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Bloody Diamonds

- Diamonds and Economic Development in Africa

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Abstract

Diamonds are regarded to be one of the most valuable natural resources on earth, with an average rough diamond price of $71 per carat in 2000. This gives scope for great economic success in diamond abundant countries. Some of the worlds most diamond abundant countries are found in Africa, ironically also some of the poorest. In recent years it has been brought to the world's attention that illicit diamond trade has helped fueling civil wars and conflicts in Africa. With this enlightenment followed volition to limit this source of funding and stop this steam of blood diamonds to reach the world diamond market and the Kimberely Process Certification Scheme (KPCS) was born.

This paper studies whether diamond resources has had any influence on growth and development in a number of African diamond abundant countries during 1990-2005. Additionally the paper also investigates whether the implementation of the KPCS has helped to counteract the negative effects on growth that diamonds contribute to.

Each country's diamond abundance is put in relation to average growth and Human Development Index (HDI) to se if the relationship between diamond abundance and growth and development is positive or negative. Additionally the characteristics of the KPCS are scrutinized in order to detect features that counteract the negative influence that diamonds have on growth and development.

The results obtained indicate that for a majority of the countries in the sample the relationship between diamond abundance and both growth and development is negative. Still not all countries follow this pattern. With the highest diamond abundance and the highest growth Botswana is the exception which proves the rule. Hence the conclusion to draw is that the existence of diamond resources seems to enforce growth and development either positively or negatively. Moreover, the regulations that the KPCS imposes on participating countries will help to check for those growth and development hampering activities that diamonds are involved in.

Keywords: Blood diamonds, Human Development Index, voracity effect, natural resources, growth.

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Abbreviations

DRC – Democratic Republic of Congo

EU – European Union

GAO – General Accounting Office

GDP – Gross Domestic Product

HDI – Human Development Index

HIV – Human Immunodeficiency Virus

RUF – Revolutionary United Front

UNCTAD – United Nations Conference on Trade and Development

US – United States of America

1 Introduction

To the world around diamonds are sparkling, beautiful and precious. They symbolize love, trust and glamour. Still, in many African countries where diamonds come from they have got another darker meaning. In recent years it has become known and brought to the world's attention that the civil wars going on in Africa are fueled by trade in diamonds. Diamonds are one of the, to humanity known, most valuable elements on earth. In year 2000 the average price of a one carat rough diamond was $71 or $322,000 per kilo.[1] This gives scope for great economic growth and development in diamond abundant countries. However reality shows another picture. Today some of the world's most diamond abundant countries are also the poorest ones not seldom laid waste by decades of war and civil conflicts. Coherently, diamonds are also mined in some of the richest countries in the world like Australia and Canada. Thus, the experience of diamond resources is diverted, for some it has been a blessing and for some it is a curse.

Counted in natural resources Africa is regarded to be one of the richest continents on earth despite this it's economic growth is the lowest and in some places even negative, with an GDP per capita of 1047 in 2005.[2] This brings us to the subject of this study. Recent empirical studies show that the extracting of natural resources in a country does not in the long run necessarily boost its economic growth instead the reverse is often found, it might actually hamper it. The negative effects on economic growth are mainly canalized through export price volatility, exchange appreciation and undermining of institutional quality. The aim of this study is to investigate whether diamond resources have any influence on development and particularly growth in individual countries. An additional aim is to examine if the implementation of the Kimberley Process Certification Scheme (KPCS) helps to counteract the negative effects on growth that diamonds contribute to.

The investigation is performed by using time series analysis over growth measured as GDP per capita, value of rough diamond export as a share of GDP and Human Development Index (HDI). The analysis is carried out over a sample of diamond producing countries including Angola, Botswana, Sierra Leone, Democratic Republic of Congo (DRC), Cote d'Ivoire,

[1] Olsson 2006a, page 12
[2] http://unstats.un.org

Namibia, South Africa, Tanzania, Liberia, Guinea, Ghana, Central African Republic and Zimbabwe and the period examined is 1990-2005.

The reminder of this paper is disposed as follows; section two present the theoretical framework, section three give an overview of the diamond industry, in section four the Kimberley process is presented, in section five diamond abundance and development is investigated and finally section six concludes.

2 Natural Resource Endowment and Growth – A Theoretical Framework

In the past decades resource abundant countries all over the world, with some few exceptions, have on average experienced a lower growth rate than countries without natural resources.[3] While the statistical evidence for this is strong the reasons why this is the case are much debated. The economic literature recognizes three channels of causation from natural resource abundance to a lower economic growth.

2.1 Dutch Disease

Dutch Disease can hit a country after its natural resources are discovered, exploited and sold on the world market. The country's real exchange rate appreciates due to positive chocks, this makes the other export products (manufacturing sector) more expensive on the world market, and hence demands for these products decrease and these sectors of the economy shrink. The result is a less diversified economy with a large export sector in primary commodities and a decreasing manufacturing sector. The Dutch Disease in combination with the idea that the manufacturing sector is superior since it is only here positive externalities as learning by doing exists. The country will focus its production and export on natural resources and therefore no human capital accumulation will take place, which is crucial to a country's growth in the long term. Hence, in the long run natural resources have a negative impact on economic growth.[4]

2.2 Volatility Effect

Working through governmental revenues the volatility in export prices also has a hampering effect on growth. The argument is that natural resource abundant countries are more affected by volatility in export prices because a large amount of the governmental revenue comes from primary exports. The more fluctuating these prices are the more unpredictable are the governmental revenue and future expenditure. When talking about price volatility one should distinguish between medium and long term fluctuations. Concerning the long run fluctuations

[3] Boschini et al.2003, page 2
[4] Sala-i-Martin and Subramnian 2003, page 6

one should note that even though the price declines over time it does not have to interfere with profits if the cost of production declines proportionately.[5] Instead it is the volatility on the medium term that appears to have stronger economic impact. A productivity increase in an industrialized country is encapsulated by a wage increase for the workers in the industry while a productivity increase in the production of primary goods tend to be passed on in terms of lower prices for the industrialized country.[6] Policies and programs that are implemented during an export boom might not be financially covered during a downfall. Consequently the government faces a budget deficit.[7]

2.3 Voracity Effect

Finally one talks about the voracity effect, which implies that a voracious rent-seeking is caused by rents generated by natural resources. In the economy this is recognized as increased corruption, which has a negative impact on economic growth. In countries with strong institutions this phenomenon is less likely to occur than in countries with weak institutions. According to the results obtained in Sala-i-Martin and Subramanian's cross section empirical analysis, it is claimed that some natural resources, particular oil and minerals, have a negative effect on economic growth working through weak institutions. Collier and Hoffner show that there is a strong non linear relationship between natural resources and civil conflicts. Their estimates show that in a country which natural resources accounts for 26 percent of GDP or more the probability for civil conflict is 23 percent while it is only 0.5 percent for countries without natural resources. Hence, their results are consequently evocative of a role for natural resources in affecting the institutional quality of a country in a general way.[8]

Other studies emphasize that the type of resource endowment determines the institutional development and quality, hence also the economic outcome. Thus this should not be interpreted as if the natural resources which are important today had strong influence on the institutional development. It is probably more likely that how the exploration of these resources affectes the economic development in different countries is due to the countries institutional differences.

[5] UNTCAD, page 21 ff.
[6] Ibid, page 10 ff.
[7] Ibid, page 21 ff.
[8] Sala-i-Martin and Subramnian 2003, page 6

Auty *et al*. emphasize the importance of distinguishing between different types of resources. Their theory is that very precious resources as diamonds, oil etc. or "point resources" as they call them are, compared to resources such as wheat, rice and animals or "diffuse resources" , are more likely to trigger problems. Even though these theories try to give predictions to why the natural wealth of various countries affects them differently it does not explain why the economical outcome is different between countries with similar natural wealth. Boschini *et al.* claim that the answer to this lies in the country's institutional quality, countries with good institutions will gain from their natural resources while countries with low institutional quality will lose. This originates from the theories of natural resources as a source of rent-seeking of conflict hence the costs of non-productive activities increase with high quality institutions. They claim that the institutional quality is more important in countries rich in more precious resources since they are more likely to cause problems.[9]

The results gained by Mehlum *et al*. also support the discussion about institutional quality as crucial to economic growth through natural resources. They distinguish between producer friendly and grabber friendly institutions where in the former production and rent-seeking activities are complements and in the latter they are competing activities. Hence producer friendly institutions will attract investments into production implying higher profits for the entrepreneur while with grabber friendly institutions there are gains from specializing in unproductive activities.[10] Their conclusion is that while producer friendly institutions facilitate for countries to gain full advantage of their natural resources, the combination of resource abundance and grabber friendly institutions leads to low growth.[11]

Moreover Olsson interprets the problem of potential predatory behavior by using a model of a Stackelberg game. Player one is the head of state in charge over the country's natural resources and player two is a possible greedy rebel. Player one, the Stackelberg leader, decides how much labor to devote to defend the natural resources taking what he think is the most likely response from player two in terms of predatory behavior into account. Thereafter player two makes his move taking the Stackelberg leaders choice as given. In equilibrium the expected outcome of the model is that there is a negative relationship between natural resources and economic growth where the institutional quality is low. The link to output

[9] Boschini et al. 2003, page, 6 ff
[10] Mehlum et al. 2006, page 3
[11] Ibid, page 16

growth runs through increased utile public spending as well as through a crowding-out of labor from the formal sector.[12]

2.4 Policies to Counteract the Effects – Different Roles of the Stabilization Fund

The above discussion concerns the negative impact of natural resources on economic growth mainly working through institutional quality and macro economic policies. So what are the conditions to be able to generate economic growth from natural resources? Or more specifically what are the institutional requirements and macro economic policies for sustained mineral – driven development? The cornerstone for natural resource economy to generate a sustainable economic growth is to ensure that the contribution of primary exports to growth is preserved over time despite the country's ability to maintain its primary goods production. As the theories predict the impact from natural resources is partly determined by the institutional quality. With sound institutions follows the possibility to establish a stabilization fund to counter act the negative effects from Dutch Disease and price fluctuations and to preserve the rents from primary goods production over time.

2.4.1 Counteracting Conjunctures

As explained above diamond rich economies that strongly depend on primary exports are subject to internal structural changes in the domestic economy incompatible with sustained growth. Fluctuating governmental revenue from primary exports generates uncovered expenditures and deterioration of the balance of payments. A stabilization fund in combination with macroeconomic policies plays a major role in counteracting these conjunctures. The amount invested in the stabilization fund can vary between all of the revenue the government receives from primary exports, a percentage of it or reduced to revenues above an assumed "normal" rate. The main function of the fund is to compensate decreasing government revenue in years of recession and smooth the path to lower governmental expenditure or revenue diversification by allowing net withdraws from the fund.

[12] Olsson 2006a, page 5ff

The fund should be managed by the central bank and payments to the fund are in foreign exchange rate. Preferably a proportion of the amount paid in to the fund ought to be invested abroad in capital development funds to stabilize the supply of foreign exchange originating form primary good export. Additionally as the government transfers money to the fund it should obtain a corresponding credit in domestic currency at the central bank. That the fund controls the release in domestic currency credits in the fund is also desirable. In this way the establishment of a stabilization fund can help limiting the negative effects of export revenue volatility and facilitate the management of macro policies aimed to avoid distortions that hamper economic growth.[13]

2.4.2 Investing for Future Generations.

As it lies in the nature of natural resources that they are finite, an additional function of the fund could be to facilitate the allocation of payments into the fund between consumption and investment, in a way intended to ensure sustainable development beyond the resources life time. This is realized by investing a sufficiently large proportion of the revenues to preserve the capital value of the depleted domestic natural resources. Payment into a stabilization fund may be divided between resource rent and payments for labor and capital required for extraction as well as for finding new ones.[14]

[13] UNTCAD, page 21 ff.
[14] ibid

3 The Diamond Industry

The international diamond industry concerns more than 100 countries around the world and in year 2000 the supply of rough diamonds mined across the globe was valued to $7.86 billion, where African minded diamonds accounted for $5.4 billion.[15] The diamond industry is quite complex by its character and the most obvious links to development in Africa runs through the mining, cutting and polishing and trading and sorting activities but transparency and conflict issues also have a major influence.

3.1 Mining

Most of the diamond mines in Africa were discovered around the first half of the twentieth century. Back then the entire industry where based on alluvial extraction; an area similar to a river delta where diamonds are extracted from deposits of gravel, clay and sand. The diamonds are naturally transported there by water erosion and placed along either the shoreline, on the bed of the ocean or at riverbanks found by using sieves and pans. In our days alluvial mining still exists but the majority of African diamonds are extracted by so called deep mining. [16] In general diamond mining is an industry that requires a large amount of capital and sophisticated infrastructure, where deep mining is carried out it is operated as a joint venture between the government in the country and one of the major diamond companies. [17]

Further on the diamond quality varies between different mines and countries. In some countries 100 percent of its extraction is gemstone quality while in other the figure could be 20 percent. With the variation in quality follows a variation in price, as an example having a gemstone percentage of almost 95 percent in year 2000 the average price of a Namibian rough diamond was $271 per carat in comparison with the average world price the same year of $71.[18]

[15] GAO *International trade,* page 5
[16] Ibid*,* page 5 and 45
[17] Diamondfacts.org
[18] Olsson 2006a, page 4

3.2 Trading and Sorting

The rough diamonds are examined and sorted in terms of their clarity and color, the clearer and the rarer the color the higher the price.[19] The diamonds are sorted between gem quality diamonds used in jewelry and industrial diamonds used in equipment.[20] The greater part of the world's rough diamonds is traded through a few key markets, foremost London and Antwerp. 65 percent of the value of rough diamond production is traded through the diamond trading company, a part of Debeers business group. The company sorts the diamonds and sells them further to be cut and polished mainly via Antwerp. Other trading countries are India, Israel and the United States (US).[21]

3.3 Cutting and Polishing

India is the major center for diamond cutting and polishing and accounts for the cuts and polish of 9 out of 10 of all the rough diamonds in the world, while diamond mining countries account for less than 10 percent of the polished market. Other large cutting and polishing centers are Belgium, Israel and China. Once the diamonds are cut and polished they are sold once again to jewelers all over the world with the major markets being US and Japan. Hence the average African diamond travels from Africa via London and Antwerp further on to India then finally to the US or Japan.

The markup for a polished diamond is extremely high, in 2005 a one carat round cut stone had a value of US $6500, indicating that there are great profits to gain from the cutting and polishing industry.[22] This has raised the economic and political pressure to increase the share of cutting and polishing activities performed by diamond mining countries in order to gain more from their mineral wealth. As an example according to legislation in both South Africa and Namibia some domestic cutting and polishing is mandatory.[23]

[19] Olsson 2006a, page 3
[20] diamondfacts.org
[21] GAO 2002, page 45 ff.
[22] pricescope.com
[23] GAO2002, page 48

3.4 Transparency

The diamond industry is maybe one of the least transparent industries where businesses can be conducted on the basis of a handshake. The complex and variable ways in which diamonds flow from the mines in Africa via a number of middlemen to the final consumer in combination with inconsistent and insufficient industry data exhibit this lack of transparency. Moreover, that the total value of rough diamond export exceeds rough diamond production reflects the large amount of middlemen additionally. Industry experts claim that diamonds are traded back and forth mixed with each other in order to disguise origin or avoid taxes, making attempts to track its origin to a mission impossible.[24]

Table 3: 1

	Estimated diamond fraud Democratic Republic of Congo				
	Exports DRC		Imports Belgium		
Year	*Million Carats*	*US$ million*	*Million Carats*	*US$ million*	*fraud*
1995	21.8	377	18.6	646	269
1996	21.9	388	15.1	667	279
1997	21.7	386	15.8	553	167
1998	26.0	450	20.8	614	164
1999	20.1	289	23.4	758	469
2000	16.0	234	17.0	629	395
2001	17.1	273	19.6	495	222

Source: Official statistics from the government of DRC and High Diamond Council

That the diamonds are traded back and forth makes it difficult to keep record of the industry in the first place. Still as significant differences appear even after diamonds have been traded in just one step this cannot only be due to middlemen's markup.

Table 3:1 shows the differences between DRC's own reported rough diamond export to Belgium and the reported rough diamond import to Belgium from DRC. All together during seven years rough diamonds valued to US$ 1965 millions has left the country statistically unnoticed.[25] These 1965 millions should be put in relation to the US$ 563.44 millions which was DRC's GDP in 1995.[26] Considering the DRC's corruption level and war torn history these differences are most likely to be due to illicit trade and smuggling.

[24] GAO2002, page 8
[25] UNDP 2004, page 28
[26] World Bank, 2003

However uneven export and import figures are not the only cases revealing the industry's need of more sever industry regulation and control. The export values of rough diamond in DRC, Guinea and Liberia are all larger than the individual countries estimated production value, while the estimated production in Angola exceeds its export. There even exist cases where countries that are not known to not have any diamond extraction or rough diamond import show figures of rough diamond export.
Nevertheless, data inconsistencies do not necessarily only reflect illicit trade but are also said to be due to; value differences that importers and exporters allot to deliveries, differences in commodity codes interpretation or industry practices such as goods sold on consignment, inspections demanding shipments to be moved across borders or the reception of stockpiles.

Still, it is not only poor data that is claimed to threaten the industry's transparency and origin traceability. Increased awareness of the value and importance of the cutting and polishing process among diamond mining countries promote engagement in these activities. The fear is that domestically extracted diamonds will be mixed with imported rough diamonds and once cut and polished they are exported without detection.[27]

3.5 The Diamond Industry in Africa

Africa accounts for 67 percent of the world's supply of rough diamonds, 45 percent of these are extracted by so called deep mining while the remaining percent are extracted from alluvial deposits.[28] In Africa deep mining is found in Botswana, Namibia, South Africa and Tanzania, while alluvial extraction is the only type of production in the other diamond producing countries.[29] There are big differences for workers involved in deep mining and alluvial extraction. The former is employed by a big company with proper job certificate and payment, whereas for the latter the activity is almost always informal or even worse illegal with great exposure to working hazards, disease carrying mosquitoes and sometimes even guarded by armed rebels. Moreover a non-neglectable share of this workforce exposed to the working hazards is children often also sexually abused and the spread of HIV is faster in these

[27] GAO2002, page 8 ff.
[28] Ibid, page 5 and 45
[29] Diamondfacts.org

areas, than in others. In peaceful times the average wage for a digger is US$0.5 per day plus some food and a minuscule share of the value of the diamonds they find.[30]

Despite this the value of African diamond exports has increased during the last one and a half decade, indicating that the workers extract more and more diamonds and the importance of the diamond industry increases. Still not all countries follow this positive pattern.

Table 3: 2

Average Rough Diamond Export US$	**1990-1991**	**1995-1996**	**1999-2000**	**2004-2005**
Angola	154611500	134893500	592289000	938654824,5
Botswana	1433500000	1579000000	2148000000	2945612655
Central African Republic	76858500	101374000	162273000	56082380,5
DRC	251169000	455063500	406163000	808178439
Cote d'Ivoire	106697500	169788000	56731500	…
Ghana	12291500	218997000	132868000	30100614
Guinea	87044500	93602000	153220500	51487202,5
Namibia	328000	…	584000	689678144,5
Sierra Leone	108067500	111315000	24253500	134243107
South Africa	423115000	97325500	1344066000	1991994050
Tanzania	4055000	948500	19219000	30110030,5
Zimbabwe	114000	7687500	1766500	1891599
Liberia	263573000	661234500	196052000	…

Source: GAO, Kimberley Process

Table 3:2 shows the average diamond production in the sample at different points in time. All countries except Central African Republic, Cote d'Ivoire, Guinea and Liberia show increasing export figures for rough diamonds, representing a growing diamond industry. A common feature for the countries with decreasing diamond export is that they are all involved in alluvial mining while the countries with the highest export value are those where deep mining is carried out. It is important to remember that these figures show the average value of the rough diamond export, where the value depends on the quality of the diamonds. Hence a country can extract a larger amount of diamonds still having lower exported value than another due to lower quality diamonds. Still as the difference between deep mining countries and the others is large it is most likely due to more efficient extracting methods rather than diamond quality. Nevertheless that alluvial mining countries show both increasing and decreasing export figures could be explained by the diamond quality but is more likely to be explained by more external factors as political stability in the country.

[30] Olsson 2006b, page 1145

3.6 Conflict Diamonds

The illicit diamond trade to fund civil conflicts in Africa has been highlighted in recent years and with this the phenomena of blood diamonds or conflict diamonds was born. United Nations definition of conflict diamonds is as follows: "Conflict diamonds are diamonds that originate from areas controlled by forces or fractions opposed to legitimate and internationally recognized governments and are used to fund military action in opposition to those governments, or in contravention of the decision of the Security Council."[31]

Diamonds are claimed to be the ideal reward for a predatory rebel because of its appropriability and tradability. Beginning with the former, diamond deposits are relatively easy for a rebel to gain control of especially those hidden by deep forest in alluvial areas which do not require large investments in capital and skills. Further on diamonds have a high and stable value and unlike other resources impossible to destroy. The flexible practical size of a diamond makes it cheap and easy to transport and impossible for custom dogs or metal detectors to trace.[32]

All together, it makes them the ultimate item to smuggle or use in illicit dealings.[33] Both in Angola, Sierra Leone and the Democratic Republic of Congo it has become evident that the country's diamond resources have been a crucial funding for the civil conflicts that have hit the countries in recent years. The rebel army Revolutionary United Front (RUF) in Sierra Leone took control over some of the country's diamond extracting fields, giving them income to continue the battle. In 2002 United Nations imposed sanctions on diamonds traded from RUF, but due to close connections between RUF and the Liberian government RUF diamonds reached the world market through smuggling from Sierra Leone to Liberia.[34] Guinea has also been part of the illicit trade where conflict diamonds from all parts of the world and particularly from Sierra Leone has been smuggled trough the country. The country's domestic diamond production is also involved in the illicit trade as half of the annual production evaded official notice.[35] Diamonds have not only fueled civil conflicts in central and western Africa

[31] Olsson 2006a, page 4
[32] Ibid, page 12
[33] Olsson 2006b, page 1134
[34] Olsson 2006a, page 3 ff.
[35] Gberie, 2001, page 8

contributing to the destabilization in the area, but the diamond trade in west Africa also turns out to have played a part in financing of terrorist groups such as Hezbollah and al-Qaeda.[36]

[36] Olsson 2006b, page 1140 ff.

4 Kimberley Process

The diamond industry has never been subject to any narrow scrutiny. Many are those cases where the importing and exporting figures do not agree, due to lack of or differences in measurements and tax classifications but also reflecting potential smuggling to fund wars.[37] To try to stop this illicit rough diamond trade a number of countries, European Union, United Nations, stakeholders in civil society and the diamond industry joined together in May 2000 and started up the Kimberley Process Certification Scheme (KPCS) which has been operating since 2003.[38]

The aim of the KPCS is to eliminate the flow of blood diamonds into the international market and to protect the legitimate diamond industry, by regulating the production, export and import of rough diamonds. To become and remain a member of the KPCS participants have to implement the measurements stated in the constitution.[39] The regulations force participants to set up a system of domestic controls aimed to eradicate that blood diamonds are imported or exported from its territory. To assure other participants that the diamonds shipments they send are free from conflict diamonds, they are obliged to ensure that a duly validated certificate is attached to all consignments and that they are exported and imported in a tamper- resistant container. Additionally the regulation concerns statistically issues and force members to collect and maintain data over production, import and export.[40] More over members are only allowed to trade rough diamonds with other participants. In our sample all countries except Liberia has met the minimum requirements to become a member of the KPCS.[41] To ensure the maintenance of the certification scheme's reliability and that the Kimberley process moves closer to stopping the trade in blood diamonds. Participants work together in groups, with representatives from industry and civil society, the groups are called; monitoring, statistics, diamond experts and committees. The statistics group has the important mission to ensure that statistical data are reported and analyzed regularly in order to detect abnormalities and to make sure that KPCS is effectively implemented.[42]

[37] GAO, 2002, page 6 ff.
[38] http://ec.europa.eu
[39] kimberleyprocess.com
[40] Ibid Preamable, kimberley process certification scheme
[41] http://ec.europa.eu
[42] kimberleyprocess.com

Further on the KPCS also contains of recommendations. One such recommendation is that the licenses issued by the government should be the basis for all alluvial mining and middlemen to be approved by KPCS and officially registered. Since the diamond industry is of crucial importance for development in some countries the KPCS also has the higher ambition to make the diamond industry become a vehicle in generating economic growth and development in diamond abundant countries.[43]

[43] Olsson 2006b, page 1146 ff.

5 Diamonds and Development

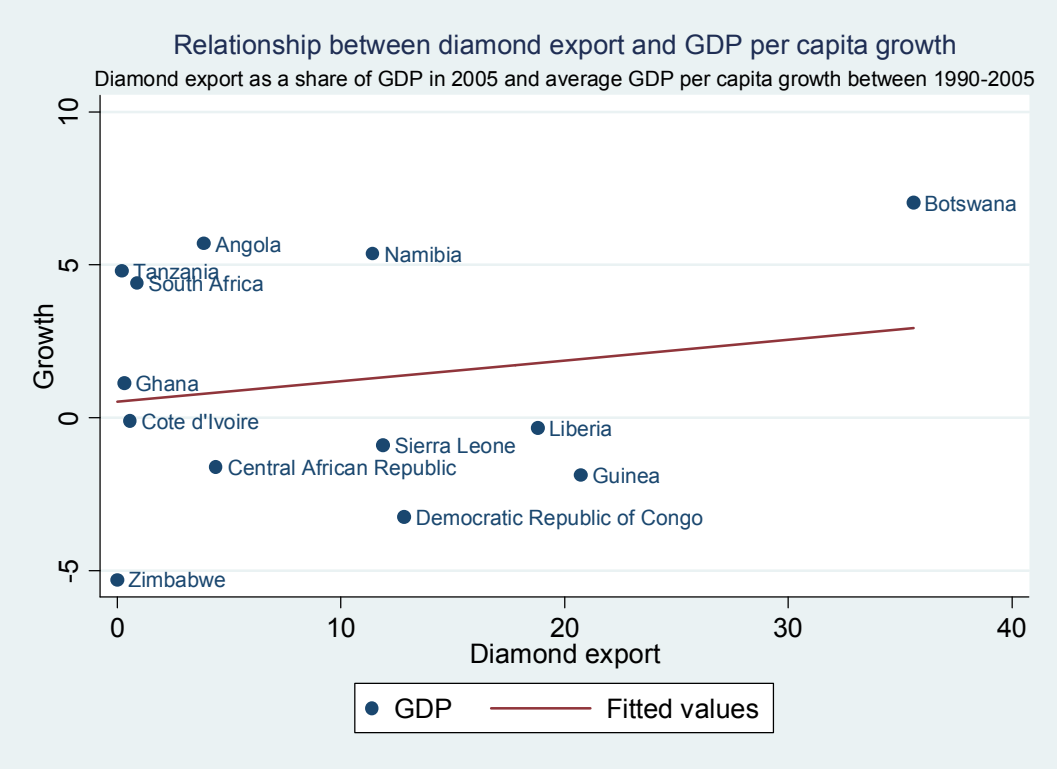
The theoretical framework explains how natural resources can have a negative impact on economic growth. To investigate whether this negative relationship is true also for diamonds the average GDP per capita growth in each country will be put in relation to its diamond abundance. However, the economic outcome does not necessarily reflect the level of social development and life quality in a country, therefore diamond abundance will also be put in relation to level of human development.

Secrecy and confidentiality are features that to some extent permeate every corner of the diamond industry and data reliability is a constantly returning issue. To be able to get an idea about how much wealth and how much government revenue the diamond industry accounts for the need to establish a reliable diamond database is urgent. One purpose of the KPCS is to monitor the industry and establish such a database, indicating the importance of the scheme for diamond industry to promote economic growth in African economies.

5.1 Diamond Abundance and Economic Growth

The theoretical framework explains that natural resources can have a negative effect on economic growth. The connection between diamond abundance and growth is measured as the relationship between average growth in GDP per capita during 1990-2005 and diamond export as a share of GDP in 2005. With this background it is most likely to expect that the higher the diamond abundance the lower the growth, hence according to the theories the figure should show a negative pattern between diamond abundance and growth with a downward sloping regression line.

Figure 5: 1

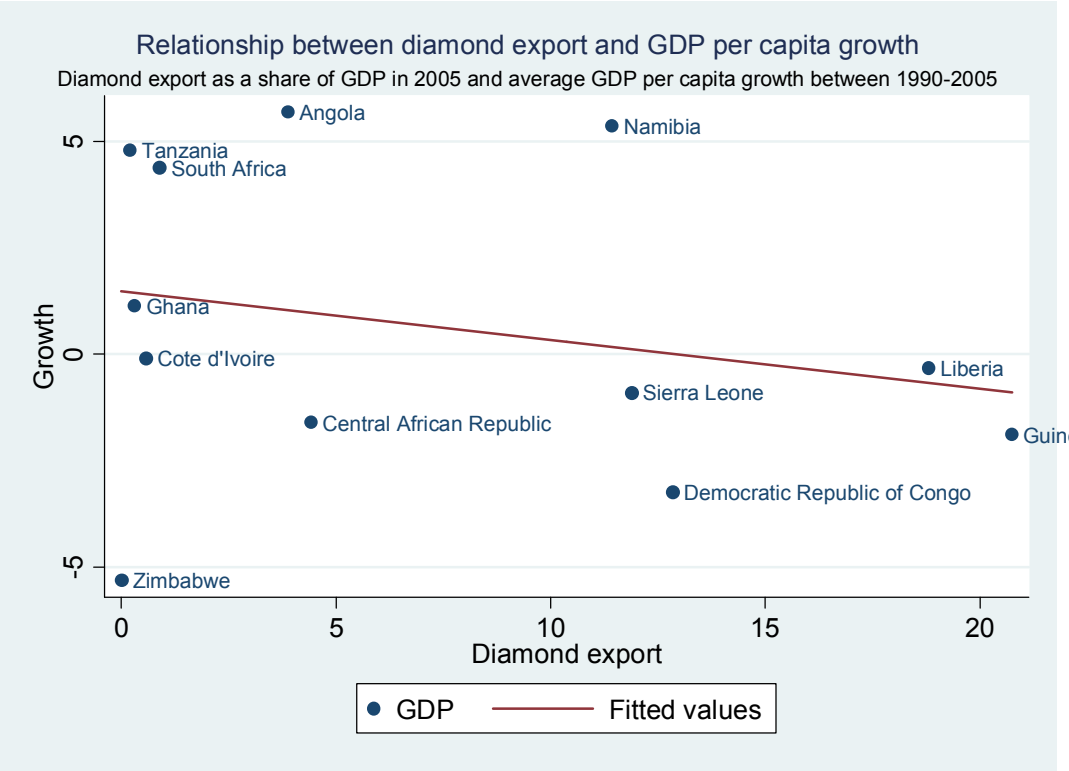


Source: World Bank, Kimberley Process[44]

Surprisingly figure 5:1 shows a positive correlation between diamond abundance and growth, consequently in direct opposition to what the economic theories predict. Despite the positive relationship, a narrow majority of diamond abundant countries experienced a negative growth during the period examined. Hence whether diamonds have had a positive or negative influence on growth is according to figure 1 ambiguous to say. With such a vague result as this it is most likely that one country or more drives the results. Looking closely at the countries growth and diamond abundance figures it becomes obvious that Botswana, with an average growth rate of 7 percent and a diamond abundance above 35 percent could be such a country. To get more trustworthy results the same test is done, excluding Botswana.

[44] In the case of Cote d'Ivoire and Liberia rough diamond export figures for 2000 is used.

Figure 5: 2



Source: World Bank, Kimberley Process[45]

In figure 5:2 Botswana is excluded, the picture shows a negative relationship between diamond abundance and growth. Hence it follows the pattern forecasted by theories, showing a clear negative relationship between diamond abundance and growth with a downward sloping regression line. For these countries the higher the diamond abundance the lower the growth.

That the results changes so drastically by excluding Botswana indicates that the features of the country is in direct opposition to what is required for this negative relationship to occur. Consequently by distinguishing through which channels the negative effects are working in the other countries, Botswana could be used as a sort of role model for the other countries to follow.

Considering the developmental stage in the countries concerned, with small or no manufacturing sectors to be hurt, the negative effects from Dutch Disease is not likely to explain the growth rate. Taking the structure of the diamond industry with one company

[45] In the case of Cote d'Ivoire and Liberia rough diamond export figures for 2000 is used.

controlling a majority of the market, indicating a relatively stable market price, and transparency limits into account the export price volatility effect could also be excluded. Thus, the only factor from economic theories left to explain the economic development in the last one and a half decade is deteriorating institutional quality. The simulation in figure 5:2 indicates that the result obtained by Sala-i-Martin and Subramanian implying a negative relationship between natural resources and economic growth also is applicable on diamond abundant countries mainly working through deteriorating institutional quality.

As not all countries follow the same pattern it is important to point out that economic growth could spring from many sources and diamonds might only be a small part of the explanation. The more diversified and larger the economy is the smaller is the diamond export as a share of GDP, after Botswana South Africa is the second biggest producer of diamonds with a production value accounting for US$ 5164.17 millions but only 0.89 percent of GDP. Thus, in the case of South Africa the diamond industry is relatively less important than for the other countries. Therefore, even though South Africa has experienced a positive economic growth it cannot be claimed to mainly be due to their increased diamond production. The case is rather that as the economy has grown the diamond industry has become less important and its influence in the economy is not that important whether negative or not. In countries where diamond export accounts for a small share of GDP diamond resources will not have such a big influence on the economy. This because the major value of the diamond industry in African countries consists out of rough diamond export, since other refining activities is non existent or to small to have an influence on growth in GDP per capita.

The ironic feature in this sample is that the country with the highest diamond abundance also has had the highest growth, a case that is so different from the others that it has the power to actually drive the results. Anyhow the overall result follows other empirical studies and economic theories, indicating a negative relationship between diamond abundance and growth.

5.2 Diamond Abundance and Social Development

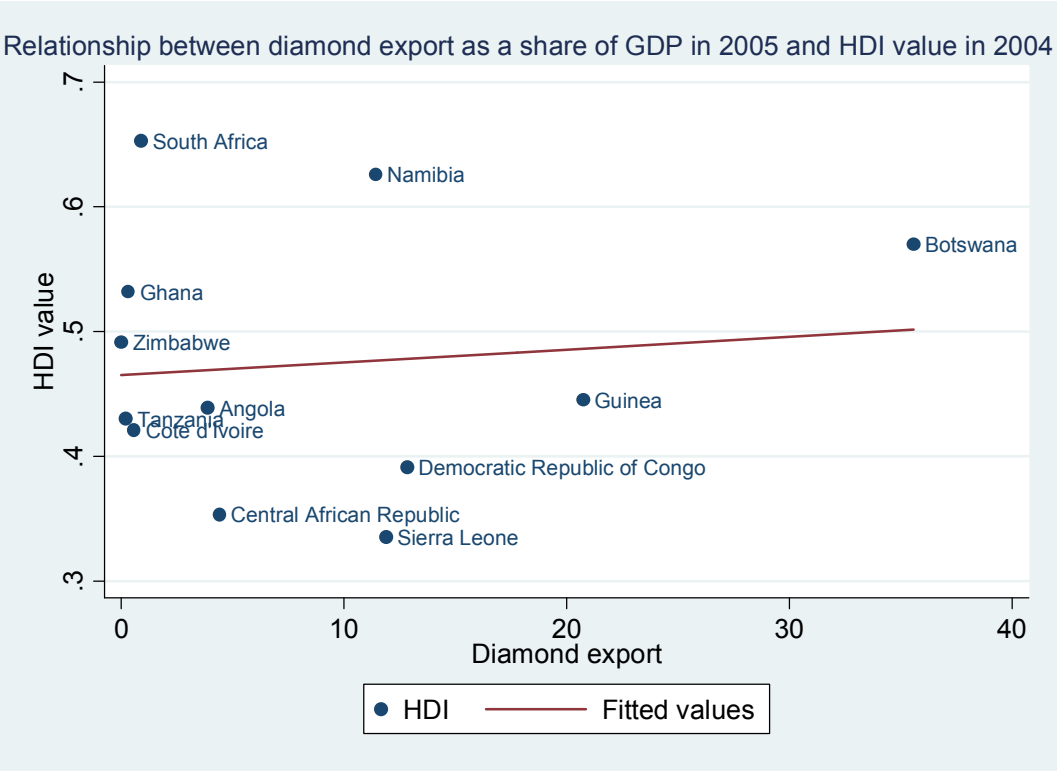
To measure the level of social development in the countries Human Development Index (HDI) is used. The HDI concerns the environment in a country and evaluate in which extent habitants can develop their full potential to live productive and creative lifes inline with their needs and interests.[46] The major parameters that HDI measures are health, knowledge and standard of living.[47] Hence to some extent the level of GDP per capita has a lagged effect on HDI level. Consequently as is not measured and do not change much from one year to another, countries can show a high level of HDI while having a negative growth during recent years or vice versa. For example where a country has experienced a high growth rate it will take some time before the adult part for the population have a higher literacy rate even though the additional resources given to education are distributed effectively.

The HDI also brings problems of data insufficiencies among the countries in the sample, as 2004 is the only year with data for almost all countries. Unfortunately however HDI value for Liberia was not found for any year.

As the diamond industry in a majority of these countries do not bring much of refining activities such as polishing and cutting it will mainly contribute to economic growth via increased export earnings. With no refining activities the positive externalities as human capital accumulation can not take place that can improve peoples' level of knowledge and generate additional employment and income opportunities. That means that it is up to the individual country's government to implement measurements so that the benefits from economic growth are distributed among the people, HDI is a way to capture the effect of these measurements. Consequently the relationship between diamond abundance and social development will be tested in the same way as with growth.

[46] http://hdr.undp.org
[47] http://en.wikipedia.org

Figure 5: 3

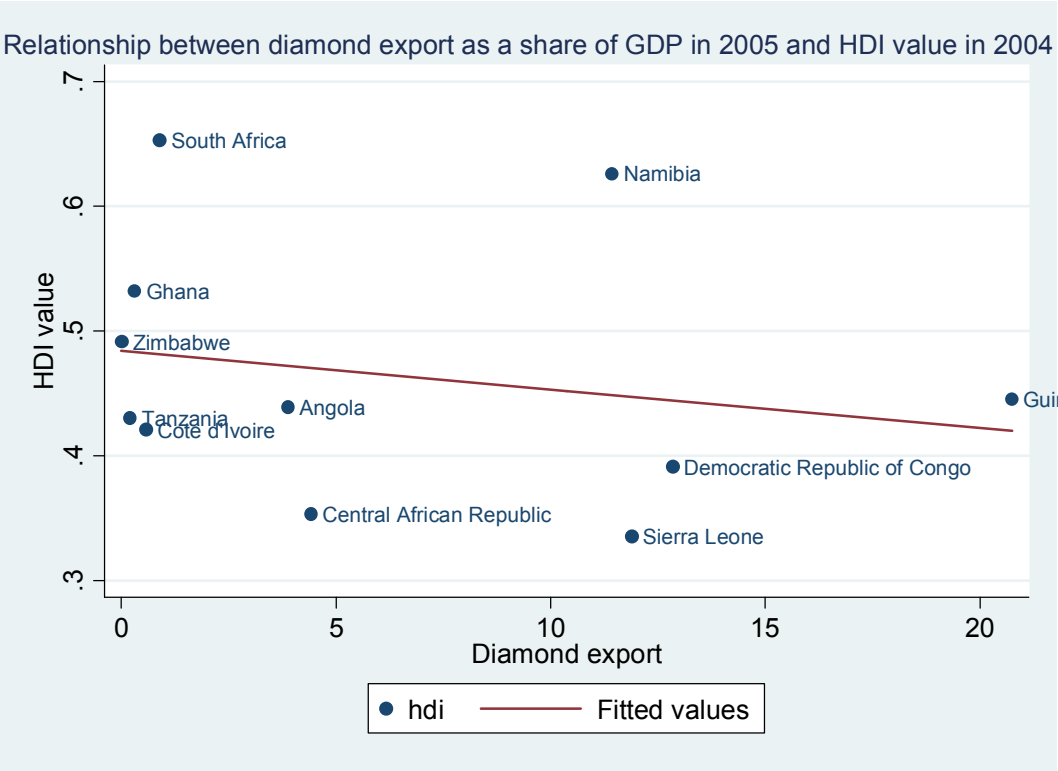


Source: Human Development Report 2006, Kimberley Process

As HDI in some way is connected to GDP per capita level the expected relationship between HDI value and diamond abundance ought to be the same as the one between growth and diamond abundance.

Figure 5:3 shows that there is a positive relationship between diamond abundance and level of human development. Nevertheless 7 out of the 12 countries in the sample fall below the line. Again the pattern is vague, as the regression line show a positive correlation between diamond abundance and level of human development. The picture also show one obvious example of the lagged effect between diamonds, growth and HDI and that is Zimbabwe which had the lowest growth in the sample about -5 percent but has a HDI value above average.

Figure 5: 4



Source: Human Development Report 2006, Kimberley Process

Since the ambiguous pattern follows this relationship as well, it is yet again most likely that some country is driving the results. Again it is most likely that Botswana drives the result because of its high diamond abundance, consequently the test will be done once more excluding Botswana. In figure 5:4 Botswana is excluded, the picture shows a negative relationship between HDI value and diamond abundance. Hence it seems as if diamonds have a negative influence on social development as a high diamond abundance give a lower HDI value.

One possible explanation behind this pattern could be the different side effects that come with the diamond industry. As diamond resources have triggered greed and corruption, fuelled wars and civil conflicts this behaviour can only grow strong in the type of environment that is not compatible with high level of human development. In an environment with high literacy level and standards of living, people have experienced and understood the importance of public goods such as education and health services and with that that the revenues from common resources also are and should remain common. To have high HDI investments in education and health services is necessary, to gain profits from such investments sound institutions are required. Yet again Botswana shows the contrary with the highest diamond

abundance among all countries and with the third highest HDI value, after South Africa and Namibia.

5.3 Case Study over Namibia, Botswana, Sierra Leone, DRC, Liberia and Guinea

Botswana, Namibia, Sierra Leone, DRC, Liberia and Guinea are six countries that are constantly returning in the figures persistently representing either good or bad scenarios. A common feature for these countries is that their diamond export in 2005 accounted for more than 10 percent of GDP. Of these six countries only Botswana and Namibia show a positive relationship between diamonds and both economic and social development.

So how come diamonds only mean something positive for people in Namibia or Botswana but not for people in the other countries? There could be several reasons behind this phenomenon First consider how the diamonds are extracted, as mentioned above Namibia and Botswana are two of the four African countries where deep mining, or off shore mining in some Namibian places, are performed as a joint venture between the state and one of the major diamond mining companies. This implies that to get hold of and to later export diamonds in these countries a large amount of capital, technology and skills are required partly supplied by foreign investments. Thereby not suggesting that it is due to the presence of multinational corporations that diamonds in Botswana and Namibia symbolize prosperity rather than blood spill, but rather that the countries can offer the foreign investors a sound institutional environment where profits could be made. Hence in these countries institutions are producer friendly rather than grabber friendly and consequently as predicted by Mehlum *et al*. give scope for economical success.

The breakout of a war is the outermost sign of an institutional failure in a country. Again what Sierra Leone, DRC, Liberia and in some extent also Guinea have in common in opposition to Botswana and Namibia is that they have been hit by wars between 1990 and 1999. In these war torn countries famous for their corruption and smuggling of blood diamonds it is simply not feasible to make investment in the diamond industry.
Whether the wars going on in these countries have been a fight for freedom for the people or to get control over natural resources lies beyond the scope of this essay. Instead what becomes

obvious is that what ever the purpose diamonds have helped fueling these wars. As diamonds are forever and very valuable, alluvial diamond areas become the ultimate spot for a rebel to take control of. Additionally being the most valuable element on earth they appear to trigger greed more than any other resource, putting the institutions on trial. Hence the developments in these countries could be regarded as a real life experience of Olsson's Stackelberg game representing a negative relationship between natural resources and economic growth in equilibrium.

Though one would give the diamonds a bad turn by claiming them to be the cause of low quality institutions and civil conflicts in Africa, when there exist poor countries with no resources that have been struck by ongoing conflicts in the latest decades. Instead, where the institutional quality is low, when diamonds are found and extracted it seems as if they undermine the institutional quality additionally.

Another possible explanation could be to consider at which point in time the individual countries' first diamonds where discovered. Apart from the outlier Botswana, where the first diamond where found in 1967 a year after they had gained independence, in all the other countries diamonds where discovered during colonization in the first half of the 20th century. Institutions in Botswana had grown strong enough to resist eventual rent seekers coming up when the diamonds where discovered. Still this explanation is not sufficiently strong since positive examples as Namibia exists where diamonds where found in 1908.[48] Nevertheless it supports the idea developed by Boschini *et al.* that how the exploration of diamond resources has affected the economical development is due to countries institutional differences. Institutions have never grown strong because the knowledge of the existing diamond resources has repeatedly put them on trial.

Another feature that differentiates Botswana from the other countries is its stabilization fund. Diamond revenue in Botswana is invested in a fund in order for them to benefit the most from their precious stones. To establish and manage such a fund requires well founded and confiding institutions. Hence an obvious feature of how diamonds can promote prosperity rather than tragedy.

[48] diamondfacts.org

Moreover, as discussed above the industry suffers from severe lack of transparency and external control. Export figures exceeding production figures or vice versa indicate illicit trade and smuggling. Angola, Sierra Leone, Liberia, DRC and Guinea all show disagreeing production and export figures. Extended corruption and smuggling are a typical feature for countries with low institutional quality, hence an additional sign of deteriorating institutional quality connected to the precious stones in these countries.

5.4 Relationship Between KPCS Membership and Economic Growth

The KPCS became legally binding in 2003. With the aim of the process follows an expectation that the revenues from diamonds shall be part of the formal sector of the economy, promoting economic growth. However considering the period examined this effect is not yet to be statistically visible nor provable, additionally the relationship between KPCS membership and economic growth will probably mainly be visible in countries where illicit diamond trade has occurred to fund conflicts. Since the introduction of the KPCS the part of conflict diamonds in total diamond trade has decreased from between 4-15 percent to less than 1 percent[49] implying that concerned countries have made efforts to stop the illicit diamond trade to become members of the KPCS. In this way the implementation of the scheme has helped to limit one source of war funding and the humanitarian catastrophes and institutional deterioration that follow with it. The existence of the scheme forced countries to oppose those channels and characteristics connected to blood diamonds and impose severer domestic control of the industry. For this implementation to be successful improvement of the institutional quality is required.
Hence the KPCS helps to counteract the negative effects that diamonds contribute on growth. Thereby not saying that the KPCS has the power to stop the conflict in it self but rather to stop one source of funding for the conflict.

The only country in the sample that has not met the requirements to become a member in the KPCS is Liberia. Still the existence of the KPCS could help to counteract the negative effects from diamonds even in this country. As participants of the KPCS only are allowed to trade with other members the market for Liberian diamonds becomes very limited. Before the

[49] regeringen.se

KPCS many Liberian diamonds where smuggled in to their neighboring countries mainly Sierra Leone and Guinea, thus since both these countries now are members of the KPCS this outlet for Liberian diamonds should be closed. As they cannot find a market for their diamonds their source to fund wars gets limited and hopefully this will help stop the conflict. Additionally with no market for their diamonds, the diamond extracting areas in the country get less valuable and attractive for predators to take control of giving scope for increased political stability. Hence to get revenue for the diamonds they extract Liberia is forced to take measurements to become a member of the KPCS, measurements that in the extension offset the negative influence that diamonds have on growth by increasing the country's institutional quality.

Much of the problems generated by diamond abundance originate in the severe lack of transparency and industry data. The schemes mission to collect and scrutinize diamond data will help to clarify the picture of the industry to detect weaknesses and which countermeasures to implement. Thus a successful performance of this mission will enable diamond resources to increase the peoples' welfare instead of misery

Still there are desirable improvements in the KPCS to better promote prosperity diamonds. Much of the content in KPCS consists of recommendations. One example is the recommendation concerning the license requirement for all miners, hence not mandatory to become a member. With no license requirement anyone can at anytime start alluvial mining anywhere. If there is no regulation or control for these activities the question is whether it is the law of the jungle or laborers that rules out there.

However since the implementation of the KPCS the amount of conflict diamonds has decreased as a part of world diamond trade. As the scheme with time wins confidence with the people it will be regarded as a natural part of as well as a requirement for diamond trade. This in combination with continued improvements of the KPCS might make us able to, at least for the case of diamond resources; reject Collier and Hoffners estimates of increased risk for civil conflicts with the presence of natural resources.

6 Conclusions

The African diamond experience is somewhat diverted. A majority of the diamond abundant countries has experienced a negative growth during the period examined. According to the results obtained there seems to be a negative relationship between both growth and social development and diamond abundance, after effects from the outlier Botswana has been corrected for. Looking closely at the most diamond abundant countries in the sample which has experienced a negative growth and low HDI values, they all show typical features of deteriorating institutional quality. This implies that it is through these channels that the negative effects from diamonds are working. By its nature diamond resources have triggered greed and corruption, fuelled civil wars and conflicts phenomena that is not compatible with growth and development. Still not all countries follow this pattern with the strongest exception being Botswana. With a diamond abundance of more than 35 percent and an average growth of 7 percent there is a positive correlation between both growth and social development in this special case. Considering the relatively peaceful history of the country and other characteristic revealing institutional quality and comparing it with the corresponding in the other countries the diamond success is probably due to higher institutional quality. Hence the conclusion to draw is that the existence of diamond resources seems to enforce the growth and development either positively or negatively.

In 2000 the KPCS was implemented as an attempt to stop the steam of blood diamond to reach the world market. As the KPCS regulates almost the entire world trade in rough diamonds not allowing any blood diamonds out on the world market, the outlet for blood diamonds should be limited. All African diamond producing countries, except Liberia, and diamond trading countries are members of the KPCS. As KPCS participants are only allowed to be involved in diamond trade with other participants, diamonds should no longer be hard currency to fund wars and civil conflicts since the market are not allowed to buy them. Hence the implementation of the KPCS should help to counteract the negative effects that diamonds contribute to not only by imposing a certificate requirement but maybe more importantly by increasing the industry's transparency.

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Appendix

Diamond Export

Diamond export US $	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2004	2005
Angola	260546000	48677000	182784000	143464000	123535000	16151000	253636000	322969000	352725000	551313000	633265000	788138694	1089170955
Botswana	1412000000	1455000000	1374000000	1379000000	1384000000	1437000000	1721000000	2095000000	1477000000	2132000000	2164000000	2562605782	3328619528
Central African Republic	75178000	78539000	76337000	84959000	62076000	90093000	112655000	106374000	160415000	156031000	168515000	51592358	60572403
Congo. Democratic Republic	28902000	473436000	384883000	471625000	750674000	824525000	85602000	722098000	677269000	83351000	728975000	720899077	895457801
Cote d Ivoire	101322000	112073000	110932000	106259000	71326000	129043000	210533000	116723000	44469000	52219000	61244000	…	…
Ghana	14047000	10536000	112924000	20413000	264885000	212316000	225678000	202859000	133568000	206784000	58952000	26323083	33878145
Guinea	82835000	91254000	102032000	191622000	113854000	101856000	85348000	11569000	125087000	143275000	163166000	47206238	55768167
Namibia	328000	…	…	…	…	…	…	…	…	459000	709000	678822821	700533468
Sierra Leone	84342000	131793000	210271000	92629000	104288000	108805000	113825000	129009000	73941000	34393000	14114000	126652633	141833581
South Africa	516417000	329813000	15483000	167215000	146493000	194136000	515000	860385000	851454000	1297676000	1390456000	1835693965	2148294135
Tanzania	7964000	146000	360000	222000	5974000	215000	1682000	6579000	5518000	8144000	30294000	34784013	25436048
Zimbabwe	…	114000	505000	1658000	3802000	5613000	9762000	7888000	1235000	1557000	1976000	3582088	201110
Liberia	390833000	136313000	312739000	291745000	318212000	766156000	556313000	328923000	277458000	290243000	101861000	…	…

Source: 1990-2000 GAO-02-678 International Trade, 2004,2005 Kimberley process statistics

Human Development Index

Human development index	value 2004
Angola	0,439
Botswana	0,57
Central African Republic	0,353
Congo. Democratic Republic	0,391
Cote d Ivoire	0,421
Ghana	0,532
Guinea	0,445
Namibia	0,626
Sierra Leone	0,335
South Africa	0,653
Tanzania	0,43
Zimbabwe	0,491
Liberia	…

source: Human Development Report 2006. UNDP