Indian Journal of Economics & Business, Vol. 3 No. 1 (January-June, 2017)

DIAMONDS AND DUTCH DISEASE: A CASE STUDY OF SIERRA LEONE

BETSY DEKORNE MA*

Abstract

Sierra Leone is resource rich in diamonds but remains one of the poorest countries in the world. This paper seeks to answer how a country with significant resource wealth can remain in poverty. To answer this question I have applied the Dutch Disease theory to Sierra Leone. This is done through the evaluation of Sierra Leone's key economic indicators, including GDP, variance in sectors including industry, agriculture, and services, terms of trade, inflation, and overall dependency on diamonds.

I. INTRODUCTION

The resource curse can be broken down into four common economic explanations: decline in terms of trade for primary commodities, the instability of international commodity markets, the poor economic linkages between resource and nonresource sectors, and the Dutch Disease theory (Ross, 1999).

A vast array of research has been conducted since the 1980's studying the relationship between resource wealth and economic development that has provided strong evidence that states with abundant resource wealth perform less well than their resource-poor counterparts, however there remains little agreement of why this is (Ross, 1999). In 1970, 80 per cent of the developing world's export earnings were from primary commodities; in 1993 that rate has fallen to 34 per cent, which is a result of the fast growth of manufacturing exports in East Asia. However, three-fourths of the states in sub-Saharan Africa still rely heavily on primary commodities for at least half of their export income (Ross, 1999).

DUTCH DISEASE

In 1977 the term "Dutch Disease" was first used in the weekly magazine, "The Economist" to describe the economic phenomenon of the Netherlands export boom and simultaneous decline of the manufacturing sector in the late 1970s. The Netherlands experienced a rise in their natural gas exports as a result of increasing oil prices in the early 1970s. Inflation occurred as the foreign exchange

* Korbel School of International Studies, University of Denver, 2201 South Gaylord Street, Denver, CO 80208, *E-mail: betsydekorne@gmail.com*

reserves increased the domestic money supply. Simultaneously the Netherlands increased their major imports, which led to a rise in the cost of production and overall decline in aggregate supply (K.Kulkarni, P. Brijesh, 2009). The decline of aggregate supply in the economy resulted in an increase in domestic unemployment. Although the Netherlands had substantial export growth, the Dutch economy experienced stagflation , now known as the Dutch Disease (K.Kulkarni, P. Brijesh, 2009).

Generally speaking, today Dutch Disease refers to three sectors, the boom sector, lagging sector, and non-traded sector. The booming sector refers to exported goods from resource extraction and the lagging sector refers to manufacturing or agricultural exports (Cordon and Neary, 1982). The non-traded sector refers to the non-resource sector or services. The international market sets the prices of the traded sectors; raw resources, manufacturing goods and agriculture. The prices of non-traded goods such as services and other non-resources are set domestically since they are used within the country. Dutch Disease evaluates the coexistence of all three sectors within an economy and their relation to economic growth. The theory is that as exports in raw extractive materials increase, such as oil and minerals, there is a decrease in the export of manufactured and agricultural exports due to added pressure on the sector.

According to Sachs and Warner, capital and labor are used in the manufacturing and non-traded sector, but not in the natural resource sector (Sachs & Warner, 1997). The higher the natural resource endowment a country has the greater the demand on non-tradable goods. Thus labor and capital move from the manufacturing sector to the non-traded sector. When an economy experiences a resource boom, from either an improvement in terms of trade or the discovery of a resource, manufacturing industry decreases as the non-traded sector expands (Sachs & Warner, 1997).

The diminishing manufacturing sector is considered the “disease” but within the neoclassical theory, it isn’t fatal if competitive conditions exist within the economy. Dutch Disease is considered harmful when an economy experiences slow economic growth due to certain sources of growth in manufacturing. An example would be the backward and forward linkages that constitute production externalities. If manufacturing is characterized by externalities in production then the decreasing manufacturing sector can lead to a socially inefficient decline in growth (Sachs & Warner, 1997).

This paper will test the Dutch Disease hypothesis in Sierra Leone, evaluating the impact of exporting raw commodities on economic growth. The likelihood of Dutch Disease increases when a countries trade is reliant on one or two main commodity exports. I will evaluate the impact of diamond exports on the overall economic growth of Sierra Leone and test for the occurrence of Dutch Disease.

II. CASE STUDY: SIERRA LEONE

Economic Indicators

Sierra Leone is one of the poorest countries in the world, known in the last two decades for its civil war, political instability, economic devastation, and conflict

diamonds. The country has a poverty rate of 66 per cent and a life expectancy of 48 years (World Bank, 2011). Sierra Leone also gained international attention through the mining and trading of diamonds as conflict and corruption exploded within the country. Sierra Leone brought to light how the 'paradox of plenty' can lead to destruction and poverty (Maconachie & Binns, 2007).

Sierra Leone possesses substantial agricultural, mineral (diamonds) and fishery resources. However, civil unrest, political instability, lack of social and physical infrastructure, severe income distribution and reliance on diamond exports has kept the country among the poorest in the world.

The following graphs give a view of Sierra Leone's GDP breakdown (Figure 1), GDP growth from 1968 to 2008 (Figure 2), and annual contribution to real GDP growth by sector from 1999-2003 (Figure 3). I will discuss the breakdown of the figures further in the following sections.

Figure 1: GDP Composition By Sector

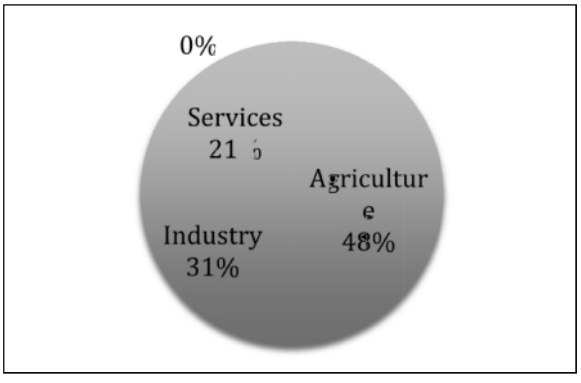
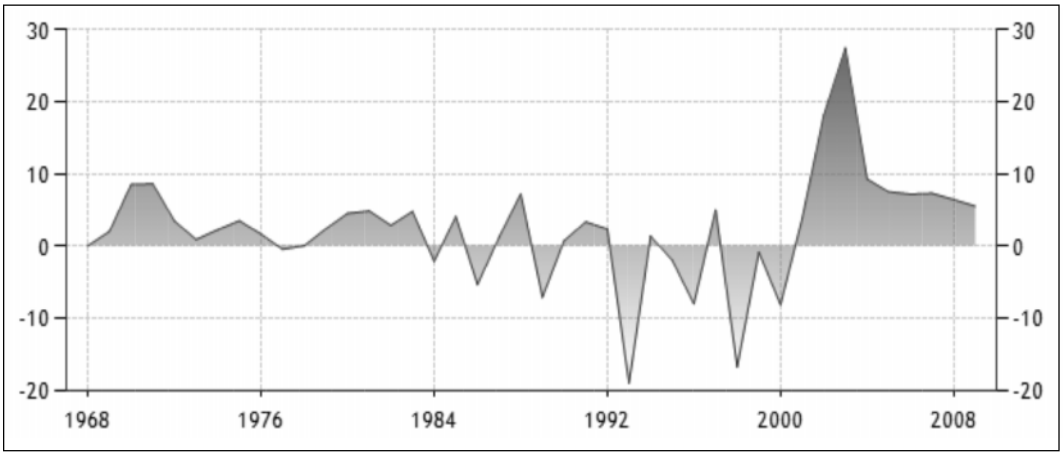
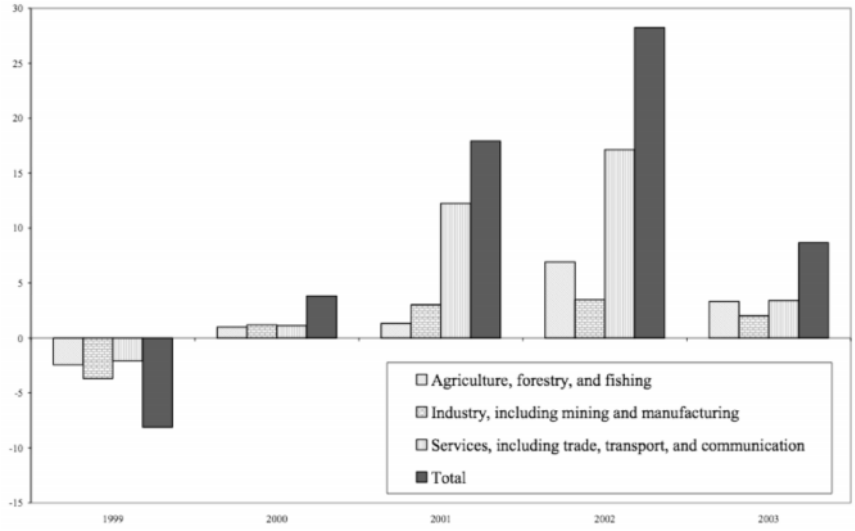


Figure 2: Sierra Leone- GDP Growth (Annual %)



(Trading Economics, 2010a)

Figure 3: Sierra Leone: Annual Contribution to Real GDP Growth by Sector, 1999-2003 (In per cent)

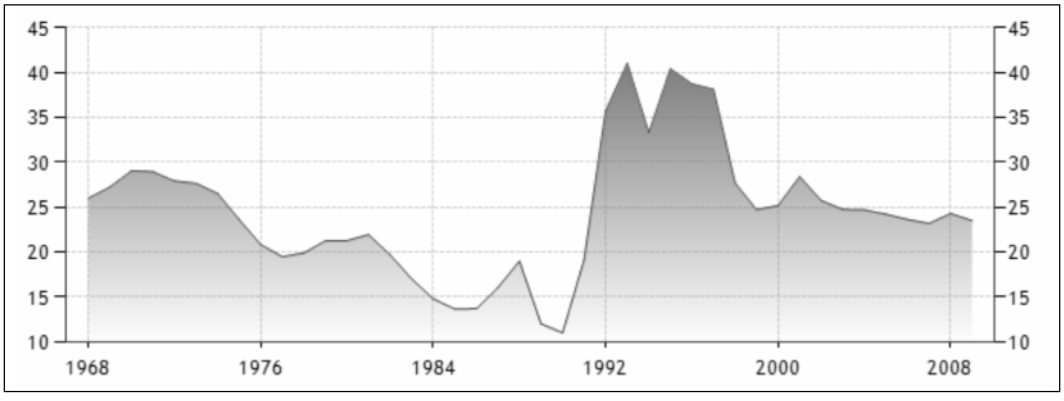


Sources: Statistics Sierra Leone; and IMF Staff Estimates

INDUSTRY

Sierra Leone's industry makes up 31 per cent of the countries GDP and is comprised of diamond mining, small-scale manufacturing (beverages, textiles, cigarettes, footwear), petroleum refining, and small commercial ship repair. The country is rich in mineral resources, including diamonds, rutile, titanium ore, bauxite, iron ore, gold, and chromite. The only minerals that appear on Sierra Leone's foreign trade list are diamonds and rutile. Approximately 7% of Sierra Leone's work force is employed in the industry sector (World Bank, 2011). The chart below shows the value of the industry sector in per cent of GDP from 1968 to 2008 (Figure 4).

Figure 4: Sierra Leone- Industry; Value Added (% of GDP)



(Trading Economics, 2010b)

It is reported that in 2009 the industry sector, total GDP decreased 13 per cent from 2008. This was due to the decline of output in the mining sector, which the industry sector is heavily dependent on. The mining sub-sector continued to experience negative growth as the international demand for diamonds fell due to the global recession. The suspension of one of the leading mining companies (Koidu Holdings) also negatively impacted growth rates in 2008. Manufacturing experienced a negative growth rate of 6.9 in 2009, which is accredited to a decline in output of cement, soft drinks, bear, flour and paint (Statistics Sierra Leone, 2010). The manufacturing sub-sector is underdeveloped as it consists mainly of raw materials processing and light manufacturing for the domestic market (Alaba, 2009).

Regarding Sierra Leone's GDP, the industry sector negatively affected growth in 2009. The decline in growth can be contributed to the following: the diamond production by Koidu Holdings was still be below the pre-suspension level; Rutile will still be operating a single (old) dredge for much of 2010; actual production of iron ore by London Mining and African Minerals may not commence in 2010 by all indications; and Bauxite mines will remain closed for much of 2010 (Statistics Sierra Leone, 2010). The industry sector is heavily dependent upon the mining sub-sector, thus when externalities affect the growth of the mining sector, Sierra Leone experiences negative GDP growth in the industry sector.

DIAMOND INDUSTRY

In 1930 diamonds were discovered in Sierra Leone and have played a critical role in their economy ever since. At the height of the diamond era, from 1930-1970, diamond exports were the backbone of Sierra Leone's economy, accounting for more than two-thirds of the country's export earnings and one quarter of its GDP (Maconachie & Binns, 2007). While many thought that diamonds could be the catalyst to bring the country out of poverty, that has not been the case.

In 1968 President Siaka Stevens came to power and it was the beginning of a decline in the diamond market for the country. During his 17 years in power diamond exports fell from 1.7 million carats in the 1960s to 50,000 carats by 1985 (Maconachie, R. Binns, 2007). Stevens used the wealth from the diamond industry to pay supporters, which made the diamond industry rife with corruption and smuggling. This is an important point, as it is estimated that roughly 50 per cent of diamonds still leave the country illegally today (Maconachie, R. Binns, 2007). This has created a shadow economy that is linked to the global market, which makes it difficult to fully apply the Dutch Disease theory, as there is a gap in information, specifically the role of diamonds in Sierra Leone's export market.

The diamonds in Sierra Leone are alluvial diamonds, meaning they are surface level and are usually found where people live. Diamonds became much more accessible which resulted in a diamond rush. Alluvial diamond mining is much more labor intensive, making it extremely difficult to monitor and control. Kimberlite

mining, done in Botswana and South Africa, involves mining companies with higher levels of technology and a lower mix of labor. The diamonds in this process are found further in the ground, thus mining is more secure and controlled, resulting in legitimate diamond mining and trading.

There are two specific initiatives recently enacted in aims to legitimize diamond mining and trading. The first is the Kimberley Process Certification Scheme (KPCS) and secondly the Diamond Area Community Development Fund (DACDF). The Kimberley Process Certification Scheme comes from the accountability involved in the extraction of kimberlite diamonds as oppose to alluvial diamonds. There has been much international recognition for kimberlite mining in the effective management and marketing of diamonds. The United Nations in 2002 adopted a resolution that supported the development of an international certification scheme for diamonds. The KPCS scheme was adopted in November 2002 at a ministerial meeting in Switzerland, as a joint government, international diamond industry and civil society initiative created to stem the flow of conflict diamonds into the global market, while simultaneously supporting the legitimate diamond industry (Maconachie, R. Binns, 2007). The Kimberley process took off in 2003 when 50 countries began diamond marketing and production, including Sierra Leone. The scheme has its limitations. There is no mandatory impartial monitoring system; the industry is left to monitor itself. There is a need for stronger controls and monitoring for the Kimberley Process to be effective and ensure that diamonds are no longer exploited to fund conflicts. While there are many improvements to be made, KPCS has proved somewhat successful in Sierra Leone. Since 2003, KPCS has increased Sierra Leone's diamond exports by providing legitimacy to the industry and international trade of diamonds.

The Kimberley Process Certification Scheme did not address the harsh working conditions of miners, especially small-scale miners in Sierra Leone. In an attempt to bring a development focus to the miners and miner communities in Sierra Leone the Diamond Area Community Development Fund (DACDF) was established in 2001. The premise of the fund is to give money back to the mining communities as a re-investment. The government has a 3 per cent tax on diamond exports, and to encourage miners to go through the government rather than the black market and to further develop the communities, the government gives a portion of that tax to the fund. The per centage given back to the community is roughly .75 per cent of the 3 per cent, and donors are asked to match what is put into the fund (Maconachie, R. Binns, 2007). There is an estimated US $3 million in the fund today and many chiefdoms are using the money wisely investing in community infrastructure, education, health, and vocation skills and training centers. In addition, the government believes that by giving the money back to the chiefdoms they will have a vested interest in monitoring the mining activities to ensure legitimacy, thus more rewards. In 2002 it was reported that some chiefdoms were not re-investing the money in the communities. Since then they have set up a coalition to attempt to ensure proper use of the fund. While neither the KPCS or DACDF initiatives have

proven bulletproof, they have exemplified leaps in the development of legitimacy in the diamond export and trade in Sierra Leone.

AGRICULTURE

The agriculture sector contributes the greatest per centage to Sierra Leone's GDP and is the dominant economic activity of Sierra Leoneans. The agriculture sector employs two-thirds of Sierra Leone's workforce; most of them are involved in sustenance farming. The major agricultural products of Sierra Leone include cocoa, coffee, palm kernel, rubber and ginger. The country has been more involved in the international commodity market with all of the products. Cocoa is currently the most significant product in regards to foreign trade.

From 2008 to 2009 there was a 4 per cent increase in the agriculture sector (Statistics Sierra Leone, 2010). Crops grew an estimated 5 per cent, which is partially accredited to the tractorization policy of the government (Statistics Sierra Leone, 2010). The investment in technology significantly increased the returns of crops. While the fishery sub-sector grew marginally, due in part to the ban on monofilament fishing nets. The figure below shows the agriculture sector's per cent of GDP from 1968 to 2008 (Figure 5).

Figure 5: Sierra Leone- Agriculture; Value Added (% of GDP)

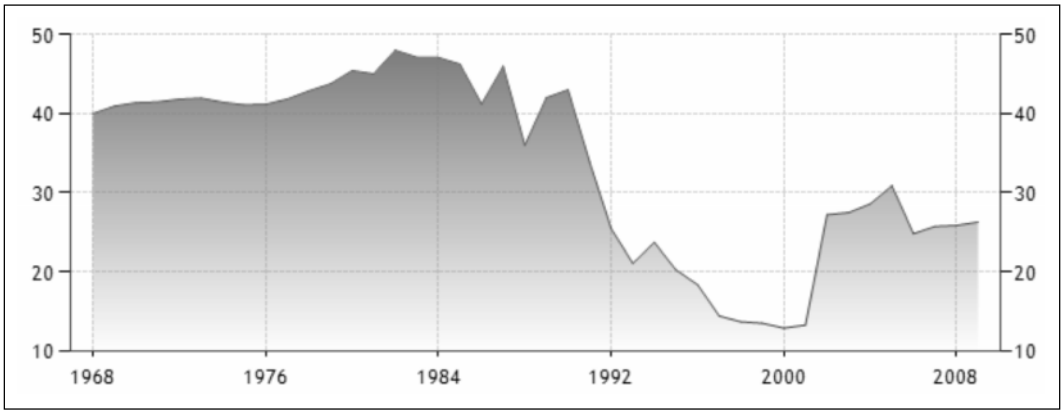
(Trading Economics, 2010c)

SERVICES

The services sector recorded a 7.95 per cent growth from 2008 to 2009 (Statistics Sierra Leone, 2010). The sector continues to grow due to expansions of sub-sectors such as Transportation, Communication, and Banking. Trade and Tourism grew 3.7 per cent revealing a minor decline from 2008 (Statistics Sierra Leone, 2010). The decline was specifically in hotel stays, which could be attributed to the global recession, thus less people were traveling to Sierra Leone from 2008 to 2009. There is much anticipation for the services sector to continue to grow, especially with

increased foreign investment in travel and tourism. The chart below displays the service industry trends in per centage of GDP from 1968 to 2008 (Figure 6).

Figure 6: Sierra Leone- Services; Etc.; Value Added (% of GDP)



(Trading Economics, 2010d)

TRADE

Exports and imports are invaluable indicators of economic growth and are foundational in evaluating for Dutch Disease. Sierra Leone is heavily reliant on diamond exports, which poses a high risk. The country is also dependent on imports. Sierra Leone has seen an improvement in Terms of Trade since 2002. The following section breaks down economic indicators of trade.

Exports

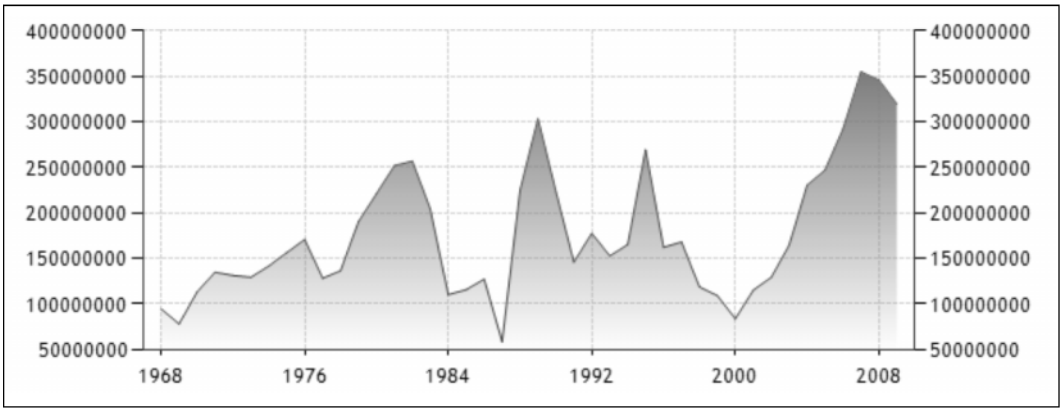
Sierra Leone has seen an increase in exports since the end of the civil war in 2002. After the war, both agricultural and mining exports expanded strongly. The 83 per cent increase in diamond exports can be attributed to increased government oversight and the adoption of the Kimberley Process Certification Scheme. Agriculture increased 71 per cent, due to a market rise in cocoa exports, but still remained a minor share in total exports (D. Rwegasira, J. Gottschalk, 2004).

Mineral export continues to dominate the country's export profile. The mining of other minerals, such as gold, are making their way into Sierra Leone's exports. Currently, Sierra Leone's major exports are diamonds, rutile, cocoa, coffee and fish. Export growth from 1968 to 2008 is displayed in the graph below (Figure 7).

Diamond Exports

It is difficult to truly account for the total quantity of diamond exports in Sierra Leone. This is due to the significant shadow economy within the country. As stated earlier in the paper, it is estimated that 50 per cent of diamonds in Sierra Leone still

Figure 7: Sierra Leone- Exports of Goods and Services (US Dollar)



(Trading Economics, 2010e)

leave the country illegally. According to USAID, in 1999, Sierra Leone's official diamond exports were about $1.2 million, compared to a conservative industry estimate of $70 million as the real commercial value. The other $68.8 million of estimated value was lost to illicit and criminal activity (USAID, 2001). UN experts and diamond industry representatives have estimated that conflict diamonds may be as little as 4 per cent of the world trade, in carat weight, whereas smuggled diamonds may account for 20-30 per cent (USAID, 2001). The chart below shows the amount of diamond exports in Sierra Leone from 1998 to 2006 (Figure 8). It is evident that there is a significant rise in diamond exports in 2003, once the KPCS was adopted.

Figure 8: Diamond Exports

Diamond exports from Sierra Leone: 1998–2006 (GGDO)

Year	Carats	Value (US$)	Duty, 3% (US$)
1998	15,818.04	1,780,287.41	53,408.22
1999	9320.32	1,244,825.34	37,344.76
2000	77,372.39	10,066,920.81	302,007.62
2001	222,519.83	26,022,492.27	780,674.77
2002	341,859.23	41,732,130.29	1,251,964.71
2003	506,723.37	75,969,753.32	2,193,335.84
2004[a]	499,242.43 (A)	89,618,053.54	2,688,541.60
2004[a]	58,030.54 (K)	11,172,434.79	335,173.04
2005	552,044 (A)	119,429,528	3,582,885.84
2005	116,665 (K)	22,510,716	675,321.48
2006*	209,762 (A)	45,535,966	1,366,078.98
2006*	30,631 (K)	6,984,425	209,532.75

*Figures from January to June 2006.
A = Alluvial; K = Kimberlite.
Source: Strasser-King (2004, p. 9) and GGDO (2006).
[a]Figures from January to September 2004.

(Maconachie, R. Binns, 2007)

One explanation of the substantial illegal diamond trade in Sierra Leone is the accessibility of the diamonds. The most predominate type of diamond in the country is alluvial diamonds. These diamonds are found on the surface level over large areas of land and are extremely labor intensive. Alluvial diamonds are found by "diggers" who manually, or with rudimentary equipment, sift through soil and sand while digging holes up to 30 feet in depth, in places they think they are most likely to find diamonds (USAID, 2001). The diggers are the poorest of the poor in the country who endure body-breaking labor, day after day with little compensation and no certainty that they will find stones. The diggers labor hours on end with hopes of finding a large stone that will provide for the remainder of their life, however there is a slim chance of this happening.

The land in Sierra Leone is communally owned, as a result the government requires "leases" for the land by diggers. Traditional paramount chiefs are responsible for collecting rents. The diggers cannot afford leases, so diggers obtain permission to dig in specific areas from the respective chief and are financed by "dealers" to pay the lease. Dealers are business people who manage groups of diggers by advancing them food, tools, household goods, and then deduct from the proceeds of the sales of the stones that the diggers find for them (USAID, 2001). Poverty overtime has conspired with ignorance to create a system of servitude (USAID, 2001). It is hard to imagine that at system of such exploitation still exists today.

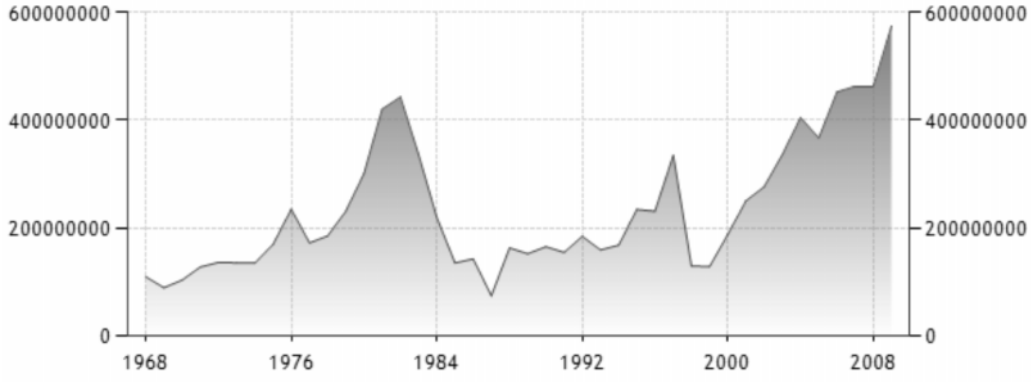
Imports

Sierra Leone has seen a steady rise in imports since 2000. The country experienced a post-war import surge, which reflected UN and NGO operations after the war (shown in Figure 9)**.** The post-war imports consisted of machinery and transport equipment, mineral fuel, chemicals, and manufactured goods. Increases in the value of machinery and transport equipment reflected increased investment. The increased availability of foreign exchange to importers improved business confidence, and greater economic activity, which spurred the increase in imports (D. Rwegasira, J. Gottschalk, 2004). The imports in 2002 and 2003 were mostly used for reconstruction activities. Private capitol flows including NGOs helped finance imports in Sierra Leone during post-war surge. Mineral fuels and lubricants constitute the majority of imports, approximately 34 per cent (Alaba, 2009). It is also recorded that imports of food, and animal and vegetable oil fell in 2005. Alaba concludes that a trade deficit remains an issue of concern in the country (Alaba, 2009).

Terms of Trade

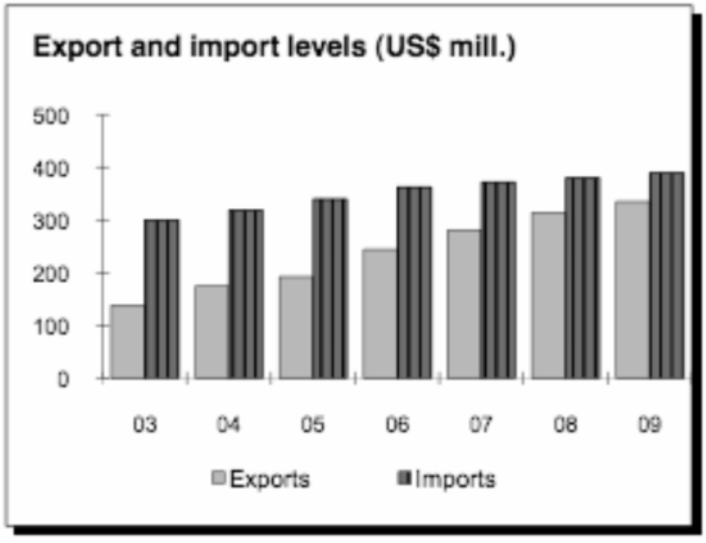
Sierra Leone has seen a slight increase in its Terms of Trade from 1999 to 2009, which is illustrated in the chart below. Terms of Trade are determined by the ratio of imports to exports. Figure 10 above shows the increase in exports, thus increase in Terms of Trade over the last 10 years. Sierra Leone has experienced a 35% increase in terms of trade since 2000. Figure 11 below shows the increase in Terms of Trade from 1999-2009.

Figure 9: Imports of Goods and Services (US Dollar)



(Trading Economics, 2010f)

Figure 10: Imports and exports in Sierra Leone from 2003 to 2009



(World Bank, 2011) (World Bank, 2011)

Figure 11
Terms of Trade (TOT)

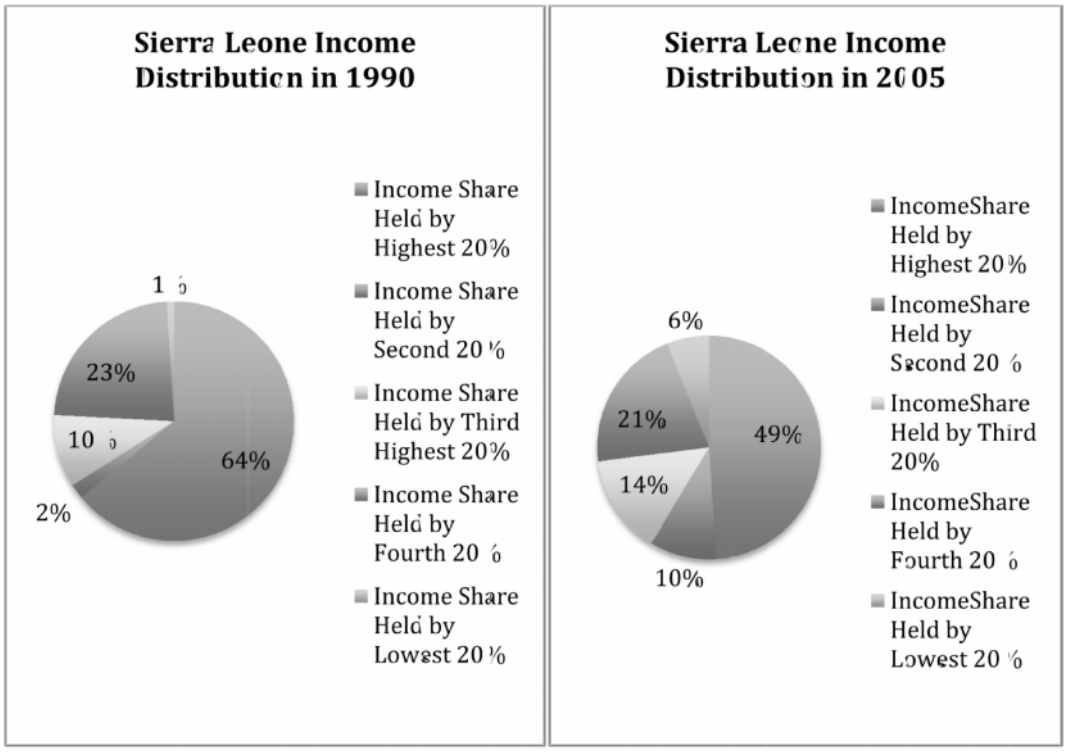
Year	*1989*	*1999*	*2008*	*2009*
TOT (2000=100)	…	121	130	135

Statistics provided by (UNdata, 2011)

INCOME DISTRIBUTION

Given the illegal mining system in Sierra Leone along with other poverty factors, it is not surprising that the country has a relatively high GINI coefficient. The GINI coefficient is the most commonly used measure of inequality. The coefficient varies between 0, which reflects complete equality and 1, which reflects complete inequality. A coeffient of one would mean one person has all the income and all the others have none. The GINI is expressed as a per centage, 0-100. In 2000, Sierra Leone had a GINI coefficient of 62.9 per cent. There is not reliant data for recent GINI coefficients for the country. Figure 12 displays income inequality in quintiles from 1990 and 2005 (Trading Economics, 2010c).

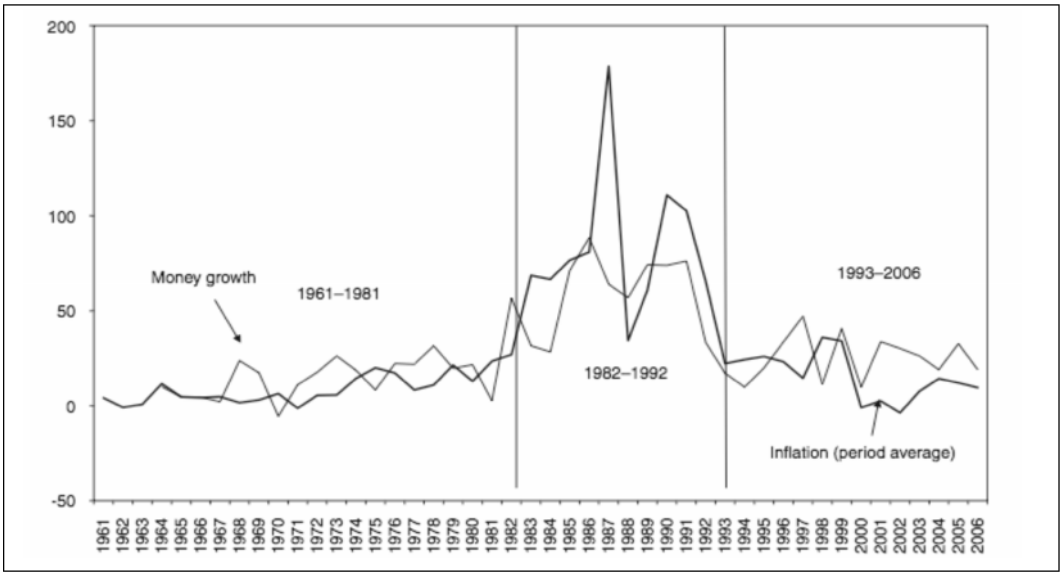
Figure 12: Sierra Leone Income Distribution



INFLATION

Inflation is the general level of prices of goods and services in an economy over time. Inflation indicates erosion in the purchasing power of money. Low and stable inflation rates are favored in economies. Sierra Leone's inflation rate is 6.3 annually. Figure 13 shows inflation rates from 1961 to 2006 (D. Rwegasira, J. Gottschalk,, 2004). Another essential indicator of inflation is the Consumer Price Index (CPI). Sierra Leone's CPI was 140 in 2009 with a base year of 2005 = 100. That indicates a 40 per cent increase in price of the last five years (World Bank, 2011).

Figure 13: Annual Inflation and Money Growth, 1961–2006 (Per cent a year)



Sources: Sierra Leonean authorieites and IMF Staff Estimates

(Kovanen, 2007)

Sierra Leone's economy is quite basic. Its retail sector is comprised of small-scale enterprises or individual sellers of primary commodities. Food products comprise over half of Sierra Leone's commodity basket (Kovanen, 2007). The prices of food products are more volatile by nature compared to nonfood items, Kovanen says this somewhat explains the high frequency of price changes in the retail sector.

Inflation remained low in 2001 and 2002 due to improvements in the supply situation, specifically imports, increased trade competition, a substantial reduction in import tariffs, a reduction in domestic petroleum product prices, and a relatively stable exchange rate (D. Rwegasira, J. Gottschalk, 2004). Inflation began to increase in 2003 primarily due to higher fuel prices and their effects on transportation, the expansion in broad money, and the continued depreciation of the leone against the US dollar and other international currencies (D. Rwegasira, J. Gottschalk, 2004). Data in Sierra Leone suggests uncertainty about the economic and political conditions, which could be an important indicator for pricing decisions, which then translate into higher inflation volatility.

III. TESTING DUTCH DISEASE IN SIERRA LEONE

Over the last thirty years, Sierra Leone's economy can be broken down into three major periods. The first period was from 1980-1991, the second 1991-2002, and the third 2002-present day. I will briefly evaluate the case of Dutch Disease for each period of time, with a primary focus and explanation for the third period, as it is most relevant. I will use the information given through the paper to make my conclusions.

Period 1: 1980-1991

This was the pre-war period while the country was experiencing a boom in the diamond business. It is possible there could have been a case of Dutch Disease in 1980s due to a spike in both inflation and exports. The majority of exports reflected diamonds, thus it is considered a diamond sector boom. In the 1980s, the country was still in a state of poverty and did not have an established manufacturing sector that we can tell from available data. I believe it is unlikely that there was a case of Dutch Disease in the 1980s as the country was underdeveloped with abundant labor, thus the diamond boom employed people without taking resources from other sectors. It must be noted that there is a lack of information on the country's economy from the period making it difficult to make a conclusive answer regarding whether Sierra Leone experienced Dutch Disease in the 1980s.

Period 2: 1991 to 2002

The second economic period was from 1991 to 2002 when Sierra Leone was immersed in a horrific civil war. The war came shortly after the boom of the 1980s. During the war diamond exports were nearly non-existent. The diamonds were not going through the government because they were being traded on the black market to fund the war. This is what the terms 'blood diamonds' or 'conflict diamonds' refer to. Although there is very little information on Sierra Leone's economy during the civil war, we can conclude the country did not experience Dutch Disease because there was no booming sector as the country was unable to export diamonds due to the war.

Period 3: 2002 – 2011

The war ended in 2002, bringing Sierra Leone into its third significant economic period from 2002 to present day. This period will be the primary focus of the Dutch Disease test and the potential for it in Sierra Leone as it is most relevant. Using the statistical data from this time period, I conclude that Sierra Leone did not experience Dutch Disease from 2002 to 2011, however I argue that the country is at risk for the disease. I conclude this because of the nature of diamond mining in Sierra Leone, the breakdown of GDP by sector, exports rates, and inflations rates over the past ten years.

Nature of Diamond Mining in Sierra Leone

As stated earlier in the paper, the mining industry in Sierra Leone primarily mines alluvial diamonds. Since alluvial diamonds are found at surface level and are spread over a large area of land, it is highly labor intensive. The mining takes place in rural areas, thus the majority of mining workers are considered unskilled labor. Although the diamond sector requires labor, it does not recruit labor from urban areas where the majority of manufacturing occurs. Diamond mining employs the poorest of the poor, unskilled labor while traditional manufacturing employs somewhat skilled labor. According to the Dutch Disease model, moving labor from

agriculture to industry would not pose a problem, as it should promote economic development.

The other type of mining that takes place in Sierra Leone is Kimberlite mining, which requires machinery to dig for diamonds deep under the earth in a concentrated area. Kimberlite mining is not as prominent as alluvial mining in the country. Kimberlite mining does not necessarily take resources from the manufacturing sector as the most of the equipment is provided through foreign companies and foreign investment.

I conclude that the booming diamond sector does not take resources or labor from the manufacturing sector, however it may take labor from the agricultural sector. There is a risk for Dutch Disease in Sierra Leone if the country moves towards Kimberlite Mining. It is more resource intensive and requires less unskilled labor, thus the diamond sector could take skilled labor from the manufacturing sector and additional resources for investment in machinery.

Exports

Diamond exports make up the majority of Sierra Leone's exports. Other major exports include cocoa, coffee and fish. The government is heavily dependent on diamond exports and foreign aid. It is estimated that 50 per cent of Sierra Leone's diamonds still leave the country illegally, which means the government is not profiting from the entire diamond trade, creating a shadow economy. The Kimberley Process Certification Scheme has increased the number of diamonds going through legal channels; illegal diamond trade still remains a challenge for the government. In addition to the scheme, the government setup a fund to reinvest in the mining communities, which has been somewhat successful. With these new initiatives in place, Sierra Leone has seen a steady increase in diamond exports since 2002. When testing for Dutch Disease it is important that exports have not spiked over the last ten years, in the case of Sierra Leone, they have increase steadily. Sierra Leone should proceed with caution, as an increased dependency on the export of diamonds could prove detrimental to the economy as it may be diagnosed with Dutch Disease in the future.

Food product prices are much more volatile in the international market compared to diamonds. However, in 2007 the diamond industry decreased significantly, by 13 per cent, as a result of a decrease in international demand for diamonds. This can be accredited to the global recession, but is a reminder of the dangers of being dependent on few exports.

I conclude that Sierra Leone is overly dependent on the export of diamonds and is at a high risk for Dutch Disease. The country needs to diversify its exports and reliance on industry. The service sector has seen substantial growth in the last ten years, which needs to continue. The graph of GDP per centage broken down by sector shows that the country is still heavily reliant on agriculture. This is not an indicator of Dutch Disease but rather poverty. Sierra Leone should seek to maintain

control over the diamond sector, pursuing legitimate channels for trade while expanding its tourism and travel sector.

Inflation

A spike in inflation and significant rise in imports are key indicators for Dutch Disease. Since 2002 Sierra Leone has maintained a relatively low inflation rate without any significant spikes. Since inflation has been steady, I conclude that Sierra Leone did not suffer from Dutch Disease. Inflation is more of an indicator rather than precursor to Dutch Disease, thus to keep inflation steady, other Dutch Disease principles must be addressed as discussed in the above sections. Imports have always been higher than exports in Sierra Leone, however, in the past ten years, the country has began closing that gap and has increased their terms of trade. Sierra Leone needs to maintain inflation stability and pursue better Terms of Trade to experience economic growth and discourage Dutch Disease.

IV. CONCLUSION

Using the above indicators, I conclude that Sierra Leone did not experience Dutch Disease from 2002 to 2011 but does have a significant level of risk for it in the future depending on the country's ability to regulate trade, diversify exports, and increase the services sector. In the context of Sierra Leone, diamonds would appear to be a source of wealth and development for the country because their price on the international market is relatively stable, diamonds have greater value than other minerals, they are relatively easy to extract and rely largely on unskilled labor. However, the value and ease of extraction has been the driving force of the underground market. Sierra Leone has not been able to control the flow of resources, thus they have not financially been able to capitalize on the market to provide public services, infrastructure, education and other major sectors needed to move the population out of extreme poverty.

> Whether the diamond sector provides a strong or a rotten foundation upon which Sierra Leone can rebuild depends on the ability of the state to regulate the mining and trade of diamonds, to sustain the shift in production from the illicit to the formal sector, and to garner and fairly distribute revenue from the mining and sale of diamonds' (Maconachie, R. Binns, 2007).

References

Alaba, O. (2009), Post-Conflict Economies in the EU-ACP Economic Partnership Agreements : A Case of Sierra Leone. *Sierra*.

D. Rwegasira, J. Gottschalk,. (2004), *Sierra Leone : Selected Issues and Statistical Appendix International Monetary Fund Washington , D. C. Sierra*. Washington, D.C.

J. Corden and W. Neary. (1982), Booming Sector and De-Industrialisation in a Small Open Economy. *The Economic Journal*, 92(368), 825-848.

K. Kulkarni, P. Brijesh, and K. A. (2009), "Dutch Disease" and Indian Trade Policy. *SCMS Journal of Indian Management*, (October - December 2009).

Kovanen, A. (2007), Price Variability Under Price Level Stability—A Study of Sierra Leone's Price Dynamics Using Micro-Level Price Data. *Imf Staff Papers*, 54(4), 701-726. doi: 10.1057/palgrave.imfsp.9450021.

Maconachie, R. Binns, T. (2007), Beyond the Resource Curse? Diamond Mining, Development and Post-conflict Reconstruction in Sierra Leone. *Resources Policy*, 32(2007), 104-115.

Ross, M. L. (1999), The Political Economy of the Resource Curse. *World Politics*, 51(2), 297-322.

Sachs, J. D., & Warner, A. M. (1997), Natural Resource Abundance and Economic Growth. *October*. Harvard University Cambridge MA.

Statistics Sierra Leone. (2010), *Report on 2009 Real Gross Domestic Product (RGDP)*. *Statistics*.

Trading Economics. (2010a), GDP Growth. Retrieved June 9, 2011, from *http://www.tradingeconomics.com/sierra-leone/gdp-growth-annual-percent-wb-data.html*.

Trading Economics. (2010b), Industry; Value Added (% of GDP) in Sierra Leone. Retrieved May 9, 2011, from *http://www.tradingeconomics.com/sierra-leone/industry-value-added-percent-of-gdp-wb-data.html*.

Trading Economics. (2010c), Agriculture; Value Added (% of GDP) in Sierra Leone. Retrieved May 8, 2011, from *http://www.tradingeconomics.com/sierra-leone/agriculture-value-added-percent-of-gdp-wb-data.html*.

Trading Economics. (2010d), Services; Etc.; Value Added (% of GDP). Retrieved June 10, 2011, from *http://www.tradingeconomics.com/sierra-leone/services-etc—value-added-percent-of-gdp-wb-data.html*.

Trading Economics. (2010e), Exports of Goods and Services. Retrieved June 10, 2011, from *http://www.tradingeconomics.com/sierra-leone/exports-of-goods-and-services-us-dollar-wb-data.html*.

Trading Economics. (2010f), Imports of Goods and Services (US Dollar). Retrieved June 10, 2011, from *http://www.tradingeconomics.com/sierra-leone/imports-of-goods-and-services-us-dollar-wb-data.html*.

UNdata. (2011), UNdata- Country Profile: Sierra Leone. Retrieved May 19, 2011, from *http://data.un.org/CountryProfile.aspx?crName=SIERRA LEONE*.

USAID. (2001). *Sierra Leone: "Conflict" Diamonds Progress Report on Diamond Policy and Development*. *Conflict*.

World Bank. (2011). Sierra Leone | Data. *World Bank*. Retrieved May 10, 2011, from *http://data.worldbank.org/country/sierra-leone*.