products in its analysis, irrespective of the fact that their percentage contribution to export revenue might have been low or declining.

4.2 Mining Sector

The importance of the mining sector's activities towards the economy of Botswana can be traced back to the discovery of diamonds in the country's Opera region in 1967. This discovery resulted in the growth of mining activities, which at independence comprised only small-scale quarrying, into a multi-billion dollar venture. Although the slow recovery in the global economy in the late 1970s, following the 1973/74 oil shocks affected Botswana's mineral exports in the early 1980s, mining activities continue to be the backbone of the country's economy, providing export revenue and employing sizeable labour. For instance, the mining and quarrying sector accounted for 8 300 jobs, or about 3% of the total formal sector workforce in 2008.

4.2.1 Diamond

The quantity and quality of the country's diamond reserves, especially from the Orapa, Letihakane and Jwaneng mines operated by Debswana, have resulted in Botswana becoming a powerful and the largest diamond producer in the world over the years. Although most countries that are endowed with abundant natural resources, and therefore exporters of products from those resources have suffered the Dutch disease[16], Botswana stands out to be one country which has never been cursed by such a disease.

The country's competitive edge in diamonds continues to be as sharper as before. Sales at the Debswana Diamond Company Limited, a 50 – 50 joint venture between the government of Botswana and DeBeers Centenary AG (Coakley, 2004); have maintained a constant level over the years. The relatively stronger United States (US) dollar in relation to the Botswana Pula, higher carat sales and increased diamond prices are some of the reasons behind Debswana's maintained stronger diamond sales.

In terms of contribution to the economy, the diamond sector continues to be the mainstay of the economy, accounting for above 35 per cent of the country's gross domestic product (GDP) and 53% of Government revenues. The sector directly employs more than 6 500 people and is considered to be the largest single employer in Botswana, second only to the government, employing a total of 25% (directly and indirectly linked to diamonds) of the total labour force of the country (http://www.diamondfacts.org).

Table 3 provides percentages of export earnings contributed by each of the three sectors under study. As shown in the table, diamonds account for more than 70% annually towards Botswana's export revenue.

[16] Dutch disease refers to the adverse effects on the manufacturing sector of mineral (natural gas, diamond, gold, etc.) discoveries through the subsequent appreciation of the real exchange rate (Coden, 1984).

Table 3: Export revenue by sectors (%) 1996-2008

Year Sector	1996-1999+	2000	2001	2002	2003	2004	2005	2006	2007	2008
Diamonds	73.3	82.6	84.8	82.1	76.8	75.4	74.9	79.1	63.2	65.2
Textiles	2.6	1.7	1.3	1.8	1.8	3.4	5.0	3.2	6.9	5.7
Meat & meat prod	2.5	1.8	2.5	1.7	2.1	1.5	1.7	0.8	2.2	1.9
Sub total	**78.4**	**86.1**	**88.6**	**85.6**	**80.7**	**80.3**	**81.6**	**83.1**	**72.3**	**72.8**
All others	21.6	13.9	11.4	14.4	19.3	19.8	18.4	16.8	27.8	27.1
Overall Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: author percentage calculations using data from the Botswana Central Statistical Office (CSO).

Note: '+' Means four-year average

Whilst export revenue earnings from the diamond sector have contributed significantly to the country's budget, domination of diamonds in export earnings is generally considered as a drawback as it ties the country to one product for its economic growth and development. Thus, in an effort to diversify away from diamond, the country's National Export Strategy (NES) of 2008 envisioned "to make Botswana more internationally competitive and productive with an aim to diversifying the country's export base thereby boosting export performance and improving national competitiveness". The NES advocates for strategies which helps the country to diversify its production and export bases with the aim of reducing the vulnerability of over-reliance on the mining sector, especially diamonds[17].

The marketing of Botswana diamonds is strictly monitored and is done through the De Beers Diamond Trading Company, formerly the Central Selling Organization, in the United Kingdom (UK). Thus, although there could be a number of potential trading partners for Botswana's diamonds, a larger proportion of them are sold through UK by virtue of the latter country being the host to the De Beers Diamond Trading Company.

[17] Among the manufacturing sectors proposed for immediate diversification programmes are: Arts and Crafts, Hides and Skins, Garments and Textiles, Jewellery, Leather and Leather products, and Meat and Meat Products.

4.3 Textiles Sector

Allen *et al*. (2007) points out that the country's historical development of the modern textile sector has been incentivised by both international trade as well as domestic policies which have successfully lured both domestic and international investors to invest in this sector over the years. The country witnessed its first peak of activities in this sector in the late 1970s when firms relocated to its second largest city, Francistown, from Zimbabwe due to the following reasons. Firstly, there was active political and social unrest in the latter country which meant that firms were not able to properly do their business there. Secondly, shortages of foreign currency resulted in implementation of restrictive foreign currency policies making it difficult for companies operating in Zimbabwe to import capital equipment and essential raw materials to service their domestic market. Lastly, the fact that Zimbabwe had become independent in 1980 meant that workers were free and that they were beginning to strike for increased wages, better working conditions and an increased say in the management of the industry. This made some investors nervous and they decided to relocate to Botswana.

The second notable peak in the textile sector was experienced in the 1980s mainly due to the attractive Financial Assistant Programme (FPA) which was instituted by the government of Botswana in 1982 to attract investment in this sector, among other sectors. The FPA was basically a collection of financial and tax incentives for prospective investors or existing investors undergoing significant expansion programmes. The main incentive behind this package was a wage subsidy that started at 80% of workers' wages in the first year and declined over a period of five years. In addition there were capital purchase grants, tax holidays, and a training co-financing scheme. The FPA, among other things, consolidated growth in the textiles sector (Salm *et al.* 2004).

Following the problems encountered with the FPA, the Government of Botswana decided to phase it out and many companies were negatively affected, resulting in a sizeable number of firms either closing down or relocating. This saw the biggest decline in textile activities and other manufacturing entities in the form of reduced employment and exports in 2000.

Nevertheless, revival of the textile activities after 2000 was stimulated by the inception of United States of America (USA)'s African Growth and Opportunities Act (AGOA), which will be discussed latter in the chapter. Due to AGOA, there has been a dramatic increase in exports to the USA. Also there appears to be a steady stream of investment in the sub-sector which, since it is not FPA led, is likely to be far more sustainable.

Salm *et al*. (2004) argues that the textile and apparel industry in Botswana is an ideal formal employment entry point for the poor. This industry can also absorb relatively large numbers of employees where they can make an economic contribution and earn a cash wage even if they are not particularly well educated or literate. Currently 24 000 workers are estimated to be employed in the manufacturing sector of the economy. Of these more than 8 500, or 35.4%, are currently employed in the textile and apparel sub-sectors.

In terms of contribution to export revenue, Table 3 shows that the sector's revenue contribution has been below 3% for most of the years reported. Nevertheless, signs of growth have been witnessed since 2004, with annual contributions above 3%.

4.3.1 Textile export markets

Botswana is fortunate in that it has preferential access to several important markets for garment and textile products. As an African, Caribbean and Pacific (ACP) country, it has duty and quota-free access for textiles and garments to the EU. As a member of the Southern African Customs Union (SACU), all its products can be sent to the largest regional market, South Africa, without duty or restriction. As a Southern African Development Community (SADC) member country, Botswana's products are given preferential duty treatment when exported to SADC countries outside the SACU. The country also has a bilateral free trade agreement with Zimbabwe that dates back to 1956 and most of its textile products enter into the latter country duty-free. Finally, under the AGOA, Botswana qualifies as a developing country. This means that until September 2015, it can produce apparel from fabric purchased anywhere in the world and ship it to the United States duty-free under the AGOA trade regime.

4.3.2 Other issues affecting the textile sector

Despite the success of this sector over the years, a number of challenges remain. Firstly, the country's high HIV/AIDS rate has meant low labour productivity, high employee turnover and absenteeism. Secondly, lack of skilled labour has limited firms' ability to enter into high value-added stages of the textile production chain. Production inefficiencies have been witnessed due to lack of economies of scale and high input costs. Generally, most importers prefer to buy in large volumes, and Botswana has failed to seize that opportunity due to the firms' inability to do mass production. High input costs in the form of raw materials, electricity and water costs have resulted in the country being a relatively high cost producer. Another challenge has been the high road transportation costs related to this landlocked country, as opposed to the relatively cheaper sea transport.

4.4 Meat and meat products sector

Generally, the agricultural sector is relatively small in terms of contribution to the country's GDP, with annual contributions normally below 3%. Nevertheless, this sector is still relied upon by most people living in rural areas and dependent on agricultural activities for their livelihoods. FAO (2005:1) reports that agricultural activities in Botswana are a major source of income and employment. The agricultural sector employs around 44% of the country's labour force and around two third of the population depend directly or indirectly on the agricultural sector, mainly subsistence farming.

Historically, the meat and meat products sector used to be one of the important components of the economy, especially in the early years of the country's independence. However, its significance has declined, especially in terms of contributions to the GDP and export revenues. For instance, at independence in 1966, its contributions towards the GDP and export revenue was around 30% and 70%, respectively. Currently, the sector has been overtaken by such sectors as mining. As of 2004, the meat and meat products sector's contributions to the GDP and export revenue were around 3% and 1.5%, respectively (ODI, 2007), with the contribution to export revenue rising marginally to 1.9% in 2008 as shown in Table 3.

Botswana's National Export Strategy (NES) points out that, "animal husbandry, particularly the ownership of beef cattle, has been at the heart and soul of Botswana for several generations". Current figures indicates that there are more than 2.15 million head of cattle and more than 2.5 million sheep and goats in the country. Also because of the traditional and cultural background of native citizens of Botswana, approximately every Motswana owns cattle or other animals or is related to someone who does.

Jefferis (2005) claims that although this sector's contribution at macroeconomic (GDP) level is currently marginal, the sector however, remains as a bedrock of economic activity in rural Botswana. Livestock rearing is the central agricultural activity in Botswana and an important contributor to poverty alleviation and rural development (BIDPA, 2006). Livestock rearing and sales are the main commercial activity and source of cash in the rural economy. WTO (2003.) claims that livestock production makes up 80% of the major income earner of the agricultural GDP, especially in rural areas. Specifically, there are around 60 000 cattle farming operations in the country, with approximately 37.5% of Botswana's households, or about 612 000 people, occupied in cattle rearing activities, either as owners or employees (HIES, 2003). An estimated 75% of these cattle owners are small-scale farmers with a herd size of 1-19 cattle (ODI, 2007).

In addition, cattle-rearing is considered the biggest industry in Botswana that is owned and controlled primarily by citizens. Moreover, the livestock sector is the only export industry that shows strong linkages to domestic sectors, ranging from rural supply of cattle, over urban demand for cattle to transport and finance (ODI, 2007).

4.4.1 Export markets for meat and meat products

In terms of export markets, the country has a long and well-established trade relationship with the European Union (EU) under the preferential Lomé and Cotonou Conventions. Its exports to the EU comprise, among other commodities, meat and meat products. The parastatal Botswana Meat Commission (BMC) is the state trading agency for beef from Botswana and has a statutory export monopoly on meat, canned meat and live cattle. About 80% of the BMC's total production is exported. The EU is Botswana's main export market receiving about 55% of total exports. In the highly protected EU market, Botswana benefits from an annual quota for boneless beef and veal of 18 916 tons under the Cotonou trade agreement. This volume has been exported at a preferential rate of zero tariff plus a duty (0%+24.2 €/100kg/net). Compared with the regular most-favoured-nation (MFN) tariff for boneless meat, which is 12.8% plus a duty of 303.4 €/100kg/net, this implies a 92% tariff reduction. That is, Botswana can export boneless beef and veal at 8% of the applied MFN tariff (Cotonou Agreement, 2000). Under these trade preferential arrangements, Botswana has been entitled to serve its quota throughout the years without undue restrictions. In the case that the country was not able to fulfill the quota, for example due to droughts, it was also allowed to expand its quota in the following years (ODI, 2007)

4.4.2 Other issues affecting the meat and meat products sector

On the downward side, the cattle and beef sector has been facing some problems. Firstly, the size of the national cattle herd has been shrinking, and, although data is poor, the herd appears to be well below the peak of 3 million animals that was reached in the early 1980s (Jefferis, 2005). Secondly, productivity has been relatively low compared to other regional countries like Namibia and South Africa. Lastly, lack of viability has also been a serious setback for most farmers. In the recent years, selling prices for meat products have not kept pace with rising costs, and for most small scale farmers with limited economies of scale, these selling prices have resulted in them experiencing cash flow problems, thus undermining the viability of this industry. Moreover, the monopoly export abattoir, the BMC, has consistently made losses in recent years (*Ibid*).

4.5 Botswana's engagement in preferential trade arrangements

Botswana, besides bilateral trade arrangements, is engaged in a number of regional, inter-regional and multilateral free trade arrangements and negotiations. The aim of all these trade arrangements and negotiations is to liberalize trade, imports and exports, between Botswana and the participating countries. The most important trade arrangements in which Botswana is (and has been) involved are briefly highlighted below.

4.5.1 Southern African Customs Union (SACU)

SACU was established through the Customs Union Agreement of 1910 between the Union of South Africa and the three so-called High Commission Territories of Bechuanaland (now Botswana), Basutoland (now Lesotho), and Swaziland. The 1969 Customs Union Agreement between South Africa, Botswana, Lesotho and Swaziland replaced that Agreement. Namibia became a contracting party to the 1969 Agreement in 1990 upon its independence from South Africa. The customs union currently consists of five member countries which are Botswana, Lesotho, Namibia and Swaziland (also referred to as the BLNS-countries) and South Africa.

The main objectives for the establishment of the SACU were that of regional integration and trade facilitation between the members of the Agreement in order to improve economic development of the whole area, in particular the less developed members. The members are thus united in a customs free zone. This means that all import duties between members are abolished.

4.5.2 Southern African Development Community (SADC)

The SADC[18] has been in existence since 1980, where it was formed as a loose alliance of nine majority-ruled States in Southern Africa known as the Southern African Development Coordination Conference (SADCC), with the main aim of coordinating development projects in order to lessen economic dependence on the then apartheid South Africa. The transformation of the organization from Co-ordination Conference (SADCC) into a Development Community (SADC) took place on August 17, 1992 in Windhoek, Namibia when the Declaration and Treaty was signed. The region's vision is that of a common future, a future within a regional community that will ensure economic well-being, improvement of the standards of living and quality of life, freedom and social justice and peace and security for the peoples of Southern Africa.

Generally, the objectives of the SADC Windhoek Treaty do in principle commit SADC to regional economic integration on a wide and deep range of fronts. However, to give the regional trade integration process the attention it deserves, and in accordance to Article 22 of the Treaty, the Community signed a Protocol on Trade (hereinafter called "The Protocol") on the 24 August 1996, thoug its implementation started on 1st September 2000. The Protocol among other things resulted in the implementation of the tariff phase down structure since September 2000 until December 2007. The Protocol mainly deals with all the trade issues of the Community. The specific objective of this Protocol, which directly deals with intra-trade as stated in Article 2, is "To further liberalize intra-regional trade in goods and services on the basis of fair, mutually equitable and beneficial trade arrangements, complimented by Protocols in other areas".

The SADC region has been trading as a preferential trade area (PTA)[19] since its inception in 1980. However, based on the implementation of the agreed tariff phase

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[18] The current SADC member countries are: Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

[19] PTA is the loosest form of economic integration, which liberates trade among member countries by *lowering* of trade barriers against imports from other member countries while trade barriers against non-member countries are maintained. As such, the PTA places non-member countries at a competitive disadvantage, and diverts trade from them towards member countries. This is because the duty–free,

down commitments, SADC attained free trade area (FTA)[20] status as of January 2008, although the formal FTA launch was done at a regional Head of State Summit, which was held in Johannesburg, South Africa in August 2008.

4.5.3 Botswana and European Union (EU)

Botswana's trade relationship with the EU over the last four decades has been based on the Lome Agreement from 1975 to 1999, and the Cotonou Partnership Agreement (CPA) from 2000 to 2007. Under these arrangements, Botswana, together with other African, Caribbean and Pacific (ACP) countries have been exporting some of their products, mostly unprocessed agricultural products, to the EU markets duty free. The CPA replaced the previous Lome agreements and lays the basis for a fundamental transformation of ACP-EU trade relations, especially starting from 2008. The non-reciprocal preferential trade arrangements characterized in the Lome agreements will be replaced with a reciprocal preferential trade regime envisioned under the Economic Partnership Agreement (EPA).

The new EPA framework consists of trade, development and political measures that will provide the basis for it to be agreed between Botswana, under the configuration of ACP states, and the EU. The objectives of this economic and trade co-operation is to improve the participation of ACP states in the multilateral trading system, therefore improving the benefits gained from the trading system. This is to be achieved with due regard to political and development priorities and should be consistent with the concept of sustainable development. Under this new framework, 'substantially all trade', that is around 90% of total trade (exports and imports) between Botswana, together with other ACP countries, and the EU will be liberalized.

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even with high production costs, imports from within members may become cheaper than duty-paid, but with lower production costs, imports from non-members.

[20] In an FTA, member countries *remove* both tariff and non-tariff barriers when trading with each other. Nevertheless, each member country retains its own set of trade barriers, including customs duties, against non-member countries; and these trade barriers normally vary from one member to another. Similarly, a member may retain a separate set of barriers against imports from different non-member countries.

Botswana, together with some SADC countries, has been negotiating an EPA under the CPA with the EU. The main outcome of these trade negotiations will be trade liberalization between Botswana, as well as other SADC states, and the EU member countries[21].

4.5.4 Botswana and the AGOA trade regime

The United States of America (USA)'s African Growth and Opportunity Act (AGOA) promulgated by the USA Congress in May 2000 provides market access preferences into the USA markets for 37 Sub-Sahara African (SSA) countries, including Botswana since 2002, by ensuring duty– and quota–free (DFQF) access on over 7000 product lines until 2015. The AGOA builds upon existing USA trade policies by expanding benefits previously available via the Generalized System of Preferences (GSP). The combined AGOA/GSP provisions cover 7000 product tariff lines, of which the AGOA accounts for 1800 of these. These lines include apparel and footwear, wine, certain motor vehicle components, a variety of agricultural products, chemicals, steel, etc. See www.agoa.info for more information. Specifically for Botswana, the textile and apparel sector is one of the three sectors with over 90% of export product lines qualifying for AGOA.

4.5.5 Botswana and the WTO

Botswana is a member of the World Trade Organization (WTO), a successor of the General Agreement on Tariffs and Trade (GATT). The main objective of the WTO is multilateral free trade among member states. To this end, WTO member countries have been negotiating free trade arrangements, especially through the Doha Development Agenda (DDA) round of negotiations which started in November 2001. Although these DDA negotiations have not progressed well since 2003, once they are

[21] An EPA was suppose to have entered into force begging January 2008, but due to extension of negotiations, it is now expected to be in force before the end of 2010.

finished, they will result in free trade among signatory member states in both agricultural and manufactured products, among other things.

4.6 Conclusion

The profiles of the three sectors under study, that is, diamond, textile, and meat and meat products have been summarized in the chapter, with the intention of providing a brief sectoral overview. Also trade liberalization arrangements in which Botswana is involved have been presented.

CHAPTER FIVE: STRUCTURE OF SECTORAL EXPORTS

5.1 Introduction

This section presents the empirical results of the structure of sectoral exports which are either inter-industry trade (INT) or intra-industry trade (IIT). This analysis is achieved by computing Equation (3) for the three sectors, and further simulating Equations (4) and (5) for the sectors where results from Equation (3) suggest the exports to be IIT driven. Computational results from Equations (4) and (5) decompose IIT further into either horizontal IIT (HIIT) or vertical IIT (VIIT). The study employs the Harmonized Commodity Description and Coding System (HS) data at 2-digit level, for the meat and meat products (HS 02) and the textiles (HS 50 to HS 63) sectors. On the other hand, for the diamond sector, this thesis employed the HS data at 4-digit level (HS 7102). This was necessitated by the need to explicitly single out diamond figures, while leaving out non-diamond statistics.

5.2 Diamond sector

The major trading partners[22] for Botswana's diamonds are Belgium, Israel, South Africa, United Kingdom (UK) and United States of America (USA). As shown in Table 4, IIT indices between Botswana and three of its major trading partners (Belgium, Israel and South Africa) are more than 50 in five of the eight year period analyzed. This shows that there is evidence of IIT between Botswana and these three major diamond trading partners. This means that Botswana normally exports unprocessed diamonds to these countries due to lack of proper technology to value-add, and these countries in turn do value-addition by producing manufactured diamond related products such as jewelry like rings, necklaces, etc. Botswana in turn imports these value-added diamond manufactured products. Presence of IIT indicates that Botswana's diamonds can compete in markets of these partner countries. That is,

[22] In analysing IIT and INT, major trading partners are countries in which Botswana and the respective partners have two-way flow of goods, that is, Botswana simultaneously exports and imports the same product to and from the partner countries.

manufacturers in Belgium, Israel and South Africa tend to use Botswana diamonds in their diamond related manufactured products.

Table 4: Diamond IIT indices for Botswana's major trading partners

Country \ Year	1999	2000	2001	2002	2003	2004	2005	2006	Overall
Belgium	97.57	90.12	69.48	5.58	89.78	1.50	0.00	79.77	**IIT**
Israel	97.80	80.51	75.17	57.47	0.00	0.00	0.00	59.05	**IIT**
South Africa	65.20	89.75	52.44	0.06	0.16	0.82	53.1	64.85	**IIT**
United Kingdom	0.44	2.46	1.54	0.23	0.01	0.00	0.00	0.06	INT
United States	0.00	0.00	0.00	30.62	0.00	0.00	na[23]	7.99	INT

Source: author calculations using data from TIPS database

On the other hand, INT dominates trade between Botswana and the other two trading partners, the UK and USA. For these two countries, the IIT indices are all below 50. Since trade with the majority of partner countries is IIT driven, it can be concluded that Botswana's diamond trade for the period 1999 to 2006 was IIT dominated.

5.2.1 Decomposition of IIT into HIIT and VIIT

Given that diamond trade between Botswana and its major trading partners is IIT driven, the next step will be to further decompose IIT into either HIIT or VIIT. The results of the decomposition are shown in Table 5. Tabulated results show that HIIT dominated trade in diamond between Botswana and its two trading partners, Belgium and Israel, only in 1999. Otherwise, for the other trading years and for all diamond trade with South Africa, VIIT was the main drive behind Botswana's diamond trade with these three trading partners. Panels A through D in Table A2 in Section 2 of the Appendices provide the decomposition of IIT into HIIT and VIIT, where both smaller and larger dispersion values of α have been used. Generally, comparing the results when either a smaller value of α, e.g. 0.10, is employed or a lager value of α, e.g.

[23] "na" implies that there was either exports (with zero imports) or imports (with zero exports) only between Botswana and the country in which "na" appears in the table.

0.30, is used, the results do not differ much with the results presented in Table 5 where the value of α used is 0.15.

Table 5: HIIT and VIIT in the diamond sector (α=0.15)

Year / Country	1999	2000	2001	2002	2003	2004	2005	2006
Belgium	HIIT	VIIT	VIIT	VIIT	VIIT	VIIT	na	VIIT
Israel	HIIT	VIIT	VIIT	VIIT	na	na	na	VIIT
South Africa	VIIT	VIIT	VIIT	VIIT	VIIT	VIIT	VIIT	VIIT

Source: author calculations using data from the TIPS database

5.3 Meat and meat products sector

Trade in meat and meat products, as shown by the calculated IIT indices presented in Table 6, is INT driven given that overall IIT indices for 11 of the twelve countries are below 50 for all the years indicated in the table. This overall scenario testifies to the specialized nature of Botswana's meat and meat products mainly emanating from its cattle resource endowment, and thus following the dictates of the Heckscher-Ohlin (H-O) trade specialization. It is however important to note that the country's trade with South Africa in this sector is IIT driven. That is, Botswana normally exports unprocessed meat products to South Africa and due to the fact that the latter country has advanced technology, it value-adds meat products into products like canned meat, canned beef, veil, etc. Botswana, in turn imports these value-added manufactured meat and meat products from South Africa.

Table 6: Meat and meat products IIT indices for major trading partners

Year / Country	1999	2000	2001	2002	2003	2004	2005	2006	Overall
Belgium	na	0.00	Na	na	0.00	0.00	na	Na	INT
Germany	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	INT
Greece	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	INT
Italy	0.00	0.00	0.00	0.00	na	0.00	na	0.00	INT

Mauritius	na	na	0.00	0.00	0.00	na	na	0.00	INT
Namibia	0.30	0.00	0.00	0.00	30.09	64.99	0.00	49.39	INT
Netherlands	0.00	0.00	Na	0.00	na	0.00	0.00	0.00	INT
Norway	0.37	0.00	0.00	0.00	0.00	0.00	na	Na	INT
Réunion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	INT
South Africa	74.56	61.24	28.07	36.77	55.81	56.97	19.0	64.50	**IIT**
United Kingdom	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	INT
Zimbabwe	0.00	na	0.00	na	0.00	0.00	na	0.00	INT

Source: author calculations

5.4 Textiles sector

Botswana's textiles sector, like the meat and meat products sector, is also INT driven as most indices presented in Table 7 show values below 50. Among the 34 major trading partners for these sectoral products, only trade with Namibia and South Africa is IIT driven.

Table 7: Textiles IIT indices for major trading partners

Year / Country	1999	2000	2001	2002	2003	2004	2005	2006	Overall
Angola	na	0.00	0.00	na	3.15	0.00	0.00	10.89	INT
Austria	na	0.00	Na	0.00	2.64	0.00	Na	Na	INT
Belgium	29.27	96.85	25.03	32.58	37.28	6.11	0.00	0.14	INT
Canada	21.43	29.28	1.76	40.72	55.56	6.52	64.09	14.54	INT
China	0.00	0.00	0.00	0.00	0.21	1.56	0.76	39.75	INT
Denmark	0.00	0.00	12.63	6.14	51.14	0.00	0.00	0.00	INT
Finland	na	0.00	0.00	3.01	52.68	na	92.66	0.00	INT
France	27.90	0.00	0.00	86.00	6.97	1.15	0.00	5.88	INT
Germany	6.26	18.01	4.12	6.27	0.41	0.18	0.11	1.17	INT
Ghana	1.44	0.80	0.00	0.02	0.00	0.00	6.37	1.44	INT
Hong Kong	1.33	0.00	0.00	0.00	0.24	79.54	0.00	2.42	INT
India	0.08	0.00	0.00	0.00	18.40	0.00	0.05	0.12	INT

Iran	0.00	0.00	0.00	43.19	6.85	0.00	na	0.00	INT
Italy	36.00	3.96	0.00	0.00	0.00	0.00	0.02	57.28	INT
Lesotho	3.57	59.21	0.00	0.00	0.00	6.68	88.98	81.67	INT
Malawi	5.96	12.61	31.59	95.75	0.00	13.18	4.38	1.92	INT
Mauritius	98.50	0.00	0.00	1.65	0.15	80.10	0.72	10.55	INT
Namibia	8.29	2.13	0.00	92.46	82.46	55.99	77.30	73.17	**IIT**
Netherlands	48.02	0.00	0.00	39.56	28.44	7.39	35.87	0.15	INT
New Zealand	16.54	0.00	74.56	0.00	0.00	0.00	83.15	75.78	INT
Norway	0.00	Na	1.80	0.00	0.00	na	0.00	0.00	INT
Portugal	0.00	0.00	0.00	96.01	0.00	0.00	25.95	0.00	INT
South Africa	41.81	50.37	46.86	51.29	55.51	67.91	76.40	77.10	**IIT**
Spain	0.79	0.00	0.00	12.71	6.29	0.53	0.00	0.00	INT
Swaziland	98.86	0.00	Na	0.00	0.00	6.88	48.48	0.15	INT
Sweden	0.00	0.00	0.53	0.00	0.37	0.00	na	Na	INT
Switzerland	0.00	0.00	0.00	88.93	66.80	84.19	0.30	9.02	INT
Uganda	0.00	0.00	Na	0.00	0.00	na	na	Na	INT
United Arab Emirates	na	na	Na	0.00	0.00	27.75	7.29	9.66	INT
United Kingdom	11.25	35.29	22.96	40.86	28.31	14.12	2.57	1.01	INT
United Republic of Tanzania	0.00	9.10	4.72	2.88	0.00	0.00	2.69	0.31	INT
United States	8.32	11.43	23.78	5.90	1.03	0.24	0.55	1.01	INT
Zambia	2.58	0.01	0.07	44.15	0.00	23.39	0.00	146.75	INT
Zimbabwe	25.13	29.01	83.22	93.31	99.33	37.58	32.49	84.21	INT

Source: author calculations

Overall, the tabulated IIT/INT results for the textile sector imply that this sector's trade is specialized driven emanating from Botswana's relative textile abundance. At the same time, it is also important to note that the country exports unprocessed textile to South Africa where, because of the latter country's advanced technology, textile which originates from Botswana is manufactured into value-added products such as shirts, blankets, jeans, etc. Botswana in turn imports these textiles from South Africa, but in a different form.

5.5 Conclusions

This study employed the IIT adjusted Grubel and Lloyd's (1975) indices to investigate exports from Botswana's three sectors, namely, diamond, textile, and meat and meat products for the period 1999 to 2006. Simulated results for meat and meat products, and textiles show that export trade for these two sectors between Botswana and its major trading partners was INT driven for the period under study. This emanates from the relative abundance of meat and textile resources in Botswana compared to its trading partners.

On the other hand, Botswana's diamond trade with its major trading partners is found to be IIT driven, as evidenced by the simultaneous exports and imports of diamonds by Botswana to and from its trading partners. A further decomposition of IIT into either HIIT or VIIT is also done. The simulated results show that VIIT, as opposed to HIIT, dominated Botswana's IIT for the period reviewed.

5.6 Policy recommendations

As pointed out in Section 4.5, Botswana's engagements in trade liberalization will result in changes in trade. This could be in the form of an increase and/or decrease in exports, and an increase and/or decrease imports. These changes in exports and imports will involve shifts in resources between sectors. Given that two of the three sectors analyzed, i.e., textile and meat and meat products are INT driven, any increase in imports of competing or similar goods, especially from the developed countries, will hurt these sectors, and may result in closure of some companies in these sectors. This possible sectoral negative impact stems from the fact that imports from developed countries will be of high quality, due to these countries having advanced and better production technologies, as well as being relatively cheaper, given that producers from developed countries have economies of scale, do mass production and for agricultural production, they are given both production and export subsides by their governments. The increase in imports will thus result in loss of employment, due to structural changes brought about by increased competition emanating from trade liberalization, and re-allocation of capital to other surviving sectors. For labour, it may mean that those formally employed in the closing sectors will have to find jobs in other industries where their experience may not match the job requirements and this may involve re-training, normally at a cost. At the same time, relocated capital, especially specialized machinery and equipment may end up being redundant.

Since some of these trade liberalization arrangements in which Botswana has (is) engaged itself are still to be implemented (e.g., the EPA with EU and WTO liberalization arrangements), the country needs to formulate and implement policies to deal with the possible negative impacts of trade liberalization of the meat and meat products, and textile sectors. Possible defensive strategies would be product differentiation within the same sectors with more emphasis on value-addition production. For instance, rather than concentrating on production and exportation of raw meat, the country can improve and value-add meat production in the form of caned meat. The same applies to textiles, where value addition can entail shift into production of shirts, t-shirts, jeans, as opposed to production and exportation of rolls of cloth or un-knitted garments.

Lack of proper structure and implementation of diversification and value-addition strategies may mean that, once imports increase due to trade liberalization, the INT driven sectors, i.e., the meat and meat products, and textiles sectors, will experience structural unemployment and possible capital redundancy.