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The Second Scramble for Africa: Foreign Military Presence and Natural Resource Exportation

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An abstract of a thesis submitted to the Faculty of Emory College of Arts and Sciences of Emory University in partial fulfillment of the requirements of the degree of Bachelor of Arts

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Abstract

This thesis paper explores the relationship between foreign military base presence and frequency in Africa, and the exportation of valuable natural resources out of the African countries acting as hosts for wealthier foreign nations. The history of foreign presence is explained, as well as the current relevance of military settlements in Africa that are new and in process by wealthy and rapidly growing countries that were previously considered "developing" countries. Foreign military base presence is used as a dummy variable, and natural resources are measured by total value, rather than by quantity. The value of natural resources exported is the dependent variable, and foreign base presence and frequency are the main variables explored in the regression. Ultimately, there is a statistically significant relationship between the two, main explanatory variables, this only is the case when the dependent variable is logged for the foreign base presence variable, suggesting that the relationship is positively correlated, and existent, but not linear. Overall, the presence of a foreign military base increased the total value of natural resources exported by 43 percent. Other population and conflict variables and their roles in natural resource exportation are discussed, like the negative relationship between GDP per capita and the Y variable, and the positive relationship between corruption and the total value of natural resources exported. Future replication of this study in ten years would be a good idea, seeing as many new military base developments by Asian and Middle Eastern countries may happen, and researchers would be better able to see if Eastern countries who have rapidly grown, are looking to compete with each other for essential African resources. Researchers should also continue to monitor the bilateral costs and benefits of foreign military presence.

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Contents

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This thesis paper explores the relationship between foreign military base presence and frequency in Africa, and the exportation of valuable natural resources out of the African countries acting as hosts for wealthier foreign nations. The history of foreign presence is explained, as well as the current relevance of new military settlements in Africa that are new and in process by wealthy and rapidly-growing countries that were previously considered "developing" countries. Foreign military base presence is used as a dummy variable, and natural resources are measured by total value, rather than by quantity. The value of natural resources exported is the dependent variable, and foreign base presence is the main variable explored in the regression. Ultimately, there is a statistically significant relationship between the two variables, this only is the case when the dependent variable is logged, suggesting that the relationship is positively correlated, and existent, but not linear. Overall, the presence of a foreign military base increased the total value of natural resources exported by 43 percent. Other population and conflict variables and their roles in natural resource exportation are discussed, like the negative relationship between GDP per capita and the Y variable, and the positive relationship between corruption and the total value of natural resources exported. Future replication of this study in ten years would be a good idea, seeing as many new military base developments by Asian and Middle Eastern countries may happen, and researchers would be better able to see if Eastern countries who have rapidly grown, are looking to compete with each other for essential African resources. Researchers should also continue to monitor the bilateral costs and benefits of foreign military presence.

1 Introduction and Motivation

What is the relationship between foreign military base presence in African countries, and their respective natural resources exports? To explore this topic, I strive to answer the question: Does placing a foreign military base on African soil, increase the total value of natural resources exported from the host country? This answer remains largely to be explored, especially in the economic research sphere. In exchange for third-party peacekeeping operations, improved infrastructure, alleged anti-terrorism initiatives, and oftentimes weapon provision, Sub-Saharan African countries with valuable natural exports allow American, French, and other transnational enterprises, to mine for minerals, metals, oils, and more. This is increasingly relevant now to the United States with the spread of Chinese military bases and Chinese foreign investment, as well as other wealthy and previously labeled "developing" countries. It also relates the ethics of supply chains and child labor in the mining and farming industries coming into play with the spread of social media and corporate responsibility and transparency. More people have become aware of wear the lithium is mined for their phone batteries, or if their Tiffany diamonds were mined by a pre-teen. Wealthier countries who are major importers, may have longer histories of prosperity, but they are heavily dependent on Africa for their oils and minerals, and would not be the giants they are today without their African trade partners. The Democratic

Republic of Congo is the world's leading cobalt producer, possessing half of the world's known reserves, and the DRC, South Africa and Botswana together account for over half of global diamond-mining output. Zimbabwe, Angola and Gabon also hold and produce significant shares of platinum, copper and iron (Alden and Alves 2009). In terms of the United States, a senior Department of Defense official reportedly commented in 2003 that "a key mission for U.S. forces (in Africa) would be to ensure that Nigeria's oil fields are secure" (Ploch 2009). The areas with foreign military bases do gain from US-backed military funding and weapons, but what the US gains is continuous easy access to the resources they are dependent on. The object of this thesis is to empirically demonstrate that co-dependency and add to the already stated reason that US officials give for their military presence, of simply wanting to aid the governments and civilians in keeping the peace among civil unrest. In addition to China, Iran, Israel, Russia and the United Arab Emirates, have all begun the process of establishing military outposts and naval bases in Africa. This is a relatively recent phenomenon for these non-European, powerful and wealthy countries, whose economic growth has been continuously on the rise. While the effects of neo-colonialism remain rampant, and must be dismantled, it is time for researchers to turn towards a new form of quid-pro-quo imperialism, military base establishment, arms trade, and the rapid emergence of non-Western, non-White powers. The causality of their military base construction has not been inferred, nor has their presence's effect been studied, as some were established as recently as 2018. My theory is that their establishment is mainly motivated by resource availability, and competitiveness with other opposing nations. This paper will be focusing on whether value of natural resource exports is higher in countries with bases, to infer if this is a potential main motivation for their establish and for permanent troop deployment, and on the rapport between natural resource bilateral trade and foreign base presence.

2 Historical Context

Since the Portuguese began their slave trade in 1446 Guinea, thus began the European colonization of African territory. The French set up their first trading post in Senegal in 1638. The Dutch even tried to call themselves Afrikaners and claimed Africa as their homeland in 1795, when Britain first settled in South Africa. Various European countries including Italy, Germany and Belgium, continued to fight each other for mining territory, called by many historians, the "Scramble for Africa." The French and the British have had military camps and bases in Africa since the 1800s, but the wars fought against the UK for independence ended in a more permanent way, so only one British base remains, situated in Mali (See Figure 1). France was the nation that continued to maintain a relationship with their former colonies when former president Charles de Gaulle decided to grant "la Franc Afrique" their independence, in exchange for special trade relationships and low tariffs. After World War II, the French president at the time, Charles de Gaulle, founded la Franc Afrique– France's informal sphere of influence in Africa. Apart from covertly backing African political elites that supported the colonial status quo, he also created the French colonies in the African monetary zone. These zones, which continue to exist today as the CFA, encompass 12 former colonies: Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal, Togo, Cameroon, Central African Republic, Chad, the Republic of the Congo, Guinea-Bissau and Equatorial Guinea. Together, they account for 14 percent of Africa's total population, and cover about 965,000 square miles (King 2022). The monetary zone limits industrialization and economic development and discourages trade among member states. It renders countries in the Franc Afrique zone unable to profit from their labor and their available and bountiful natural resources and stimulates huge capital outflows.
It was only in 2002 when the United States chose to set up shop in Djibouti, calling the base

Camp Lemonnier. The United States and the United Nations, who go hand in hand, are stationed across the Sahel region, which has been prone to civil conflict, and the terrorization and recruitment of young civilians by extremist religious groups. In 2002, when the US first established its base in Djibouti, 15 percent of their crude oil imports were from Africa, particularly the Sub-Saharan region (Klare 2006). The Bush administration made strenuous efforts to increase the role of US energy firms in African production in 2002, coinciding with the establishment of their first African base (Klare and Volman 2006). Instability issues in Sub-Saharan Africa where this oil is sourced, was considered as an obstacle to their investment and consistent flow of oil imports, so they sought to boost the internal security capacity of their partnering African states, laying the groundwork for direct US military involvement in Africa. This is done through base establishment and sending money to the national militaries they trade with. They also sought to enhance US access to African oil to reduce US dependence on the Middle East, because at the time, their relationship was extremely rocky. Several African countries have also purchased US arms and equipment directly from US defense contractors through the Commercial Sales program, overseen by the US Department of State. Major African beneficiaries of this program in recent years have included Angola, Botswana, Kenya, Nigeria, Senegal, South Africa and Uganda (DOS 2006).

Another, now major power, planting their military roots on Africa's soil, is China. No longer considered developing, China is now the second largest economic power, the largest exporter and third largest global investor in the world. (Liu and Dunfored 2016). To meet its oil and mineral needs, Beijing has consistently delivered arms to some states in Africa especially the conflict-torn zones, working around other United Nations sanctions, including 55 million USD worth of arms to Sudan between 2003 and 2006, during their civil war, before the UN embargo was lifted in 2011 (Shinn 2008). In particular, since the announcement of the Belt and Road Initiative in 2013, they have overtaken other investors in the Sub-Saharan (Masuda 2023). Over 80 percent of China's cobalt and 40 percent of manganese imports originate in Africa, from the Democratic Republic of Congo and Gabon, respectively, their main suppliers of these precious minerals (Alves, et. Al 2009). In some ways, their presence and involvement has proven beneficial, and has kickstarted infrastructure projects that strengthen the long-term economies of the regions they extract from, but it has also established a presence of Chinese "soft power," and an irreversible linkage between the controversial superpower, and countries like the DRC, whose GDP is 0.3 percent of that of China's.

Another indicator that this is not merely a symptom of the expansion of globalization, but a second scramble for land area, is that Iran and Israel both put bases in Eritrea. Iran and Israel have long been at odds for their military competitiveness, starkly different political and ideological agendas, and continuous tension between political leaders. Now they are both stationed in the same territory, and Iran is trying to continue expanding to Sudan, but was met with refusal from the Sudanese government. Furthermore, on the topic of Arab countries fighting for territory, in June 2017, countries Saudi Arabia, the United Arab Emirates, Bahrain, and Egypt, declared that they would cut diplomatic relations with Qatar. This split in the Gulf region has spread to the Horn of Africa, forcing each regime to choose sides and further complicating local rivalry (Masuda 2023). China and the United States also find themselves in a fight for resources and soft power, as in 2018, National Security Advisor John Bolton described China's aid to Africa as "predatory" and in a recent US Africa Command Senate Armed Services Committee gathering, the leading chairman, Senator Jack Reed, called AFRICOM's approach, "strategic competition" with China and Iran. All of this to say, that the title "Second Scramble for Africa" is justified given these strategic competitions both Western, Eastern, and Middle-Eastern countries find themselves

in during these proxy wars.

Figure 1: Updated Map of Foreign Bases in Africa

3 Literature Review

This thesis explores the relationship between trade, an economic factor, and a geopolitical condition of foreign military base presence. Therefore, Dr. Kelechukwu Dennis Ezeh and Dr. Gerald Ekenedirichukwu Ezirim's study, 'Foreign Military Bases and Economic Security in Africa,' which attempts to determine whether the geo-strategic locations of foreign military bases in Djibouti are driven by the economic interests of the foreign countries and also to find whether or not the rents and premiums on these bases have any significant impact on the economic development of Djibouti, is greatly relevant. They found, not through empirical methods, but rather through documentary research and collecting observational information from various articles and sources, that the rents foreign countries pay for having a military base their, do economically help Djibouti, but not greatly in terms of development and growth. They are a major source of governmental income, but this stream of money has not necessarily led to further growth or consequential benefits. What is most helpful about this paper is its background on the purpose of foreign military bases in a country, saying that military settlements diminish the sovereignty of the host nation. They are in a way, there to show and provide defense support, but also to serve as a looming reminder that the host country is not fully independent, in the way that French military bases in Niger, or other African countries act as reminders of their nature as forces former colonizers. With respect to Niger, French interests around Niger's vast uranium resources implicates French economic interests in Africa. Simultaneously, these military bases, American and French, are also coordinating on "counterterrorism" that has been marked with the direct deployment of troops from foreign powers. Africa remains an important supplier of oil and metals and the continent accounts for 5 percent of France's exports, so they have significant motivation to maintain colonial ties and a strong economic gravitational pull (Ezeh, et. al 2023). Dr. Jules Dufour, an expert on US foreign military presence, calls their activity "the greatest fraud in

US history," especially the Global War on Terrorism, which is one of the initiatives the US promotes in Africa (Dufour 2007). Duofour's main points are that firstly, the US gains control of the global economy and market through their military presence, and secondly, gains not only access, but power over the host area's natural resources. Ezeh and Ezrim point out that while the United States justified their establishment of a base in Djibouti, as a method of combatting extremist Islamic practices, this is inconsistent with the fact that 95 percent of the population in Djibouti adheres to non-extremist tendencies and values in their practice of Islam (Ezeh, et. al 2023). China is the most recent country to establish a military base in Djibouti, and have created a railway connecting Ethiopia and Djibouti, with plans to build a natural gas pipeline between the two countries as well. Djibouti does earn annual revenues of 30 to 36 million USD from the US and French military bases, so there is a benefit for them when they play host to these global superpowers (Brass 2012).
Of the forty-five Sub-Saharan countries, seventeen of them were classified as resource-rich by Ben Katoka and Jörg Michael Dostal in their study, Natural Resources, International Commodity Prices and Economic Performance in Sub-Saharan Africa. Of the seventeen resource-rich countries, seven are oil rich: Angola, Cameroon, Chad, Congo, Gabon, Nigeria and Sudan. Ten are mineral rich: Botswana, Burkina Faso, Central African Republic, DR Congo, Guinea, Mali, Mauritania, Mozambique, Sierra Leone and Zambia. The remainder countries are classified as non-commodity dependent (Katoka and Dostal, 2022). Not coincidentally, 13 out of the 16 countries host foreign bases, most of them American.
A study done by Keith Head, Thierry Mayer, and John Ries in 2011 measures the depreciation of trade done by post-colonial states after gaining independence. They developed a formula to measure the change in export and import ratios per capita, to account for population density, and used linear regression to analyze and visualize their results. They found that on average, colony–metropole trade remains 31 percent higher than trade of countries that were never in colonial relationships, and a 27 percent trade boost persists after 60 years. The researchers also conducted a falsification exercise. They identified a control group of countries that were never colonized and have characteristics similar to the colonized group and assigned the never-colonized countries randomly to potential colonizers from Europe other than the UK and France, the two principal European metropoles of the last century, and used this data to prove that the results of having significant retention of trade after being colonizers of a country, was not simply spurious correlation. However, it was clear from their results that while trade is stronger overall with former colonizers, the level of trade consistently and significantly decreased over time with metropoles, and increased with other trading partners, when looking at a pattern between all of the formerly colonized countries they examined. On average, trade between a colony and its metropole declines by about 65 percent during the first 40 years of independence, and additionally, trade between countries who were also colonized by the same metropole falls by a similar amount, which is bad for intra-state development and trade, hence the need for the development of organizations like the ECOWAS. This relationship also shows the dependence that former colonies feel, primarily West-African, French former colonies who continue to have close trade relations with France, and host their military bases as well.
On the topic of exploring the relationship between trade with developing countries and military involvement, is a paper that explores the relationship between US military troop deployment, and international trade with 126 countries, examining more closely the effect of that country being a developing country. Written by Karl DeRouen Jr and Glen Biglaiser from the University of Alabama, they found that "trade follows the flag and troops follow trade" (DeRouen and Biglaiser 2009). France and the US have their military prowess in common, as both are ranked in the top ten strongest militaries in the world according to Global Firepower. Therefore, evidence finding that U.S. troop deployments leads to

increased bilateral trade between the U.S. and the developing country accepting the troops, can also be applied towards analysis of the French military's troop density in developing countries whether that factor is related to trade. The authors hypothesize that the decision about whether to permit U.S. troop deployment requires a consideration of the economic incentives used to gain popular local support. Economic incentives encourage more trade engagement and reduced likelihood for conflict among commercial partners that ultimately accept U.S. troops. It follows the proposed hypothesis of this thesis, that trade relations and the presence of military bases are strongly correlated. They found that troop deployment followed trade more heavily only for the United States and not so much for other countries. A crucial factor that was included in the above study, was level of trade dependency, citing Oneal and Russett, who argue that it is not only the level of trade dependence that influences dyadic conflict, but changes in the level of trade dependency (Oneal, et. al). They argue that the faster the growth in trade dependence, the less likely it is that a nation will resort to force. It could be important to consider this, as it provides a reason for foreign countries to make military allies with African countries that are home to the natural resources that they need. Establishing a military base, providing arms, and supporting the state government's defense forces, leads to a mutual dependence between the host, and the guest countries.

Another interesting study connecting military spending and economic growth is *Arms Trade, Military Spending, And Economic Growth* by Pavel Yaklovev. He found that higher military spending is less damaging to growth when a country is a net arms exporter (Yakovlev 2007). This finding demonstrates a more beneficial relationship, economically, for countries like the United States who provide arms to conflict-ridden countries, not so much for the importers. Not in the same region, but a retrospective look at the same mechanism I am trying to prove, is the "back-door compensation" that the United States received from Greenland for maintaining a military base in Thule (Takahashi 2019). After doing retrospective observational research, he found that after covertly building an air base in Thule, Greenland, in the 1950s, with the permission of the then ruling power, Denmark, they displaced the local inhabitants of the area, the Inughuit people, with the continuous expansion of the base. Simultaneously, they gained a permanent relationship with Greenland, that expanded bilateral tourism and trade. This historical study takes a micro approach, focusing in on a few cases, in Japan in addition to Greenville. This provides a mechanism for my theory, while my paper looks at multiple iterations of this mechanism at the macroeconomic level. It demonstrates the way that establishing a military base was a causal mechanism for trade volume increasing. This clears up the reason why this thesis looks at trade as the dependent variable, rather than the independent variable.

A substantial amount of research has been done on post-colonial African economies, and relationships between former colonies and colonizers, but mainly in the political science or history fields. The economic aspect of their relationship has been under-researched, especially the cross-section between foreign militaries and natural resources importation. This thesis aims to be a step towards an unbiased, statistical analysis of potentially imperialistic military base establishment practices, and should be the first in a series of explorations of this topic.

4 Data and Variable Description

Data on natural resource exportation comes from the BACI database from CEPII, the Center for Prospective Studies and International Information, and is all data from the most recent year that they have data for every country on in 2022. The 'value' variable is in thousands of dollars USD for 2022 (Conte and Mayer, 2022). A subset list of exports was

Table 1: Summary Statistics and Variable Descriptions for All Countries in Africa

Variable	Description	Mean	Std. Error
Value	Total value of natural resources exported (in thousands of 2022 USD)	13,550.23	197,033.35
Value Log	Natural log of that total value	2.04	4.10
Foreign Base Presence	(0=Not present, 1=Present)	0.33	0.47
Years Since Last Conflict	Years since last highly violent conflict	0.47	2.03
Inner Conflict Intensity	Internal battle deaths, indexed 1-10	1.94	3.09
Neighboring Conflict	Battle deaths in neighboring countries, indexed 1-10	4.40	4.50
Corruption Index	Corruption scale 1-10 across government spheres	6.07	1.19
Food Security	Mean of Food Security Indicators	4.56	1.75
GDP/Cap	GDP per capita	5.01	1.39
Govt. Effectiveness	Government effectiveness index (1-10)	5.53	1.22
Child Mortality Rate	Mortality rate under (deaths per 1,000 people)	5.84	1.07
Population	Natural log of population	5.32	1.46
Unemployment Rate	Unemployment rate	6.73	1.72
Water	Water Stress Index 1-10	4.66	1.75
Youth Bulge	No. of inhabitants 15-24 divided by No. of inhabitants over 25	6.12	1.75
FDI/GDP	Foreign direct investment as a percentage of GDP	2.53	2.61
Urban Pop.	Percentage of population living in an urban setting	53.08	17.68
No. of Bases	Number of foreign military bases in the country	0.91	1.65
Landlocked	Landlocked status (1=Landlocked)	0.20	0.40

created from CEPII's dataset, called 'NatResource' which constituted of goods that were not finished and came from the earth.[1] For example, 'Shirts' were not part of this category list. Instead of minerals like 'Manganese' and 'Precious metals' are examples of what was included. The product codes come from the UN's Comtrade database, which separates and describes different commodities traded between countries.

The data gathered on military base presence as a dummy variable was gathered from multiple sources cited in the bibliography. Some was from Institute for Security Studies, which the map in Figure 1 is based on, but as other bases were not established until after the ISS graphic was last updated in 2018, it was necessary to look up which bases had been built after, like ones created by the United Arab Emirates and Iran. One issue I ran into was the delineation by the ISS between Somalia and Somaliland. Despite its self-declared independence, Somaliland is not recognized as a separate country by the United Nations or any country in the world. Hence, I had to input Somalia and Somaliland as one nation for data cleaning and analysis purposes.

I created a dummy variable, Landlocked, to distinguish whether a country is landlocked (1) or by the sea (0), as a landlocked country may lower the chances of a military base being stationed there due to less accessibility to other countries and naval mobility. This is because the landlocked nature of some countries can dissuade foreign powers from constructing a base there. However, after the regression was run, landlocked countries were proven to be more popular than not.

Additionally, in line with Glen Biglaiser and Karl DeRouen Jr, who followed troop deployment and foreign direct investment, I controlled for GDP per capita. The data used to measure conflict came from the GCRI, or "Global Conflict Risk Index" put together by researchers at the European Union. Many of the other control variables are also sourced from the GCRI, which in turn from the UCDP, Uppsala Conflict Data Program and the World Bank. The GDP per capita given is in 2017 constant international dollars, which is equivalent to constant USD for 2017. The value of natural resource exportation was measured in 2022 current USD, so it was necessary to convert this unit to achieve a more accurate result. The reference year for that year until 2020 was 2017, so it was only necessary to adjust for 5 years of inflation (World Bank). According to the Bureau of Labor Statistics, in 2017, 1 USD has the same purchasing power as 1.19 USD in 2022, so the GDP

[1]Natural resource list: Uranium ores and concentrates, Petroleum gases and other gaseous hydrocarbons, Oils, Petroleum gases and other gaseous hydrocarbons, Diamonds, Coal, Iron ores and concentrates, Petroleum oils and oils from bituminous minerals, not crude: preparations n.e.c. containing by weight 70 percent or more of petroleum oils or oils from bituminous minerals: these being the basic constituents of the preparations: waste oils, Fertilizers, mineral or chemical, Manganese ores and concentrates, including ferruginous manganese ores and concentrates with a manganese content of 20 percent or more, calculated on the dry weight, Aluminium, Phosphoric acid and polyphosphoric acids, Ferro-alloys, Iron or non-alloy steel, Aluminium ores and concentrates, Copper, Natural calcium phosphates, natural aluminium calcium phosphates and phosphatic chalk: unground, Titanium ores and concentrates, Chromium ores and concentrates, Precious metal ores and concentrates, Nickel, Copper, Iron or steel, Uranium, Gases, rare, Earth-metals, rare, Petroleum coke, Sulphur, Zicronium, Oils and other products of the distillation of high temperature coal tar, Carbon, Stones, Quartzite, Quartz, Cobalt, Iron pyrites, Iron ores and concentrates, Iron oxides and hydroxides, Manganese dioxide, Aluminium oxide, Chromium trioxide, Manganese oxides, Titanium oxides, Iron oxides and hydroxides, Chromium oxides and trioxides, Lead, Lead Oxides, Copper oxides and hydroxides, Metal, Metals, Iron, Iron or non-alloy steel, Zinc, Magnesium, Titanium, Chromium, Zirconium, Berrylium, Turpenic oils, Cocoa, Cocoa beans, Graphite, Clays (excluding expanded clays of heading no. 6806), Kaolin and other kaolinic clays, Mineral substances, Mica, Dolomite, not calcined or sintered, Magnesium carbonate (magnesite), Gypsum, Limestone flux, Dolomite, calcined or sintered, Silver ores and concentrates, Leucite, Vermiculite, perlite and chlorites, Nickel ores and concentrates, Cobalt ores and concentrates, Thorium ores and concentrates, Zirconium ores and concentrates, Niobium, tantalum, vanadium ores and concentrates, Antimony ores and concentrates, Ores and concentrates n.e.c. in chapter 26, Lead ores and concentrates, Zinc ores and concentrates, Copper ores and concentrates, Tin ores and concentrates, Molybdenum ores and concentrates.

per capita was adjusted accordingly. The GDP per capita provided by the World Bank was also in dollars, while the value of exports was in thousands of dollars so that was also scaled properly. Foreign direct investment is also an indicator of the closeness of a relationship between two countries, so it was added as another variable. This variable and unemployment rate are also sourced from the World Bank.

Anther control variables is water stress, as it would effect the ability of workers to be more productive. This is a scale from 1-10 from the World Resources Institute Corruption index. It is an index compiled from the ratio of total annual water withdrawals to total available annual renewable supply, flood occurrence and drought severity (World Resources Institute). Youth bulge was also included, the number of inhabitants between age 15 and 24 divided by the number of inhabitants older than 25, as well as the child mortality rate- deaths under 5 per 1,000 people. The Food and Agriculture Organization created an index for food security based on dietary energy supply, domestic food price level index, nourishment, and domestic food price volatility, which effect the ability of people to work in mines and farms as well (Halkia 2020).

As the main reason cited by several foreign powers for setting up bases is to help keep peace and aid local military efforts against different militia and terrorist groups, it is important to look at the relationship between conflict level and whether military bases are stationed in a region. Once these factors are examined in tandem with each other, we can see that the exportation of natural resources increases as inner conflict increases in different regions of Africa. Hence, the most important variables to control for given their collinearity with base presence is 'Inner Conflict Intensity' and 'Years Since Last Conflict' to ensure that I was only measuring for the effect of natural resource exportation, rather than the traditional motivations for military involvement. This data all came from the UCDP. The 'Conflict Intensity' variable counts the total number of battle-related deaths in each country-year and is then put on a 0-10 conflict intensity scale after the analysis (Schvitz, et. Al, 2023).

Table 2: Summary Statistics for Countries with Bases

Variable	Mean	Std. Error
Mean Value	14,168.40	178,268.58
Mean Value Log	1.47	4.09
Foreign Base Presence (0 or 1)	1.00	0.00
Years Since Last Conflict	0.35	1.67
Inner Conflict Intensity Index	3.17	3.42
Neighboring Conflict Index	7.31	3.77
Corruption Index	6.60	1.23
Food Security Rate	6.06	1.22
GDP Per Capita	6.25	1.11
Govt. Effectiveness Index	6.10	0.97
Mortality Rate	6.40	0.78
Population	4.88	1.30
Unemployment Rate	5.72	1.25
Water Quality Index	4.11	1.01
Youth Bulge Index	7.55	1.00
Federal Direct Investment/GDP	2.89	3.15
Urban Population Percentage	41.63	19.38
Number of Bases	2.78	0.02
Landlocked (0 or 1)	0.36	0.48

Table 3: Summary Statistics for Countries with No Bases

Variable	Mean	Std. Error
Value	13,248.87	205,563.98
Value Log	2.32	4.08
Foreign Base Presence (0 or 1)	0.00	0.00
Years Since Last Conflict	0.52	2.19
Inner Conflict Intensity Index	1.34	2.73
Neighboring Conflict Index	2.99	4.13
Corruption Index	5.80	1.07
Food Security Rate	3.82	1.48
GDP Per Capita	4.41	1.08
Government Effectiveness Index	5.26	1.23
Mortality Rate	5.57	1.09
Population	5.54	1.48
Unemployment Rate	7.22	1.70
Water Quality Index	4.92	1.75
Youth Bulge Index	5.42	1.61
Federal Direct Investment/GDP	2.35	2.28
Urban Population Percentage	58.67	13.67
Number of Bases	0.00	0.00
Landlocked (0 or 1)	0.12	0.33

From looking at tables 2 and 3, we see that the mean value for natural resource exportation is higher in countries that have foreign bases, than those without. However, the natural log of that value is higher in countries without foreign bases. While this is the case, when the

main regression was run, the logged value was positively correlated with base presence, indicating that in terms of the mean log value for these countries, other factors were at play to output this number.The mean 'Neighboring Conflict' was much higher for countries with military bases, which could be because bases are established to protect their host countries from opposing neighboring countries. Landlocked countries were more likely to have bases, despite the benefits of naval access that come with non-landlocked countries. The main reason why a base would not be in a landlocked country, is if it is a naval base, for this reason, countries that cite anti-piracy as the reason for their military presence are on the coast of Africa. Countries with military bases have higher average food security, higher average GDP per capita, and higher government effectiveness. The corruption indexes across both tables are almost equal, at 6.60 and 5.80 on the GCRI scale. Countries with bases also have younger populations, and more rural populations, as well as higher child mortality rates. A potential mechanism behind more corrupt countries having more military bases, is a lack of unbiased and free media. In countries such as Djibouti, Eritrea, and Somalia, where domestic media is underdeveloped, it is harder for the media to monitor or scrutinize the actions of the authority (Masuda 2023).

5 Method

Equation

$$\begin{aligned}\log(\text{NatResourceValue}_i) =& \beta_0 + \beta_1 \text{HasBase}_i \\ &+ \beta_2 \text{FDI}_i + \beta_3 \text{GDP\_CAP}_i + \beta_4 \text{LandLocked}_i \\ &+ \beta_5 X_{5_i} + \beta_6 X_{6_i} + u_i\end{aligned}$$

I used the Ordinary Least Squares method to estimate the effect of foreign military base presence on natural resource exportation. X_5 represents a combination of multiple conflict-related variables explained in the data section of this paper, and X_6 represents a variety of country-level indexes related to population and governance, also explained above. 'NatResourceValue' was originally in thousands of dollars 2022 USD, but was logged to show a more linear relationship and prevent homoskedasticity. The data used is cross-sectional and is only for the year 2022. This model allows for an extensive list of variables to be included, useful for this study as a plethora of factors could be at play when looking at bilateral trade.

$$\begin{aligned}\log(\text{NatResourceValue}_i) =& \beta_0 + \beta_1 \text{NumBases}_i \\ &+ \beta_2 \text{FDI}_i + \beta_3 \text{GDP\_CAP}_i + \beta_4 \text{LandLocked}_i \\ &+ \beta_5 X_{5_i} + \beta_6 X_{6_i} + u_i\end{aligned}$$

In addition to using foreign base presence as a main variable, I also performed a regression using the number of bases as the main explanatory variable, to see if more bases in a country lead to more natural resource exports.

6 Results

From Figure 2, it is evident that the presence of a foreign military base does not have a visually clear effect on exports in general. In fact, there is a negative correlation This paper is focusing on natural resource exportation because this is the subject of the 'resource curse' and is the export of the less-developed countries where these bases are being constructed. In

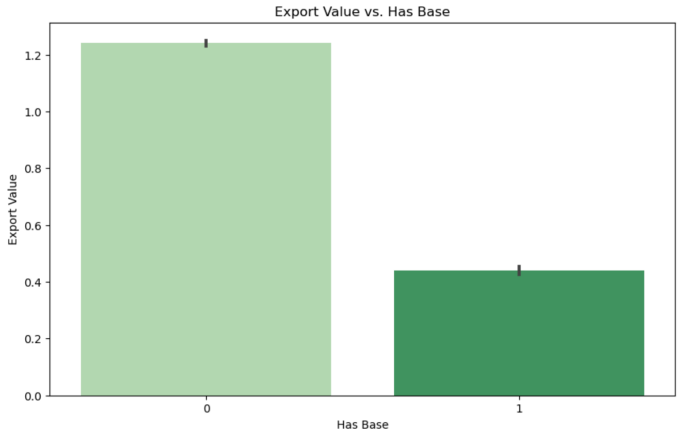

Figure 2: Bar Plot of Foreign Base Presence vs Total Value of Exports

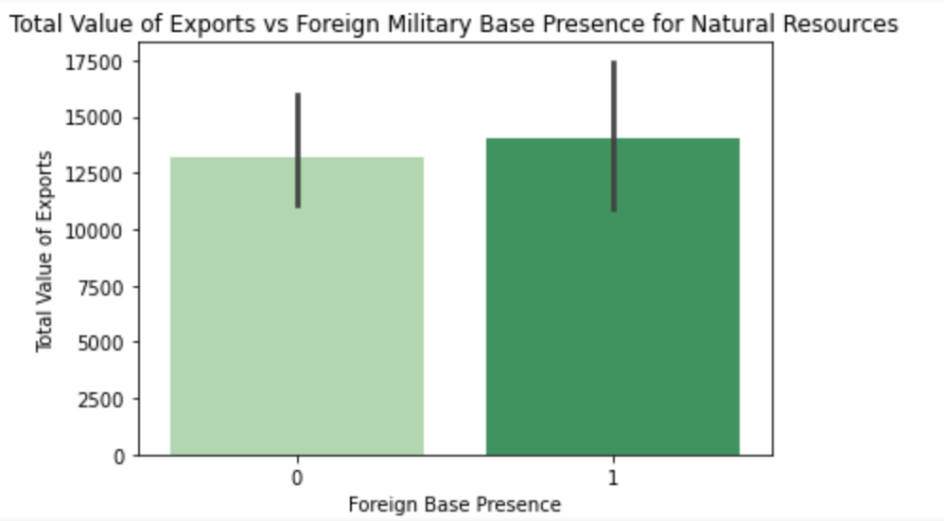

Figure 3: Bar Plot of Foreign Base Presence vs Total Value of Natural Resource Exports

order to further explore this relationship, a set of exports considered to be natural resources that these regions specialize in had to be curated.
In figure 3, we see that natural resource exports are higher in places that do have military bases, which is clear once we organize the list of resources, and eliminate finished goods and foods (See Footnote 1 for list of natural resources). While there is not a positive correlation between base presence and exports, there is one with base presence and natural resource exports, proving that this is an issue worth exploring further empirically.

Table 4: Regression Results - Total Value of Natural Resources Exported

Variable	Coefficient	Std. Error
const	0.54	(0.45)
Foreign Base Presence (0 or 1)	0.43***	(0.08)
Inner Conflict Intensity Index	-0.08***	(0.02)
Years Since Last Conflict	-0.05**	0.02
Corruption Index	0.44***	0.05
GDP/CAP	-0.33***	0.06
Neighboring Conflict Intensity Index	-0.18	(0.16)
Govt. Effectiveness Index	-0.01	(0.52)
Child Mortality Rate	0.55	(0.48)
Unemployment Rate	-0.01	(0.33)
Food Security	0.04	(0.25)
Water Quality Index	0.66	(0.67)
Foreign Direct Investment/GDP	-0.30	(0.25)
Youth Bulge Index	0.44	(0.39)
Urban Population Percentage	-0.09	(0.06)
Landlocked	0.21**	0.08

The variables that were found to be significant at the 0.01 level are indicated by '***' and the main variable I was testing for is Foreign Base Presence. Overall, it is found to be correlated with a 43 percent increase in the value of natural resources exported when it is equal to 1, AKA a foreign power is present. Foreign Base Presence was only a statistically significant factor when the Y outcome was logged, implying that the relationship is not linear.
It is important to note, that GDP/CAP has a negative correlation with total value exported, contrary to what one might expect. Potentially more is exported from these countries due to the cheapness of labor.
When we run this regression with all African host countries, the correlation coefficient between the log of natural resource exports and the number of present bases is negative. This is likely because while Djibouti is the most popular country for bases, due to its pre-established popularity and convenient gulf location next to the sea, it is not a major natural resource exporter.
The negative correlation found between inner conflict intensity and neighboring conflicting intensity, with regards to value exportation, indicates that deRouen and Biglaiser were correct about conflict stifling trade. The other curious statistically significant result was the 44 percent increase in resource exports when there is a positive unit change in the 1 to 10 Corruption Index scale. A paper by the International Monetary Fund argues that natural resource abundance creates opportunities for rent-seeking behavior and is an important factor in determining a country's level of corruption. They explored if "mother nature corrupts" and found an interdependence on multiple factors (Leite 1999). One theory for

higher corruption that they cited, was that rapid and unprecedented economic growth after the discovery of valuable minerals and oils, can lead to a majority of that revenue going to the government at the time, since it is usually government-owned land. This can exacerbate rent-seeking behavior (Leite 1999).

Table 5: No. of Bases - Total Value of Natural Resources Exported

Variable	Coefficient	Std. Error
const	0.54	(0.45)
Number of Bases	0.06***	(0.02)
Inner Conflict Intensity Index	-0.08***	(0.02)
Years Since Last Conflict	-0.05**	0.02
Corruption Index	0.44***	0.05
GDP/CAP	-0.33***	0.06
Neighboring Conflict Intensity Index	-0.18	(0.16)
Govt. Effectiveness Index	-0.01	(0.52)
Child Mortality Rate	0.55	(0.48)
Unemployment Rate	-0.01	(0.33)
Food Security	0.04	(0.25)
Water Quality Index	0.66	(0.67)
Foreign Direct Investment/GDP	-0.30	(0.25)
Youth Bulge Index	0.44	(0.39)
Urban Population Percentage	-0.09	(0.06)
Landlocked	0.21**	0.08

When the regression is run with 'Number of Bases' as the main explanatory variable, we see a statistically significant result, with a unit change in number of bases inducing a 6 percent increase in the total value of natural resource exports.

The lineplot in Figure 4 shows the correlation between unlogged total value of natural resources exported, with number of bases on the x-axis. Overall, when we ran our regression with Number of Bases as the primary independent variable, the coefficient was positive and the variable was found to be statistically significant.

Djibouti has the highest number of bases out of any of the Sub-Saharan countries. This causes it to be a bit of an outlier among other its neighbors. Figures 4 and 5 demonstrate the visual difference when we eliminate this outlier, just using raw data and not logging the dependent variable. For the specific case of Djibouti, and an attempt to apply their findings and theories to other popular base countries, Kanako Masuda at the JICA Ogata Research Institute in Japan, gathered literature and news reports, to the reasons behinds its popularity and outlier-like nature among other host countries (Masuda 2023). Djibouti makes rents off of the multitude of bases they have on their coast, and their government has decided to invite the flow of new countries constructing bases there, because it powers their economy. It is such a small country in terms of physical size, that it does not really have room to export many resources, so this serves as an important form of income.

It was also important to me to look at different types of natural resources and their correlation with foreign military presence. One that stood out to me was uranium, which France imports from Niger, a country with not 1, but 4 military bases. From the barplot above, I expected that there would be an even higher coefficient associated with military base presence in uranium-exporting countries, but when the regression was run, it was not necessarily the case.

Youthful, working-age population, continues to play a large role, likely for mining and labor

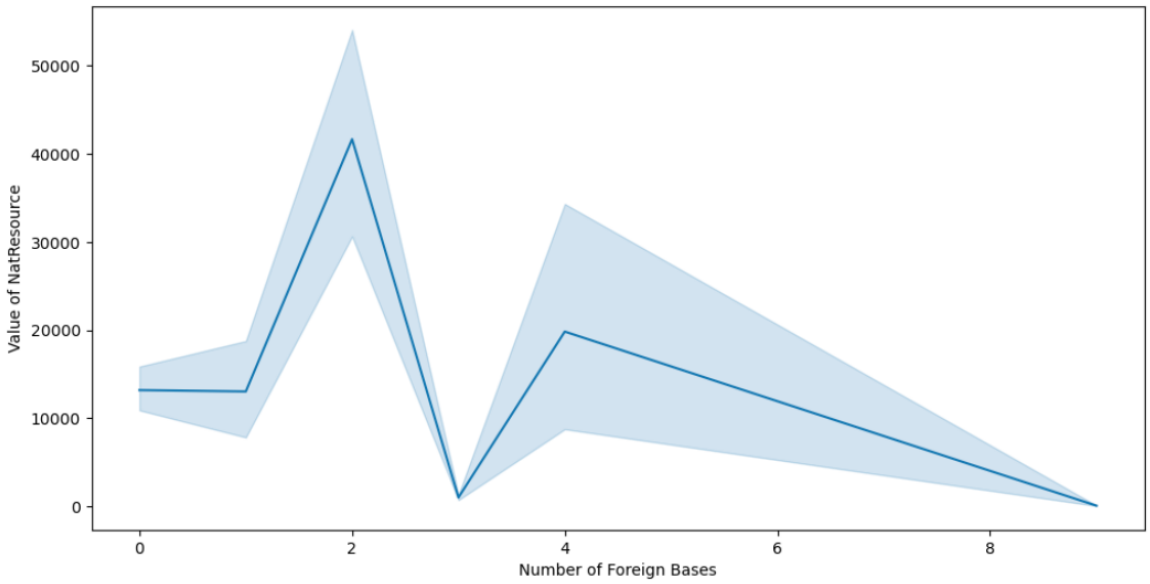

Figure 4: Correlation Between Number of Bases and Total Value of Natural Resources Exported

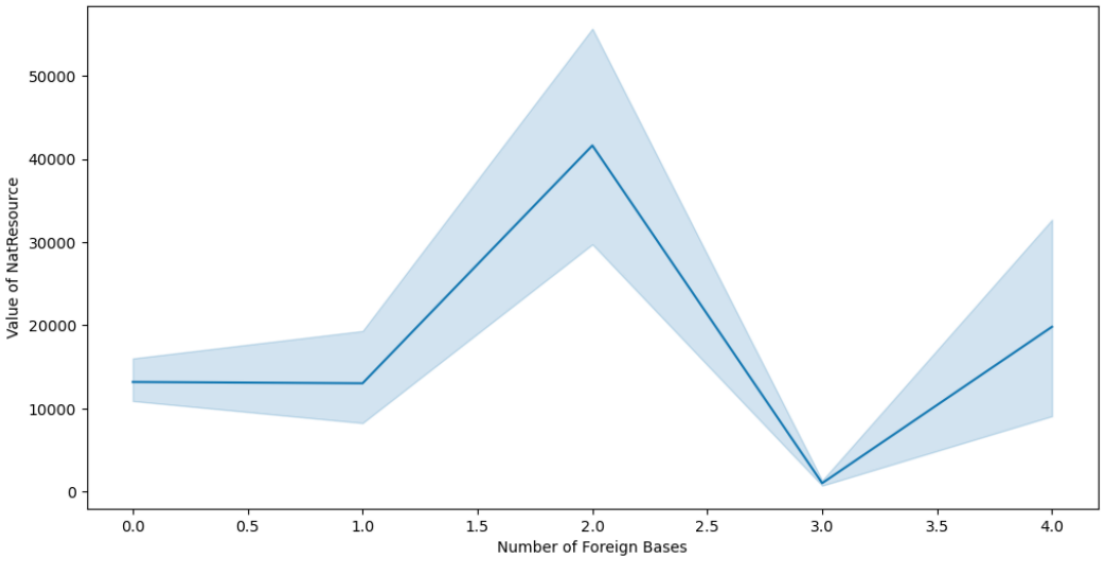

Figure 5: Correlation Between Number of Bases and Total Value of Natural Resources Exported - Excluding Djibouti

Table 6: Regression Run For Number of Bases Without Djibouti

Variable	Coefficient	Std. Error
Number of Bases	0.20***	(0.92)
Inner Conflict Intensity Index	-0.07***	(0.02)
Years Since Last Conflict	-0.04***	(0.02)
Landlocked (0 or 1)	-0.88	(0.61)
Corruption Index	0.39***	(0.33)
GDD Per Capita	-0.35	(0.06)
Neighboring Conflict Intensity Index	-0.08***	(0.01)
Govt. Effectiveness Index	0.26***	(0.47)
Mortality Rate	-0.50***	(0.07)
Unemployment Rate	-0.12	(0.03)
Food Security	0.17***	(0.04)
Water Quality Index	-0.19***	(0.02)
Foreign Direct Investment/GDP	0.11***	(0.01)
Youth Bulge Index	0.13*	(0.07)
Urban Population Percentage	0.03***	(0.00)
Landlocked	0.13	(0.08) height

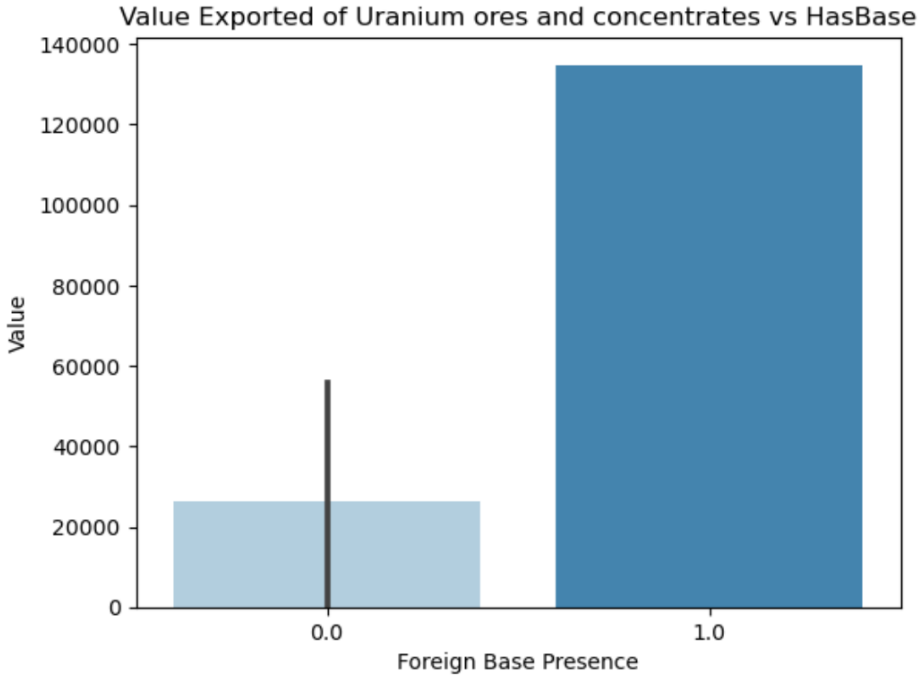

Figure 6: Bar Plot of Foreign Base Presence vs Total Value of Uranium Exports

Table 7: Regression Run with only Uranium

Variable	Coefficient	Std. Error
const	0.07	(0.06)
Foreign Base Presence (0 or 1)	-0.38	(0.45)
Inner Conflict Intensity Index	-0.17	(0.77)
Years Since Last Conflict	0.38	(0.92)
Landlocked (0 or 1)	-0.27	(0.35)
Corruption Index	0.07	(0.28)
GDD Per Capita	-0.11	(0.47)
Neighboring Conflict Intensity Index	-0.11	(0.22)
Govt. Effectiveness Index	0.18	(0.51)
Mortality Rate	0.36	(0.46)
Unemployment Rate	-0.08	(0.30)
Food Security	0.73	(0.57)
Water Quality Index	1.17	(0.83)
Number of Bases	-0.18	(0.16)
Foreign Direct Investment/GDP	-0.35	(0.27)
Youth Bulge Index	0.34	(0.39)
Urban Population Percentage	-0.14**	(0.06)

force reasons. Due to the lesser nature of the data available, none of the variables could be considered statistically significant when running this regression except for urban population percentage, likely because uranium production and mining is a rural practice.
In order to examine a more bilateral relationship, and hone in on a potential mechanism for a positive association with foreign base presence, I created a dataset with only American bases, and the United States as the importer of goods.

$$\log(\text{NatResourceValue}_i) = \beta_0 + \beta_1 \text{USBase}_i + \beta_2 \text{FDI}_i + \beta_3 \text{GDP\_CAP}_i + \beta_4 \text{LandLocked}_i + \beta_5 X_{5_i} + \beta_6 X_{6_i} + U_i$$

The United States has the highest number of military bases of any foreign power present in Africa. This makes them the best candidate for looking at whether natural resource trade is higher in places with bases. Their bases are newer, and they do not have the long and complicated colonial backstory that France has. Because France's bases are more based on past colonialism, their high volume of trade with former colonies can be mostly related to their history and long-standing relationship to many African countries as a metropole, as opposed to the mechanism of establishment of military bases.
These regression results come from replacing the variable 'HasBase' with 'USBase' and only keeping rows of data that contain the United States as the importer country of the natural resources. This was also a dummy variable with (1) for the presence of a US base and (0) for a lack thereof. What is really striking, is that the presence of a base seems to be related to a 138 percent increase in the logged value exported. When the Y value was not logged, and another regression was run with this characteristic in place, the coefficient was very large as well. However, the variables that were statistically significant at an individual level, were 'Youth Bulge,' 'Food Security' and 'Neighboring Conflict Intensity.'
The constant and y-intercept increased significantly, likely because the United States is wealthier and larger than some of the other countries with bases, like Belgium or Italy. Food security had a negative and statistically significant effect on the value exported, indicating

Table 8: Regression Run with only US as an Importer and Guest

Variable	Coefficient	Std. Error
const	2.96	(3.83)
United Sates Base Presence (0 or 1)	1.38	(0.92)
Inner Conflict Intensity Index	0.01	(0.13)
Years Since Last Conflict	0.08	(0.17)
Landlocked (0 or 1)	-0.88	(0.61)
Corruption Index	0.36	(0.33)
GDD Per Capita	-0.20	(0.38)
Neighboring Conflict Intensity Index	-0.08***	(0.03)
Govt. Effectiveness Index	0.72	(0.47)
Mortality Rate	-1.01*	(0.52)
Unemployment Rate	-0.25	(0.22)
Food Security	-0.92***	(0.25)
Water Quality Index	0.15	(0.83)
Foreign Direct Investment/GDP	0.07	(0.10)
Youth Bulge Index	1.06*	(0.054)
Urban Population Percentage	0.02	(0.06)

that they import more natural resources from poorer and less food secure countries, in addition to younger countries. The reason I chose this particular narrowed-down regression is to examine the purely bilateral dynamic of the question I am trying to answer.

Table 9: Regression Run with only Sub-Saharan Countries

Variable	Coefficient	Std. Error
const	0.81	(0.72)
Foreign Base Presence (0 or 1)	0.27**	(0.11)
Inner Conflict Intensity Index	-0.12***	(0.02)
Years Since Last Conflict	0.02	(0.03)
Landlocked (0 or 1)	0.11	(0.09)
Corruption Index	0.44***	(0.07)
GDD Per Capita	-0.01	(0.08)
Neighboring Conflict Intensity Index	-0.04***	(0.01)
Govt. Effectiveness Index	0.01	(0.10)
Mortality Rate	-0.39***	(0.10)
Unemployment Rate	-0.04	(0.03)
Food Security	0.16***	(0.04)
Water Quality Index	-0.28***	(0.04))
Foreign Direct Investment/GDP	0.07***	(0.01))
Youth Bulge Index	-0.31***	(0.07)
Urban Population Percentage	0.03***	(0.00)

As is evident from the map provided in Figure 1, all foreign military bases, with the exception of Italy and the United Arab Emirates' bases in Libya, are found in the Sub-Saharan region. In order to narrow the countries I was looking at, I ran an additional regression with only Sub-Saharan "host" countries. This yielded very similar results to the original regression. The base presence coefficient remained statistically significant, while it

did lower slightly. The variable of 'Foreign Direct Investment' gained statistical significance, and became positive, contrasting from our original regression including all countries.

7 Limitations

The difference between the United States and the UN has been difficult to delineate and pinpoint. For some US bases mentioned in this study, there are US troops stationed at the bases, although formally they are part of UN peacekeeping missions. This is the case with a temporary US military base in South Sudan and Botswana.

Another shortcoming of this study is the inability to look at "lily-pad deployment," where military bases are set up temporarily over a wider stretch of Africa. The US uses this method to hide their involvement from the public, and it is more difficult to get accurate or official data on their numerical presence for this reason. There could be more natural resources that the US is protecting their interests in by using the military, but it is not possible to accurately capture what is not being recorded indiscreetly (Schewe). While the US has 15 "enduring locations" where they plan to have military personnel long-term, they also have 12 "contingency locations" where they deploy troops based on perceived need, but do not plan to remain there long-term (Turse). A large part of the information about troop deployment, numbers of boots on the ground, and dates of establishment, are kept confidential by the governments of foreign countries.

Some variables that could have also been valuable to include are general aid, from NGOs, charities, and governments, as well as data on arms trade, like the International Military Education and Training Program that the United States has with Algeria, Angola, Chad, Cote d'Ivoire, the Democratic Republic of Congo, the Republic of Congo, Eritrea, Ethiopia, Gabon, Nigeria, and Sao Tome (Klare and Volman 2006).

The Global Conflict Risk Index, is also not completely up to date, as the newest updated version for 2022 is not available to the public. The one I was able to access is for 2018 and projects the conflict intensity for the next 4 years since then, so conflict results for 2022 are projected and not necessarily accurate for that year.

A dimension of this study I wish I had been able to explore is value exported over time, and the log of that change. Then I would relate that to the continued establishment of military bases over time. This would better demonstrate if there is a relationship between the establishment of a base and the followed increase in natural resource exports. However, date and time of military base establishment is not always public information.

8 Conclusion

Ultimately, the correlation between foreign military base presence is positive and statistically significant, but it could be valuable to try another study studying the relationship between distance of the bases to the sites where the natural resources are being extracted for the guest countries, as national borders could be insufficient to measure the accessibility to mining or oil extraction sites. The relationship found through the Ordinary Least Squares Regression method was a 43 percent increase in the total value of natural resources exported from a country, correlated with the presence of a foreign military base. The United States continues to cite counter-terrorism as their main motivation for troop deployment across Africa, particularly in the Sahelian region. There is truth to this, as many Western countries who fear extremist and violent religious groups are trying to prevent them from spreading their ideology or recruiting members in Africa. However, the goal to maintain a physical stronghold on the region to maintain soft power and a closer

gravitational pull with respect to natural resource trade cannot be ignored. There is some mutual benefit to this relationship, an example being how the US has sent more than 500 million USD in equipment and training to Niger since 2012, and the US is able to import their uranium from them (Macfie 2023).

As Eastern and Middle-Eastern countries continue to grow economically and increase their global breadth, researchers should continue to explore their economic motivations, and developing Sub-Saharan countries should plan for equitable and mutual growth, rather than a second "Scramble for Africa" happening again. This regression could be run in ten years from now, and the relationship between the presence of bases or number of bases and resource exports could be much higher, as more countries vie for new places to import their minerals. Particularly, conflicts between Iran and Israel, should be fought amongst each other, without harming populations who are neighbors to their respective bases.

It is also essential for host countries to be protected from any harm that has already come or will in the future, from these external military presences. Already, civilians have been victims of experimental or training-related bomb explosions, and in many cases throughout history, soldiers in a foreign country have tended to exploit local populations, especially women. Countries who are at odds may also choose these areas for not only military exercises and training, but potentially for fighting conflicts amongst each other, and not just internal and intra-state conflicts that Sub-Saharan African countries currently face.

Simultaneously, foreign military bases have also proven to be positive on a multitude of fronts for some Sub-Saharan African countries. Aside from the rents paid to the government for their continued presence, soldiers living in the area inject money into the economy when they visit local businesses. It will be key for outside observers and researchers to monitor the effects of continued, unarmed, conflict between opposing countries in the Middle East, for land and resources in Africa, as well as ever-growing tensions between the United States and China, who feel in competition with one another over who will gain an upper hand in the Sub-Saharan.

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