

Trade and Smuggling of African Gold to UAE: the Cases of Libya and Sudan

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Abstract:

The paper examines the trade in gold from two African countries, Libya and Sudan which are according to the United Arab Emirates (UAE) import figures, the two largest gold exporters to the UAE from the African continent. In the case of the former almost no gold is mined in Libya and yet it is reported to have exported 81 tonnes in 2016 and Sudan which is the second or third largest gold producer on the continent, reportedly exports gold to the UAE, based on 2016 prices at the lowest price of any African gold exporting country. The paper also considers the role of the UAE in the global gold trade and the need for improved compliance with minimum standards to assure that conflict gold does not find a ready market in Dubai.

Keywords: Gold, smuggling, UAE, Libya, Sudan

1. Introduction

With the end of the apartheid wars in southern Africa and the resolution of many of the 20th-century conflicts in West Africa and the partition of Sudan into North and South, the last decade has seen an almost unprecedented growth of gold exports from African countries. This expansion has been both in terms of volumes and the number of countries engaged in gold production and exports. This growth has been both of large scale mining (LSM) and just as significantly in artisanal and small scale gold mining (ASGM). The former is well documented under the reporting requirement of mining majors to their respective stock exchanges. However, ASGM which is commonly an informal and undocumented activity is far less well known though is growing in volume.

African gold exports to the markets in the UAE have increased considerably while a large number of statistical and trade anomalies appear to have arisen that require detailed examination.

There are several cases of countries emerging over the last few years as smuggling hubs in the African gold mining sector. This is attributed to the regulatory weaknesses in the ASGM sector, and this has seen an increase in smuggling and trade with tax havens like the UAE/Dubai. Precise data on the volume of exports of the most significant export item of many African countries are either inconsistent or in some cases non-existent. Even a relatively developed country like South Africa does not have one consistent database on gold production and exports, and there are inconsistencies between the estimates of various South African and international agencies (UNCTAD, 2016; Eunomix, 2016; Eunomix, 2017) [2]. When gold production and trade in the rest of the continent is considered below the reliability of production and export data deteriorates markedly.

The purpose of this paper is to investigate, to the extent that public data permits, the trade in gold from two exceptional cases. The two most significant are the cases of Libya and Sudan which have exported 81 tonnes and 62 tonnes of gold to the UAE respectively in 2016. The case of Libya where there was virtually no gold mining activity in the country, and yet, according to UAE data, it was the continent's largest exporter to UAE. Sudan on the other hand if one includes ASGM production is recognised as being the third largest producer of gold on the continent in 2016 after South Africa and Ghana and the second largest exporter to the UAE. Just as significantly as we shall see below Sudan is

reported to have exported gold and gold doré at prices well below not only the annual average gold price but also well below the minimum price of gold for that year. The issue of trading gold from Sudan at prices well below global averages has been raised in various IMF Article IV Consultation reports[3]. Estimates are made of losses of export revenue to Sudan from the gold smuggling and undervaluation to the UAE. The estimated losses and sale at what appears to be low prices create a large pool of rents earned by traders as well as the Central Bank of Sudan.

Table 1
2016 Estimates of African Gold Production and Exports by Data Source (Mtpa)

GFMS - Gold Mine Production In Africa	Comtrade - UAE Import of Gold from Africa	World Bank – Gold production by country
South Africa	145.7 Libya	81.517 South Africa
Ghana	94.1 Sudan	62.580 Ghana
DRC	60.4 Ghana	54.577 Burkina Faso
Mali	49.8 Mali	41.069 Mali
Tanzania	49.7 Guinea	31.194 Mauritania
Burkina Faso	40.9 Egypt	30.243 Tanzania
Zimbabwe	21.8 Tanzania	26.270 Guinea
Ivory Coast	22.6 Nigeria	21.208 Cote D'Ivoire
Guinea	19.6 Togo	12.000 DRC
Egypt	17.1 Uganda	9.994 Egypt
Sudan	15.5 Benin	9.990 Zimbabwe
Ethiopia	12.0 Cameroon	9.939 Senegal
Mauritania	7.6 South Africa	7.218 Ethiopia
Namibia	7.6 Senegal	5.394 Namibia
Senegal	6.8 Rwanda	4.882 Botswana
Zambia	4.6 Chad	4.668 Morocco
Other	18.9 Niger	4.337 Liberia
Total Africa	594.9 Madagascar	4.056 Eritrea
	Liberia	3.310 Total
	Burundi	2.841
	Others	18.853
	Total	446.140

Sources: GFMS data: GFMS Thomson Reuters. (2018). *GFMS GOLD SURVEY 2018*. Thomson Reuters. UK, London. NB GFMS data is drawn only from publicly listed gold mining companies and hence the discrepancy between GFMS and other sources. GFMS does not include ASGM output. **UAE Total imports:** DMCC <https://www.dmcc.ae/gateway-to-trade/commodities/gold> **Comtrade data:** extracted from the Comtrade statistical database. **World Bank:** World Bank (2017) *Transfer Pricing in Mining with a Focus on Africa: A Reference Guide for Practitioners*, Washington. This total is of what is categorised as producing mines output

Table 1 above sets out the estimates of gold production and trade by country from three different sources. The first is the GFMS Reuters survey, a highly reputable source in the minerals circles but one weakest in terms of the ASGM sector[4]. The second is the reported imports of the UAE of gold from African countries and the third is based on the World Bank mining database. In the case of the UAE data, this is largely but not exclusively from ASGM sources, though as we shall see below Libya's

massive exports of gold are not from any mined source. The World Bank database is entirely predicated on large scale mining projects.

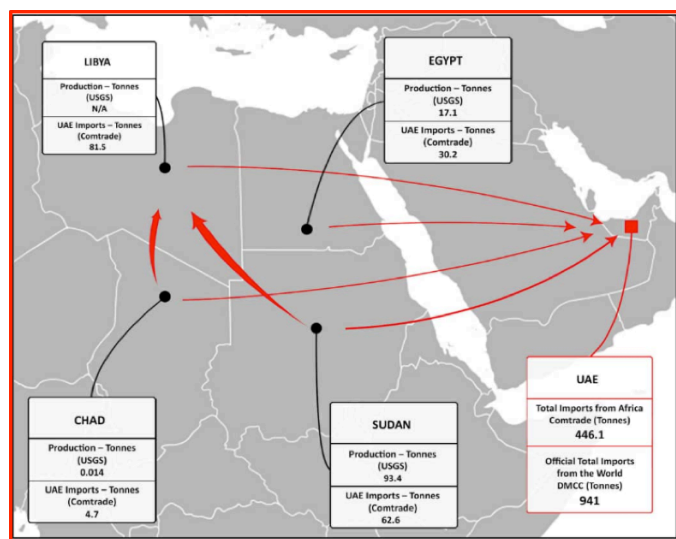
Smuggling of gold is by no means confined to the above cases but is prevalent across several countries and regions across the continent as well as globally (Blore, 2015; Martin & Taylor, 2014)[5]. The prevalence of gold smuggling in and from countries such as Mali, DRC and Sudan should be of concern not only to those countries but to all contiguous African countries which have become conduits for this illegal trade. The research indicates that a network of illegal gold trading is occurring across the continent from conflict and fragile states experiencing instability. These gold flows are often associated with money laundering and other illicit activities. Part of the driving force for the smuggling stems from the difference in export tax rates which should be harmonised. African countries would also benefit from an improved and harmonised and vastly improved system of gold trade recording.

The following brief analysis is based on Comtrade data for UAE imports of unwrought gold, i.e. HS7108.12. Indeed this is the same gold trade data source that has come in for heavy criticism from various governments including that of South Africa (SARS, Friday, 29 July 2016; Eunomix, 2017). The data is based on regional imports into UAE of gold from Africa [7]. There are numerous reasons that the analysis below should be tempered with scepticism in light of the recognised weaknesses of Comtrade data for commodities from Africa (UN Comtrade, 2016; Kar, 2009; United Nations, 2004; Ajayi, 1998) [8]. First, a large part of the gold imports into UAE are doré, and hence the volumes of imports are subject to the assumption that the volumes being declared at the UAE border and assayed by exporters (and sometimes by importers) at the border are correct[9].

Moreover, in some cases, these volumes may be incorrectly entered by customs officials. This is common in commodity trade throughout Africa. Second, the dollar value of imports that are declared might be undervalued by the importer though there is little immediate financial incentive as there are no taxes in the UAE on gold. There is however one

Map 1

Trade Production and Smuggling of Gold from Libya, Sudan and Egypt (2016 volumes)



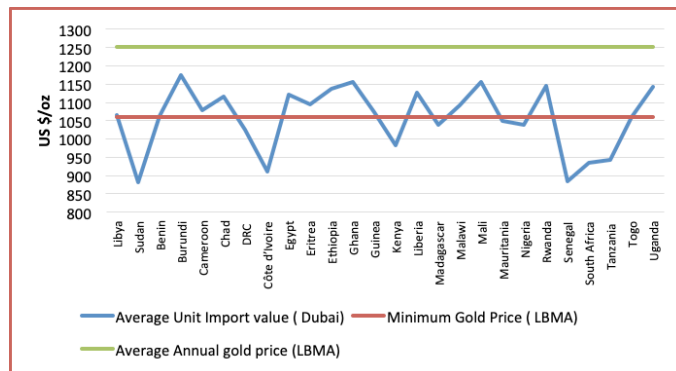
possible explanation of the anomalous volume of exports to the UAE. All four countries (Chad, Egypt, Libya and Sudan) constitute a zone of political instability and civil conflict. As a result, the export of gold in volumes well beyond reliable estimates of production of gold may be the disposal of gold as savings by private citizens from North East Africa to a relatively stable and tax-free environment in the UAE.

2. Smuggling from Africa: North African routes

The smuggling and trade routes of gold entering the UAE is depicted in Map 1 above. What it shows is that Libya is responsible for some 9% of total UAE imports in 2016. The map portrays the production and import of gold from four contiguous African states- Libya, Sudan, Egypt and Chad. There has existed a trade in Sudanese, i.e. Nubian gold with Egypt since the pharaonic era but there is no evidence that it is Sudanese gold that explains Egyptian export levels to the UAE that are well beyond known levels of production. It should be of considerable concern to the UAE concerned about the regions due diligence procedures. This is particularly so, given that Libya produces virtually no gold and Egypt is reported to export gold to the UAE in volumes that exceed estimated national production levels in 2016.

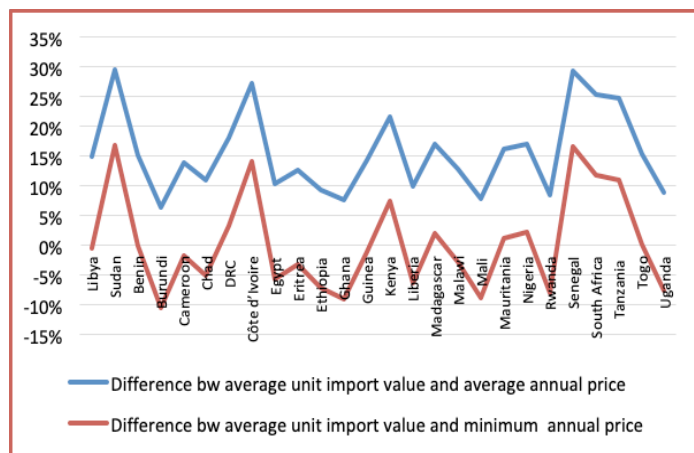
Figure 1

Comparison of Gold prices and Unit import values for 2016 – Top 26 African exporters to the UAE (ranked by volume of imports)



Given these data limitations, can one draw firm conclusions from unit import values of gold entering the UAE? There are some reasons why this data may be somewhat more accurate than other data used in the analysis of IFF. First, the data comes from one jurisdictional source only, the UAE and second, there is no obvious tax or financial incentive for gold importers or exporters to present inaccurate data on imports as is the case of other high tax jurisdictions. Third, the various data sources available present a remarkably consistent picture of African countries selling gold in substantial volumes and at unit import values below the average price in 2016 which is the latest year for which data is available[10]. The data also presents a picture of unit import values, in many cases being well below the minimum gold price of that year. Not one country in Africa sold gold to the UAE in 2016 that was above the average gold price. This outcome is shown in Figure 1 above. This may be explained by the fact that when selling doré there usually is a 1-3% refining charge and a marketing charge which is normally less than 1% for bars. The low unit import value which is below the average price for 2016 could merely be a result of unfortunate timing of sales. The outcomes are remarkably similar for all countries even those countries like Libya which is Africa’s biggest exporter of gold to the UAE in 2016 at 81 tonnes and Sudan at 62 tonnes in 2016 which by early 2018 had expanded production to such an extent that it rivals both Ghana and South Africa as the continent’s largest gold producer[11].

Figure 2
Gold Margins for 2016 - Top 26 African exporters to the UAE



Source: Comtrade and author's calculations

i. Libya

Libya and Sudan are the two most important cases of gold trading and smuggling to the UAE. Libya produces virtually no gold and has no operating large scale mines, yet UAE recorded some 81 tonnes of imports from Libya in 2016. In 2016 gold was Libya's second largest export after oil.[12] In 2011 when the Libyan civil war began Libya sold some 27 tonnes of the country's official reserves.[13] However, since that time has sold or exported a total of some 171 Tonnes of gold which made the country Africa's largest exporter to the UAE [14]. The origins of the gold which has been exported from Libya to UAE are unknown and could have been, at least in part, smuggled from sub-Saharan Africa as well as Sudan to pay for the very substantial human trafficking of sub-Saharan African nationals occurring through Libya[15]. There does exist some evidence of ASGM activity in Libya, but volumes are considered very small.[16] In neighbouring Chad (Tubiana & Gramizzi, 2017)[17] there are significant ASGM gold deposits in the north of the country and Libya may well be a smuggling route of preference rather than returning such gold to the capital N'Djamena. Furthermore, smuggling of gold from the mines in various parts of Darfur [18] in Sudan and used in order to pay for the transport of refugees from the war-torn region has been cited as one case of trans-boundary shipment of gold for people smuggling. However, Libya is not a known gold smuggling entrepot to the UAE.

However, it is difficult to imagine that such a large volume of gold over a period of five years could come from mined sources in Libya or its immediate neighbours. It is more probably part of the much vaunted 140-tonne stock held by the former Libyan dictator Muammar Gadhafi [19] and disposed of into the UAE markets by various 'governments' in Libya or by the various warlords that have controlled different parts of the country since the death of Gadhafi in October 2011. The leaked Hilary Clinton email alleges that the motivation of the French government in leading the Libyan intervention was:

'Qaddafi's government holds 143 tons of gold, and a similar amount in silver. During late March 2011 these stocks were moved to SABHA (south-west in the direction of the Libyan border with Niger and Chad); taken from the vaults of the Libyan Central Bank in Tripoli. This gold was accumulated before the current rebellion and was intended to be used to establish a pan-African currency based on the Libyan golden Dinar. This plan was designed to provide, the Francophone African Countries with an alternative to the French franc (CFA). (Source Comment: According to knowledgeable individuals this quantity of gold and silver is valued at more than \$7 billion. French intelligence officers discovered this plan shortly after the current rebellion began, and this was one of the factors that influenced President Nicolas UNCLASSIFIED U.S. Department of State Case No. F-2014-20439 Doc No. C05785522 Date: 01/07/2016 Sarkozy's decision to commit France to the attack on Libya. According to these individuals, Sarkozy's plans were driven by the following issues:

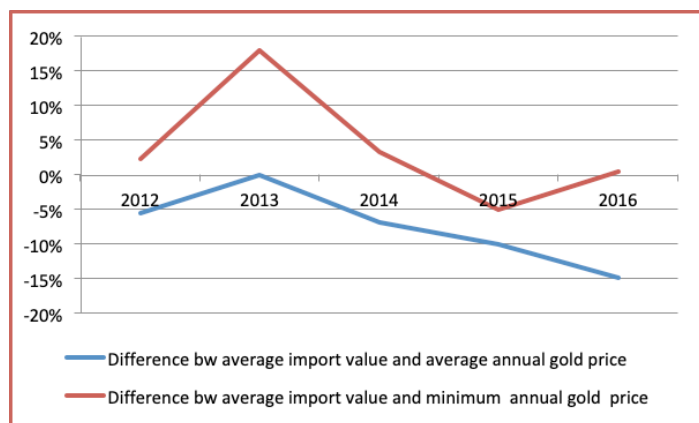
- A desire to gain a greater share of Libya oil production,
- Increase French influence in North Africa,
- Improve his internal political situation in France,
- Provide the French military with an opportunity to reassert its position in the world.
- Address the concern of his advisors over Qaddafi's long term plans to supplant France as the dominant power in, Francophone Africa.

This leaked Hilary Clinton email has become the source of many web-based conspiracy theories. The

veracity of the email has not been denied but what subsequently occurred in France has shaped the discussion. Former President Sarkozy has been indicted for illegally receiving Euro 50 million in campaign contributions from Gaddafi to support his 2008 reelection bid [20]. While this indictment did not occur until 2018, the circumstances of the rebellion against Gaddafi and his suppression of the rebellion must have provided domestic political reasons, if it were needed, for the French military intervention in Libya. This would ultimately see the death of Gaddafi and with him a secret of French domestic politics. The UN Security Council has undertaken considerable research into what has happened with the assets of the Gaddafi regime, but it has not tended to focus on gold but rather upon other assets of the regime (United Nations Security Council , 2017) [21].

Figure 3

Gold Margins for Libya-UAE Trade (2012-2016)



Source: Comtrade and author’s estimates

In 2016 when some 81 tonnes of gold were imported from Libya by UAE, the gold was sold on average at the minimum price for that year and 15% below the LBMA average gold price. These low prices for Libyan gold that was almost certainly already refined as virtually no doré is produced in Libya should be a concern to UAE authorities given the prospects of money laundering activities by human traffickers.

Given the long years of conflict that have followed the death of Muammar Gaddafi the gold sales into the UAE may also be, in part, explained by the sales by private Libyan citizens during the years of conflict starting since 2011. This is particularly so given that

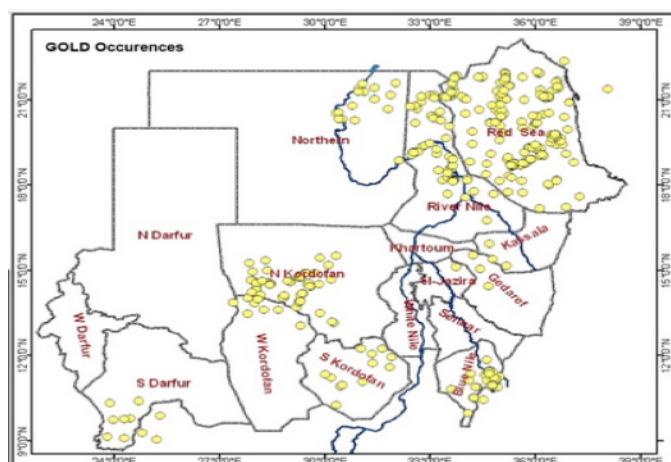
that Libyan dinar was a gold coin[22]. There is a further issue that pertains to the Libyan exports, and that is the price received for what was almost certainly not doré bars. Figure 3 above shows the unit value of Libyan gold exports to the UAE.

ii. Sudan

Gold production in Sudan is widely distributed and occurs in over 13 provinces[23] in an estimated 40,000[25] mines which employ over 1 million people [25](Dr Fatima, 2017). In this mostly ASGM sector gold production which remains only very lightly regulated and is not a significant source of revenue for the government because of what is seen, even by government estimates as widespread smuggling of gold. The occurrence of gold at the very geographic periphery of the country in the Nubian Shield makes for ready smuggling across the Red Sea to Saudi Arabia, to Egypt, or Dubai. Other areas such as Darfur make for more smuggling routes into other neighbouring countries like Libya as well as to Dubai via Khartoum. Map 2 below depicts the occurrence of gold are widespread and distributed close to borders.

Map 2

Occurrences of Gold in Sudan



Source: Mineral Deposits of Sudan 2013 – Extracted from Minerals potential and resources in Sudan by Dr Yousif Elsamani

Based on early results from the first quarter of 2018, Sudan’s production had expanded to such a degree that it may emerge as Africa’s largest gold producer by the end of 2018 though, based on previous years’ estimates it is still normally ranked as the third largest producer after South Africa and Ghana.[26]

Sudan has estimated that virtually all production comes from the ASGM sector[27]. Some larger mines are being developed[28] (Dr Fatima, 2017) but by and large, the industry is associated with small mines with all the attendant social, environmental and health problems experienced in the sector (Benkenstein, 2012; UNEP, 2013)[29]. The actual volume of gold production and exports from Sudan is an unknown, and the estimates available from different normally reliable sources suggest very substantial smuggling of gold. Table 2 below shows that the volume and value of gold exports by Sudan are considerably less than the amount that the UAE claims that it imports. The GFMS data indicates that gold production is low and declining over time and no source provides data which is remotely consistent with other sources. Given the widespread use of ASGM in Sudan and other countries in west and central Africa, the GFMS data is becoming progressively less accurate over time given its exclusion of ASGM gold which is smuggled out of the country[30].

Official Sudanese government estimates of gold production are at wide variance with the external estimates. GFMS estimates, based as they are on gold production of listed firms, can be dismissed and the USGS estimates of gold production are primarily based on the official government estimates. It can be seen from the table above that production in 2016, the last year for which data is available, was 94.3 tonnes and this is expected to rise substantially in 2017 and 2018 given the expansion of production that is occurring in ASGM and LSM. It is doubtful that given the wide geographic dispersion of ASGM mining in Sudan that these estimates are accurate given the level of smuggling and therefore should be treated with the necessary measure of scepticism. Indeed gold production could be considerably larger than current estimates (Onour, 2018).

In order to understand gold production and exports from Sudan, it is necessary to understand the byzantine rules of gold trade that are used by the Government of Sudan. The government of Sudan has a multiple exchange rate system whereby gold is purchased at the parallel exchange rate in order for the government to obtain some of the forex benefits of the gold mining industry. To do this the

government prints money which has fueled inflation. [31]

Table 2
Gold Production and Exports from Sudan by Data Source

Year	GFMS-GOLD MINE PRODUCTION	IMF		Comtrade - UAE Import of Gold		USGS	GoS
	Volume (Tonnes)	Exports, f.o.b. (mil US\$)	Volume (Tonnes)	Value (mil US\$)	Volume (Tonnes)	Mine output (Tonnes)	Production (Tonnes)
2012	27.9	2,158	46.1	3,188.4	69.1	46.1	45
2013	20.1	1,048	24.8	1,820.9	44.3	70.0	70
2014	21.5	1,271		1,856.8	51.1	73.3	70
2015	16.5	726		1,294.1	38.4	82.4	82
2016	15.5	1,044		1,772.7	62.6		93
Total	101.5	6,247		9,932.90	265.5		360

Sources: GFMS 2018 Gold Survey, Sudan 2014, 2016 and 2017 Article IV consultation reports, the Comtrade database and USGS 2015 Sudan Mineral Industry data. **NB:** more recent comparisons are not included as recent IMF reports do not have this data. The 2016 GOS figures stem from a Presentation by The Republic Of The Sudan Ministry Of Minerals, by Dr Mohamed Abu Fatima, GRAS Director General, UK-Sudan Trade & Investment Forum, 12-12, 2017 <https://www.developingmarkets.com/sites/default/files/1.Ministry%20of%20Minerals.pdf> downloaded September 2018. The USGS estimates are the same as the Government of Sudan estimates.

The government sells the gold in Dubai and uses the forex earnings used to buy dollars which are then made available to importers at the lower official exchange rate. This creates the potential for rent-seeking behaviour and the underpricing of gold exports. Whether under-valuation of exports is occurring through the CBOS or just through private exporters is unknown. The IMF has estimated losses to Sudan stemming from how gold is traded. In 2016 losses were equivalent to 1% of GDP (equivalent to 576.49 million USD).

Table 3
Losses by Central Bank of Sudan from Gold exports (%GDP)

	2013	2014	2015	2016	2017(p)
Losses	0.6	0.7	0.4	1.0	1.8

Source: IMF (2017) Article IV Consultation Report 17/364 (Sudan), p8. <https://www.imf.org/en/Publications/CR/Issues/2017/12/11/Sudan-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-Executive-45456> downloaded September 26, 2018 (%GDP)

These multiple exchange rate policies stem from what has been the collapse of Sudan's oil export sector with the secession of South Sudan as well as the sanctions that were placed on Sudan until October 2017. Gold has now replaced oil as the largest export sector of the economy, yet it has been a poor revenue substitute because of the dominance of ASGM production. This has meant that the government has faced severe revenue and forex generating issues.

Given that many of the mines are located near the different borders and the existence of virtually unregulated ASGM production then there are definite limits to any enforceable government policy on gold purchases. In 2018 the Central Bank of Sudan was reported to have taken over all gold exports from Sudan[32]. This should not necessarily be seen as a defence of good governance as Sudan has consistently sold its gold at well below the world market price. This has been alluded to in several earlier IMF Article IV consultation papers[33] (IMF , 2014) and is consistent with more recent Comtrade data in table 4 below. In 2016 the unit import value of Sudanese gold in the UAE was at a 31% discount to the average price and a 15% discount to the minimum 2016 price.

There have been various estimates made of the extent of smuggling from Sudan and the most recent estimates based on econometric analysis suggest that some 34% of Sudan's gold is smuggled out of the country[34]. The difference between what is recorded in the IMF Article IV consultation report (\$6.2 billion in exports over the period 2012-2016) and the UAE import data (\$9.9 billion over the period 2012-2016) suggest that the level of smuggling and misreporting together are close to 60% of the value of 'official exports'.

Table 4 sets out various estimates of undervaluation of Sudan's gold exports for two years for which IMF and Comtrade data exists. Based on Comtrade data Sudan exports to UAE far more gold than the entire country officially exports. The export volumes in the official IMF Article IV data is significantly below the UAE import data, which is to be expected given the amount of smuggling. The unit values of the IMF estimates and Comtrade are, however, remarkably

similar and both indicated that Sudan exported gold and unit values well below the world price in the years for which IMF undertook the analysis. The IMF, apparently concerned by the reported unit export values of gold, nevertheless ceased to publish this type of analysis after 2013.

Table 4
IMF Export and Comtrade UAE Unit Import Values of Gold

		US\$ (mil)	Tonnes	Average Unit Export value	Minimum Gold Price	Average Annual gold price	Difference bw average export value and average annual price	Difference bw average import value and min, annual price
IMF	2012	2,158	46.1	1454.95	1540	1669	13%	6%
	2013	1,048	24.8	1313.69	1195.25	1411	7%	-10%
		US\$ (mil)	Tonnes	Average Unit Import value	Minimum Gold Price	Average Annual gold price	Difference bw average import value and average annual price	Difference bw average import value and minimum annual price
Comtrade	2012	3,188.4	69.1	1434.92	1540	1669	14%	7%
	2013	1,820.9	44.3	1279.53	1195.25	1411	9%	-7%

Sources: Sudan 2014 Article IV consultation report and Comtrade database. **NB:** more recent comparisons are not included as recent IMF reports do not have this data.

ASGM vs LSM

It remains possible but certainly challenging for countries to monitor, regulate, control and tax ASGM activities when mines are widespread and remote as in Sudan. Sudan is transforming its economic base from dependence on oil exports before the separation of South Sudan in 2011 and the gold export economy that has emerged in the north in the wake of the partition of the country and the decline of oil. The economic transformation of Sudan from its dependence on large scale oil production and hence a relatively knowable if volatile source of export and government revenues, to the current situation where both export and government revenues from ASGM are precarious and dependent upon highly distortionary government economic policies towards gold exemplifies the problems facing ASGM. The government of Sudan faces a situation where it is just not possible to extract tax revenues from the mining sector because of the porous borders and relative ease of smuggling. The

more the government attempts to compensate for the loss of oil revenues by taxing gold production the more it pushes the ASGM sector towards smuggling and other nefarious activities.

In most cases what is seen in Sudan is not in any way exceptional for the experience of other developing countries with ASGM. Regulating and controlling the ASGM sector has been challenging, and most governments have merely preferred to see large scale mining by large transnational companies even though this constitutes a substantial loss of employment for its citizens. When ASGM is seen from the perspective of the Ministries of Finance and Minerals, the sector is invariably seen as a cost centre for a government that is environmentally destructive[35] (Benkenstein, 2012; UNEP, 2013) as well as creating severe social and gender issues [36] (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF), 2018; Doris, et al., 2017; Hinton, et al., 2003).

In Sudan, the government has seen little benefit and significant economic as well as environmental costs from the ASGM sector. In 2011 the IMF concluded that (IMF, 2013) [37], 'the gold sector is estimated to account for less than 0.1 percent of total tax revenues in 2011'. This minuscule contribution of what is now the economy's largest sector to the revenue along with the prevalence of smuggling along with, substantial environmental, social and gender problems means that the single contribution of the sector is its widespread employment generation.

Three factors combine to create significant impediments to effective policies towards gold and gold mining. The first and undoubtedly the most important is the extreme difficulty that a geographically large country like Sudan, like so many others, has with dealing with a large number of producers. The second reason stems in no small part from smuggling which stems from not only the nature of the ASGM sector but attempts by the government to tax gold mining and assure that it contributes to the national revenue. The third comes from the very nature of ASGM where there are large numbers of producers spread over large parts of the country. The existence of smuggling and trade malfeasance such as export undervaluation result in

prices received for gold in Sudan that, as we have seen are below the global average and minimum prices.

The analysis below presents a counter-factual of the Sudanese balance of payments as well as of national tax revenue under the assumption that Sudan's gold mining is:

- (I) Based on a relatively small number of large scale mines which are manageable in terms of production, tax liabilities and exports
- (II) The government receives forex based on the average annual LBMA price of all gold produced minus 4% of estimated value for final refining and trading margin in Dubai.
- (III) The government imposes royalties and company taxes that are consistent with good practice in the industry [38].

Thus the losses estimated are the economic price the country pays for creating a large number of jobs (estimated to be 1 million) in the ASGM sector in Sudan and continued smuggling as well as the underpricing of gold. It is the virtually complete absence of an effective regulatory framework in the ASGM sector that makes it possible to conclude that Sudan was losing some \$3.4 billion in forex earnings from the gold sector in 2016. Assuming the government was able to control exports of gold and assure that transaction went through the CBOS then the trade deficit would decline from some 7.3% GDP in 2016 to 2.8% GDP. Gold export earnings would rise from the estimated US\$ 1.8 billion in 2016 to \$3.6 billion. In other words, the country trade imbalance would approach sustainable levels if good governance in gold production and trade can be assured.

The forex losses to Sudan from its current mining and trade model is predicated on ASGM with smuggling, and consistent undervaluation of exports is most evident when one creates a revenue counter-factual case. Here we assume that the government collects as what was suggested by the IMF no revenue from gold mining. The study assumes that with LSM in the formal sector it can collect 7% royalty, and lastly a company tax payment equivalent to 4%-6% of gold sales.

Figure (4 a)
Actual Sudan Balance of Trade and Counter-factual balance

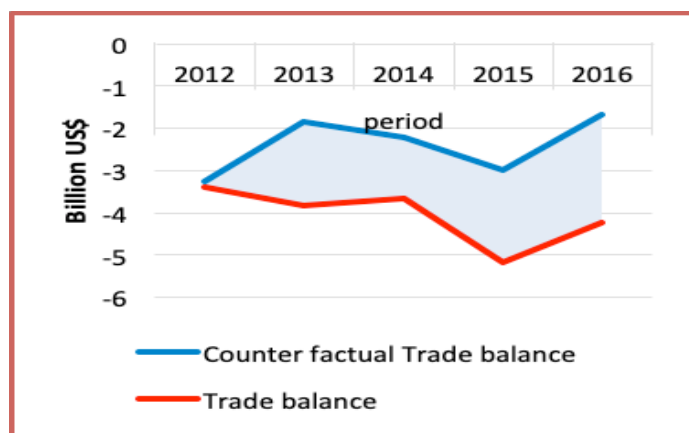
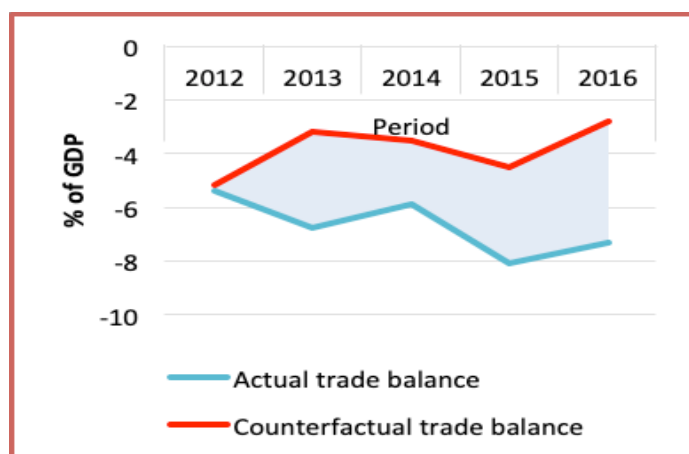


Figure (4 b)



Source: Various IMF article IV consultation reports and authors estimates.

The two figures below present the increase in government revenue that would accrue if LSM firms, like those which operate around Africa also operated the Sudanese gold mines. The implicit assumptions regarding good governance in such a scenario are indeed heroic. While an adequately managed gold mining sector would not solve all of Sudan's fiscal deficit issues, it would dramatically decrease the size of the fiscal deficit significantly.

DMCC Due Diligence

The UAE through the Dubai Multi Commodities Centre (DMCC) conducts a policy of responsible sourcing of gold which is supposed to minimise the trade in gold from conflict zones[39]. The responsible sourcing of gold, however, has not halted

the importation of gold from Libya and Sudan. There is also an increase in the volume of gold coming from the Great Lakes Region where exports to the UAE from countries neighbouring the Eastern DRC are in such volumes that they cannot possibly be from local mines whether ASGM or LSM. Table 5 below shows the increasing dependence of the UAE on gold from countries in conflict and what we have termed countries that are trade anomalies, i.e. where exports to the UAE are far higher than any estimates of gold production. The UAE estimated that 944 tonnes of gold were imported to Dubai in 2016 with some 143 tonnes coming from Libya and Sudan.

Figure 5 (a)
Sudan Fiscal Deficit – Actual and Counterfactual Cases (US\$ billions & %GDP)

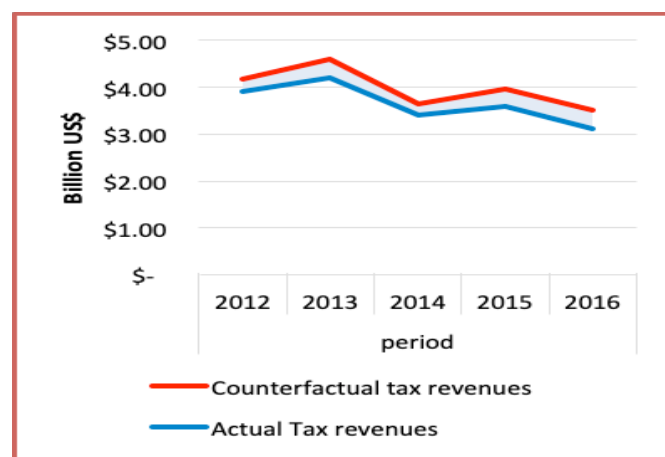
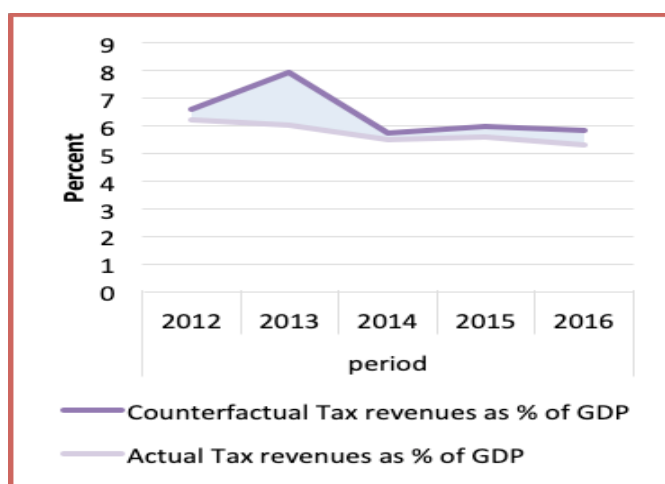


Figure 5 (b)



Source: Comtrade, IMF Article IV consultations and authors estimates

Adding to this, the reported exports from Uganda, Rwanda and Burundi to the UAE of 18 tonnes the figure rises to 17% of total UAE gold supply[40].

The amount of gold smuggled from eastern DRC to UAE using these three countries as entrepots from DRC does not include potential smuggling from DRC to neighbouring Tanzania. The dependence on gold from conflict countries and countries which are trade anomalies in gold has risen from 17.2% at the beginning of the period to 31% in 2016. Many of the countries involved in trade with UAE are reported to export quantities that are well over any estimates of production such as Nigeria, Benin, Uganda and Rwanda amongst others. This trade requires a detailed forensic investigation by DMCC and international anti-money laundering authorities.

Gold that arrives in Dubai from Africa entered the Emirates in small volumes and is carried in personal luggage. There exist what are at least nominally fairly stringent UAE customs regulations that govern this trade. Importers are required to declare the content at the border, and in the absence of a foreign assay test the importer is required to complete one before the gold is released to the importer to bring into the country[41]. However, the small volume of personal imports that come from many countries in Africa is not the principle route for Sudanese gold which has entered through two principal sources. In 2012, when NGO estimates were available, they indicate that 'about 77% of the 57 tonnes of gold originating from Sudan was exported to Dubai by an arm of the Sudanese government known as the Sudan Financial Services Company (SFS)[42]. The remaining 23% was sold by private companies incorporated in the United Arab Emirates or Sudan, which subsequently exported it to Dubai. Most of this gold from Sudan was sold to one refiner in Dubai: Kaloti[43]. This refiner is discussed below.

The gold doré or dust can enter the market either directly through one of the refiners involved in the industry or be sold to individual traders in the Dubai 'gold souk'. These buyers act as intermediaries that will then on-sell gold imported from Africa and elsewhere to one of the refineries which will then be able to sell on the Dubai gold exchange as 'Dubai Good delivery'[44]. Buyers in the souk wishing to sell their gold on to a Dubai refiner are required to keep a record of the nature and origin of their gold purchases in order to satisfy the due diligence requirements of the refiners. However, the practice of classifying the gold as scrap by gold buyers and

the "don't ask, don't tell" practice, weakens the due diligence practice. Even more worrying is the laxness of compliance with the due diligence process by significant players in the supply chain (the refiners). Blore (2015) notes that while some refiners were open to discussions on their purchase verification procedures, others were not.

Table 5
UAE Total Imports of Gold, - Dependence on Conflict

Total Imports of Gold in metric tons					
	2012	2013	2014	2015	2016
UAE	937	1103	959	794	941
UAE Imports of Gold in tons from Conflict countries in Africa					
	2012	2013	2014	2015	2016
Libya	19.3 (1)	10.3 (1)	10.6 (1)	40.4 (1)	81.5 (1)
Sudan	68.1 (48.3)	44.3 (70)	51.1 (73.3)	38.4 (82.4)	62.6 (92.4)
DRC	0.4 (14)	0.6 (17)	0.8 (31)	1.2 (37)	0.6 (36)
UAE Imports of Gold in tons from "Anomaly" countries in Africa					
Burundi	3.0 (0.5)	5.1 (0.4)	5.2 (0.3)	4.6 (0.3)	2.8 (0.5)
Benin	5.5 (1)	4.8 (1)	8.7 (1)	6.8 (1)	10.0 (1)
Cameroon	5.0 (1.5)	9.6 (1.6)	8.7 (1.3)	10.4 (1.8)	9.9 (1.8)
Chad	0.7 (1)	1.9 (0.014)	4.2 (0.014)	2.0 (0.014)	4.7 (0.014)
Egypt	0.5 (8.2)	0.1 (11.1)	3.7 (11.7)	2.0 (13.7)	10.2 (17.1)
Liberia	3.6 (0.0)	3.3 (0.0)	3.1 (0.0)	3.3 (0.0)	3.3 (0.0)
Madagascar	4.0 (0.2)	3.6 (1)	3.8 (1)	4.0 (1)	4.1 (1)
Mali	29.1 (41.0)	49.6 (41.4)	59.9 (40.9)	66.9 (40.9)	41.1 (42.0)
Niger	0 (1.7)	1.2 (1.2)	2.4 (0.7)	4.9 (1.3)	4.3 (1.0)
Nigeria	7.9 (4.3)	6.3 (6.3)	9.9 (7.2)	15.3 (7.9)	21.2 (7.9)
Rwanda	0 (1)	0 (1)	0.2 (0.2)	2.0 (0.3)	4.9 (0.3)
Togo	12 (18.0)	10 (21.1)	5.8 (20.6)	0.064 (15.6)	0.076 (15)
Uganda	1.2 (0.004)	1.1 (0.005)	1.0 (0.004)	2.9 (0.013)	10.0 (0.01)
Total	161.9 (136.7)	152 (170.7)	188.1 (188.2)	205.1 (202.2)	231.3 (215.9)

Source: DMCC <https://www.dmcc.ae/gateway-to-trade/commodities/gold> and Comtrade database. In parenthesis are production figures from USGS.NB, It is worth noting that USGS states that Benin may have produced gold (either as undocumented artisanal or byproduct production), but available information was inadequate to make reliable estimates of output levels. Whereas, USGS has no data for Libya as like may sources production is believed to be none existent or very low. On the other hand, USGS state that data reported by the Government of Togo as exports predominantly include artisanal gold mine production transiting Togo from neighbouring countries and, to a lesser extent, domestic artisanal mine production. Data may include gold from other artisanal sources.

Gold and Anomalies

The single most revealing development with regard to the Africa-UAE gold trade over the last few years has been the case of Kaloti, the largest refiner in the UAE responsible for \$12 billion of trade and gold refining[45] which has been allegedly involved in several extremely high profile incidents of what is considered commercial impropriety in the gold trade. Ernst and Young undertook a management report in 2013, and the results indicated that there were numerous lapses in the proper governance of the gold value chain by Kaloti[46] (Global Witness , 2014). Kaloti was allegedly involved in some incidents, of which the importation of some 4 tonnes

of Moroccan gold which had been coated in silver to evade Moroccan export regulations is one[47]. However, the issue of greatest relevance to the current research is the assertion that Kaloti accepted 57 tonnes of Sudanese gold for refining purposes even though it is considered high risk by its standards[48]. Similarly, Kaloti had a practice of accepting gold from 'call customers' without carrying out any enhanced due diligence. The value of these call customer trade amounted to \$5.2 billion in 2012. The consultant who had undertaken the original due diligence was removed and the same year Ernst & Young (E&Y) later released a study stating Kaloti was in compliance with the requirements of the DMCC's Practical Guidance for Market Participants in the Gold and Precious Metals Industry[49] (Ernst & Young, Nov, 2013). This was followed up by Grant Thornton who undertook a new study the following year and gave Kaloti a clean bill of health[50] (Grant Thornton, Aug 2014). The following year Kaloti was delisted by the DMCC from the Dubai good delivery list[51]. The consultant for the original E&Y study Mr Rihan was removed and in 2018 was reported to be suing Ernst and Young[52]. This brings into question the role that is played by the major consulting and accounting firms in assuring the proper maintenance of the value chain.

Conclusion

Until 2000 most African gold came from the mines of the Witwatersrand in South Africa as has been the case for well over a century. Much smaller volumes came traditionally from Ghana with some ASGM activity occurring throughout the continent. Overall, gold mining was an economic activity conducted mainly by some of the world's largest transnational mining companies, and a regulatory mechanism existed that assured that exports and revenues would accrue to the South African and Ghanaian states. However, with the end of some of the many conflicts in Africa that had plagued the continent and by extension the mining sector in the 20th-century gold is now being produced in considerable volumes in many non-traditional source countries such as Sudan and the countries of West Africa. The trade in gold out of Africa was in the past almost entirely conducted by these transnationals and through the Rand Refinery in South Africa which remains one of the primary vehicles for the formal trade in gold

through the LSM sector. However, there has been a fundamental transformation with gold mining. It is becoming decentralised and informal with new destinations beyond South Africa and the London markets. Exports have increasingly shifted to Dubai in the UAE and away from traditional destinations such as Switzerland and the United Kingdom.

Libya's situation as a failed state faced with a cycle of internal conflict and ruled de facto by warlords and multiple governments creates a myriad of ills. Gold, after oil, is now Libya's second largest export and yet there are no operating large scale mines and very few ASGM activities. The export of a reported 81 tonnes of gold in 2016 by Libya to the UAE cannot be readily explained by mine production. Total gold exports to the UAE from Libya since the collapse of the Gadhafi regime in 2011 was 174 tonnes. This raises the obvious question of the origins of such volumes of gold from a country which has never in modern times been a gold producer of any significance. We have suggested several hypotheses, and that is all a prudent economist can do with the current state of knowledge. The most immediate was the disposal by governments or warlords of Gadhafi's accumulated 140 tonnes of gold. There appears to be anecdotal evidence that gold from the ASGM in northern Chad is finding their way into Libya and that gold from Darfur in Sudan is being used to facilitate the trade in refugees and illegal migrants to Europe. The last explanation is that private citizens faced with long years of civil conflict have been melting Gadhafi's gold dinars and selling them in order to maintain their living standards.

Sudan's experience, on the other hand, typifies much of what has happened to African gold production over the last decade. Production is decentralised with an estimated 1 million people employed in ASGM in Sudan. Regulating the trade and production in 13 provinces has yet to prove successful, and governments by and large have not generated any significant revenue. Moreover, without the costly two-tiered exchange rate system there would almost certainly be no official export earnings from the sector as gold would tend to be smuggled to the UAE in even higher volumes. Unit import values of gold tend to be well below the LBMA average price as well and on occasion below the minimum price. The potential for substantial

nefarious rents to be earned by government officials would appear to be considerable. The study has conducted a counterfactual exercise of what export and tax revenues would be generated if Sudan were to conduct the mining activities based on a properly managed LSM and not a decentralised and de facto unregulated ASGM. While not an economic panacea to all of Sudan's economic woes it would significantly reduce fiscal and trade deficits in a country still reeling from the loss of the oil sector following the partition of Sudan in 2011.

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9. At an international level, the HS classification for unwrought gold does not differentiate between doré and bullion which are classified at HS 7108.12 at six-digit level. Some countries like the USA, for example, have created 10 digit HS classifications such as Gold doré which is HS 7108.12.1010 and HS 7108.12.1020 which is bullion.
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13. See: World Gold Council reserve statistics of official gold reserves from <https://www.gold.org/data/gold-reserves>
14. This according to Comtrade data from 2012 to 2016. The 27 tonnes sold in 2011 is not included in this figure as it

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 35. See: Alex Benkenstein. (2012). "Artisanal and Small-scale Mining in Africa: Opportunities and Challenges". SAIIA; and UNEP. (2013). "Global Mercury Assessment 2013: Sources, Emissions, Releases and Environmental Transport."
 36. See: Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF). (2018). Women in Artisanal and Small-Scale Mining: Challenges and opportunities for greater participation. Winnipeg: IISD; Buss Doris, Blair Rutherford, Jennifer Hinton, Jennifer Stewart, Joanne Lebert, Gisèle Eva Côté, Abby Sebina-Zziwa, Richard Kibombo, and Fredrick Kisekka Ntale. 2017. "Gender and Artisanal and Small-Scale Mining in Central and East Africa: Barriers and Benefits". GrOW Working Paper Series GWP-2017-02 and Hinton, J., M. Veiga and C. Beinhoff. (2003). Women and artisanal mining: Gender roles and the road ahead, in Gavin Hilson (ed) Socio-Economic Impacts of Artisanal and Small-scale Mining in Developing Countries, Lisse: A.A. Balkema Publishers, pp. 161–204. Just to list a few.
 37. IMF (2013) Country Report No. 13/320 Sudan: Selected Issues, p.13 <https://www.imf.org/external/pubs/ft/scr/2013/cr13320.pdf> downloaded 19th September 2018. At a subsequent point in the report the IMF states that (.pp 17-18) 'In 2012, it is estimated that around 48 tons of gold were exported, worth \$2.2 billion, with only a small percentage coming from established gold mining companies. Attempts have been made to better regulate the gold sector by requiring all gold exports, other than by the large mining companies, to be through the Central Bank of Sudan. The Central Bank buys the gold from 4 gold agents who are licensed to buy gold from the small miners and sell it to the Central Bank. The Central Bank introduced these arrangements in 2011 to control foreign currency reserves and also as a mechanism to reduce the incentive for smuggling by offering small miners a price which is better than the price they would obtain for smuggled gold. The gold agents deduct a royalty of 7 percent from the payments to the small miners, so that some taxes are being collected, at least indirectly, from the miners. Royalties are paid to the Geological Research Authority of Sudan, which is a public corporation attached to the Ministry of Minerals'
 38. Counterfactuals were based on the author's calculations. It was assumed that all production was exported. This saw gold sales exceed what was reported as exports ("of which: gold") from IMF consultation reports. The difference was then added to the actual exports, while imports remained unchanged. The difference between the counterfactual exports and imports giving the counterfactual trade balance. The royalties and company tax counterfactual on the other hand were based on the assumption that close to no revenue was generated according to IMF consultation reports. Sudan has a small number of gold mining companies who are required to pay a royalty rate of 5-7% and a business profit tax of 15% (Dr. Mohamed Abu Fatima. (2017). Sudan Minerals Potential and Investment Opportunities. The Ministry of Sudan. Downloaded 2018 from: <https://www.developingmarkets.com/sites/default/files/1.Ministry%20of%20Minerals.pdf>) in comparison to thousands of artisanal miners who pay close to nothing. Counterfactuals were based on the author's calculations of averages from AngloGold Ashanti (Rest of Africa - RoA), the Kinross group, Gold Fields group and Newmont of company taxes as a portion of gold sales - AngloGold Ashanti (RoA) excluded South African mines as they are marginal and disaggregated African data was readily available in comparison to the other mines where group data was used as African mine data was not disaggregated. After that based on the actual values (Tax revenues and nominal GDP), the respective counterfactuals were derived.
 39. OECD (2014) 'Gold industry and sector initiatives for the responsible sourcing of minerals' pp14-16 <https://www.oecd.org/daf/inv/mne/Gold-Industry-and-Sector-Initiatives-Guide.pdf> downloaded 2nd October 2018. The principles embedded in the DMCC standards should if applied, be sufficient to assure the elimination of trade in conflict gold from Africa. Trade in gold from conflict areas has grown since the DMCC Responsible Sourcing of Gold and Precious Metals <https://www.dmcc.ae/gateway-to-trade/commodities/gold/responsible-sourcing> downloaded 2nd October 2018. The DMCC policy includes the DMCC Practical Guidance for Market Participants in the Gold and Precious Metals Industry (the "DMCC Guidance") and the DMCC Review Protocol, which collectively is now referred to as the DMCC Rules for Risk-Based Due Diligence in the Gold and Precious Metals Supply Chain (the "DMCC Rules for RBD-GPM").

40. . The volume of gold imports from India is regarded as being exaggerated by the phenomenon of 'round-tripping' whereby Indian gold jewellery importers will transport the same gold across the Arabian sea several times in order to gain access to credits available for the Government of India. Round-tripping is the act of exporting gold, be it jewellery bars or coins, with the sole purpose of melting it down before re-importing it back to the original exporting country. The process results in a circular flow of gold between different countries, serving to inflate trade statistics. The levels involved can be significant, and this is one reason why trade statistics should not be taken at face value.' – WGC. (2016). India's Gold Market: Evolution and Innovation. Page 41.
41. See: <https://gulfgoldrefinery.com/> downloaded 4th October 2018 under shipping conditions – hand carry procedures. Importers are required to provide a commercial invoice in a hand carry scenario should be made out to the passenger directly and not to the assayer/refiner. The commercial invoice should include:
- i. Description of the contents (Dust, Nuggets, Dore, etc.)
 - ii. Net weight of the contents
 - iii. Gross weight of the shipment
 - iv. Value of the contents
 - v. Description of the container(s)
 - vi. The Consigner and Consignee
42. See: [Khadija Sharife. \(May 2016\). Illegal 'blood gold' - from war-torn Sudan to your phone. Mail & Guardian. Retrieved from: <https://mg.co.za/article/2016-05-11-the-missing-paper-trails-of-sudans-gold>](#)
43. Illegal 'blood gold' - from war-torn Sudan to your phone Khadija Sharife 11 May 2016 <https://mg.co.za/article/2016-05-11-the-missing-paper-trails-of-sudans-gold> downloaded October 2018. The Sudan Financial Services company is 99% owned the CBOS and 1% Ministry of Finance.
44. See: <https://www.dmcc.ae/about-us> and <https://www.dmcc.ae/gateway-to-trade/commodities/gold/accreditation-initiatives>
45. See: <https://www.arabianbusiness.com/dubai-refinery-kaloti-dmcc-caught-up-in-5bn-global-gold-scandal-540342.html>
46. See: Global Witness. (2014). CITY OF GOLD: Why Dubai's first conflict gold audit never saw the light of day. Downloaded from: https://www.globalwitness.org/sites/default/files/library/dubai_gold_layout_lr.pdf
47. Ibid. p. 7
48. Ibid. p. 6. For the assertions on the quantity of gold received, see: <https://www.theguardian.com/business/2018/jan/21/ernst-young-whistleblower-suing-gold-audit-dubai> and <https://www.gulf-times.com/story/575762/Gold-firm-whistle-blower-who-fled-Dubai-sues-Ernst>.
49. See: Ernst & Young, Independent Reasonable Assurance Report on Kaloti Jewellers Factory Ltd's Refiner's Compliance report. Downloaded from: http://www.w-t-w.org/en/wp-content/uploads/2013/12/EY_Kaloti_Evaluation_27.11.13.pdf
50. See: Grant Thornton, Independent reasonable assurance report (ISAE 3000) to Kaloti Jewellery International DMCC. Downloaded from: <http://www.kalotipm.com/userfiles/file/GTASSURANCE-REPORT.pdf>
51. The DMCC did not public provide specifics as to the delisting. See <https://www.thenational.ae/business/dmcc-removes-kaloti-from-dubai-good-delivery-list-over-gold-sourcing-1.34979> and Dubai Good Delivery List. Downloaded from: https://www.dmcc.ae/application/files/2114/9138/7908/DGD_List-Gold_Alphabetical_-_October_2016_Final.pdf
52. See: <https://www.theguardian.com/business/2018/jan/21/ernst-young-whistleblower-suing-gold-audit-dubai>, though some sources state he resigned. See: Gold market breaches 'covered up' from <https://www.bbc.com/news/business-26341072>. He is suing for the "unlawful, unprofessional, and unethical" conduct relating to E&Y's its audit of Kaloti who have been accused of money laundering and buying gold from conflict zones See: <https://www.theguardian.com/business/2018/jan/21/ernst-young-whistleblower-suing-gold-audit-dubai>, <http://uk.businessinsider.com/whistleblower-sues-ey-alleged-corruption-2018-1> and <https://www.gulf-times.com/story/575762/Gold-firm-whistle-blower-who-fled-Dubai-sues-Ernst>

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