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The End of Dollar Hegemony? Myths and Prospects on De-Dollarization

Professor Chiara Felli

SUPERVISOR

Professor Andrea Filippetti

CO-SUPERVISOR

Giorgio Francioni – 760791

CANDIDATE

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Summary

Introduction

Economic theory establishes that a currency is such if it presents three characteristics, namely being: a store of value; a medium of exchange; a unit of account. As a store of value, currency represents a means of transferring purchasing power from the present to the future. As a medium of exchange, currency is what is used to purchase goods and services. As a unit of account, currency represents the unit through which prices are expressed and debts are recorded.

In a world where hundreds of different coinages circulate, it happens that a global reserve currency periodically emerges, that is, a currency that is simultaneously more commonly held as a reserve currency, more widely used for foreign trade and international transactions, and in which prices of internationally traded goods and services are expressed. Historical examples include the Dutch florin of the 17th century and the British pound sterling of the 19th century (Coppola, Krishnamurthy & Xu, 2023).

Since the end of World War II, the dollar has been the global reserve currency. This status was officially acquired with the signature of the Bretton Woods Agreement in 1944, under which each country established a par value in relation to the dollar, which in turn was pegged to gold at $35 per ounce (Kumar, 2014). The system that came into effect was thus a gold exchange standard: all currencies were convertible into dollars and, through them, into gold. This system lasted until 1971, when the United States ended the convertibility of their legal tender into gold. Although Washington stripped the dollar of its status as a *de jure* global reserve currency, *de facto* the US legal tender maintained its primacy. Data from the International Monetary Fund (IMF) updated to the third quarter of 2023 show that 59.17 percent of official foreign exchange allocated reserves are expressed in dollars[1]. In addition, according to Boz et al. (2022), 54% of global exports are invoiced in dollars. Finally, the vast majority of goods (especially commodities) are priced in dollars.

The propagation of the dollar around the world has given rise to discussions concerning the dollarization of the global economy. However, in recent years a new word has begun to spread for what could be the reverse process to the one just described: de-dollarization. This is not really a neologism: in fact, this term was used to refer to the de-dollarization of those economies – particularly in Latin America – that used the dollar as a parallel currency to the

[1] https://data.imf.org/?sk=e6a5f467-c14b-4aa8-9f6d-5a09ec4e62a4

official one or that had pegged the value of the latter to the US legal tender. In recent years, this word has taken on a broader meaning and political connotation: in fact, de-dollarization represents a challenge to the US political and economic hegemony, posed especially by the BRICS countries (Brazil, Russia, India, China, South Africa), with the goal of building a new architecture of globalization (Liu & Papa, 2022; Gouvea & Gutierrez, 2023). In particular, Moscow and Beijing are very active in replacing the dollar with the ruble or renminbi in their bilateral trade (Bhusari & Nikoladze, 2022; 2023). The Kremlin's efforts in this regard began in 2014 (Shagina, 2022), and then increased significantly in 2022, following the large-scale invasion of Ukraine and especially the sanctions imposed by Western countries (Lockett, 2022). Precisely the effect of sanctions on the primacy of the dollar has been the subject of study, with mixed results: for some, they strengthen the hegemony of the dollar (Dooley, Folkerts-Landau & Garber, 2022); for others, they undermine it (McDowell, 2023). However, although many acknowledge the existence of an anti-US strategy aimed at de-dollarization of the global economy, some scholars express caution about whether this is actually happening, supported by data showing that the dollar still enjoys good health (Gerding & Hartley, 2023).

Having emerged only recently, the issue of de-dollarization is still little studied and has produced relatively little literature. However, it cannot be ignored that the growing tensions between the United States and other powers such as Russia and China will produce upheavals in global politics and economy, including the international monetary system.

This work aims at investigating whether the hegemony of the dollar is in danger, as well as the effects of Washington's sanctions policy on the role played by its currency in the international monetary system. To do so, this thesis will use a data-oriented approach.

This thesis will be organized as follows. The first part will study the rise and (potential) decline of the dollar as a global reserve currency, analyzing its historical, political and economic reasons and exploring possible future scenarios related to de-dollarization. The second part will focus on data analysis, to find evidence whether, as many argue, there is a cause-and-effect relationship between Washington's increasing use of sanctions and the push in favor of de-dollarization, and to attempt to measure the strength and influence of the major currencies and the countries that coin them in order to understand whether there are any players capable of challenging the dollar's hegemony.

Dollar hegemony

This chapter presents the conditions that made and make possible the dollar's hegemony. To begin with, the historical stages in the evolution of the international monetary system are briefly reviewed, with special emphasis on those that led the dollar to become the global reserve currency. Next, referring to the concepts of monetary capability and currency influence, the macroeconomic variables on which the dollar's primacy rests are examined. Finally, the advantages and disadvantages to the United States resulting from monetary hegemony are analyzed.

The evolution of the international monetary system

Kumar (2014) defines the international monetary system as the set of financial institutions, multinational corporations and investors providing the institutional framework for determining the rules and procedures for international payments, determination of exchange rates, and movement of capital.

The current arrangement of the international monetary system is about fifty years old, and in the past half century it has not experienced major changes. However, throughout history the international monetary system has been organized in different forms. The four main stages of its evolution are: (a) bimetallism; (b) gold standard; (c) gold exchange standard; (d) flexible exchange rate regime.

International monetary relations developed in the late medieval and early modern period (1400-1700), but there was no international monetary system until about the half of the 19th century. In fact, it was only after the emergence of the nation state and national currencies, together with the impressive growth of international trade and capital flows in the nineteenth century that we can begin to talk about an international monetary system (Capie, 2013). At the same time, the British pound sterling was emerging as the global reserve currency, expression of the world's greatest power back then.

Until the 1870s, the international monetary system was based on bimetallism, that is, both gold and silver were used as media of exchange internationally, with the exchange rates between different currencies determined by their gold or silver content (Kumar, 2014).

For about forty years, precisely from 1875 to 1914, the international monetary system was based on the gold standard, whereby individual national currencies could be converted into gold at a given rate and vice versa, and exchange rates between different currencies depended on their gold content. This system disappeared during World War I, when the belligerent European countries imposed embargoes on gold exports and suspended the convertibility of banknotes into gold (Kumar, 2014). The rationale is clear: to finance the war effort, central banks printed money in such quantities that it was impossible to convert it into gold for the simple reason that this would not be sufficient.

During the interwar period there were several subsequent, short-lived arrangements of the international monetary system: free floating (1919-25), gold exchange standard (1925-early 1930s), and managed floating (early 1930s-late 1930s). The unsatisfactory state of some of these arrangements led to the design of a new system for the postwar years (Capie, 2013). In those years, the dollar started challenging the British pound sterling as the most important currency in the world.

As World War II was turning in favor of the Allies in 1944, representatives from 44 countries gathered at Bretton Woods, New Hampshire, to discuss the postwar global economic and financial order. For what concerned the monetary issue, the delegates decided to adopt the gold exchange standard: under this system, the dollar would be pegged to gold at $35 an ounce, and each country would establish a fixed exchange rate with the US legal tender, with an exchange rate fluctuation band of 1 percent (Kumar, 2014). Therefore, by becoming the only currency directly convertible into gold, the dollar officially achieved global reserve currency status, certifying the political and economic primacy of the United States at the end of World War II.

An international monetary system such as the gold exchange standard may come into crisis because of a contradiction, known as Triffin's dilemma or paradox, explained by Robert Triffin himself before the US Congress[2]. The country printing the global reserve currency must pursue a deficit balance of payments to spread its currency to the rest of the world so that other countries can accumulate reserves denominated in the global reserve currency. However, when this deficit becomes too large, the confidence of other countries that their reserves can actually be converted into gold may fail. So, whereas a deficit in the balance of payments of the country

[2] https://www.imf.org/external/np/exr/center/mm/eng/mm_sc_03.htm

coining the global reserve currency is indispensable to make the system work, it can also lead to a crisis of the system itself.

This is exactly what happened to the gold exchange standard system introduced with the Bretton Woods Agreements, as Figure 1 suggests. Although initially US gold reserves were largely sufficient to cover US liabilities to foreign officials, this gap narrowed in the 1950s, and by the mid-1960s the latter exceeded the former.

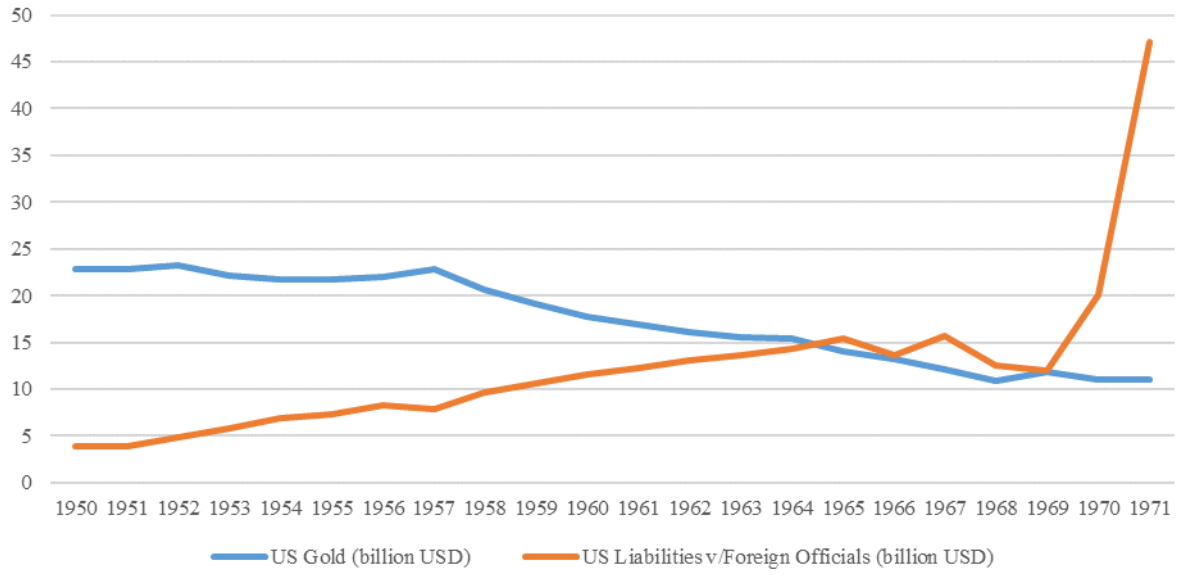

Figure 1. US gold and US liabilities v/foreign officials (1950-1971, billion USD). Source: IMF (1958), IMF (1965), IMF (1972)

Therefore, in 1971, US President Richard Nixon announced the end of gold convertibility of the dollar, paving the way for the flexible exchange rate regime, formally ratified by IMF members in 1976 through the Jamaica Agreement. Under this new system, the exchange rate between different currencies is determined by the market, although national central banks have the ability to intervene to avoid undue fluctuations (Kumar, 2014).

For about half a century, then, the dollar has no longer officially been the global reserve currency. But is this really the case?

Monetary capability and currency influence

Norloff (2014) provides a systematic explanation of dollar hegemony, built on the concepts of monetary capability and currency influence. According to the author, a country's currency must be strong in both dimensions to become a global reserve currency.

Monetary capability

By monetary capability, Norloff (2014) means the underlying resource base required for exercising currency influence, synthetized by four indicators: GDP output; trade; capital market (size and degree of openness); and defense expenditures.

World Bank data show that in 2022 the United States ranked first in the world in terms of GDP output, amounting to more than $25 trillion[3]. The United States has held this primacy since the end of the 19th century, although in recent decades China has partially closed the gap thanks to its strong growth, becoming in 2016 the world's leading economy in purchasing power parity, surpassing the United States[4]. Nevertheless, even if its relative importance compared to the rest of the world decreased in the last decades from about 40 percent to around 25 percent (Figure 2), the US economy still remains the biggest one by size.

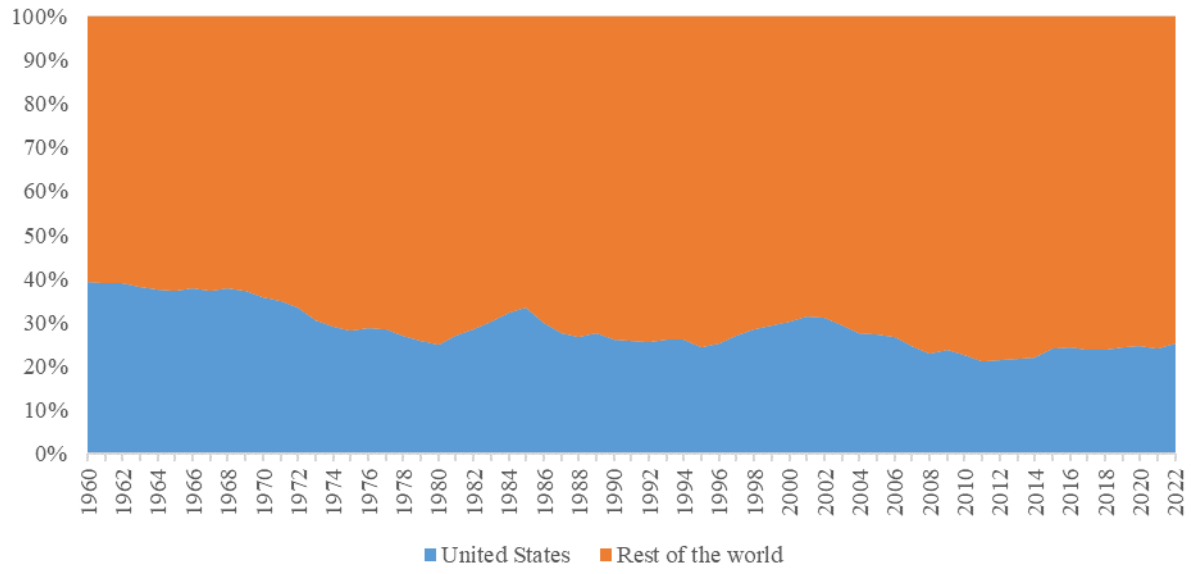

Figure 2. Relative importance of the US economy compared to the rest of the world (%, 1960-2022). Source: World Bank Open Data

[3] https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?most_recent_value_desc=true
[4] https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD?locations=US-CN&most_recent_value_desc=true

Regarding trade, in 2022 the sum of US imports and exports amounted to about $7 trillion, making them the world's leading country in terms of volumes exchanged[5][6]. The United States is the first importer and the second exporter in the world, right after China, which has recently challenged the US primacy in this field, being the largest player in global trade in 2020 and 2021. However, Washington still accounts for almost 13 percent of world imports and nearly 10 percent of global exports.

The latest data from the World Bank clearly show that as of 2022 the United States is by far the world's leading country in terms of the size of financial markets, with a market capitalization of listed domestic companies slightly higher than $40 trillion[7], meaning that businesses accounting for 43 percent of world market capitalization are listed in the United States. To measure the degree of openness of financial markets, we can use the Chinn-Ito Index (Kaopen) – a coefficient measuring a country's degree of capital account openness introduced by Chinn and Ito (2006) – whose latest update (2021) shows that the United States is still among the countries to score the highest (1.00) continuously since 1970[8]. This finding is confirmed by the IMF's Financial Development Index – a relative ranking of countries on the depth, access, and efficiency of their financial institutions and financial markets[9] – which saw the United States ranked fourth in the world in 2020 with a score of 0.91, down from second place in the previous year but in line with the scores recorded between 2010 and 2020, ranging from 0.89 to 0.92[10].

Finally, data on 2023 defense expenditures provided by the Stockholm International Peace Research Institute (SIPRI) show that the United States ranked first in the world in military spending (about $916 billion, equivalent to 3.4 percent of GDP)[11]. What is striking is that Washington spent more than the next nine countries combined – China, Russia, India, Saudi Arabia, United Kingdom, Germany, Ukraine, France and Japan, whose military expenditures amounted to around $883 billion – and that the Pentagon budget accounted for nearly 40 percent of the world defense spending (Figure 3). Another impressive element concerns the global reach

[5] https://data.worldbank.org/indicator/NE.IMP.GNFS.CD?end=2022&most_recent_value_desc=true&start=1960
[6] https://data.worldbank.org/indicator/NE.EXP.GNFS.CD?end=2022&most_recent_value_desc=true&start=1960
[7] https://data.worldbank.org/indicator/CM.MKT.LCAP.CD?end=2022&most_recent_value_desc=true&start=1975
[8] https://web.pdx.edu/~ito/Chinn-Ito_website.htm
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[11] https://milex.sipri.org/sipri

of the US military: it has about 750 military bases in more than 80 countries, deploying more than 170,000 active-duty military personnel abroad (O'Dell, 2024).

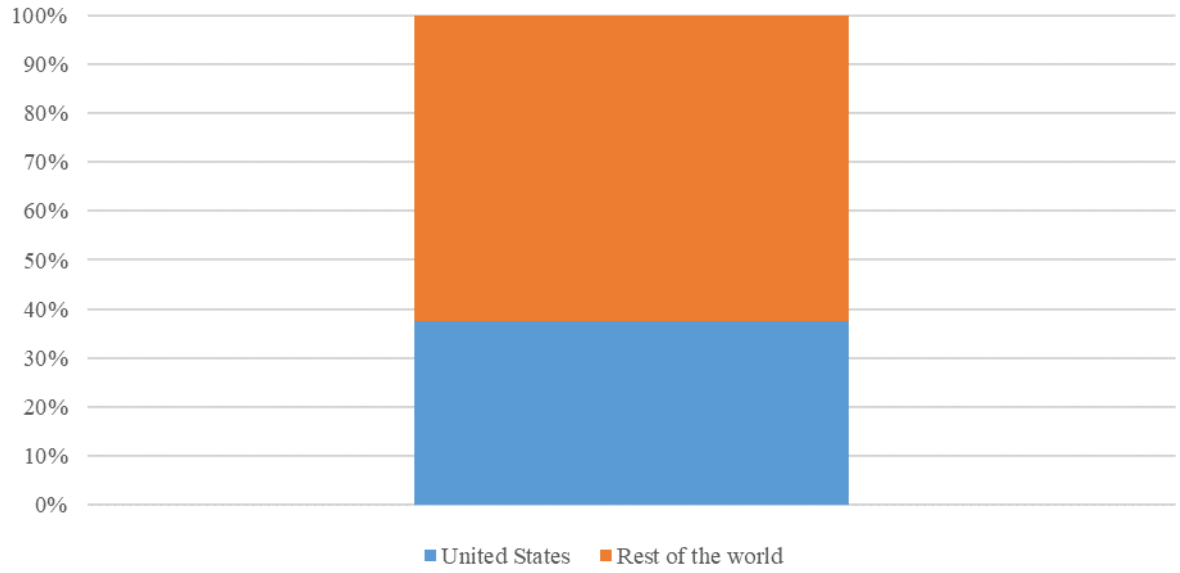

Figure 3. Relative importance of the US defense spending compared to the rest of the world (2022, %). Source: SIPRI

US primacy in all these parameters is therefore a symptom of high monetary capability.

Currency influence

By currency influence, Norloff (2014) indicates the extent to which a specific currency is used internationally, that is, how much a national currency is used as a store of value, medium of exchange and unit of account globally.

The most effective way to understand whether a national currency is used as a store of value globally is to quantify its share in official foreign exchange reserves. The data show that the dollar is definitely the preferred currency as a store of value, making up nearly 60 percent of official foreign exchange reserves. Although the numbers speak of an overwhelming superiority of the US legal tender over all other currencies in this respect, it should be kept in mind that in recent decades the dollar's share has fallen by more than 10 percent: as Figure 4 shows, in the late 1990s it made up more than 70 percent of reserves.

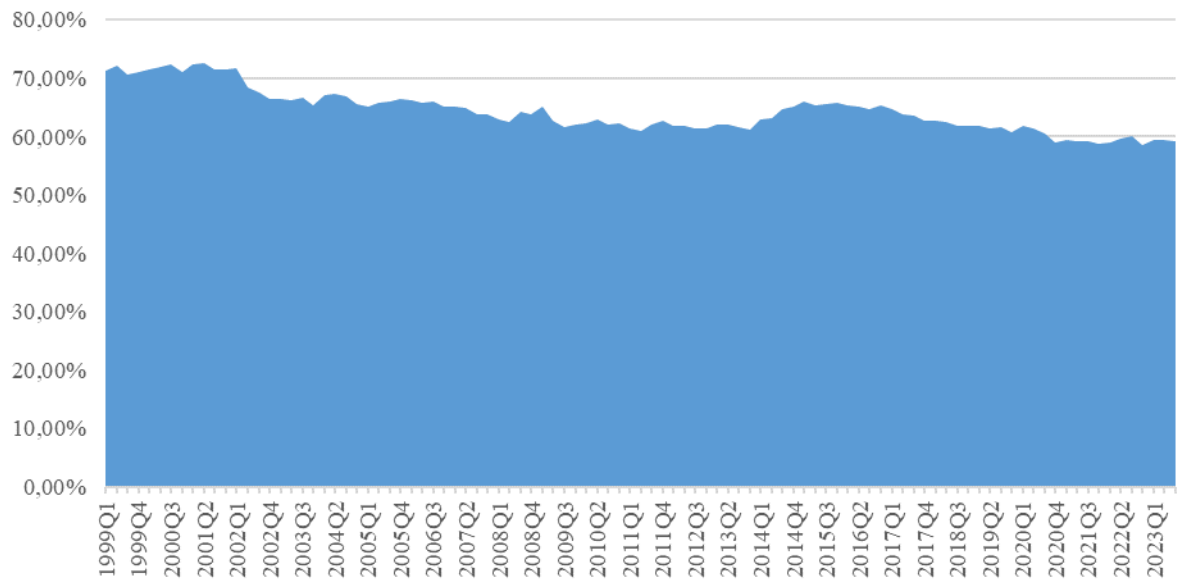

Figure 4. Share of USD in official foreign exchange reserves (1999-2023, %). Source: IMF Data

To measure how much a currency is used as a medium of exchange globally, one can investigate to what extent it is used in international trade. Boz et al. (2022) report that 54 percent of global exports are invoiced in dollars, implying that the US legal tender is still clearly the preferred currency in the international monetary system as a medium of exchange. In fact, many countries prefer to export their goods by receiving dollars rather than their own currency: as Figure 5 shows, there is a clear disproportion between US exports and global exports invoiced in dollars, proving that they are also used in (many) transactions that do not directly involve the United States. Another dimension that can be used to prove the importance of the US legal tender as a medium of exchange is the foreign exchange market turnover by currency: as of April 2022, the dollar was on one side of 88.5 percent of all trades[12].

[12] As two currencies are involved in each transaction, the sum of shares in individual currencies will total 200%.

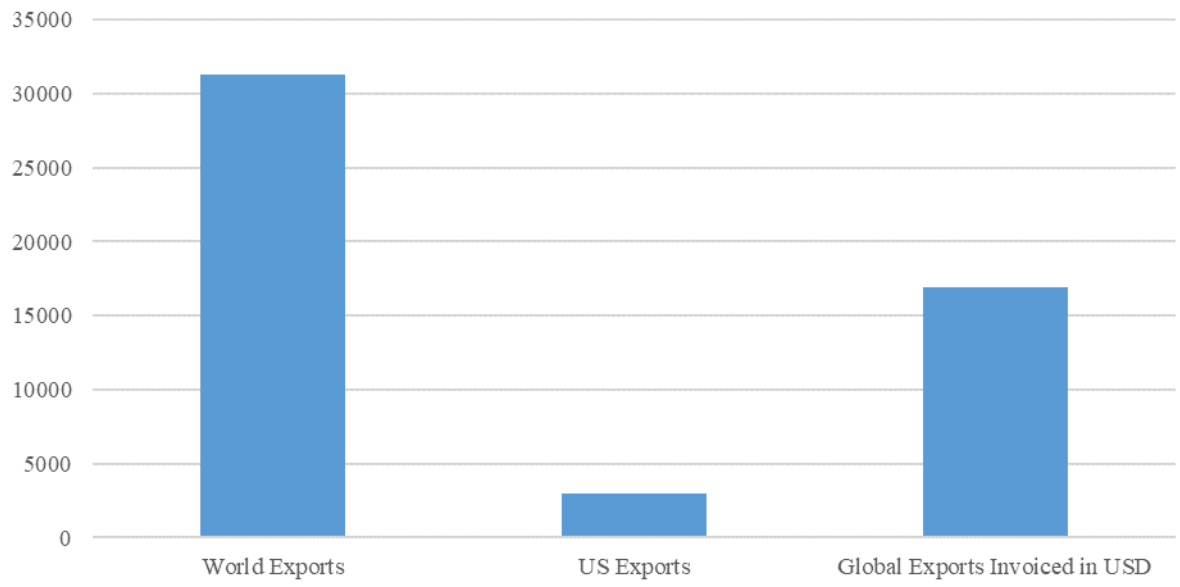

Figure 5. World exports, US exports, Global exports invoiced in USD (2022, billion USD). Source: Boz et al. (2022), IMF Data

The dollar is also used as a unit of account. The reason is simple, and partly related to the previous point: most goods traded internationally are priced in dollars, so it is fairly common to use them as a unit of measurement or comparison. This is true especially for commodities, from oil to natural gas, from corn to soybeans, from gold to silver.

Balance of payments and balance of trade

In order to sustain the dollar's primacy as the global reserve currency, the United States needs its national tender to be spread throughout the world. To do so, however, Washington must accept to run structural deficits in the balance of payments and in the balance of trade.

The balance of payments is the account in which all transactions made by a state's economy to foreign countries over a given time period are recorded and accounted for in domestic currency. Specifically, an outflow of money from the country is a debt, while an inflow of money into the country is a credit. When credits exceed debits, the balance of payments is in surplus, while when debits exceed credits, the balance of payments is in deficit. Figure 6 clearly shows how since the late 1970s – albeit with exceptions in the early 1980s and 1990s – Washington has run large deficits in its balance of payments. This net outflow of national currency from the United States is a key cornerstone of the dollar hegemony, which

thereby spreads to the rest of the world, allowing other countries to accumulate reserves denominated in the US legal tender and use them for international transactions.

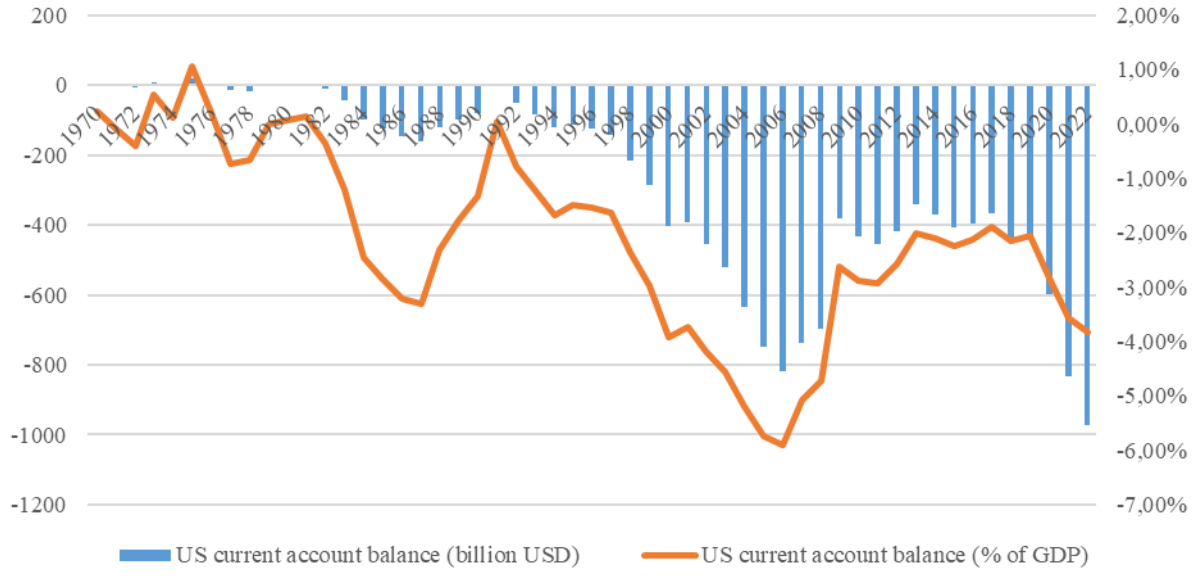

Figure 6. US balance of payments (1970-2022, billion USD, % of GDP). Source: World Bank Open Data

The balance of trade represents the difference between the value of a country's exports and imports of goods and services for a given time period. It is the largest component of a country's balance of payments. Again, Washington has continuously run a deficit in its balance of trade since the late 1970s, which in 2022 reached an all-time high in absolute terms (nearly $1 trillion), standing at between 3 and 4 percent of GDP over the past decade, as Figure 7 shows. Although the trade deficit represents a kind of bulk for the GDP, Americans benefit from it: in fact, they import large quantities of cheap goods that would be more expensive if they were produced in the United States.

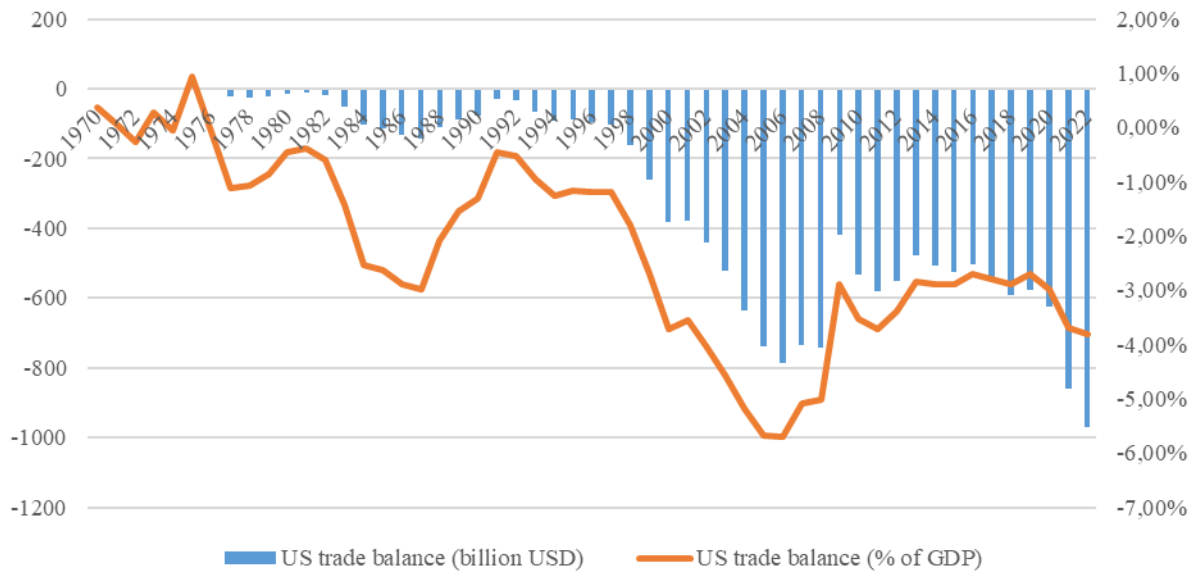

Figure 7. US balance of trade (1970-2022, billion USD, % of GDP). Source: World Bank Open Data

Incumbency advantages

Wade (2024) adds that dollar dominance is based on huge incumbency advantages, that is, institutions that give the dollar system huge economies of scale and network externalities, such that the more users there are, the more people have to use it.

Examples include Wall Street, the most important stock exchange in the world, or US Big Tech (Amazon, Apple, Google, Meta, Microsoft), representing some of the greatest companies in the world by market capitalization with a globally distributed user base.

In addition, the US has well protected property rights and an accountable and independent judicial system. In the 2023 International Property Rights Index published by the Property Rights Alliance, the United States ranks 14th in the world: specifically, Washington ranks 1st in intellectual property rights protection, 14th in physical property rights protection, and 29th in legal and political environment[13].

However, the major incumbency advantage mentioned by Wade is represented by SWIFT (Society for Worldwide Interbank Financial Telecommunication), the message system through which all major banks communicate with each other in order to facilitate financial transactions – it does not actually transfer money, it simply tells one bank to debit an account

[13] https://www.internationalpropertyrightsindex.org/country/united-states-of-america

and credit another. Although SWIFT is not under direct US control, they wield considerable power within it, as demonstrated by the exclusion from the system of Iranian banks in 2012 and Russian banks in 2022, both of which occurred at Washington's input. Also, 40 percent of the more than 42 million international payment instructions sent each day over SWIFT involve payments in dollars (Rockwell, 2023).

As long as the Bretton Woods system was in place, the dollar was officially the global reserve currency, and it was therefore natural that it was widely used internationally. Why, then, did the US legal tender maintain its preeminence even after the Nixon shock? According to former Fed Governor Ben Barnanke, the most immediate reason is related to inertia, that is, the habit of traders to use the dollar in international transactions (Bernanke, 2016). However, such a kind of network externality does not by itself explain why the dollar has retained its hegemony. In fact, Barnanke believes that the dollar provides four kinds of benefits to its users: (a) stability of value, since the Fed has been able to keep inflation low and stable over the past decades; (b) liquidity, as US financial markets are among the largest and most liquid in the world; (c) safety, as dollar assets are generally very safe and the dollar itself is considered a 'safe haven' currency; (d) lender of last resort, since in period of crisis the Fed served as a backstop provider of dollars by instituting currency swaps with other central banks (Bernanke, 2016).

Is the privilege still exorbitant?

In 1965, France's then Finance Minister Valéry Giscard d'Estaing complained about the 'exorbitant privilege' (*privilège exorbitant* in French) that came to the United States from issuing the key reserve currency, meaning the ability to finance a current account deficit at very low interest rates, thanks to the role of the dollar as the anchor of the global financial system as stated by the Bretton Woods agreement (Subacchi & van den Noord, 2023). More than fifty years after the end of the gold exchange standard hinged on the dollar and almost sixty years after Giscard d'Estaing's words, is the exorbitant privilege still there?

Benefits

The exorbitant privilege to which Giscard d'Estaing referred was related primarily to the ability of the United States to borrow cheaply, taking advantage of the dollar's position as an international reserve currency. Indeed, it appeared unlikely that Washington could be

expected to default on its debt, so the US Treasury could issue bonds at low interest rates. This was true until the late 1970s. However, as Figure 8 shows, the United States pays similar (if not higher) interest on its debt than other economically developed countries.

Figure 8. Long-term interest rates for government bonds. France, Germany, Japan, United Kingdom, United States (Q2 1953–Q3 2023, %). Source: OSCE

The concept of exorbitant privilege is not limited to interest rates on government bonds, however, but can also be extended to expected returns on risk-free assets. Some scholars, including Gilmore and Hayashi (2011) and Hassan (2013), found that dollar risk-free assets generally pay lower expected returns than the risk-free assets of most other currencies. This can be classified as a violation of uncovered interest parity (UIP) favoring the dollar as a cheap funding currency (Gopinath & Stein, 2021).

Another benefit enjoyed by the dollar is related to seigniorage, which is the gain associated with the difference between the value of a coin or banknote and the cost of its minting or printing. It could be argued that this is a benefit enjoyed by all states with monetary sovereignty. However, the status of a global reserve currency guarantees the dollar a superior gain. As Norrlof explained (2008), there are two components to seigniorage: on the one hand, dollars held abroad represent an interest-free loan to Washington, as they are nothing but paper IOUs, that is, claims on the United States; on the other hand, the more dollars in circulation, the more Washington is able to borrow interest free from foreigners, resulting both in an interest to extend dollar use and in a temptation to print more dollars, as it would bring to a reduction of

the value of the dollars held abroad and therefore of the value of what the United States has to pay back in the form of goods, services and assets.

Drawbacks

Issuing the global reserve currency can also have drawbacks, which are not always evident. For example, the high demand for dollars from abroad means that this is always highly valued, making imports cheap for US consumers, as noted earlier. The downside, however, is that this condition represents a disadvantage for US producers, who lose competitiveness abroad, leading to job losses (Siripurapu & Berman, 2023). In recent years, the issue of deindustrialization and the socio-economic malaise it has generated has become increasingly important in the United States – particularly in the Midwest, in the states of the so-called Rust Belt, once the engine of American manufacturing – also for its political implications (McQuarrie, 2017).

This is not the only way in which the dollar appreciates. In fact, its value can also be affected by currency manipulation, that is, when another country artificially holds down the value of its currency by accumulating dollar reserves, in order to maintain a large trade surplus (Siripurapu & Berman, 2023).

Challenges to dollar hegemony

For eighty years the dollar has been exercising the role of global reserve currency. At the moment, its hegemony does not seem to be in question, thanks to the global economic and political primacy of the United States. However, in recent years a new word has begun to spread: de-dollarization. The aim of this chapter is to identify where the challenges to dollar hegemony come from, distinguishing between exogenous and endogenous threats.

Exogenous challenges

Exogenous challenges are defined as initiatives taken by external actors that may potentially undermine dollar hegemony.

Growing discontent with dollar hegemony

Initially, the term 'de-dollarization' was used to refer to the process of reducing dependence on the US legal tender by those countries-especially in Latin America – for example Bolivia, Paraguay, Peru, and Uruguay – that had previously made the dollar the preferred currency in order to gain economic, financial and monetary stability, following episodes of severe economic crisis and high inflation (Sosa & Garcia-Escribano, 2011).

In recent years, this word has taken on a broader meaning and political connotation: in fact, de-dollarization represents a challenge to US political and economic hegemony, posed especially by the BRICS countries – Brazil, Russia, India, China, and South Africa, joined in 2024 by Egypt, Ethiopia, Iran, and the United Arab Emirates – with the goal of building a new architecture of globalization (Liu & Papa, 2022; Gouvea & Gutierrez, 2023).

In a speech given in Shanghai in April 2023, Brazil's President Luiz Inacio Lula da Silva railed against the dollar hegemony in international trade: "Every night I ask myself why all countries have to base their trade on the dollar. Why can't we do trade based on our own currencies? Who was it that decided that the dollar was the currency after the disappearance of the gold standard?"[14]. A few months later, at the 2023 BRICS Summit in Johannesburg, Lula raised the ante, suggesting "the creation of a currency for trade and investment transactions

[14] https://www.ft.com/content/669260a5-82a5-4e7a-9bbf-4f41c54a6143

between BRICS members" in order to "increase payment options and reduce our vulnerabilities" (Demony, 2023). However, the ambitious proposal has not been enthusiastically received by other countries. Indian Foreign Minister Subrahmanyam Jaishankar declared that "there is no idea of a BRICS currency," while South African central bank governor Lesetja Kganyago highlighted the enormous challenges that the creation of a common currency would pose, namely banking union, fiscal union, and macroeconomic convergence (Savage, 2023). He was echoed by Herbert Poenisch, a senior fellow at Zhejiang University, who stressed the importance of the issue of trade imbalances – "all BRICS member countries have China as their main trading partner and little trade with each other" – and concluding that "if such a currency is ever achieved, it is unlikely to replace the dollar" (Poenisch, 2023).

A more concrete path might be to promote the use of currencies other than the dollar for trade among BRICS member countries (and beyond). The protagonist of this project is the Chinese renminbi, whose internationalization strategy rests on three pillars: the spread of offshore renminbi clearing banks; the increase of the People's Bank of China's (PBC) bilateral swap lines; and the growth of the Chinese Cross-Border Interbank Payment System (CIPS) (Greene, 2023). The establishment of offshore clearing banks allows foreign financial institutions to settle renminbi payments directly with the local clearing bank, operating in the same time zone and often using the same language and legal framework, without resorting to China's local correspondent bank, which is often time-consuming and costly, and facilitating the accumulation of renminbi liquidity abroad (Perez-Saiz & Zhang, 2023). Regarding bilateral swap lines, the 2022 RMB Internationalization Report shows that by the end of 2021, the PBC signed bilateral currency swap agreements with central banks or monetary authorities of 40 countries and regions, with the total amount of over 4.02 trillion yuan (PBC, 2022) or about 630 billion dollars according to the exchange rate of January 1, 2022. Finally, CIPS – established in 2015 and now counting 152 direct participants and 1412 indirect participants, with an annual business volume of 123 trillion yuan in 2023 and growing, having already exceeded 165 trillion yuan as of the end of August 2024[15] – meaningfully improved the efficiency of cross-border renminbi transactions relative to previous channels (Greene, 2022), not to mention that average daily CIPS transactions reportedly increased by 50 percent in 2022 after Russia invaded Ukraine (Kitagawa & Inujima, 2023), providing individuals, businesses and institutions targeted by the American and European sanctions with an alternative channel

[15] https://www.cips.com.cn/en/index/index.html

to conduct financial transactions, thereby alleviating the effect of such punitive measures – one for all, the exclusion of several Russian banks from SWIFT.

However, this trend does not only affect BRICS countries: at the 2023 Summit, ASEAN members (Brunei, Burma, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam) signed an agreement to enhance regional payment connectivity through the use of local currency transactions instead of established currencies used for trade, such as the dollar (Medina, 2023).

The rise of Central Bank Digital Currencies

A revolution in the international monetary system could also come from the technological evolution that has swept through finance in recent decades and seen the emergence of cryptocurrencies, which are digital, encrypted, decentralized media of exchange that, unlike national currencies, are not issued and managed by a central authority, as these tasks are broadly distributed among users (Ashford & Curry, 2023).

In recent years, several central banks around the world have also begun to take important steps in the field of currency digitalization. The most significant innovation is represented by central bank digital currencies (CBDCs), defined as a central bank liability, denominated in an existing unit of account, which serves both as a medium of exchange and a store of value (Cœuré & Loh, 2018). Basically, it is an instrument that would allow citizens to have an account with the central bank, in which the digital code for each virtual currency unit will be held in a digital wallet and transferred seamlessly by the wallet-holder to other people's digital wallets (Mookerjee, 2021). Benefits that could be achieved through the use of CBDCs include: a cut in cross-border transactions costs and times; the possibility for people to have easy access to money in case of emergencies; a boost in financial inclusion; a way to fight against money laundering and other criminal activities (Waliczek, 2023).

The Atlantic Council CBDC Tracker reports that 134 countries and currency unions, representing 98% of global GDP, are exploring a CBDC, and that three countries (the Bahamas, Jamaica and Nigeria) have already fully launched a CBDC[16]. But how can the development and spread of CBDCs negatively affect dollar hegemony? The answer is simple. As written earlier, the dollar's superiority is also linked to the ability of the United States to control transnational money flows and impose financial sanctions. Using CBDCs as a store of value and as a medium

[16] https://www.atlanticcouncil.org/cbdctracker/

of exchange could limit Washington's ability to freeze foreign assets and block transactions, thereby eroding the dollar's supremacy[17].

Endogenous challenges

Endogenous challenges are defined as unintended effects of Washington's policies on the dollar primacy.

Default on US national debt

As previously written, it is quite unlikely that Washington will default on (part of) its national debt. However, by law the United States must ensure that the federal debt is kept below a given limit, which is the total amount of money that the US government is authorized to borrow to meet its existing legal obligations[18] and can only be increased or suspended by a favorable vote of the US Congress (Belz, Campbell, Stojanovic & Wessel, 2019). Should the debt exceed the current ceiling, theoretically Washington could find itself in the situation of having to declare default on part of its national debt (Berman, 2023).

Although in recent years Republican congresspersons have expressed reluctance to increase the debt ceiling (Slattery & Sullivan, 2023), Figure 9 shows that the US Congress, regardless of the controlling party and of the political affiliation of the incumbent president, has always approved increases in the debt ceiling so as to prevent it from being exceeded, and that the only cases in which the debt exceeded the threshold occurred during periods when the ceiling was suspended. Thus, experience suggests that the risk of a default on federal debt remains unlikely, though not impossible.

[17] *ibidem*
[18] https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/debt-limit

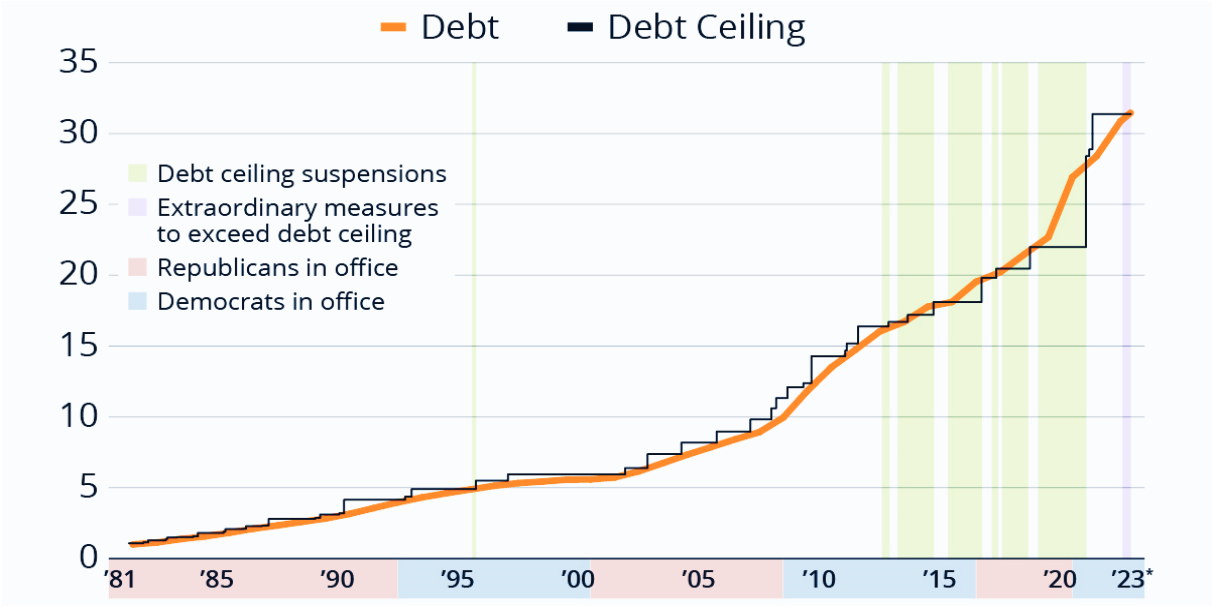

Figure 9. Debt ceiling and gross federal debt in the United States (1981-2023). Source: Statista based on Office of Management and Budget, Treasury Department

The misuse of sanctions

Economic sanctions are a set of measures restricting or blocking economic and trade relations by one or more countries towards another found guilty of violating international law (Haidar, 2017). Drezner (2021) explains that sanctions can be issued with two different purposes: (a) containment, that is, to limit the power of another state's economy; or (b) compellence, that is, to induce a well-defined change in another state's behavior. However, whereas the former is the easier to achieve the more countries (especially economic powers) participate in sanctions and the tougher the sanctions themselves, the latter (which should be the main objective) is hardly ever accomplished.

According to Drezner (2021) the misuse of sanctions is linked to American decline. However, the multiplication of sanctioning measures and affected subjects only accelerates the American decline: first, the more sanctioned subjects there are, the easier it becomes for them to find schemes to circumvent sanctions (i.e., by using currencies other than the dollar for their exchanges, thus undermining the global hegemony of the American currency), frustrating the objective of containment as well as that of compellence; second, the more the US threatens to apply secondary sanctions, forcing other countries to adhere to these measures, the more discontent the latter will feel towards Washington.

Drezner (2021) recommends a few solutions to the problem of US sanctions overexposure. First, he suggests issuing fewer sanctions in order to make the few measures applied more effective. Second, in contrast to what has been done so far, he recommends setting precise conditions that, if met by the targeted actors, would lead to an easing of sanctions. Third, he proposes to publish a five-year government strategy of economic statecraft, including explicit guidelines for the imposition of sanctions. Fourth, he prescribes that sanctions should be subject to periodic scrutiny and that they should have a fixed deadline after which Congress should take responsibility for re-approving expired measures.

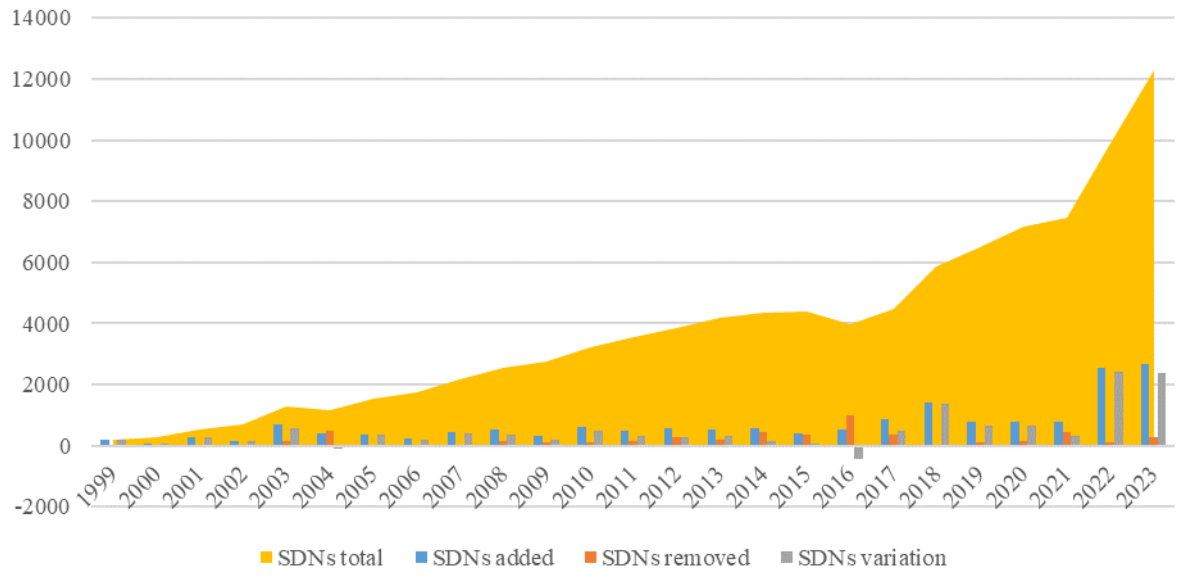

Figure 10. Number of entries added and removed annually from the SDNs list, their variation and total (1999-2023). Source: OFAC

Methodology

The previous chapter traced the historical stages that made the dollar the global reserve currency and analyzed the conditions that allowed it to remain so for decades, but also the challenges it faces today in defending its position. To get a clearer picture, two lines of analysis will be followed: in the first, the concepts of monetary capability and currency influence introduced in the first chapter will be taken up to understand whether there are actors potentially capable of overthrowing the status quo; in the second, the relation between the number of subjects sanctioned by the United States and the share of the dollar in official foreign exchange reserves will be analyzed to understand whether Washington's sanctions overexposure has undermined the dollar's primacy.

Monetary capability and currency influence

The first part of the analysis will be focused on assessing how the monetary capability and currency influence of the United States, Euro Area[19], China, Japan and the United Kingdom have changed over time and to determine whether there are currencies that can threaten the hegemony of the dollar as the global reserve currency. In fact, Norloff's (2014) analysis refers to data from 2010, so it may be interesting to update it with the most recent data available, enriching it with an intertemporal comparison to observe the evolution of these values over time.

Data selection

As written earlier, the Euro Area, China, Japan and the United Kingdom were compared with the United States. They were chosen because their currencies are the five most present in official foreign exchange reserves as of the end of 2023[20] and the five most used in foreign exchange transactions as of April 2022 (BIS, 2022).

[19] Euro Area includes Austria, Belgium, Cyprus, Croatia (from 2023), Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia (from 2014), Lithuania (from 2015), Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, Spain.
[20] https://data.imf.org/regular.aspx?key=41175

Data collection

To assess the monetary capability of a country or a group of countries, data regarding GDP, trade, financial markets, and military spending are needed. The main source used for data collection is the World Bank Open Data database, from which I obtained data on GDP output[21], trade[22] [23] – except those on the Euro Area, taken from Eurostat Data Browser[24] in order to isolate data on extra-Euro Area trade, since the World Bank database also includes data on trade between Euro Area countries under this heading – and on the market capitalization of domestic listed companies[25]. Regarding financial markets, the dataset provided by Chinn & Ito (2021) was also consulted in order to also consider the index of openness of the capital markets of the countries in question in addition to their size. Finally, data on defense expenditures were collected on the SIPRI Military Expenditure Database[26].

To assess the currency influence of a country or a monetary area, data on the official foreign exchange reserves of the currency being analyzed and on foreign exchange transactions involving that currency are required. These were collected by the IMF Data[27] and BIS's Triennal Central Bank Surveys (2013; 2016; 2019; 2022), respectively. Regarding data on official foreign exchange reserves, the values for each year refer to the latest available value for that year, which is that of the fourth quarter.

Norloff's paper on which this study is based examines data dating back to 2010. The analysis that will be conducted aims to update Norloff's work by looking at how the monetary capability and currency influence of the United States, Euro Area, China, Japan and the United Kingdom have evolved in the subsequent years.

[21] https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2023&locations=US-GB-JP-CN-XC-1W&skipRedirection=true&start=2012
[22] https://data.worldbank.org/indicator/NE.IMP.GNFS.CD?end=2023&locations=US-GB-JP-CN-1W&skipRedirection=true&start=2012
[23] https://data.worldbank.org/indicator/NE.EXP.GNFS.CD?end=2023&locations=US-GB-JP-CN-1W&skipRedirection=true&start=2012
[24] https://ec.europa.eu/eurostat/databrowser/view/tet00066__custom_10751356/bookmark/table?lang=en&bookmarkId=665452b4-3ad8-48dd-9a99-cdb46a3558d3
[25] https://data.worldbank.org/indicator/CM.MKT.LCAP.CD?end=2022&locations=US-GB-JP-CN-XC-1W&skipRedirection=true&start=2012
[26] https://milex.sipri.org/sipri
[27] https://data.imf.org/regular.aspx?key=41175

Analysis

Studying the temporal dynamics of the monetary capability and currency influence of the United States, Euro Area, China, Japan and the United Kingdom can help to understand whether and how the power relations between these countries and their currencies have changed. The time period on which the analysis focuses (2012-2023) was chosen for two reasons: first, as mentioned earlier, Norloff's paper photographs the situation as of 2010, so it may be interesting to observe how this has evolved over the years; second, sufficient data are available for this time interval.

Limitations

The study presents some limitations related to the absence of a few data.

With reference to the monetary capability analysis, data on trade and market capitalization of domestic listed companies are available until 2022. Regarding the latter dimension, data for the United Kingdom from 2015 to 2020 and the Euro Area from 2019 onward are also absent.

With reference to the analysis on currency influence, data on official foreign reserves expressed in Chinese Renminbi are available only from 2016 on, when it was added to the Special Drawing Rights Basket[28]. Data on foreign exchange transactions, on the other hand, are only available for 2013, 2016, 2019 and 2022, as these are published every three years by the Bank for International Settlements.

Sanctions

The second part of the analysis will be focused on assessing whether sanctions issued by the United States have had an impact on the preeminence of the dollar as a global store of value. To conduct this study, a new dataset – which can be found in the Appendix – was created from data available on the OFAC website[29]. In addition, this study not only explores the relationship between the amount of sanctions imposed by Washington and the state of the dollar

[28] https://www.imf.org/en/News/Articles/2016/09/29/AM16-NA093016IMF-Adds-Chinese-Renminbi-to-Special-Drawing-Rights-Basket
[29] https://ofac.treasury.gov/specially-designated-nationals-list-sdn-list/archive-of-changes-to-the-sdn-list

as the global reserve currency, but also delves into the possible interaction between the latter and individual major sanctions packages.

Data selection

The SDNs lists posted on OFAC's website distinguish between four categories of entries: individuals; organizations (institutions and companies); aircrafts; vessels. However, the analyses were carried out only with reference to the first two categories, as entries labeled as aircrafts and vessels were discontinuously included in the lists, so they are concentrated in a few years, while individuals and organizations are consistently present over the years.

Since interventions in the time period under consideration (1999-2023) covered about one hundred sanctions packages, I grouped the SDNs into 35 macro-packages, identified by country or by category of sanctioned individuals. However, even these macro-packages are often found to be small in terms of the number of subjects sanctioned, as well as sometimes concentrated in short periods of time. Therefore, only macro-packages that are quantitatively and temporally consistent were considered for the purposes of the analysis: Iran (2010-2023); Russia (2014-2023); Terrorism (1999-2023). These three are also the only macro-packages with more than 2,000 sanctioned entries as of the end of 2023 – 2,034 for Iran, 4,038 for Russia, and 2,058 for Terrorism, meaning 8,130 out of 13,086 total tags (some entries are labelled with two or more tags), over 62 percent.

Washington first introduced sanctions against Tehran in 1979, following the Islamic Revolution that overthrew the Shah's government. However, only measures taken since 2010 in response to growing international concerns over Iran's nuclear program are considered here, measures that mainly affected oil exports. In 2015, following the signing of the Joint Comprehensive Plan of Action (JCPOA) by the United States, Iran, and other countries, Washington removed some of the sanctions, and in return Tehran agreed to limit its nuclear activities and subject them to inspections by international observers. These were reinstated and further tightened in 2018 by the Trump Administration as part of the 'maximum pressure' policy aimed at pushing Iran to sign a new and more stringent agreement. The Biden Administration had planned to revive the JCPOA, but Iran's support for Russia in the war against Ukraine and rising tensions between the Islamic Republic and Israel prevented it from pursuing this strategy. At the moment, U.S. sanctions on Iran target several sectors of Iran's economy – including energy, banking, shipping, construction, mining, textiles, automotive,

manufacturing – arms trade to or from Iran, and many components of Iran's government – including the Supreme Leader and the Islamic Revolutionary Guard Corps (Thomas, 2024).

Washington began sanctioning Moscow in 2014, following the illegal annexation of Crimea. Although these were significant measures, they had nothing to do with the sanctions imposed following the invasion of Ukraine that began in February 2022, to which the United States and allies responded with wide-ranging sanctions on Russia that are unprecedented in terms of their comprehensiveness, coordination, and speed. These sanctions packages mainly affected two sectors: finance and trade. Financial sanctions froze about $300 billion of Russia's central bank foreign reserves, removed the most important Russian banks from the SWIFT system, and prohibited U.S. financial institutions processing debt payments from the Russian government to foreign investors. Trade sanctions include export controls – all exports of electronics, computers, telecommunications, sensors, lasers, and navigation, avionics, marine, aerospace, and propulsion technologies require a license – export and import restrictions – President Biden prohibited the export to Russia of U.S. dollar-denominated bank notes and luxury goods, as well as the import from Russia of products such as oil, coal, diamonds, seafood and alcoholic beverages – and the oil price cap (Nelson et al., 2023).

9/11 attacks represented a turning point in the fight against terrorism. The U.S. government launched an all-out effort to disrupt the financial infrastructure supporting terrorists and international criminals, focusing on the gateways of the global financial system. Just a few days after the attacks, the U.S. Treasury Department froze the assets and blocked the financial transactions of individuals and organizations reasonably suspected of supporting terrorism, implying huge fines and reputational damage for financial institutions violating sanctions (Masters, 2024).

Data collection

While data on the dollar's share of official foreign exchange reserves are easily available on the IMF website, the same cannot be said of the lists of entities sanctioned by the US government. Indeed, these data can be found on the website of the Office of Foreign Assets Control (OFAC), which however provides only very long lists of individuals, companies and institutions (and their aliases), without providing a summary dataset. Therefore, starting from these lists, I constructed a dataset including the number of entries added to and removed from the Specially Designated Nationals (SDNs) List each year from 1999 to 2023.

Analysis

To assess the existence of a statistical link between the number of SDNs and the dollar share in official foreign reserves, a linear regression was performed between the two variables, and then calculate the p-value and the R-squared. All analyses were performed using Python programming software.

Limitations

Since the dollar's share in official foreign exchange reserves is influenced by many factors other than sanctions, it is important to keep in mind that sanctions can only partially explain the dollar's position as a store of value in the international monetary system.

Results and Discussion

This section presents the results of the analyses introduced in the previous chapter.

Monetary capability and currency influence

In the next sub-sections, results related to the analyses on monetary capability and currency influence will be presented in order to understand how the balance in the distribution of monetary power among the world's major political and economic powers has changed in the last decade.

Monetary capability

The first indicator of monetary capability is the GDP output of a country or currency area. In fact, you cannot have a hegemonic currency without a strong economy behind it. Figure 11 shows the distribution of GDP among the United States, Euro Area, China, Japan, the United Kingdom and the rest of the world. It is immediately clear that the first three represent the world's largest economic powers by a wide margin, but it is also noticeable that between 2012 and 2023 there have been important changes. Indeed, in 2012, China had already surpassed Japan as the second largest country in the world in terms of GDP, but the economies of Beijing and Tokyo were still comparable in size; today, because of the former's sharp growth and the latter's decline, the orders of magnitude are absolutely different, with China having surpassed even the Euro Area by moving closer to the United States and Japan now having a GDP similar to that of the United Kingdom. What has not changed in the decade under review is that Washington has retained its primacy; indeed, it has even increased its relative weight in global GDP.

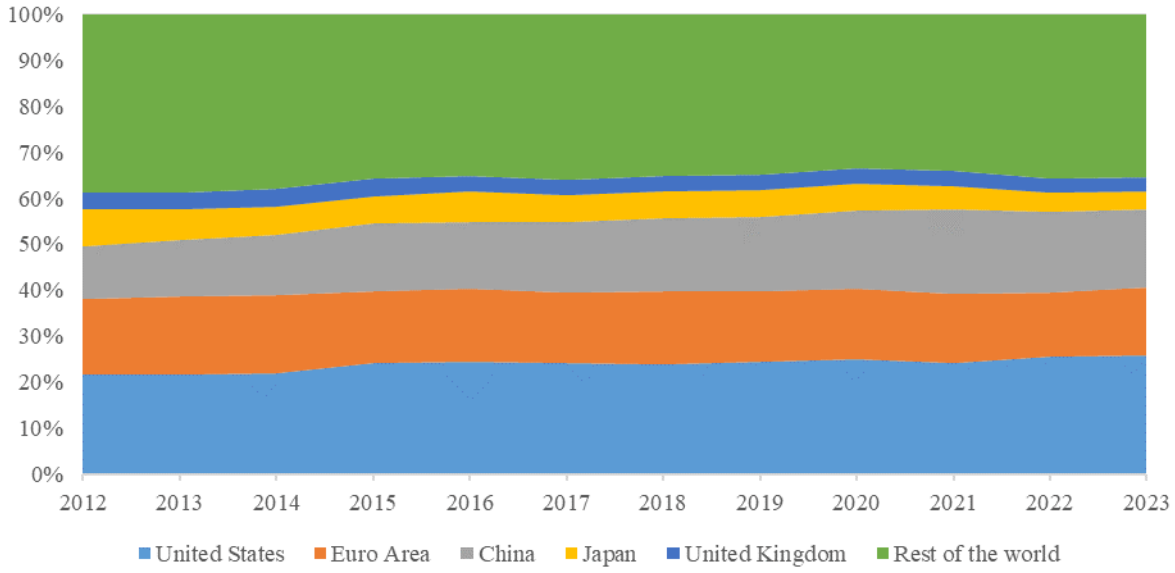

Figure 11. GDP output relative to the world. United States, Euro Area, China, Japan, United Kingdom, Rest of the world. %. 2012-2023.

The second indicator of monetary capability is the trade volume, in that, the sum of importations and exportations, of a country or currency area. This is an important measure because through trade a country can spread its currency abroad (when it pays for its imports in domestic currency) or accumulate foreign exchange reserves (when it gets its exports paid for in foreign currency). Between 2012 and 2022, the picture has not particularly changed: as Figure 12 shows, the United States, Euro Area and China remain the top three players, well ahead of Japan and the United Kingdom, and the relative weight of each has also not changed appreciably, except for a decent growth of Euro Area and China. In this field, Washington does not dominate unchallenged, and indeed in 2020 and 2021 Beijing has recorded higher trade volumes. However, there is a basic difference between the economic structure of China and the Euro Area and that of the United States with regard to international trade: the former two are structurally net exporters, while the latter are net importers. The net importer status contributes to the primacy of the dollar as the global reserve currency, because Washington pays for its imports in dollars, spreading its domestic currency abroad. Therefore, here again the United States finds itself in a favorable position.

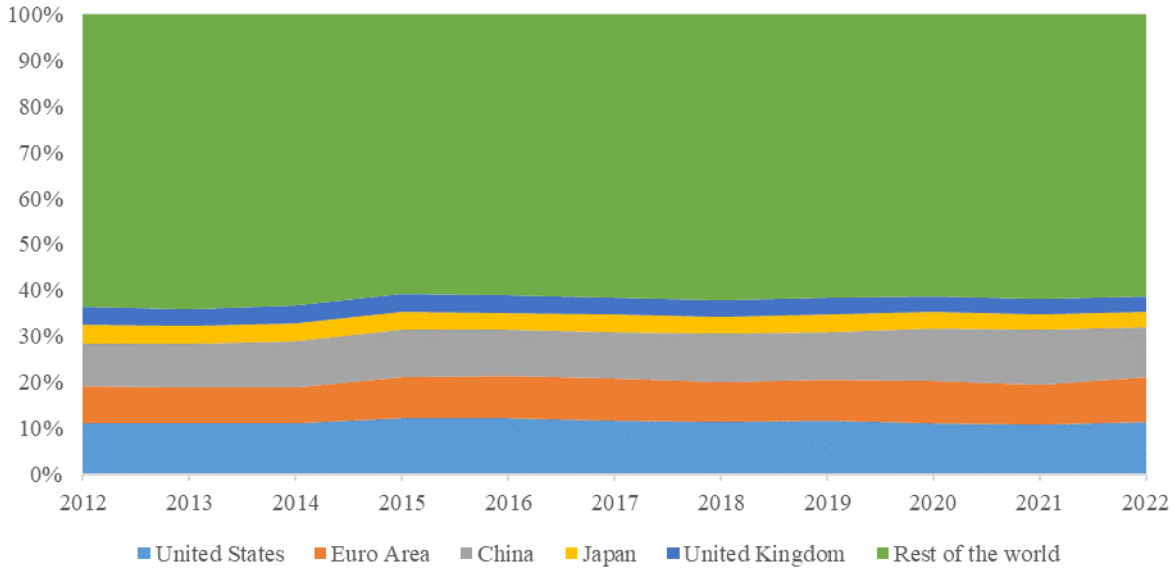

Figure 12. Trade volumes relative to the world. United States, Euro Area, China, Japan, United Kingdom, Rest of the world. %. 2012-2022.

The third indicator of monetary capability is represented by financial markets volumes, measured with the market capitalization of domestic listed companies, and their degree of openness, measured with the Kaopen index. The importance of this dimension lies in the concept of trust: financial markets are based on trust, which is essential for attracting and retaining investors. Compared to the indicators analyzed so far, the situation is radically different: as shown in Figure 13, which reports the relative weight of the capital markets of the United States, Euro Area, China, Japan, the United Kingdom and the rest of the world, Washington's dominance is not only clear-cut, but has also strengthened between 2012 and 2022, with US listed companies totaling about 40 percent of the capitalization of listed companies worldwide. However, even in this field, one cannot help but notice the growing relevance of Beijing: while in 2012 the market capitalization of Chinese domestic listed companies was comparable to that of Japanese and British companies, by 2022 it was greater than the sum of the latter two. The Euro Area is also an important player in this sector, however the most recent data available is from 2018, so it is not possible to compare it with the other countries under consideration. As for the degree of openness of financial markets, however, the Kaopen index, measured on a scale from zero to one, leaves little doubt. Between 2012 and 2022, the United States, Japan, and the United Kingdom consistently scored 1.00, the highest. The Euro Area is not rated as a whole, but almost every single country in the group (including those with the most significant and developed financial markets, i.e., Germany, France, Italy, Spain, and the Netherlands) has always recorded a score of 1.00; the rare exceptions are

countries (i.e., Cyprus, Greece, Lithuania, Slovakia, Slovenia) whose capital markets have a negligible weight on the market capitalization of listed companies in the Euro Area. On the other hand, over the time period under consideration, China has consistently scored 0.16, pointing to the fact that although its financial markets have grown considerably, they remain little open compared to those of Western countries. Summing up, the US remains the country with the largest capital markets in the world, also characterized by a high degree of openness, which can also be traced to the European, British and Japanese markets, but not to China's, which has nevertheless managed to establish itself as the second largest power in this area.

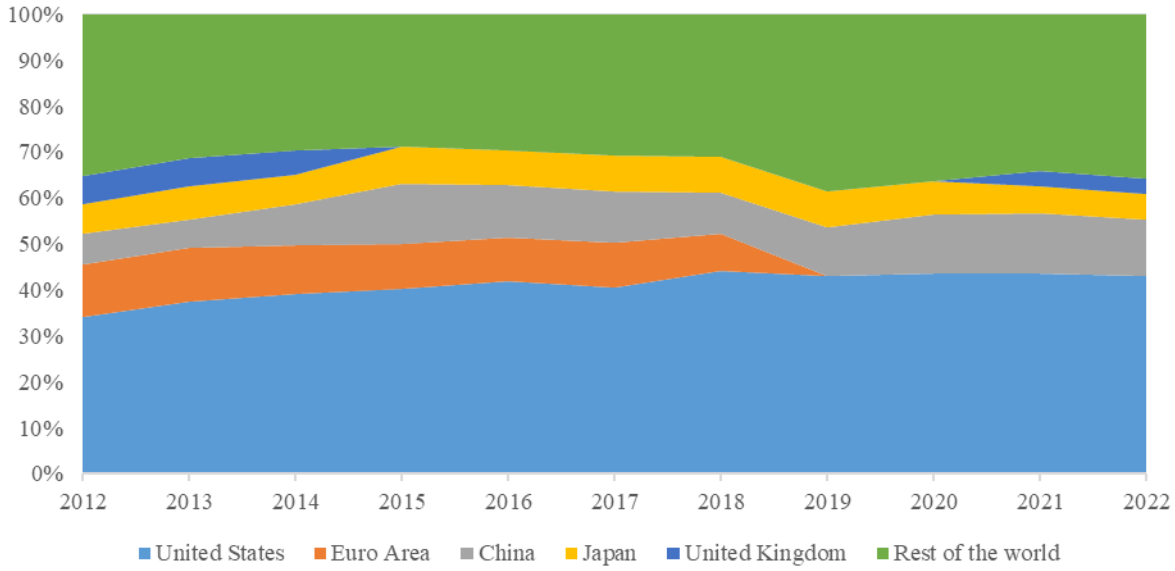

Figure 13. Market capitalization of domestic listed companies relative to the world. United States, Euro Area, China, Japan, United Kingdom, Rest of the world. %. 2012-2022.

The fourth indicator of monetary capability is the military expenditure of a country or currency area. Historically, military power has been employed to collect debt from distant places and, in addition, it represents an important political source of global currency status. As Figure 14 shows, although the relative weight of US defense spending compared to the rest of the world has decreased slightly, it remains at around 40 percent. What is even more impressive is that the sum of military spending by the Euro Area, China, Japan and the United Kingdom is less than three-quarters of the Pentagon's budget. Overall, the situation has not changed much between 2012 and 2023, subject, again, to a fair amount of growth by Beijing, which has surpassed the Euro Area while remaining far behind Washington.

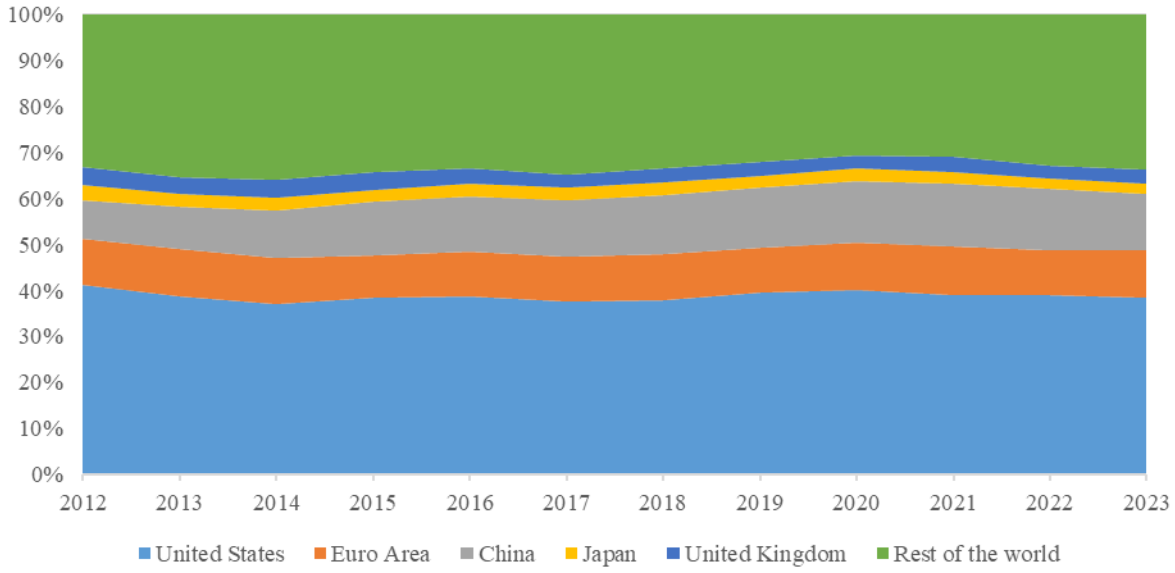

Figure 14. Military expenditure relative to the world. United States, Euro Area, China, Japan, United Kingdom, Rest of the world. %. 2012-2023.

To sum up, over the past decade the United States has maintained, and in some cases reinforced, its primacy in all dimensions that contribute to the formation of a state's monetary capability. In particular, only in the economic and trade components two competitors – namely China and, to a lesser extent, the Euro Area – emerge, while in the financial and military spheres the gap between Washington and the other powers is still abysmal, and the trend over the past decade does not seem to suggest that the strong position of the United States may be threatened. Other indications that can be drawn from this analysis are the growth of China in all dimensions, the stability of the Euro Area, and the relative irrelevance, compared to these three players, of Japan and the United Kingdom.

Currency influence

The first indicator of currency influence is the share of a currency within the official foreign exchange reserves. This is a very important measure as it provides insight about which currencies are preferred as a store of value. As Figure 15 shows, the dollar remains clearly the most widely held currency in international reserves, with a share close to 60 percent, despite a slight decline over the reporting period that continues a trend that has been ongoing for several years. The other currency holding a significant share – although much less than the dollar – is the euro, which also declined between 2012 and 2023. The opposite is the case for the Japanese yen and the British pound sterling, both of which have grown slightly over the past decade. The Chinese renminbi's share is still very low, but the trend is growing, and this is evidenced by the

fact that until 2016 it was included among ‘other currencies’, a residual entry comprising all those currencies with a negligible share. Summing up, compared to a decade ago the currency composition of official foreign exchange reserves appears slightly more balanced, with the decline of the dollar and euro being offset by the growth of the Japanese yen, British pound sterling and Chinese renminbi; however, the predominance of the dollar continues to appear unbreakable at least in the medium term.

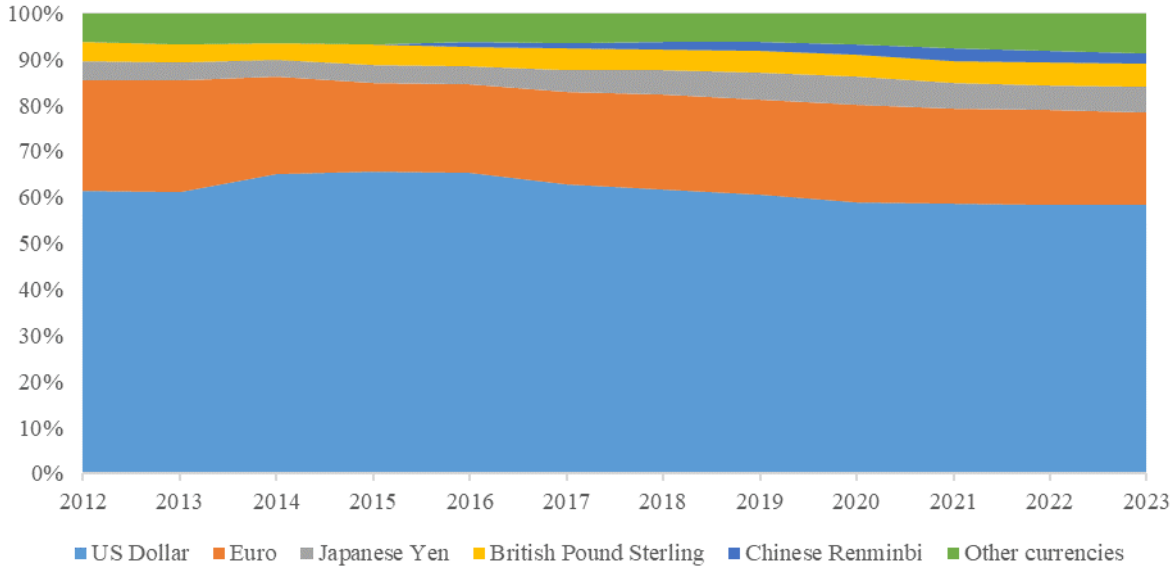

Figure 15. Currency composition of official foreign exchange reserves. US Dollar, Euro, Japanese Yen, British Pound Sterling, Chinese Renminbi, Other currencies. %. 2012-2023.

The second indicator of currency influence is the share of a currency in terms of foreign exchange transactions. This is a crucial metric because it provides information on which currencies are most frequently used as a medium of exchange. The analysis that can be done here is limited by the fact that data on the foreign exchange transactions’ currency basket are published every three years, but this does not prevent one from getting a sense of the trends at work. As Figure 16 shows, here we see again an unchallenged dominance of the dollar, which as of 2022 was part of nearly 90 percent of the transactions in question, up slightly but steadily since 2013. Bucking the trend are the euro and especially the Japanese yen, while the British pound sterling has been rising a little. Lagging behind there is the Chinese renminbi, which, however, shows a robust growth. In general, it can be noticed that the foreign exchange transactions’ currency basket is more balanced than that of official foreign exchange reserves, with the ‘other currencies’ item consistently above 40 percent (albeit out of a total of 200 percent) and with a more balanced distribution among currencies other than the dollar.

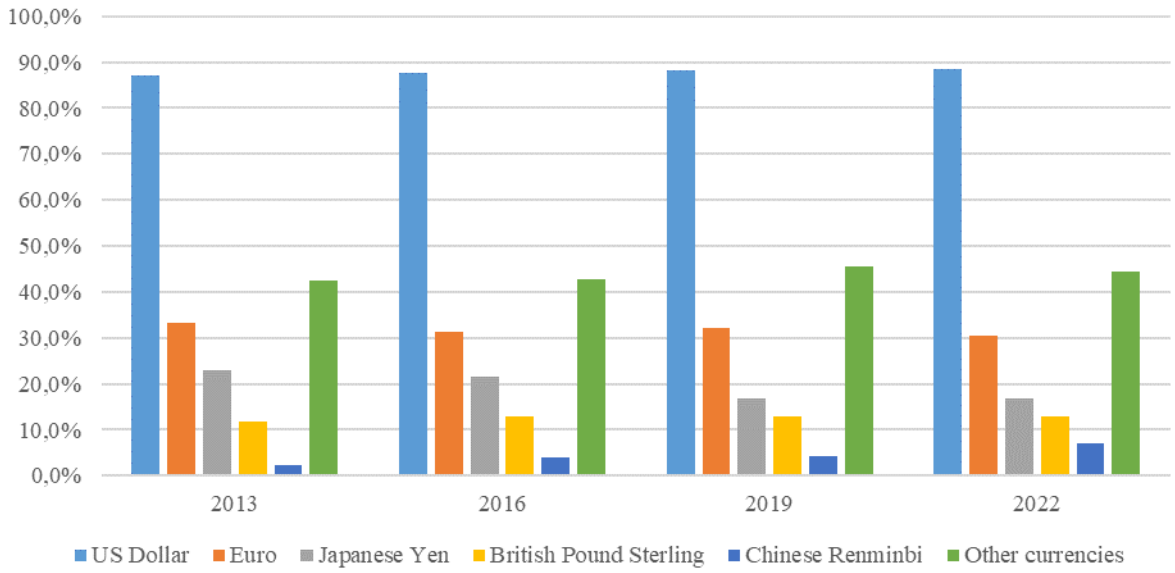

Figure 16. Currency composition of foreign exchange transactions. US Dollar, Euro, Japanese Yen, British Pound Sterling, Chinese Renminbi, Other currencies. %. 2013, 2016, 2019, 2022.

To sum up, in the last decade Washington has preserved intact its hegemony in terms of currency influence. In the face of a slight decline in the dollar's share of official foreign exchange reserves, it has experienced a small growth within the foreign exchange transactions' currency basket. What is even more important, in both metrics that measure currency influence the dollar has even strengthened against its main competitor, the euro, and kept the gap with the Japanese yen and the British pound sterling. Beijing has certainly improved the position of the Chinese renminbi in terms of currency influence, moving in a decade from a condition of total irrelevance to undermining the position of Japan and the United Kingdom. However, it is evident that there is a clear gap between the monetary capability and currency influence of China: as for the former, Beijing is second only to Washington and in the last decade has partially closed the gap with the United States, while with regard the latter, the gap between the two has remained abysmal and current trend suggest that there are no conditions to close it in the short and perhaps not even in the medium term.

Sanctions

In the next sub-sections, findings related to analyses of the relationship between US sanctions policies and the dollar's share of central banks' official foreign exchange reserves will be presented to try to understand whether the increasing use of this instrument has actually

weakened the dollar's position as a store of value in the international monetary system. To do so, linear regressions were run between the share of the dollar in official foreign reserves and different sets of SDNs. A graph showing the regression line and a table displaying the equation of the regression line, the p-value, and the coefficient of determination are presented for each analysis.

Overview

As noted several times before, in recent years the United States has increasingly used the issuance of sanctions as a foreign policy tool. Since 1999, the number of entities included in the SDNs list has grown year by year, even nearly doubling between 2019 and 2023. Over the same period, the share of the dollar in official foreign exchange reserves has decreased significantly, from just over 70 percent to less than 60 percent. In the face of these trends, the question arises whether there is a relationship between the increase in the number of SDNs and the reduced weight of the dollar in official foreign exchange reserves.

I provide some preliminary evidence by running a linear regression between the two variables for the period 1999-2023. The x-axis shows the share of the dollar in official foreign exchange reserves as of the Q4 of each year, while the y-axis shows the number of total entries on the SDNs list at the end of each year. Results provide support for the existence of a correlation between Washington's sanction overexposure and the weakening of the dollar's position as a global reserve currency. In fact, there is a negative relationship between the two variables, with the regression line (Figure 17) approximating the points quite well. From a statistical point of view, the analysis is quite robust, as shown by the coefficient of determination of 0.665 and the p-value very close to zero.

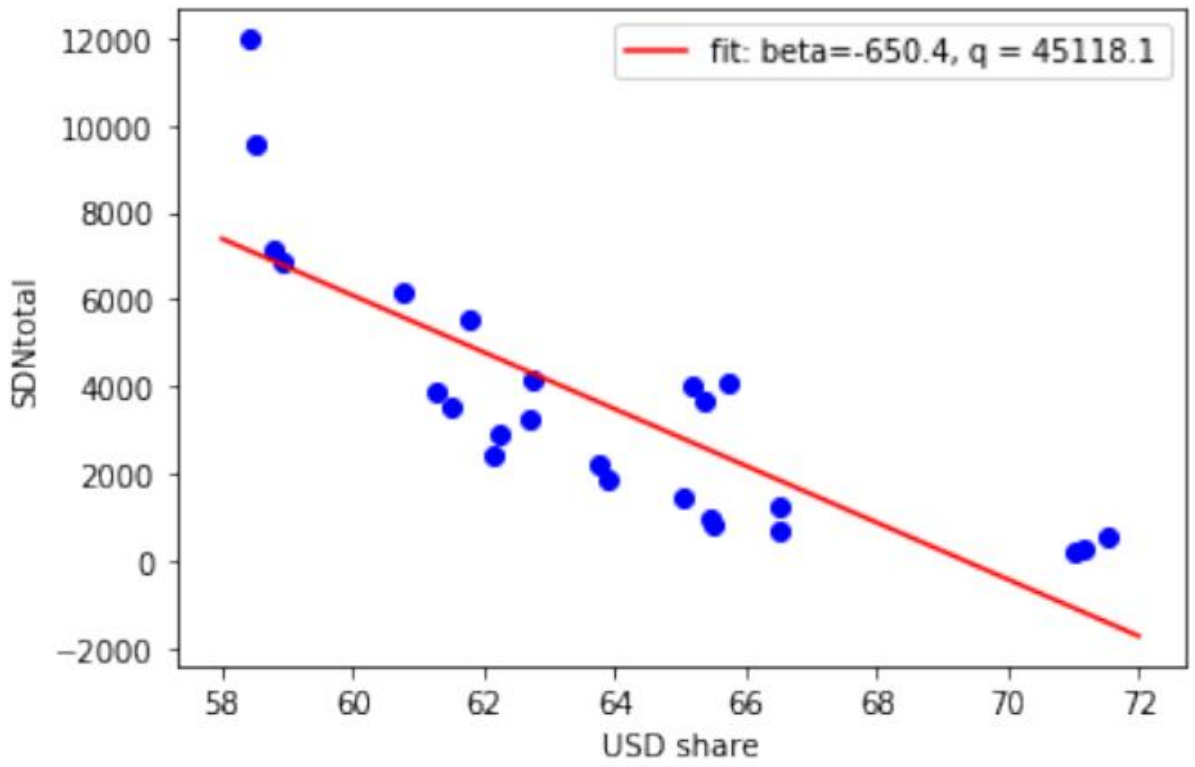

Figure 17. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of total entries on the SDNs list at the end of each year. 1999-2023.

Regression line equation	$y = -650.4x + 45118.1$
p-value	$p\text{-}value = 6.83 \times 10^{-7}$
Coefficient of determination	$R\text{-}squared = 0.665$

Table 1. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 17.

Categories

Assuming that there is a relationship between the increasing use of sanctions by the United States and the reduced share of the dollar in official foreign exchange reserves, it may be useful to delve deeper to understand whether some types of sanctions have had a greater impact than others. In fact, OFAC's lists distinguish four categories of SDNs: individuals, organizations (institutions, companies, banks, etc.), aircrafts, and vessels. However, since entries belonging to the last two categories are discontinuously present in the SDNs lists and

are concentrated in a few years, the scope of the analysis can be narrowed down to the first two categories.

Thus, two linear regressions were run, both covering the period 1999-2023: in both cases the x-axis shows the share of the dollar in official foreign exchange reserves as of the Q4 of each year, while the y-axis displays the number of individuals (Figure 18) and organizations on the SDNs list at the end of each year (Figure 19), respectively. As expected, in both cases the variables are related by a negative relationship, so that as the number of individuals or organizations sanctioned increases, the share of the dollar in official foreign exchange reserves decreases. This relationship is slightly more pronounced in the former case, as shown by the angular coefficient in the regression line equation. Finally, the coefficient of determination is slightly higher for the model referring to sanctions on individuals (0.702) than for the model concerning measures against organizations (0.645), while the p-value is very close to zero in both cases.

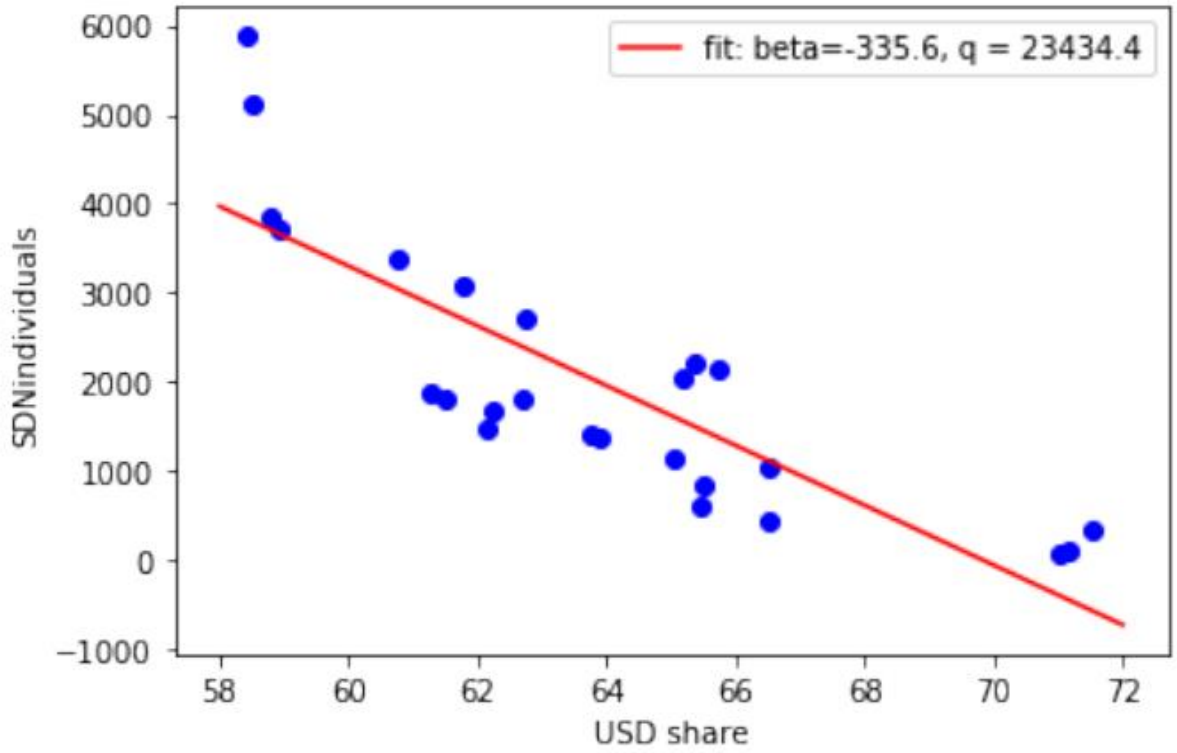

Figure 18. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of individuals on the SDNs list at the end of each year. 1999-2023.

Regression line equation	$y = -335.6x + 23434.4$
p-value	$p\text{-}value = 1.76 \times 10^{-7}$
Coefficient of determination	$R\text{-}squared = 0.702$

Table 2. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 18.

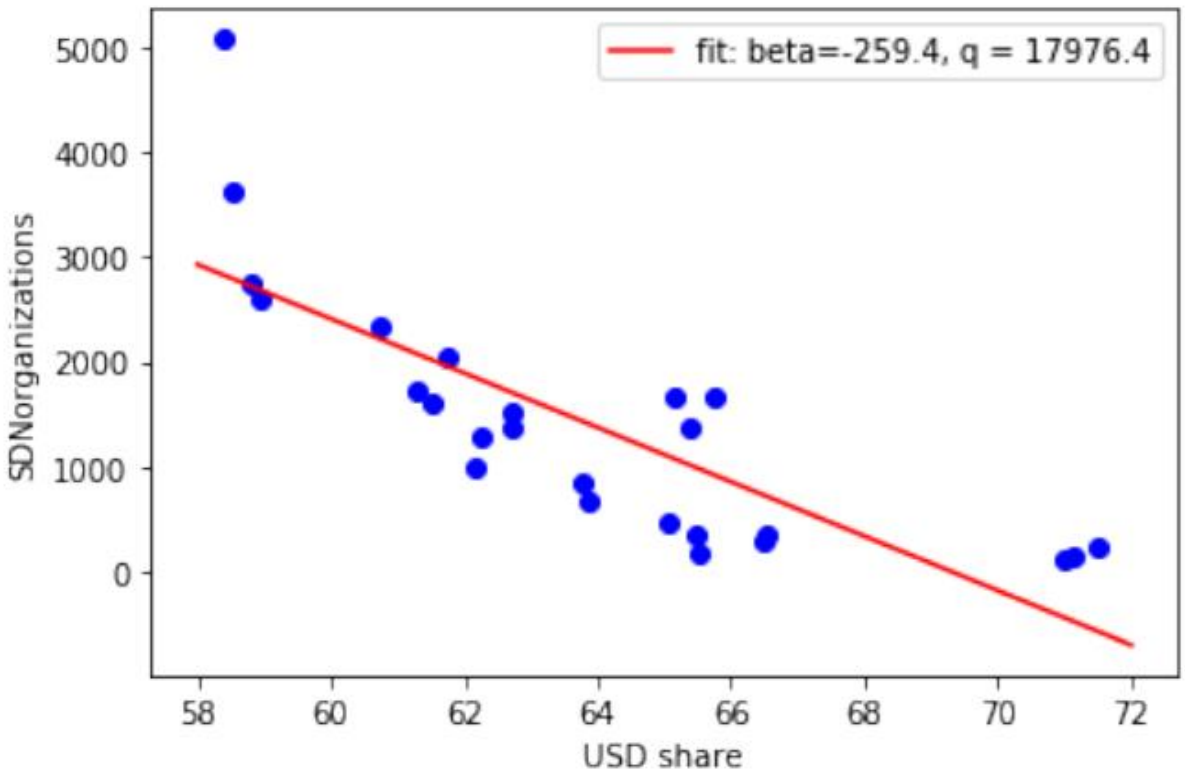

Figure 19. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of organizations on the SDNs list at the end of each year. 1999-2023.

Regression line equation	$y = -259.4x + 17976.4$
p-value	$p\text{-}value = 1.33 \times 10^{-6}$
Coefficient of determination	$R\text{-}squared = 0.645$

Table 3. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 19.

Sanction packages

The last level of the analysis concerns individual sanctions programs, grouped by relevant macro-packages. This final layer of analysis, again conducted through linear regressions, aims to determine whether these packages had a greater impact than the others in affecting the dollar's share within official foreign exchange reserves. The study was done on three of the thirty-five macro-packages identified: Iran, Russia and Terrorism. These three were chosen for two reasons: the first is that they are among the most substantial packages, both in terms of the number of sanctioned subjects and in terms of time consistency (although for Iran and Russia I chose to narrow the time period considered to exclude the years prior to the introduction of sanctions against them); and the second is that they are somewhat representative of the two types of targets of US sanctions, namely two hostile countries (Iran and Russia) and international criminals (Terrorism).

Three linear regressions were run, covering different time periods (2010-2023 for Iran, 2014-2023 for Russia, and 1999-2023 for Terrorism): in each case the x-axis shows the share of the dollar in official foreign exchange reserves as of the Q4 of each year, while the y-axis displays the number of Iran- (Figure 20), Russia- (Figure 21) and Terrorism-related entries on the SDNs list at the end of each year (Figure 22), respectively. As expected, in each case the variables are related by a negative relationship, however at different degrees: if for sanctions on Iran and terrorism-related entities the regression line interpolates the data fairly well, for sanctions on Russia the relationship appears decidedly weaker, probably due to the fact that there has been a sudden exploit of sanctions measures in the past two years. Statistical analysis confirms this impression: the coefficients of determination are significantly higher for the former two (0.611 and 0.655 respectively) than for the latter (0.363), and their p-values are also closer to zero.

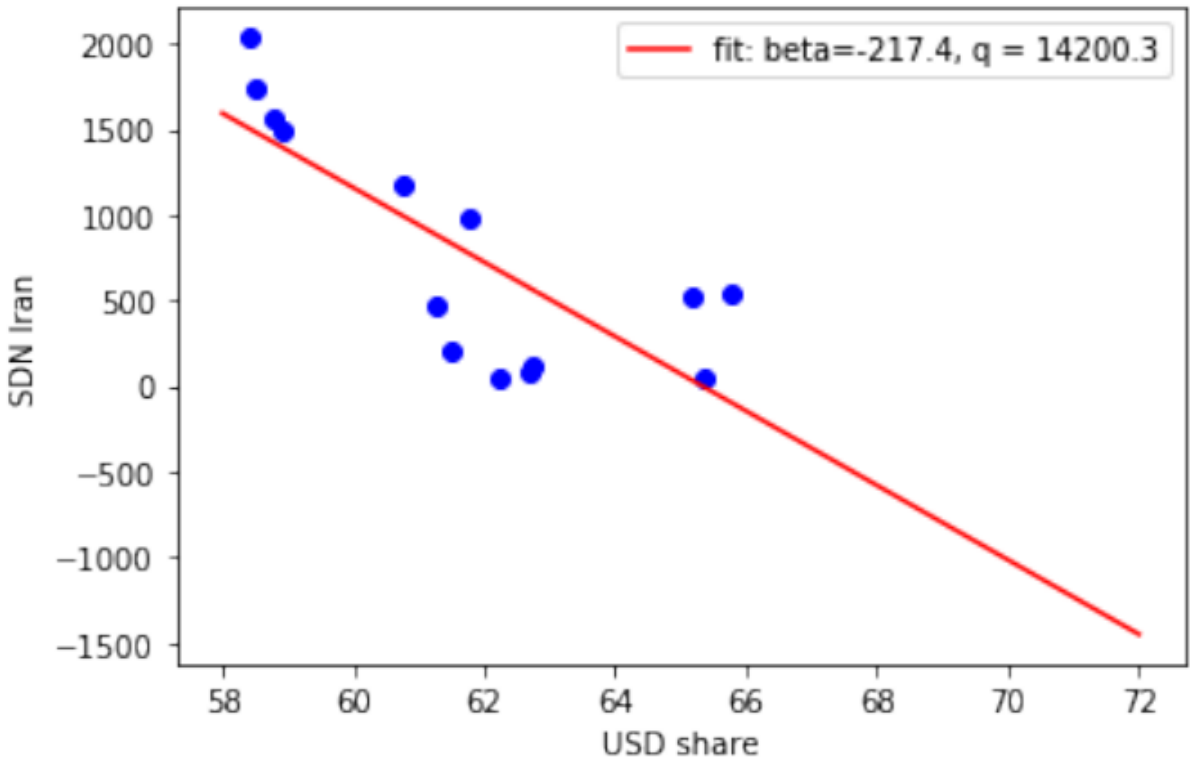

Figure 20. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of Iran sanction packages-related entries on the SDNs list at the end of each year. 2010-2023.

Regression line equation	$y = -217.4x + 14200.3$
p-value	$p\text{-}value = 9.59 \times 10^{-4}$
Coefficient of determination	$R\text{-}squared = 0.611$

Table 4. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 20.

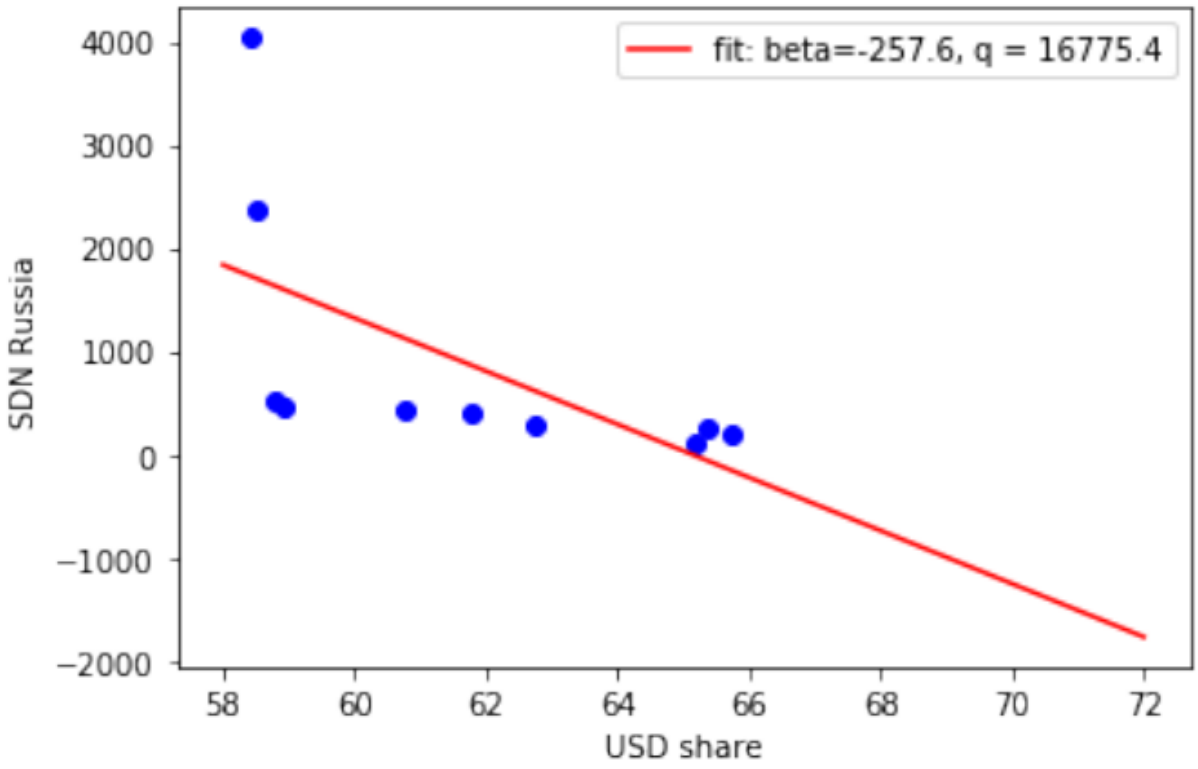

Figure 21. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of Russia sanction packages-related entries on the SDNs list at the end of each year. 2014-2023.

Regression line equation	$y = -257.6x + 16775.4$
p-value	$p\text{-}value = 6.51 \times 10^{-2}$
Coefficient of determination	$R\text{-}squared = 0.363$

Table 5. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 21.

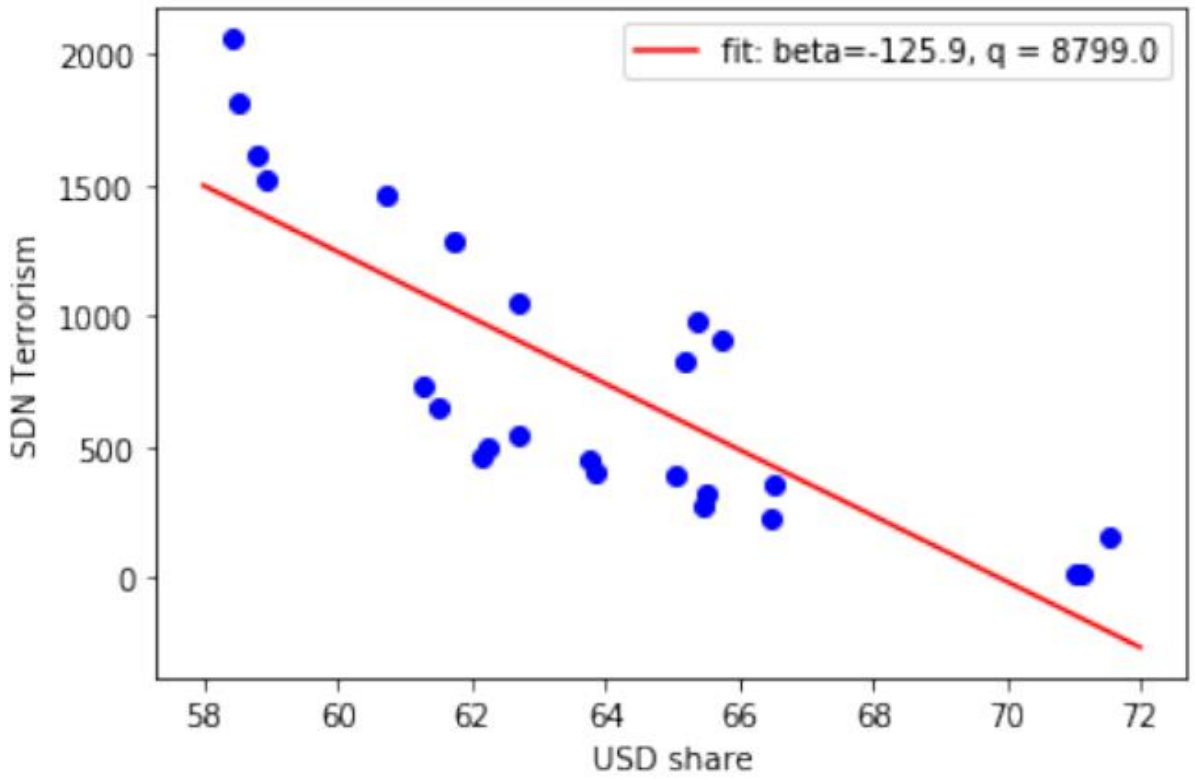

Figure 22. Linear regression to estimate the relationship between the share of the dollar in official foreign reserves as of the Q4 of each year and the number of Terrorism sanction packages-related entries on the SDNs list at the end of each year. 1999-2023.

Regression line equation	$y = -125.9x + 8799.0$
p-value	$p\text{-}value = 6.90 \times 10^{-7}$
Coefficient of determination	$R\text{-}squared = 0.665$

Table 6. Regression line equation, p-value and coefficient of determination referred to the linear regression presented in Figure 22.

Conclusion

The dollar's rise to global reserve currency began in the interwar period and was finally accomplished at the end of World War II. For nearly thirty years, this status was guaranteed by the Bretton Woods Agreement, under which the dollar was the only currency directly convertible into gold and other currencies were pegged to the dollar at a fixed exchange rate. With the end of the fixed exchange rate regime and of the gold exchange standard, the dollar hegemony was no longer the consequence of an international agreement, but the mirror of the political, economic, financial, and military primacy of the United States.

Although the dollar is still by far the preferred currency as a store of value and medium of exchange, signs of impatience coming from non-Western powers, China and Russia on top, cannot be ignored. Discourses against the dollar as an emblem of the American exorbitant privilege are being accompanied by policies aimed at reducing dependence on the dollar and diversifying the basket of currencies used in international trade. Among the reasons for non-Western countries to take such actions is Washington's increasing use of sanctions: creating alternative financial channels allows these measures to be circumvented, making them less effective.

This thesis has shown that indeed in recent years the United States has targeted its adversaries with sanctions to an increasing extent – the most striking example being the measures taken against Russia in 2022-23 – which has contributed to the erosion of the dollar's share in official foreign exchange reserves. However, analysis of the data also shows that Washington retains a clear lead in all the objective parameters that measure a country's monetary capability but especially its currency influence.

In conclusion, the data clearly say that the dollar is still the global reserve currency and is likely to remain so in the short and probably even in the medium term, despite a relative weakening of its position and increased vulnerability. Making predictions might be risky, but at the moment there does not seem to be a currency that can compete with the dollar for primacy in the global monetary system. The only possible development seems to be that of a partially more equitable distribution of monetary power internationally, which is currently concentrated in a few currencies, and the initiatives taken, for example, by the BRICS countries seem to be moving in this direction. There are likely to be important developments in this regard in the

coming years. I think it will be important for scholars and policymakers to follow them closely, to understand the evolution of the world monetary order.

Appendix

Table A illustrates how the sanctions packages were grouped to facilitate interpretation of the dataset of SDNs. Each macro-package, which has been associated with a three-letter identification tag, includes one or more tags referring to sanctions packages issued by the United States.

Table B displays the number of entries added and removed each year from the SDNs list, as well as their change and the total number of entries on the list at the end of each year.

Table C follows the same pattern as the previous one, but is more specific, dividing SDNs list entries into four categories: individuals, organizations, vessels, and aircrafts.

Table D follows the same pattern as the previous two but is even more detailed, grouping SDNs list entries by macro-packages of sanctions identified as shown in Table A.

Macro-package	Macro-package tag	Sanction tags included
Angola	ANG	UNITA
Balkans	BAL	BALKANS BALKANS-EO14033 FRYK FRYM
Belarus	BEL	BELARUS BELARUS-EO14038
Burma	BRM	BURMA BURMA-EO14014
Burundi	BUR	BURUNDI
Central African Republic	CAR	CAR
Corruption & Human Rights Abuses	CHR	GLOMAG MAGNIT
Cuba	CUB	CUBA
Cybercrime	CYB	CYBER2
Democratic Republic of Congo	DRC	DRCONGO
Ethiopia	ETH	ETHIOPIA-EO14046
Hong Kong	HKR	HK-EO13936
International Criminal Court	ICC	ICC
Iran	IRN	CAATSA-IRAN FSE-IR HRIT-IR IFCA IFSR IRAN IRAN-CON-ARMS-EO IRAN-EO13622 IRAN-EO13645 IRAN-EO13846 IRAN-EO13871 IRAN-EO13876 IRAN-EO13902

		IRAN-HR IRAN-TRA IRGC ISA
Iraq	IRQ	IRAQ IRAQ2 IRAQ3
Ivory Coast	IVC	COTED
Lebanon	LBN	LEBANON
Liberia	LBR	LIBERIA
Libya	LBY	BPI-LYBIA LIBYA LIBYA2 LIBYA3
Mali	MAL	MALI-EO13822
Narcotics Traffiking	NAR	BPI-SDNT BPI-SDNTK ILLICIT-DRUGS-EO14059 SDNT SDNTK
Nicaragua	NIC	NICARAGUA NICARAGUA-NHRAA
North Korea	NKR	DPRK DPRK2 DPRK3 DPRK4 DPRK-NKSPEA
Organized Crime	ORC	TCO
Russia	RUS	CAATSA-RUSSIA PEESA-EO14039 RUSSIA-EO14024 RUSSIA-EO14065

		UKRAINE UKRAINE2 UKRAINE-EO13660 UKRAINE-EO13661 UKRAINE-EO13662 UKRAINE-EO13685
Somalia	SOM	SOMALIA
South Sudan	SSU	SOUTH SUDAN
Sudan	SUD	DARFUR SUDAN SUDAN-EO14098
Syria	SYR	FSE-SY HRIT-SY SYRIA SYRIA-CAESAR SYRIA-EO13894
Terrorism	TER	BPI-PA FTO SDGT SDT TALIBAN
US Election Interference	USE	ELECTION-EO13848
Venezuela	VEN	VENEZUELA VENEZUELA-EO13850 VENEZUELA-EO13884
Weapons of Mass Destruction Proliferation	WMD	NPWMD
Yemen	YEM	YEMEN
Zimbabwe	ZIM	ZIMBABWE

Table A. Macro-packages of sanctions and single packages included in each of them

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Added	209	75	290	167	548	413	375	229	449	524	316	619	480	576	522	583	419	543	852	1427	768	774	768	2552	2679
Removed	15	2	4	15	291	507	17	15	27	141	130	124	141	285	192	440	349	990	354	40	99	135	453	131	290
Variation	194	72	286	152	257	-94	358	214	422	383	186	495	339	291	330	143	70	-447	498	1387	669	639	315	2421	2389
Total	194	266	552	704	961	867	1225	1439	1861	2244	2430	2925	3264	3555	3885	4028	4098	3651	4149	5536	6205	6844	7159	9580	11969

Table B. Number of entries added and removed from the SDNs list, their change, and their total (1999-2023). Source: OFAC

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Individuals	**Added**	96	35	207	106	413	314	205	126	236	183	153	300	200	194	214	328	228	250	588	378	331	372	400	1348	877
	Removed	8	3	1	7	239	75	15	14	15	127	103	107	63	189	126	162	142	169	82	27	27	37	261	91	112
	Variation	88	32	206	99	174	239	190	112	221	56	50	193	137	5	88	166	86	81	506	351	304	335	139	1257	765
	Total	88	120	326	425	599	838	1028	1140	1361	1417	1467	1660	1797	1802	1890	2056	2142	2223	2729	3080	3384	3719	3858	5115	5880
Organizations	**Added**	113	40	83	61	135	99	170	103	213	218	163	319	272	201	144	231	166	253	243	704	358	332	340	923	1618
	Removed	7	0	3	8	52	273	2	1	12	14	27	17	64	89	40	276	192	519	267	13	62	92	191	38	159
	Variation	106	40	80	53	83	-174	168	102	201	204	136	302	208	112	104	-45	-26	-266	-24	691	296	240	149	885	1459
	Total	106	146	226	279	362	188	356	458	659	863	999	1301	1509	1621	1725	1680	1654	1388	1364	2055	2351	2591	2740	3625	5084
Vessels	**Added**	0	0	0	0	0	0	0	0	0	123	0	0	8	64	19	24	16	23	20	246	73	15	25	266	99
	Removed	0	0	0	0	0	159	0	0	0	0	0	0	14	7	26	2	15	226	4	0	9	6	1	1	19
	Variation	0	0	0	0	0	-159	0	0	0	123	0	0	-6	57	-7	22	1	-203	16	246	64	9	24	265	80
	Total	0	0	0	0	0	-159	-159	-159	-159	-36	-36	-36	-42	15	8	30	31	-172	-156	90	154	163	187	452	532
Aircrafts	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	117	51	0	9	17	1	99	6	55	3	15	85
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	1	0	1	0	0	1	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	117	51	0	9	-59	0	99	5	55	3	14	85
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	117	168	168	177	118	118	217	222	277	280	294	379

Table C. Number of entries added and removed from the SDNs list grouped by category, their change, and their total (1999-2023). Source: OFAC

		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
ANG	**Added**	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Removed	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variation	10	4	0	0	-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	10	14	14	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BAL	**Added**	75	0	111	3	179	26	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	15	26
	Removed	5	0	1	1	114	0	0	0	0	1	0	1	0	0	0	3	5	0	0	0	0	0	3	21	1
	Variation	70	0	110	2	65	26	0	0	0	-1	0	-1	0	0	0	-3	-5	0	1	0	0	0	-3	-6	25
	Total	70	70	180	182	247	273	273	273	273	272	272	271	271	271	271	268	263	263	264	264	264	264	261	255	280
BEL	**Added**	0	0	0	0	0	0	0	10	8	3	0	0	4	0	0	0	0	0	0	0	0	13	66	25	46
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variation	0	0	0	0	0	0	0	10	8	3	0	0	4	0	0	0	0	0	0	0	0	13	66	25	46
	Total	0	0	0	0	0	0	0	10	18	21	21	21	25	25	25	25	25	25	25	25	25	38	104	129	175
BRM	**Added**	0	0	0	0	4	0	0	0	36	43	24	0	0	9	6	1	0	6	0	0	0	0	76	25	32
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	6	112	0	0	0	0	1	0	2
	Variation	0	0	0	0	4	0	0	0	36	43	24	0	0	7	5	1	-6	-106	0	0	0	0	75	25	30
	Total	0	0	0	0	4	4	4	4	40	83	107	107	107	114	119	120	114	8	8	8	8	8	83	108	138
BUR	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	3	0	0	0	0	0	0	0
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	3	0	0	0	0	-11	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	11	11	11	11	11	0	0	0
CAR	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	3	4	0	0	1	1	0	7
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	6	3	4	0	0	1	1	0	7
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	11	14	18	18	18	19	20	20	27
CHR	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	16	0	5	62	48	100	44	175	199	78
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	2	1
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	16	0	5	62	46	99	43	174	197	77
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	34	34	39	101	147	246	289	463	660	737
CUB	**Added**	0	0	0	0	0	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
	Removed	1	1	1	0	0	2	1	0	0	0	8	2	1	0	26	3	181	0	25	0	1	0	5	0	0
	Variation	-1	-1	-1	0	0	9	-1	1	0	0	-8	-2	-1	0	-26	-3	-181	0	-25	0	-1	4	-5	0	0
	Total	-1	-2	-3	-3	-3	6	5	6	6	6	-2	-4	-5	-5	-31	-34	-215	-215	-240	-240	-241	-237	-242	-242	-242
CYB	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	8	44	31	36	39	37	23
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	8	44	28	36	39	36	23
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	19	63	91	127	166	202	225
DRC	**Added**	0	0	0	0	0	0	0	5	10	0	5	10	2	3	4	1	0	5	2	4	3	0	0	10	9

	Removed	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variation	0	0	0	0	0	0	0	5	10	0	5	9	2	3	4	1	0	5	2	4	3	0	0	10	9	
	Total	0	0	0	0	0	0	0	5	15	15	20	29	31	34	38	39	39	44	46	50	53	53	53	63	72	
ETH	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	
HKR	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	13	0	0	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	13	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	42	42	42	
ICC	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	-2	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	
IRN	**Added**	0	0	0	0	0	0	0	0	0	0	0	56	18	137	255	69	12	17	81	851	197	331	79	181	305	
	Removed	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	2	515	0	0	0	2	12	5	13	
	Variation	0	0	0	0	0	0	0	0	0	0	0	55	18	137	254	65	10	-498	81	851	197	329	67	176	292	
	Total	0	0	0	0	0	0	0	0	0	0	0	55	73	210	464	529	539	41	122	973	1170	1499	1566	1742	2034	
IRQ	**Added**	0	0	0	0	0	39	10	0	6	12	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Removed	1	0	0	0	2	180	1	0	0	1	0	0	5	5	2	5	0	1	0	0	0	2	1	2	1	
	Variation	-1	0	0	0	-2	-141	9	0	6	11	3	0	-5	-5	-2	-5	0	-1	0	0	0	-2	-1	-2	-1	
	Total	-1	-1	-1	-1	-3	-144	-135	-135	-129	-118	-115	-115	-120	-125	-127	-132	-132	-133	-133	-133	-133	-135	-136	-138	-139	
IVC	**Added**	0	0	0	0	0	0	0	3	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0	0	0	0	
	Variation	0	0	0	0	0	0	0	3	0	0	0	0	5	0	0	0	-2	-6	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	3	3	3	3	3	8	8	8	8	6	0	0	0	0	0	0	0	0	
LBN	**Added**	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	10	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Variation	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	10	
	Total	0	0	0	0	0	0	0	0	3	3	3	3	3	4	4	4	4	4	4	4	4	4	7	7	17	
LBR	**Added**	0	0	0	0	0	27	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Removed	0	0	0	0	0	0	0	1	0	0	0	1	0	0	12	0	44	0	0	0	0	0	0	0	0	
	Variation	0	0	0	0	0	27	33	-1	0	0	0	-1	0	0	-12	0	-44	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	27	60	59	59	59	59	58	58	58	46	46	2	2	2	2	2	2	2	2	2	
LBY	**Added**	0	1	0	0	0	0	0	0	0	0	0	0	64	2	0	0	0	2	1	45	0	5	1	0	0	
	Removed	0	0	0	1	1	322	0	0	0	0	0	0	44	0	0	1	1	0	0	0	0	0	1	1	0	
	Variation	0	1	0	-1	-1	-322	0	0	0	0	0	0	20	2	0	-1	-1	2	1	45	0	5	0	-1	0	
	Total	0	1	1	0	-1	-323	-323	-323	-323	-323	-323	-323	-303	-301	-301	-302	-303	-301	-300	-255	-255	-250	-250	-251	-251	
MAL	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	5	5	5
NAR	**Added**	49	67	42	70	221	262	201	150	289	198	224	362	208	150	189	211	149	142	117	76	78	20	44	46	192
	Removed	5	2	0	3	135	2	13	10	15	135	119	84	63	260	128	406	89	104	119	37	69	54	402	54	241
	Variation	44	65	42	67	86	260	188	140	274	63	105	278	145	-110	61	-195	60	38	-2	39	9	-34	-358	-8	-49
	Total	44	109	151	218	304	564	752	892	1166	1229	1334	1612	1757	1647	1708	1513	1573	1611	1609	1648	1657	1623	1265	1257	1208
NIC	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16	20	15	10	3
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	16	20	15	9	3
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	18	38	53	62	65
NKR	**Added**	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	20	21	95	121	122	12	19	9	27	30
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1
	Variation	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	20	21	95	121	122	12	17	9	27	29
	Total	0	0	0	0	0	0	0	0	0	0	0	6	7	7	7	27	48	143	264	386	398	415	424	451	480
ORC	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	3	25	34	12	7	57	11	14	0	0	6	14	13
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	0	0	0	3	7
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	3	25	34	12	7	57	-35	14	0	0	6	11	6
	Total	0	0	0	0	0	0	0	0	0	0	0	0	3	28	62	74	81	138	103	117	117	117	123	134	140
RUS	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117	72	61	38	110	30	29	64	1862	1680
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	13
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117	72	61	38	110	24	29	64	1856	1667
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	117	189	250	288	398	422	451	515	2371	4038
SOM	**Added**	0	0	0	0	0	0	0	0	0	0	0	11	2	6	0	0	0	0	0	0	0	0	0	0	11
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	11	2	6	0	0	0	0	0	0	0	-1	0	0	11
	Total	0	0	0	0	0	0	0	0	0	0	0	11	13	19	19	19	19	19	19	19	19	18	18	18	29
SSU	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	9	2	0	0	0	5
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	6	9	2	-4	0	0	5
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	6	6	12	21	23	19	19	19	24
SUD	**Added**	70	2	0	9	0	0	0	4	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	1	154	0	0	0	0	0	0
	Variation	70	2	0	9	0	0	0	4	32	0	0	0	-2	-2	0	0	0	-1	-154	0	0	0	0	0	11
	Total	70	72	72	81	81	81	81	85	117	117	117	117	115	113	113	113	113	112	-42	-42	-42	-42	-42	-42	-31
SYR	**Added**	0	0	0	0	0	0	2	3	1	3	0	0	33	39	44	41	38	34	293	16	23	125	21	0	22
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	2	0	0	5	6	7	2	0
	Variation	0	0	0	0	0	0	2	3	1	3	0	0	33	38	42	41	38	32	293	16	18	119	14	-2	22
	Total	0	0	0	0	0	0	2	5	6	9	9	9	42	80	122	163	201	233	526	542	560	679	693	691	713
TER	**Added**	18	1	139	90	71	43	32	41	22	50	19	60	53	109	91	98	96	85	80	238	175	87	103	207	251
	Removed	4	0	2	10	25	1	0	3	12	2	3	21	7	5	12	7	14	8	11	1	1	28	11	8	5
	Variation	14	1	137	80	46	42	32	38	10	48	16	39	46	104	79	91	82	77	69	237	174	59	92	199	246

	Total	14	15	152	232	278	320	352	390	400	448	464	503	549	653	732	823	905	982	1051	1288	1462	1521	1613	1812	2058
USE	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	20	44	17	0
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	20	44	17	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	29	73	90	90
VEN	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	39	25	182	104	23	0	0
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	12	2	2	4
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	39	25	166	92	21	-2	-4
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	46	71	237	329	350	348	344
WMD	**Added**	0	0	0	0	0	0	18	12	42	170	43	121	95	125	66	30	10	33	71	37	86	28	23	43	99
	Removed	0	0	0	0	0	0	0	1	0	2	0	0	14	11	0	2	0	429	0	0	0	0	5	0	0
	Variation	0	0	0	0	0	0	18	11	42	168	43	121	81	114	66	28	10	-396	71	37	86	28	18	43	99
	Total	0	0	0	0	0	0	18	29	71	239	282	403	484	598	664	692	702	306	377	414	500	528	546	589	688
YEM	**Added**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	4	0	0
	Removed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Variation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	4	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5	5	5	5	5	5	9	9	9
ZIM	**Added**	0	0	0	0	76	7	79	0	0	47	0	1	2	0	0	4	0	2	0	0	0	4	0	7	0
	Removed	0	0	0	0	0	0	2	0	0	0	0	13	6	0	9	11	0	29	3	0	0	24	0	28	1
	Variation	0	0	0	0	76	7	77	0	0	47	0	-12	-4	0	-9	-7	0	-27	-3	0	0	-20	0	-21	-1
	Total	0	0	0	0	76	83	160	160	160	207	207	195	191	191	182	175	175	148	145	145	145	125	125	104	103

Table D. Number of entries added and removed from the SDNs list grouped by macro-package of sanctions, their change, and their total (1999-2023). Source: OFAC

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