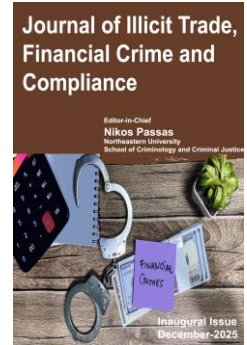


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## Have Financial Sanctions Lost Their Bite Due to Emerging Alternative Financial Practices in Global Trade?

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### ABSTRACT

The U.S. dollar is often considered the decisive chokepoint in international financial and related sanctions. Why? Because sanction or embargo violations require enabling financial payments – assumed to be in most cases U.S. dollars – and therefore must pass through U.S.-controlled dollar clearing systems. Inevitably, these payments will be visible to U.S. enforcement authorities and therefore subject to intervention and seizures. Consequently, any transfers of restricted commodities, weapons of mass destruction (WMD) technologies, conventional weapons, other military goods, or other sanctioned activity have long been believed to be discoverable by their U.S. dollar payments.

The reality, however, tells a different story. For decades, Chinese and Russian arms have flowed steadily to embargoed destinations such as Sudan, Central African Republic, Mali, Yemen, and others. China, Russia, and their proxies have also served as secretive transshipment points for technologies, commodities, and manufactured goods to be exported to Sudan, North Korea, Iran, and other countries subject to international sanctions and embargoes. The presence of billions of U.S. dollars' worth of restricted military goods in embargoed countries and regions demonstrate that the U.S. dollar chokeholds are too often illusory.

Motivated by mostly legitimate but political objectives, a dramatic increase of bilateral currency swap agreements is the most powerful de-dollarization mechanism in international trade and lending. But they stake out the environment for the effective concealment of illicit payments of embargoed goods and services, and amplify sanctions-defying practices like Russia's barter agreements, China's lender-controlled commodity revenue accounts, and international criminal network' moneylaundering with cryptocurrency or theft of virtual assets. These trends are substantially enabled by China's rise as the world's largest creditor [1], especially to distressed economies, [2] and Russia's reduction of its reliance on the U.S. dollar by developing alternate payment platforms with China [3]. These factors significantly undermine the effectiveness of U.S. dollar clearing systems and consequently defeat financial sanctions' coercive purpose.

Drawing on the author's extensive experience as a financial sanction investigator and ongoing observations of China's and Russia's financial practices in sanctioned jurisdictions – supported by recent research from academic and government institutions – this article issues an urgent call for policymakers to strengthen the effectiveness of their coercive conflict-resolution policies.

**Because U.S. dollar transactions are assumed to inevitably move through at least one U.S. regulated financial institution, in addition to requiring clearing through U.S.-regulated settlements systems, they are subject to the jurisdiction of the United States. The most prominent examples of U.S. dollar clearing systems are the Fedwire Funds Service (Fed Wire) operated by the Federal Reserve Bank, the privately-held Clearing House Interbank Payments system (CHIPS), and the Society for Worldwide Interbank financial Telecommunication (SWIFT) which is an international system that is dependent on the U.S. financial system.**

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## 1. Introduction

Sanctions – whether imposed by the United Nations Security Council (UNSC), the European Union (EU), the United States (US) or other countries – are tools designed to coerce a change in an adversary’s behavior without the use of military force. UN sanctions aim to block threats to international peace and security, such as terrorist organizations, WMD proliferators, and perpetrators of illegal wars or atrocities, while other sanctions issuers assert national security interests.

Most sanctioned targets require weapons, ammunition, and other military goods to perpetrate their illegal norm-breaking objectives, which is why arms embargoes are central to sanctions, along with restrictions on the logistics required to transport these goods and the economic resources to procure them. Controlling the flow of money and other economic assets is therefore a prerequisite for effective sanctions enforcement.

To date, successful enforcement efforts have depended largely on the U.S. dollar clearing system, the mechanism that facilitates, validates, and settles transfers of U.S. dollars between financial institutions. Because the U.S. dollar is so widely used, monitoring its clearing systems provides significant insights into the identity and purpose of transactions [4].

However, the obvious importance of the U.S. dollar has neither prevented changes in bilateral trade practices nor prevented the use of alternative currencies, particularly among nations that consider U.S. government control or supervision politically unacceptable. Examples illustrating the limitations of U.S. dollar-based enforcement include:

- More than 20 years of UN arms embargoes and almost 30 years of broader U.S. sanctions against Sudan have still left the country awash in weapons, ammunition, mercenaries, and extreme violence. Yet no U.S. dollar-cleared payment for an arms transfer has ever been uncovered [5].
- Similarly, sanctions targeting North Korea’s nuclear arms and ballistic missile programs have yielded no transactional evidence of U.S. dollar payments for the procurement or export/import of WMD technologies, weapons, or restricted commodities.

The lack of evidence for arms procurement paid in U.S. dollars leaves sanctions investigators in the dark on how sanctioned entities or countries procure weapons, especially regarding their banking and payment methods. Alternative investigative strategies, for example tracking the supply chains of specific military goods, mitigate partly the over-reliance on U.S. dollar clearance systems. The limitations of these alternatives are self-evident given the abundance of arms supplied to embargoed war zones.

## 2. The Sudan Sanctions

At the end of April 2003, when a coordinated Darfurian insurgency targeted Sudan Armed Forces (SAF) garrisons, airports, and outposts throughout the three Darfur states, the Sudanese government urgently needed to procure additional military supplies. It was not only contending with the ongoing civil war against the Sudan People’s Liberation Army, which controlled the ten southern states (today’s South Sudan), but now also had to arm itself for a new conflict with horrific humanitarian consequences across Darfur.

To meet these new military requirements, the government needed massive financing at a time when its treasury was in a precarious situation. Theoretically, for sanctions issuers it was an ideal moment to leverage financial sanctions through the U.S. dollar clearing system.

The United States and the international community seized the moment by deploying their full sanctions enforcement apparatus. Eventually, the **Office of Foreign Assets Control (OFAC)** and the **Department of Justice (DOJ)** targeted non-U.S. banks for:

1. **“Wire-Stripping” or “Cover Payments”** – Multi-billion-dollar penalties and criminal prosecutions were imposed on the target banks because they had been caught routing U.S. dollar-denominated

transactions benefiting Sudanese entities, including the Government of Sudan (GoS) or entities already designated as **Specially Designated Nationals (SDNs)**. “Wire-stripping” involved systematically removing all references to “Sudan,” specific Sudanese banks, or other information that might trigger U.S. banks’ risk management systems and the dollar clearing infrastructure.

2. **Blocking and rejecting transfers or banking services** for funds benefiting anyone associated with a Specially Designated National (SDN) or the GoS.
3. **Assisting prohibited transactions** related to the comprehensive embargo against Sudan, even when the parties involved were not already designated or directly associated with the GoS.

Despite these concerted efforts to block access to U.S. dollar services and penalize financial institutions involved in violations, the sanctions did neither reduce Sudan’s access to arms nor the engagement of mercenaries. Rather than achieving a decline in military expenditures, especially in the years immediately following the imposition of U.S., EU, and United Nations financial sanctions and related arms embargoes against Sudan, the opposite occurred (see Table 1).

**Table 1: Military expenditures for Sudan starting with the onset of international sanctions (in millions of constant 2023 U.S. dollars) [6].**

Year	Military Expenditures	Year	Military Expenditures	Year	Military Expenditures
1990	\$3,262.64	2002	\$3,310.33	2014	N/A
1991	\$2,615.70	2003	\$2,531.22	2015	\$4,549.41
1992	\$2,264.69	2004 iv	\$7,109.27	2016	\$4,767.57
1993 i	\$2,582.15	2005 v	\$5,810.78	2017	\$6,188.83
1994 ii	\$1,910.46	2006 vi	\$6,834.58	2018	\$3,152.96
1995	\$1,396.22	2007	\$8,144.36	2019	\$2,851.78
1996	\$989.56	2008	\$9,825.26	2020	\$1,655.87
1997 iii	\$778.57	2009	\$9,580.98	2021	\$976.99
1998	\$2,117.65	2010	N/A	2022	N/A
1999	\$3,756.72	2011	N/A	2023	N/A
2000	\$4,880.69	2012	N/A	2024	N/A
2001	\$3,183.56	2013	N/A		

i 1993: The U.S State Department designated Sudan as a state sponsor of terrorism, triggering restrictions on economic aid, arms sales, and international loans  
 ii 1994: The European Union imposed with Council Decision 94/165/CFSP an arms embargo that included financial restrictions.  
 iii November 3, 1997, US Executive Order 13067 imposed a comprehensive sanctions regime, blocking Sudanese government property and prohibited transactions between U.S. entities and Sudan  
 iv 2004: The UNSC imposed its first partial arms embargo against armed non-government organizations of Sudan  
 v 2004: The UNSC expanded its arms embargo to include all belligerents, including the government and associated financial ramifications.  
 vi 2006 US Executive Order 13412 extended the US financial sanctions against Sudanese property and prohibition of transactions with the Sudanese government.

The cost of military procurements, while missing for some years, required from Sudan substantial expenditures over the past 35 years. The significant insight for sanctions is however that no U.S. dollar-based transactional documentation for military goods procurements has ever come to light. The lack of such evidence is surprising given 18 years of dedicated UN sanctions compliance monitoring, investigations by non-government organizations, and undoubtedly the efforts of many Western intelligence services. Sudan either succeeded in cheating the U.S. dollar clearing system or was able to acquire weapons outside the U.S. dollar hegemony.

Part of the problem may be that human rights groups and Darfur genocide activists have consistently claimed that the increased arms expenditures were enabled by Sudan’s oil extraction and exports, and that the buyers of

this oil are therefore complicit in the atrocities committed during Sudan's civil wars. In its 2003 study "*Sudan, Oil and Human Rights*" [7], **Human Rights Watch (HRW)** along with numerous other non-governmental organizations and activist reports, argued that Sudan's oil revenues directly funded its arms procurement.

HRW and other organizations seem to have concluded that Sudan's oil revenues provided the U.S. dollars used to pay for arms procurements. Subsequent reporting by HRW and multiple other sources, including Stockholm International Peace Research Institute (SIPRI), identified China, Russia, and Belarus as the dominant arms suppliers to the GoS — presumably the recipients of these U.S. dollars. Ever since, the oil-for-U.S. dollar narrative has remained largely uncontested, widely accepted as having enabled the Sudanese government's atrocities in the civil war with the South and, potentially, the alleged genocide against Darfurians. The possibility that the oil sales were never paid in U.S. currency seemed to have never even been considered by these organizations. International sanctions leveraging the U.S. dollar clearing system against illegal arms transactions appeared thus to be a logical remedy to curb Sudan's atrocities.

The absence of transactional records of U.S. dollar payments for arms and military goods is also reflected in the three largest criminal cases against international banks for sanctions violations. None produced any specific transactional evidence for U.S. dollar payments to Sudan's weapons suppliers:

- BNP Paribas (2014): A record \$8.9 billion in forfeitures and penalties was levied for systematically "wire-stripping" and other violations to process and conceal U.S. dollar transactions on behalf of Sudan, Iran, and Cuba. Approximately \$6.4 billion of these transactions were processed for Sudanese sanctioned entities -- but not for arms and ammunition.
- Standard Chartered Bank: Fined \$227 million for conspiring to violate International Emergency Economic Powers Act (IEEPA) by manipulating transactions to strip references to Sudan, Iran, and other sanctioned countries.
- Deutsche Bank: Paid \$258 million for using similar "cover payment" schemes to move large sums through the U.S. financial system for Sudan-related parties.

### 3. The Invisible Funding of North Korea's WMD Programs

Unlike sanctions on Sudan, North Korea's non-proliferation sanctions—imposed in 2006 by the UNSC, EU, U.S., and others—built upon decades of U.S. trade restrictions dating back to the start of the Korean War in 1950. Over 75 years, sanctions evolved from a comprehensive U.S. trade ban under the Trading with the Enemy Act (TWEA) to targeted measures under the IEEPA and, eventually, an UN-led asset freeze, along with many other sanctions provisions.

The 2006 UNSC sanctions rapidly expanded to target North Korea's military and security institutions, the Workers' Party of Korea, senior officials overseeing WMD and ballistic missile programs, and the international network of business fronts and revenue-raising schemers. UNSC Resolution 2094 (2013) reaffirmed that member states must prevent financial services or resources from contributing to North Korea illicit WMD/missile activities. It also explicitly prohibited:

- North Korean banks from servicing foreign transactions.
- Payments to/from designated entities or individuals, or those acting on their behalf.
- Bulk cash transfers to and from North Korea.
- Financial services supporting WMD-related activities, sanctions evasion, or trade in prohibited goods.
- The opening of bank accounts, branches, or correspondent relationships by North Korean banks.
- Export credits, guarantees, or insurance for North Korea WMD projects.

Successive UNSC resolutions added measures targeting trade in commodities, agricultural and fishery products, manufactured goods, luxury items for North Korea elites, and weapons or dual-use goods. Financial services or funding facilitating these trades are also prohibited.

Despite these stringent restrictions, North Korea's WMD proliferation has not halted, with nuclear and ballistic missile capabilities also continuing to expand. Analysts believe annual proliferation spending ranges between \$600 million [8] and over \$1 billion [9].

## 4. Case Studies of Illicit Funding

While the financial requirements are evident, the mechanisms North Korea uses to raise and transfer funding remain opaque except for a few cases studies elaborated by U.S. law enforcement and international sanctions investigators:

2005: ~\$25–30 million in North Korea-linked funds were frozen in accounts at Banco Delta Asia (BDA) in Macau, servicing over 20 North Korean agencies and front companies engaged in counterfeiting, narcotics, and money laundering [10].

2009–2019: ~\$700 million in illicit revenue generated via a tobacco smuggling scheme by Chinese-Australian Jin Guanghua benefited North Korean military and government front companies.

2019: Seizure of the bulk carrier M/V Wise Honest and its coal cargo that violated commodity sanctions.

2018–2023: Tracing of stolen virtual assets through mixers, wallets, and exchanges, allegedly diverted by hacker groups such as APT38 and Lazarus for North Korea's spy agency, the Reconnaissance General Bureau (RGB).

2023: Charges against Sim Hyon Sop, North Korea Foreign Trade Bank representative, for conspiring with Over-the-Counter (OTC) [11] cryptocurrency traders and Information Technology workers to generate revenue via stolen funds and illegal employment in U.S. blockchain companies. \$7.74 million in U.S. dollars were seized [12].

2024: Chainalysis reported \$1.34 billion in cryptocurrency thefts by North Korean hackers across 47 incidents, laundered through mixers and exchanges in weakly regulated jurisdictions.

2025: The U.S. Department of Justice (DOJ) indicted 10 participants in a foreign currency revenue scheme involving North Korea Information technology contractors using stolen American identities, generating at least \$5 million in revenue [13].

In addition to these cases, some of which resulted in seizures of assets, the following criminal activities are commonly accepted as part North Korean proliferators' fundraising schemes [14]:

- Customs fraud and smuggling to avoid duties or enable illegal transfers of goods.
- Corrupt practices to coerce services or silence investigators.
- Tax and customs duty evasion and fraud.
- Bank fraud and forgery.
- Money laundering.

## 5. Limitations of U.S. Dollar Enforcement

As with Sudan, evidence of successful interception of U.S. dollar payments for the procurement or sales of North Korea's arms, WMD technology, commodities or industrial products, including any proceeds of criminal acts is minimal. The notable exceptions are some proceeds derived from cryptocurrency theft and ransom. For example, the UN Panel of Experts reported an aggregate value of \$400,870,018 for North Korean coal exports in 2017, denominated in U.S. dollars [15]. However, sales values published in the American currency do not imply actual U.S.

dollar transactions. Similarly, cryptocurrency thefts reported in USD do not necessarily reflect conversion into U.S. dollars.

Even with more densely monitored sanctions, North Korea demonstrates that U.S. dollar clearing-based enforcement is far from an effective trap. The Banco Delta Asia SARL (société à responsabilité limitée) transactions are likely the most significant funds that needed to pass through the U.S. dollar clearing systems, enabling authorities to intercept them. The amount of frozen assets—particularly funds intended for arms, WMD technology, and dual-use goods—is disproportionately small compared to the billions flowing annually into North Korea's illicit programs.

## 6. The Emergence of Alternative Payment and Trading Systems

Complex domestic, political, economic, and strategic interests have over the past decades gradually yielded powerful de-dollarization tools. Major trading nations like China or Russia are now extensively applying currency swap agreements in their bilateral interactions and in China's case with many other nations. Those affected by international sanctions, such as Russia and Sudan, are keen on maximizing additional de-dollarization strategies.

With the onset of international sanctions against many Russian industries, China and Russia accelerated and extended the implementation of their bilateral currency swap agreements. Consequently, the use of U.S. dollar payments has declined from 75.1 percent in 2018 to 38.7 percent of their trade in 2019 [16], and by 2024, the Russian news agency TASS reported that 92 percent of the Russia-China trade is settled in their national currencies [17]. The impact on trade with embargoed goods is hinted at in a note contained in the 2020 World Bank report that “the ruble component in trade with India has grown most strongly in 2018-2019, rising from 38 percent to 76.3 percent” and “This is in large part associated with a bilateral agreement to settle trade, notably in arms, in national currencies.”

For laundering criminal proceeds, cryptocurrencies and virtual assets serve well too, but the largest share of hidden payments for embargoed goods are accomplished with complex commodity-for-arms trades that both China and Russia support with elaborate barter and lender-controlled resource revenue financing packages.

During the early 2000s, with the growing export capacity of Chinese consumer and industrial manufacturing, the **People's Bank of China (PBoC)** pursued bilateral currency swap agreements with its trading partners. The evolution of these agreements is displayed in Table 2.

A recently published press release by the PBoC shows a substantial expansion in the number of partner countries that have signed bilateral currency swap agreements with China, while existing agreements were often renewed, and the covered trade balances significantly increased. While the original agreements covered 2.326 trillion RMB, the current coverage is 4.5 trillion RMB with 32 countries [18], leaving out substantial but undisclosed agreements with countries under sanctions, including Iran, Russia, and Sudan.

Russia has approached bilateral trade agreements in incremental steps to exclude payments in U.S. dollars, typically beginning with a general bilateral trade agreement followed by the launch of a joint investment platform. Most Western partners, however, suspended these efforts with the onset of international sanctions against Russia.

The U.S. dollar displacement effect of bilateral currency swap agreements is further strengthened by instruments adopted by members and investors of the **New Development Bank (formerly the BRICS Development Bank)**. Established in 2015 with headquarters in Shanghai, China, the NDB extends loans in local currencies to reduce exchange rate risk and promote non-dollar financing. With the expansion of BRICS membership, Egypt, the UAE, and Bangladesh have also become contributors to the NDB fund.

Looking ahead, China's endorsement in October 2024 of the decentralized digital payment platform **BRICS Pay** may have the most consequential impact on financial sanctions evasion. On its website, BRICS Pay states: “*We work for a balanced financial order where the U.S. dollar, euro, and national currencies are used fairly and equitably, reducing systemic dependency and risk*” [19]. However, the decades-long secretive trading and lending practices of China and Russia suggest that reducing systemic dependencies and risks may not actually be a priority.

**Table 2: The evolution of China’s currency swap agreements**

Partner Countries	Partner Countries of China		Partner Countries of Russia	
	Year first Agreement Signed	Billion Yuan	Year First Agreement Signed	Billion Ruble
China-Russia agreement (i)	2014	150	2014	815
South Korea (BOK)	2008	180		n/a*
Hong Kong Monetary Authority	2009	200		n/a*
Malaysia Bank Negara	2009	80		n/a*
Belarus	2009	20	2003	Open-ended economic cooperation
Indonesia Central Bank	2009	100		n/a*
Argentina Central Bank	2009	70		n/a*
Monetary Authority of Singapore	2010	150		Under negotiation
Bank of Thailand	2011	70		n/a*
State Bank of Pakistan	2011	10		n/a*
Central Bank of Turkey	2012	10		n/a*
Australia Reserve Bank	2012	200		n/a*
United Arab Emirates (UAE) (i)	2012	20	2022	A general agreement exists to settle bilateral trade in local currency
Brazil Central Bank (i)	2013	190	2014	157
India Central Bank (i)			Not publicly disclosed and reserved for defense and oil trade	
United Kingdom Bank of England	2013	200		
European Central Bank (ECB)	2013	350		
Swiss National Bank (SNB)	2014	150		
Bank of Canada	2014	200		
South African Reserve Bank (i)	2015	30		Under negotiation
Egypt Central Bank (i)	2016	18		
Nigeria Central Bank	2018	15	2025	
Sri Lanka Central Bank	2021	10		
Saudi Central Bank	2023	500		
Central Bank of Iran (i)			2024	Undisclosed, assumed to cover 96 percent of bilateral trade
Ethiopia Central Bank (i)			2025	Not disclosed

In addition to bilateral currency swap agreements, in July 2014 the original five BRICS member states have signed a Contingent Reserve Arrangement (CRA) covering the equivalent of U.S. dollar 100 billion in trade between Brazil, China, India, Russia and South Africa that are backed with the currency reserves of the members. While the agreement is primarily intended to protect the integrity of the BRICS trade, it is one way how the BRICS countries attempt to displace the U.S. dollar.

## 7. Cryptocurrencies

The emergence of cryptocurrencies and virtual assets as payment instruments for embargoed arms and other illicit purposes is a widely suspected but not yet well documented method for Chinese and Russian actors to convert criminal or sanctionable proceeds into non-U.S. dollar currencies or other types of assets. The case of Andrey Zverev, an intermediary for Russia’s defense company Kalashnikov Concern, transferred the equivalent of millions of U.S. dollars in Tether to pay a Hong Kong-based electronics distributor for drone components, including STM32 microcontrollers. Some of the parts were later found in Lancet combat drones. In related cases, U.S. authorities are

investigating and have sanctioned Russian crypto exchange Garantex for illegal transactions worth over \$20 billion U.S. dollar.

The use of cryptocurrencies and related exchanges, as well as the volume of funds laundered or cleared through this mechanism, is difficult to determine. The cases of Garantex and Zverez are however good indications that it is one preferred non-U.S. dollar payment method of Russia's and China's arms dealers.

Whether the preferred "off-ramp" leads to conversions into U.S. dollars, euros, other fiat currencies, Chinese yuan, or Russian rubles [20] even leading analytics firms such as **Chainalysis**, **TRM Labs [21]**, and **Elliptic** can report only anecdotally. "Off-ramp" flows into the Russian ruble via the ruble-backed token A7A5 on illicit Russian exchanges are reported to total the equivalent of **\$40 billion USD** by late July 2025. TRM Labs and Elliptic further suggest that unspecified billions of U.S. dollar equivalents are "off-ramped" into Chinese yuan.

If China, Russia, and other jurisdictions would implement the pertinent recommendations of the Financial Actions Task Force (FATF), these security gaps could not exist. Key provisions against illegal off-ramping of cryptocurrency assets requires that all virtual asset service providers (VASPs) or exchange service providers to be licensed by their host country's authorities. They should ensure that VASPs practice an effective on-boarding for each account holder and conduct transactional Know-your-Customer (KYC) procedures. Because most account holders operate virtually with the VASP, it is also essential to conduct digital identity verification procedures to block on/off-ramping of illicit assets.

## 8. Lender-Controlled Resource-Backed Loans

Leading researchers of China's lender-controlled commodity-revenue accounting list Russia regularly as a main beneficiary. But they do not show specific trade deals to support this claim. However, circumstantially the case for China's use of such accounts became overwhelming when international sanctions forced Russia to seek substitutes for many military goods and dual-use technology supplies. Three distinct observations support this view:

1. By 2023 the sanctions-defying trade [22] involved "critical components", primarily advanced semiconductors, supplied by Chinese intermediaries for third-country manufacturers or Chinese-produced electronics. The Chinese supply chain of electronics enabled Russia's sustained war effort against Ukraine.
2. International sanctions helped to advance the Chinese yuan not to serve as dominant payment instruments in the Russia-China trade but also as the sole reserve currency for Russia's Central Bank. Furthermore, by December 2023, 37.5 percent of Russia's total imports and 40.8 percent of Russia's total exports were settled in yuan [23].
3. Sino-Russia economic cooperation hinges on large-scale energy projects. The first major example was the 2009/2010 China Development Bank credit for the equivalent of 25 billion U.S. dollar to the Russian energy companies Rosneft and Transneft. The loan is scheduled for repayment in oil-deliveries over a 20-year period. No U.S. dollar payment and clearance required as the loan was issued in yuan.

These factors helped to establish a unique Sino-Russia bilateral trade that deviates from traditional practices in the following respects:

- Barter and other in-kind trade to avoid costly financial services and currency conversion risks.
- Lender-controlled revenue accounts to protect against corruption and sanctions exposure.
- Very strict confidentiality clauses.
- Circumvention of traditional lending institutions such as the International Monetary Fund, the World Bank Group, or the Paris Club in debt-restructuring negotiations.
- Extension of political influence and expectations of alignment with the Shanghai Cooperation Organization and related initiatives, such as the Belt and Road Initiative and the China Development Bank.

- Avoidance of the U.S. dollar clearance and international sanctions enforcement.

Similar characteristics have justified over the past 20 years China’s sanctions-busting cooperation with Sudan.

## 9. The Sino-Sudan Case Study

The Sino-Sudanese relationship demonstrates how U.S. dollar payments can be entirely excluded for over two decades from a sanctioned country’s arms procurement mechanisms while its bilateral relationship with China persists through political instability, civil conflict, high corruption, and international sanctions.

In 1997, the **China National Petroleum Corporation (CNPC)** purchased a 40 percent equity stake in the **Greater Nile Petroleum Operating Company (GNPOC)** for a reported equivalent of \$441 million USD, and in 2001 acquired a 41 percent stake in **Petrodar Operating Company (PDOC)** at an undisclosed valuation. Over the years, Chinese banks provided billions in loans to construct Sudan’s oil production and export infrastructure. In exchange, China secured steady oil deliveries, which counted toward Sudan’s repayments, while simultaneously positioning itself for broader economic, political, and military influence in sub-Saharan Africa. These arrangements also monetized Sudan’s government and consumers, enabling extensive procurement of Chinese-manufactured products, including arms and military equipment.

While no precise aggregate estimate exists for these credits, peer comparisons for the period 1995–2004 suggest total investments likely ranged between **\$4–7 billion USD**. Additional oil forward sales of up to **\$2 billion USD per year** must be considered part of the bilateral economic exchanges [24].

China’s financing of Sudan’s oil industry was not a one-time transaction, but part of a long-term, multi-sectoral economic-diplomatic ecosystem. This enabled decades of wide-ranging cooperation agreements (Table 3).

**Table 3: History of Sino-Sudan Agreements**

Year	Agreement/Activity	Description
1962	Economic and Technical Cooperation (ETC)	-
1970	Cultural, Scientific, and Technical Protocol (CSTP)	-
1970–1995	Project-based interest-free loans	~\$100 million for infrastructure, bridges, roads, textile mills, hospitals, rice cultivation, fishing projects
1987	Sino-Sudanese Committee for Economy, Trade, and Technical Cooperation	-
1993	Upgrade to Sudanese-Chinese Joint Ministerial Committee	-
1995	CNPC first oil exploration	Long-term partnership initiated
1995	Sudanese-Chinese Friendship Society established	-
1997	Investment Protection Agreement & Dual Tariff Prevention	-
1997	Khartoum Refinery Co. joint venture	50:50 JV with CNPC; loan to GoS for equity
1999	CNPC invests in GNPOC	-
2003	Cooperation Agreement between Sudan’s National Congress Party & PRC Communist Party	-
2003	Merowe Dam loan	\$555 million USD for major hydroelectric project
2007	19 project-aid and debt-cancellation agreements	\$500 million USD
2008	18 bilateral agreements	Agriculture & Chinese worker migration procedures
2012	CDB loan agreement	\$1.5 billion USD to Sudapet for budget stabilization post-South Sudan secession

## 10. Sino-Sudan Oil-for-Arms Financing

Research by human rights groups and the UNSC Panel of Experts [25] suggests that oil-for-arms financing was organized through state-owned Sudanese and Chinese companies, linking lender-controlled oil revenue accounts to non-U.S. dollar transactions for military procurements. The typical mechanism included:

1. Chinese lenders, usually **China Exim Bank** or **China Development Bank**, advanced Sudanese project costs via deposit into Chinese bank accounts.
2. CNPC, through its Sudanese affiliates (GNPOC or PDOC), paid Chinese construction companies for oil wells, pipelines, refineries, and terminals.
3. Oil revenues were deposited into escrow accounts controlled by Chinese banks, in yuan or other non-U.S. dollar currencies.
4. Agreements allowed Sudanese shareholders to retain yuan deposits for further business with Chinese companies.
5. Sudan drew from these accumulating funds to pay for arms and military goods.
6. As oil revenues exceeded initial construction debts, Sudan continued to accumulate non-U.S. dollar accounts through which additional military procurements were paid, estimated at **\$300 million–\$2 billion USD equivalent annually** [26].

Economic and legal researchers from **Georgetown Law, Peterson Institute, Kiel Institute, and AidData** highlighted several technical features of these Chinese loan practices:

- Confidentiality obligations requiring “special bank accounts...acceptable to the lender” serving as security for debt repayment [27].
- Cross-default clauses triggered by a range of sovereign actions deemed adverse to Chinese entities.
- Extensive confidentiality agreements forbidding disclosure of terms, fees, or conditions [28].
- “Revenue accounts” allocating portions of loans specifically for purchasing goods/services from selected Chinese contractors [29].
- The “Angola Mode,” using oil prepayment agreements to collateralize multi-billion-dollar loans, subsequently applied to Sudan [30].

## 11. The Russia-Sudan Case Study

Russia’s political, economic, and military engagement with Sudan similarly developed through decades of multi-sectoral cooperation. The **All-Union Scientific Research Geological Institute (VSEGEI)**, supported by the USSR Ministry of Geology, conducted extensive geological, geochemical, and geophysical surveys in Sudan during the 1970s, identifying hydrocarbon, gold, chromium, and other strategic or precious mineral deposits.

Following Sudan’s recognition of the Russian Federation in 1991, a 1993 military cooperation agreement reportedly resulted in substantial oil-for-arms transfers. Russian contributions included **32 Sukhoi bombers, 10 Mi-24 helicopters, and 20–40 T-55 tanks** delivered in 1996, along with maintenance of MiG-19 and MiG-21 aircraft and supply of military vehicles [31].

The **1998 Russia-Sudan Inter-Governmental Agreement on Trade, Economic and Technological Cooperation** [32] established most-favored-nation status and, under Article 4, mandated that payments be made in “freely convertible currency.” Given the U.S. sanctions on Sudan at the time, it is reasonable to assume the parties did not use U.S. dollars. Subsequent sanctions against Russian actors further incentivized non-U.S. dollar bilateral commerce. As Russia’s access to international currencies diminished, access to Sudanese gold became increasingly a strategic priority, as it served as a non-U.S. dollar payment instrument.

By 2004, bilateral trade had risen from 1.2 million in 1994 to 150 million U.S. dollars covering supplies of lumber, petroleum, KamAZ trucks, aircraft, and natural resources. Russian projects encompass so far

- **Slavneft:** Production-sharing agreement for Block 9.
- **Tatneft:** Participation in Melut area projects (Blocks 3 & 7, eventually abandoned).
- **Hydroproject:** Design and construction of hydroelectric plants, including Merowe Dam.
- **Stroitransgaz:** Built 366 km of oil pipeline for Petrodar Operating Company.

In 2003, a **25-year armed forces re-equipment program** (~\$3 billion USD) solidified Russia’s strategic presence [33]. Facilities near Port Sudan became staging points for regional engagements, with companies such as the **Wagner Group** led by **Evgeny Prigozhin**, who prior to his mysterious cause of death used to be a close vassal of Russian President Putin. Prigozhin, on behalf of the Russian government, also consolidated commercial activities in Sudan, Central African Republic, and Madagascar with a slew of highly opaque corporate structures.

For example, **Meroe Gold**, a Prigozhin-controlled gold trading company [34], reportedly operated without the usually required Sudanese government’s mandatory 30% co-ownership. And yet, it was controlling up to one-third of Sudan’s gold exports at times, particularly around the gold-rich Al-Ibaidiya region [35].

International Monetary Fund (IMF) reporting about Sudan’s gold exports (in millions of U.S. dollars) [36]

2008	112	2012	2,158	2016	1,044	2020	857
2009	403	2013	1,048	2017	1,559	2021	895
2010	1,018	2014	1,172	2018	832	2022	933
2011	1,442	2015	726	2019	711	2023	972
						2024	1,002

For Sudan, marketing its gold in exchange for oil had become an existential necessity. With the independence of South Sudan as an independent country in 2011, Sudan had lost approximately 75 percent of its oil revenues. Already under heavy financial and political pressure because of international sanctions, Sudan was very dependent on foreign investments and arms supplies that cannot be blocked by the U.S. dollar clearing systems. Mining gold was the obvious answer to these problems and gold-hungry Russia was Sudan's perfect partner in crime.

Part of the evolving Russian-Sudan agreements allocated the Ministry of Defense the right build a logistics and cantonment base accommodating at least 300 troops near Port of Sudan. Simultaneously, the Russian Navy had secured permission to base up to four Navy vessels at the port and eventually received authorization to build berths and other maritime support logistics. The collaboration has further expanded towards the construction and operation of a full-service Russian Navy base at Port of Sudan. As payment, Russia renewed the re-equipment program agreed in 2003 and has been providing steady supplies of armaments via its arms export agency Rosoboroneft.

Like Sudan’s bilateral agreements with China and Russia, barter-type exchanges have been suspected with Belarus arms export agency Beltechexport, Ukraine State Service for Export Control of Ukraine, and there are indications that barter-style deliveries occurred with Khazakistan’s Agency for Export Control of Military Products.

## 12. Conclusion

The common denominator of the Sino-Russian-Sudan arms supply-chains is absolute confidentiality about the commodity revenues that are deposited on lender-controlled resource revenue accounts and against which Sudan, and since 2021 also Russia, were able to charge their procurement of Chinese-made or transshipped weapons.

These unconventional bilateral arrangements have allowed both Russia and Sudan -- despite arms embargoes and broader sanctions measures -- to procure virtually all their defense need, including small arms and light weapons (SALW), related ammunition, training, as well as heavy air and ground equipment, sophisticated electronics and semiconductors. The leverage of U.S. dollar clearing systems could never have been activated, because these trades are fully de-dollarized.

Similarly, decades of illegal procurement of embargoed military and WMD technology by North Korea never required U.S. dollars. Its criminal collection of diverse currency proceeds or most of its cryptocurrency funding model avoid and circumvent exposure to the U.S. currency.

Alternatives to the declining effectiveness of US currency clearing systems in sanctions enforcement have always existed. For close to 20 years, UN sanctions investigators have always relied on the much slower and time-consuming tracing of the supply chains of illegal arms, ammunition and dual use technologies. That approach starts with reliable sightings of embargoes military goods in embargoed regions, followed by the arduous task of reconstructing the paths of these goods from the factory to the battlefield. The more diplomatic, intelligence and financial resources are invested into these tracing exercises, the quicker and the more compelling the results.

Whether sufficient political will can be mustered to secure effective embargo enforcements is less than certain given the current geopolitical trends. On the other hand, giving up on the effective coercive powers of financial and related sanctions measures means giving up on the common goal of preventing or protecting against the violence inflicted by illegal arms procurements.

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