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Article

Dollar hegemony in the digital age: an infrastructural framework

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Abstract

A surprising gap in the growing range of infrastructural perspectives on international relations is monetary hegemony. Adopting a Science and Technology Studies influenced definition of infrastructure that foregrounds socio-technical relations, this article develops an infrastructural analytical framework to consider the future of dollar dominance. We elaborate infrastructure effects in showing how social practices and technical objects underpin traditional IPE dimensions of dollar hegemony. We also identify how infrastructure formation mediates monetary hegemony through mechanisms of resurfacing, fracturing, and sedimentation, adding further four extended forms of sedimentation, namely con-, re-, de-, and neo-sedimentation. Our infrastructural perspective is harnessed to outline four future scenarios of dollar dominance: tenacity, transformation, turbulence, and transition, which we rank from highest to lowest possibilities of being enacted in the short-term to long-term. These scenarios set the stage for further research on monetary hegemony from infrastructural perspectives in international politics and beyond.

Introduction: what is the dollar's future, once again?

The future of US monetary hegemony has remained a pertinent question ever since dollar dominance arose and has persisted since World War II. International Relations (IR) debates regarding the decline or persistence of dollar hegemony have long been heated, especially during periods of major change underlining the infrastructures of global finance: when the Bretton Woods system collapsed,[1] when the Euro emerged,[2] and during the 2007–2008 global

[1] Susan Strange, "The Dollar Crisis 1971," *International Affairs*, Vol. 48, No. 2 (1972), pp. 191–216; Richard N. Cooper, "The Future of the Dollar," *Foreign Policy*, No. 11 (1973), pp. 3–32; C. Fred Bergsten, *Dilemmas of the Dollar: The Economics and Politics of U.S. International Monetary Policy* (New York: New York University Press, 1975).
[2] Kathleen R. McNamara, "A Rivalry in the Making? The Euro and International Monetary Power," *Review of International Political Economy*, Vol. 15, No. 3 (2008), pp. 439–59; Randall Douglas Germain and Herman Schwartz,

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financial crisis.[3] Growing applications of digital information and communication technologies (ICTs)—underpinning artificial intelligence (AI), blockchain, and cryptocurrencies—present global finance and international order with another potentially tumultuous period, driven by continuous changes in the objects, actors, and socio-technical relations that constitute a broadened understanding of infrastructures. Stemming from advances in the interdiscipline of Science and Technology Studies (STS), this definition widens infrastructure beyond static physical objects like bridges or pipes to consider such objects *in relation* to both one another and to human practices within and across national borders.[4]

An "infrastructural turn" in IPE literature on global finance has recently linked the micro-level of infrastructural relations with wider macro-level concerns of international hegemony.[5] Yet, while the long backgrounded infrastructures of global finance have been increasingly foreground, little analysis has delved into the infrastructures shaping the past, present, and future of monetary hegemony. In an increasingly digital and geopolitical era, in which financial technology (fintech) and financial innovations (finnovations) like stablecoins and central bank digital currencies (CBDCs) are entangled in power politics, questions concerning the continuation of dollar dominance have returned to the fore in IR and beyond.[6] In line with previous bouts of social and technological change, on-going 21st century digital transformations and geopolitical tensions have combined to foreground questions about the future of monetary hegemony. We argue here that a novel infrastructural perspective, one that also considers traditional insights from IPE and beyond, is indispensable for contemplating futures of dollar hegemony in the digital age.

This article establishes an infrastructural analytical framework for examining dollar hegemony in the digital age. We lay analytical foundations foregrounding how infrastructures help understand the past, present, and future of monetary hegemony through a trio inter-related contributions.

First, we refine existing infrastructural perspectives for studying technological change in global finance to specifically consider international monetary hegemony. To do so, we link novel infrastructure perspectives to three traditional consistent elements of dollar dominance: functions, benefits, and power. Our framework bridges conventional perspectives on monetary hegemony with infrastructural ones that have gained wide and growing purchase not only in studies of global finance, but more widely in IR of late.[7]

Second, we link traditional determinants of monetary hegemony to infrastructure (re-) formation. We adopt and extend the three mechanisms of resurfacing, fracturing, and sedimentation articulated by de Goede and Westermeier.[8] In particular, we put forward and elaborate

"The Political Economy of Failure: The Euro as an International Currency," *Review of International Political Economy*, Vol. 21, No. 5 (2014), pp. 1095–122.

[3] D.W. Drezner, *The System Worked: How the World Stopped Another Great Depression* (New York: Oxford University Press, USA, 2014); Doug Stokes, "Achilles' Deal: Dollar Decline and US Grand Strategy after the Crisis," *Review of International Political Economy*, Vol. 21, No. 5 (2014), pp. 1071–94.

[4] Carola Westermeier, Malcolm Campbell-Verduyn, and Barbara Brandl, "Infrastructural Gazing on Finance," in Carola Westermeier, Malcolm Campbell-Verduyn, and Barbara Brandl, eds., *Cambridge Global Companion to Financial Infrastructures* (Cambridge: Cambridge University Press, 2025), pp. 1–10.

[5] Marieke de Goede and Carola Westermeier, "Infrastructural Geopolitics," *International Studies Quarterly*, Vol. 66, No. 3 (2022), pp. 1–12.

[6] Thomas Palley, Esteban Caldentey, and Matlas Vernengo, eds, *Dollar Hegemony: Past, Present, and Future* (Cheltenham, UK: Edward Elgar, 2024); Jayanth Tharappel, "How Chinese Fintech Threatens US Dollar Hegemony," *Frontiers in Blockchain*, Vol. 6 (2023); Falin Zhang, Yang Cui, and Malcolm Campbell-Verduyn, "Digital RMB vs. Dollar Hegemony? Friendly Foes in China-US Currency Competition," *Journal of Chinese Political Science*, Vol. 29 (2024), pp. 483–508.

[7] Morten Ougaard, "The Transnational State and the Infrastructure Push," *New Political Economy*, Vol. 23, No. 1 (2018), pp. 128–44; Herman Mark Schwartz, "American Hegemony: Intellectual Property Rights, Dollar Centrality, and Infrastructural Power," *Review of International Political Economy*, Vol. 26, No. 3 (2019), pp. 490–519; Marieke De Goede, "Finance/Security Infrastructures," *Review of International Political Economy*, Vol. 28, No. 2 (2021), pp. 351–68; Christian Bueger, Tobias Liebetrau, and Jan Stockbruegger, "Theorizing Infrastructures in Global Politics," *International Studies Quarterly*, Vol. 67, No. 4 (2023), pp. 1–10.

[8] de Goede and Westermeier, "Infrastructural Geopolitics."

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four extended forms of sedimentation, namely con-, re-, de-, and neo-sedimentation, as core mechanisms through which socio-technical infrastructures of the monetary hegemony are also influenced and shaped by broader political and economic factors.

Third, based on our infrastructural framework, we outline possible future scenarios of dollar: tenacity, transformation, turbulence, and transition. These scenarios of future vary in the distinct processes of con-, re-, de-, and neo-sedimentation, and are ranked from highest to lowest possibilities of being enacted in the short-term to long-term while drawing out paths for further infrastructurally-attuned research on dollar hegemony.

Approaching dollar dominance: a trinity of function, benefit, and power

Dollar hegemony is typically assessed through IPE approaches focusing on its functions, benefits, and power. Meanwhile, analysis of both global finance and hegemonic transition are increasingly foregrounding infrastructures. Why have infrastructures not been foregrounded to consider the past, present, and future of dollar dominance? We argue that this reluctance stems from the existence of a strong analytical tool-kit for making sense of dollar dominance. However, more micro-level STS-inspired focus on the infrastructural relations that shape dollar dominance, we argue, complements existing macro-level stress on functions, benefits, and power in IPE research on monetary hegemony. This section reviews key aspects of existing approaches before tying them with our own infrastructural approach in the next section.

A first approach stresses the international *function* of monetary hegemony. Here the stress is on money's ability to serve as the international store of value, medium of exchange, and unit of account. Dollar hegemony is widely regarded as determined by its role since the mid-20th century as the reserve currency.[9] Key factors enabling this international function of a national currency include relative size and strength of the country's economy, international trade, domestic financial market, as well as the currency's international convertibility, and transactional network.[10] Eric Helleiner succinctly distills these factors into "confidence, liquidity and transactional networks."[11] Dollar hegemony for instance is a quantitatively measureable function of its usage in foreign reserves, global payments, international investments, foreign exchange turnover, and so on. Measuring reserve currency through such variables, Eichengreen and Flandreau pinpoint the origin of the dollar hegemony to the mid-1920s.[12] A hundred years hence, these factors combine to stress the consistently core international function of the dollar hegemony: its ability to supply monetary stability. This stress on supply contrasts with a second traditional approach focusing on demand for stability.

The *benefits* of monetary hegemony are at the core of a second take on dollar dominance. Participants in international commerce typically desire a stable functionable international currency to enable transborder transactions, economies of scale, and network externalities.[13]

[9] Jeremy Morse, "The Dollar as a Reserve Currency," *International Affairs*, Vol. 55, No, 3 (1979), pp. 359–66; Barry Eichengreen and Marc Flandreau, "The Rise and Fall of the Dollar, Or When Did the Dollar Replace Sterling as the Leading Reserve Currency?" *European Review of Economic History*, Vol. 13, No. 3 (2009), pp. 377–411; Thomas Costigan, Drew Cottle, and Angela Keys, "The US Dollar as the Global Reserve Currency: Implications for US Hegemony," *World Review of Political Economy*, Vol. 8, No. 1 (2017), pp. 104–22.

[10] Robert Triffin, *Gold and the Dollar Crisis: The Future of Convertibility* (New Haven: Yale University Press, 1960); Miguel Otero-Iglesias, and Federico Steinberg, "Reframing the Euro vs. Dollar Debate Through the Perceptions of Financial Elites in Key Dollar-Holding Countries," *Review of International Political Economy*, Vol. 20, No. 1 (2013), p. 184; Ewe-Ghee Lim, "The Euro's Challenge to the Dollar: Different Views from Economists and Evidence from COFER (Currency Composition of Foreign Exchange Reserves) and Other Data," IMF Working Paper WP/06/153 (2006).

[11] Eric Helleiner, "Political Determinants of International Currencies: What Future for the US Dollar?" *Review of International Political Economy*, Vol. 15, No. 3 (2008), p. 359.

[12] Eichengreen and Flandreau, "The Rise and Fall of the Dollar, Or When Did the Dollar Replace Sterling as the Leading Reserve Currency?" pp. 377–411.

[13] Menzie Chinn and Jeffrey Frankel, "Why the Euro Will Rival the Dollar," *International Finance*, Vol.11, No. 1 (2008), pp. 58–9.

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The dominance of any one national currency is driven here by international demands for such benefits. Changes in these demands significantly influence monetary hegemony and its future. Domestic benefits are in turn seen as major advantages stemming from the internationalization of a national currency, which in the dollar's case in the post-World War II period include international seigniorage, macroeconomic flexibility, political reputation, reduced transaction cost, and the ability to implement sanctions.[14] This last benefit of facilitating extraterritorial sanctions links most clearly to the third traditional approach to understanding monetary hegemony.

A third approach explicitly foregrounding *power* stresses the political leverage that international monetary hegemony requires and brings to the country exercising it and its allies. A vast IPE literature chronicles the exorbitant privilege[15] of dollar dominance in granting power *over* other states as well as power *to* steer monetary and other forms of governance and regulation worldwide.[16] Power here shapes all other determinant factors of dollar hegemony, including domestic supply of the international demands reviewed above such as political stability and an equally economic governance structure[17] as part of a wider balance of geopolitical power.[18]

Though closely interconnected, these three traditional approaches to monetary hegemony emphasize different determinant factors of dollar dominance. They start and arrive at different beginnings and ends on discussions of the future of dollar dominance. They typically dispute the origins, historical evolution, status quo assessment and future scenarios of the dollar hegemony. The first and second approach broadly point to the 1920s as the origins of dollar dominance while the third approach points to the longer roots as the USA exerted power over states like Philippines and regions like Latin America already in the 19th century. This third approach largely sees an unclear future of dollar dominance given new international power configurations such as the BRICS, and the return of China in particular. The second approach would agree with this unclear future of dollar dominance, in large part due to the USA becoming a less reliable partner and enforcing sanctions all over the world. Finally, the first approach largely sees dollar dominance continuing on in the foreseeable future as long as key institutions like the Federal remain nominally independent of increasingly polarized federal governments. There are further related disputes between the three approaches over whether determinant factors can be broadly separated as economic and political.[19] For instance, Eichengreen and Kirshner further classify function, benefits and power as market-based, instrumental, and geopolitical ones to generate different expectations about the future of the dollar as sustainable, uncertain, or declining, respectively.[20]

[14] Susan Strange, "The Persistent Myth of Lost Hegemony," *International Organization*, Vol. 41, No. 4 (1987), pp. 551–74; Benjamin J. Cohen, "The Benefits and Costs of an International Currency: Getting the Calculus Right," *Open Economies Review*, No. 23 (2011), pp. 13–31; Daniel Mcdowell, *Bucking the Buck: US Financial Sanctions and the International Backlash against the Dollar* (New York: Oxford University Press, 2023).

[15] Barry Eichengreen, *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System* (New York: Oxford University Press, 2011).

[16] Benjamin J. Cohen, *Currency Power: Understanding Monetary Power* (Princeton: Princeton University Press, 2015); Jeffry Frieden, *Currency Politics: The Political Economy of Exchange Rate Policy* (Princeton University Press, 2015); Andrew Walter, "Domestic Sources of International Monetary Leadership," in David M. Andrews, ed., *International Monetary Power* (Ithaca: Cornell University Press, 2006), pp. 51–71; Jonathan Kirshner, *Currency and Coercion: The Political Economy of International Monetary Power* (Princeton: Princeton University Press, 1995); David M. Andrews, *International Monetary Power* (Ithaca: Cornell University Press, 2006).

[17] Otero-Iglesias and Steinberg, "Reframing the Euro vs. Dollar Debate Through the Perceptions of Financial Elites in Key Dollar-Holding Countries," p. 184.

[18] Walter, "Domestic Sources of International Monetary Leadership," p. 51; Germain and Schwartz, "The Political Economy of Failure," pp. 1095–122; Stokes, "Achilles' Deal," pp. 1071–94; Carla Norrlof, "Dollar Hegemony: A Power Analysis," *Review of International Political Economy*, Vol. 21, No. 5 (2014), pp. 1042–70.

[19] Susan Strange, "The Politics of International Currencies," *World Politics*, Vol. 23, No. 2 (1971), pp. 215–31; Helleiner, "Political Determinants of International Currencies,", pp. 354–78.

[20] Eric Helleiner and Jonathan Kirshner, "The Future of the Dollar: Whither the Key Currency," in Eric Helleiner and Jonathan Kirshner, eds., *The Future of the Dollar* (Ithaca and London: Cornell University Press, 2009), p. 23.

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Our contention is that an infrastructural framework to dollar hegemony can bring together insights from each approach briefly reviewed here, connecting their key influencing factors like GDP, trade, capital market and defense expenditures, and political stability. We place the quantitative indicator favored in these approaches within the wider socio-technical relations that construct and support them. These relations include the macro-level relationship between great powers and their underpinnings in more everyday, mundane micro-level practices and particular objects and practices enabling trading, such as of oil and energy in dollars as opposed to other currencies. The next section proceeds to elaborate our infrastructural approach and specifically how its meso-level perspective links macro-geopolitical and micro-level concerns in interconnections that, we argue, are essential to consider in contemplating the future paths of dollar dominance.

Infrastructures of monetary hegemony

" . . . they are things and also the *relation between things*."[21]

Infrastructures draw attention to intermediate mechanisms of monetary hegemony formation and maintenance. These mechanisms are social and technical; they unfold between objects and actors and underpin the traditional determinant factors outlined in the previous section. This section first distinguishes the scope and areas of monetary infrastructures. It then zooms out on the wider relations between infrastructure and the conventional factors regarded as influencing monetary hegemony before zooming in on the infrastructural foundations of dollar dominance. In stressing how monetary hegemony is embedded in infrastructures, the perspective we elaborate seeks to spur further thinking through how—and with what implications—transformations of, or continuities in, dollar dominance may occur through what are typically backgrounded socio-technical relations.

Redefining infrastructures: scope and area

Infrastructures are largely understood as basic *things*. STS, however, have provoked two related sets of questions regarding (1) the remit of such "things" and (2) implications that relations among them and with human practices have for wider systems. These twin issues form the central dimensions of the *scope* and *area* of our infrastructural approach to analyzing the futures of dollar dominance, which emphasizes the socio-material relations between human practices and non-human objects.

Scope of infrastructures involves the range of "things" at stake in maintaining processes like monetary hegemony. As material forms these include "built networks,"[22] "the complex of non-natural resources,"[23] and "collective equipment."[24] Infrastructures are distinguished from institutions by their *materiality*. The main scope of the former's "thing-iness" traditionally includes physical roads, rails, and bridges, as well as wires and cables. These are the narrowest and most intuitive elements of infrastructure.[25] However, "things" have been broadened to also refer to less tangible human practices, techniques, and standards in research inspired by

[21] Brian Larkin, "The Politics and Poetics of Infrastructure," *Annual Review of Anthropology*, No. 42 (2013), p. 329.

[22] Larkin, "The Politics and Poetics of Infrastructure," p. 328.

[23] Keith Smith, "Economic Infrastructures and Innovation Systems," in Charles Edquist, ed., *Systems of Innovation: Technologies, Institutions and Organizations* (London and New York: Routledge, 2005), p. 90.

[24] Geoffrey C. Bowker et al., "Toward Information Infrastructure Studies: Ways of Knowing in a Networked Environment," in Jeremy Hunsinger, Lisbeth Klastrup, and Matthew Allen, eds., *International Handbook of Internet Research* (Dordrecht and London: Springer, 2010), p. 97.

[25] Nikhil Anand, Akhil Gupta, and Hannah Appel, *The Promise of Infrastructure* (Durham and London: Duke University Press, 2018).

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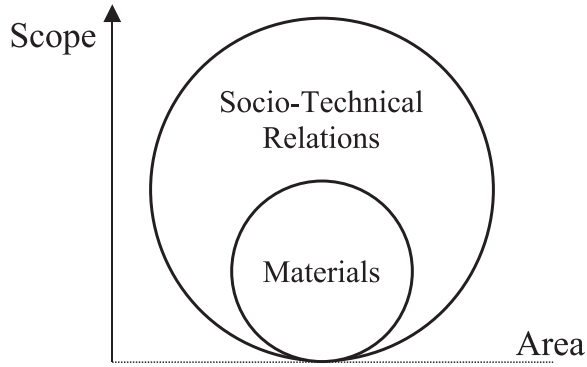


Fig. 1 General infrastructural dimensions

STS. Thus, at the other end of the spectrum of "thing-iness" are the least concrete elements of infrastructures, those whose relations with one another and with other very material "things" are emphasized most prominently in STS-inflected social studies of finance.[26]

This wider scope of infrastructural "things" overlaps with institutions, as denoted by concepts like "infrastructural (or infrastructure) institution" or "institutional infrastructure."[27] Yet, institutions and institutional perspective provide less analytical attention to material elements than even broadest infrastructural accounts of "thing-iness." Despite some overlap, institutions and infrastructures remain distinct concepts due to the latter's particular emphasis on materiality in relation to practices as noted by Bateson in arguing that "what can be studied is always a relationship or an infinite regress of relationships. Never a 'thing'."[28] In the words of Star and Ruhleder "infrastructure appears only as a relational property, not as a thing stripped of use."[29]

Figure 1 depicts in a simplified manner how the material "things" core to everyday understandings of infrastructures—roads, pipes etc.—are contained within our STS-inspired understandings of infrastructure that, we argue, usefully broaden the core scope of infrastructures to include relations between materials and practices.

Areas of activity covered by infrastructures also vary across literatures. For instance, studies of *economic* infrastructures emphasizing materiality regard roads, highways, electricity, telecommunications, etc. as necessary "preconditions" for market relations of exchange. By contrast, studies of *social* infrastructures tend to do the reverse: foregrounding the likes of educational and care relations ahead of physical buildings—schools, hospitals, and the like—where such services are offered.[30] Studies of *financial* infrastructures traditionally also tended to either foreground relational services, such as counterparty and clearing, accounting and compliance services, on the one hand,[31] and on the other hand the material "pipes" of payments and the

[26] Isabelle Chambost, Marc Lenglet, and Yamina Tadjeddine, *The Making of Finance: Perspectives from the Social Sciences* (London: Routledge, 2018).

[27] Sandra Waddock, "Building a New Institutional Infrastructure for Corporate Responsibility," *Academy of Management Perspectives*, Vol. 22, No. 3 (2008), pp. 87–108.

[28] Gregory Bateson, *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology* (London: Jason Aronson Inc, 1972), p. 246.

[29] Susan Leigh Star and Karen Ruhleder, "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces," *Information Systems Research*, Vol. 7, No. 1 (1996), p. 113.

[30] Kazimierz Fiedorowicz, "Planning of the Economic Infrastructure," *Eastern European Economics*, Vol. 16, No. 1 (1977), pp. 48–73; Johan Fourie, "Economic Infrastructure: A Review of Definitions, Theory and Empirics," *South African Journal of Economics*, Vol. 74, No. 3 (2006), p. 531; Rebert E. Hall and Charles I. Jones, "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *The Quarterly Journal of Economics*, Vol. 114, No. 1 (1999), pp. 83–116.

[31] Ruben Lee, *Running the World's Markets: The Governance of Financial Infrastructure* (Princeton and Oxford: Princeton University Press, 2011).

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like.[32] STS-influenced studies of financial infrastructures have spurred attempts to combine these areas in considering relations between social and material things.[33] These efforts have built on wider studies of *informational* infrastructures that focus on the relations between electronic databases, cyber security practices, and internet protocols.[34] Key to infrastructures whose areas span information and finance is their openness, or the ability to provide for stable inclusions of a wide range of actors and activities while also enabling certain degrees of secrecy necessary to gain market advantages through the likes of anonymous coinage, privacy laws, and intellectual property rights.

Our infrastructural approach harnesses both the broad *scope* of infrastructure as relations of things and practices with functional impacts with wider *areas* of politics, economics, and finance that are typically separated from one another. We bring these domains together and connect them in the next subsection, which zooms in on the infrastructural foundations of monetary hegemony to operationalize infrastructure of dollar dominance according to the two dimensions of scope and area. Table 1 illustrates generally how monetary hegemony is underpinned by and embedded into infrastructures in a broad sense.

Infrastructural effects: from infrastructure to monetary hegemony

The three major aspects of monetary hegemony identified in existing literature, we argue, are shaped by the objects and practices making up the broad and overlapping scope of infrastructures noted in the previous subsection. This subsection elaborates on how functions, benefits, and power in monetary hegemony are underpinned by socio-technical relations between objects and practices that are essential to digitization and potential challenges to the 21st century dollar dominance that we summarize in Table 2 and elaborate upon further below.

First and foremost, infrastructures shape the *functional* determinants of monetary hegemony. Infrastructures are the "stumbling blocks and sites where hegemonic power is shaped, blocked, and routed in specific ways."[35] In other words, they "facilitate the flow of goods, people, or ideas and allow for their exchange over space."[36] They "allow for the possibility of exchange" and are "pervasive enabling resources."[37] In analyzing financial infrastructures Lee elaborates "eight key nonexclusive factors and attributes that contribute towards identifying an institution as an infrastructure": basic, "critical, essential or, necessary," network, economies of scale, "large, long-term, immobile and sunk investment," a natural monopoly, providing beneficial public goods or services.[38] Bernards and Campbell-Verduyn position the "things" making up financial infrastructures as enabling "payments, risk assessments, and other financial functions."[39]

[32] Jennifer Jeffs, "The Politics of Financial Plumbing: Harmonization and Interests in the Construction of the International Payment System," *Review of International Political Economy*, Vol. 15, No. 2 (2008), pp. 259–88.

[33] Nick Bernards and Malcolm Campbell-Verduyn, "Understanding Technological Change in Global Finance through Infrastructures," *Review of International Political Economy*, Vol. 29, No. 5 (2019), pp. 773–89.

[34] Ole Hanseth, Eric Monteiro, and Morten Hatling, "Developing Information Infrastructure Standards: The Tension Between Standardization and Flexibility," *Science Technology and Human Values*, Vol. 21, No. 4 (1999), pp. 407–26; Eric Monteiro et al., "From Artefacts to Infrastructures," *Computer Supported Cooperative Work (CSCW)*, Vol. 22, No. 4–6 (2013), pp. 575–607; Richard Edwards, "Knowledge Infrastructures and the Inscrutability of Openness in Education," *Learning, Media and Technology*, Vol. 40, No. 3 (2015), pp. 251–64. These studies are not disconnected from IPE discussions of international power and finance, see Susan Strange, "Finance, Information and Power," *Review of International Studies*, Vol. 16, No. 3 (1990), pp. 259–74.

[35] De Goede and Westermeier, "Infrastructural Geopolitics," pp. 1–12; Marieke De Goede, "Engagement all the Way Down," *Critical Studies on Security*, Vol. 8, No. 2 (2020), pp. 101–15.

[36] Larkin, "The Politics and Poetics of Infrastructure,", p. 328.

[37] Bowker et al., "Toward Information Infrastructure Studies," p. 98.

[38] Lee, *Running the World's Markets*, pp. 9–10.

[39] Bernards and Campbell-Verduyn, "Understanding Technological Change in Global Finance through Infrastructures," pp. 773–89.

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Table 1 Infrastructural underpinnings of monetary hegemony

	Scope	
Area	**Material Objects**	**Social Practices**
Political Economic Infrastructure	• Military and bureaucratic office buildings • Close physical connections to International Organizations, embassies • Highways, railroads, ports, energy, and sewage plants, internet routers, data centers.	• Standards and rules-setting dominance • Structuring and ordering for stability • Rule-setter and market maker capacity
Financial Infrastructure	• Large and stable securities depositories, central counterparties, storage structures.	• Centrality in international transactional networks, like SWIFT, and CHIPS • Stable and effective clearing & settlement system (such as Fedwire)
Information Infrastructure	• Printing presses, CPUs to make coins, paper money, and undertake digital transactions • Shipping vessels, planes, cables (telegraph, fiber-optic) to transmit money • Storage facilities (libraries, databases, servers like Root Domain Name Server)	• Copyright, Intellectual Property Rights • Secrecy and privacy standards • Open data, freedom of information

Continuities and changes in such "thing-iness" of infrastructures in turn affect the wider systems that infrastructures underpin. Crucially, such functional impacts are *not* set in stone. New "things," such as the advent of computers and internet protocols, enact *both* shifts and persistence in infrastructural functions, such as the international monetary system provision of stability. The growth of securitization practices and circulation of objects like mortgage-backed securities (MBS) in the lead up to the 2007–2008 global financial crisis both reinforced dollar dominance in the short-term flight to safety that this period of instability caused, while spurring various searches for alternatives, from Bitcoin to BRICs countries' consideration of other options.

The key point is that the functions of monetary hegemony do not necessarily evolve in deterministic ways but can follow *both* continuities and changes in underlying infrastructures. Dollar dominance in turn must be expected to evolve unexpectedly with non-linear twists and turns. The supply of (dis)function provided by monetary hegemony is shaped by infrastructural evolution. This is likely to remain, particularly as objects like CBDCs are being integrated into existing monetary relations with implications for instance in the functional balance between monetary surveillance and privacy as well as for the very roles of (central) banks both in maintaining financial stability and dollar hegemony.[40]

Infrastructure also shapes the *benefits* of monetary hegemony. The scope of benefits both within and beyond a hegemonic state depends on the cables, satellites, and other material

[40] Zhang, Cui, and Campbell-Verduyn, "Digital RMB vs. Dollar Hegemony?" pp. 483–508.

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Table 2 Effects of infrastructural elements on monetary hegemony

	Function (store of value, medium of exchange, unit of account)	**Benefits** (stability, reduced costs, flexibility)	**Power** (*over* others; *to* determine directionality)
Material Objects	• Hardware (e.g. cables) and software that facilitate rapid but stable clearing and payments transactions (e.g. SWIFT), currency convertibility and storage	• Coinage, paper, servers, information technologies and IT support systems	• ICTs enabling in/exclusion and surveillance/privacy in Internet networks
Social Practices	• Socio-economic relations and position therein • Allies and alliances • Reputation	• Advantages stemming from seigniorage & reduced transactions with others • Inertia or path dependence • Network externalities	• Independence & leadership in setting terms of debates & directions thereof (e.g. through standard-setting)

"things" bringing dispersed parts of the world together. The telegraph, for instance, enabled British monetary hegemony to be produced and maintained over a vast empire.[41] At the same time, the telegraph also enabled key competitors to form their own regional monetary hegemonies, for instance as France did in the franc-zone of West Africa.[42] Our infrastructural approach stresses the importance of how physical objectives, like cash and paper money, located in particular places are made international through their distribution by ships, airplanes, and trains that connect certain spaces, regions, and parts of the world, but not others.[43] Discrepancies in relations between materials for production and their socio-economic distribution globally also hold for the storage of moneys, whether bills and notes or precious metals, in physical structures such as central bank vaults in certain places over others. Each of these material elements in relation to practices of exchange, trading but also of neo-colonialism and exploitation all influence the distribution of benefits underpinning monetary hegemony.

Digitization has and can be expected to continue altering benefits of monetary hegemony. Fiber-optic cables today traverse specific parts of the world with more frequency and intensity than others.[44] This unevenness has led to more wired centers of financial trade that are able to benefit from the fractional speed of high-frequency trading (HFT) than others. Such material distribution of cables around the world contributes to unevenness in the distribution of benefits both within and between countries due to various digital divides in internet access and broadband speed, such as between urban and rural centers. The relations of digital "things" with socio-economic practices, like HFT, impact the scope and scale of monetary hegemony's

[41] John Handel, "The Material Politics of Finance: The Ticker Tape and the London Stock Exchange, 1860s–1890s," *Enterprise & Society*, Vol. 23, No. 3 (2022), pp. 857–87.

[42] Toyomu Masaki, "The Colonization of French West Africa and Postal Money Transfer Services, 1874-1955: Seeking the Origin of the Compte D'opération," *Entreprises et histoire*, No. 4 (2021), pp. 42–51.

[43] Mark Salter, ed., *Making Things International 1: Circuits and Motion* (Minneapolis: University of Minnesota Press, 2015).

[44] Christian Bueger and Tobias Liebetrau, "Protecting Hidden Infrastructure: The Security Politics of the Global Submarine Data Cable Network," *Contemporary Security Policy*, Vol. 42, No. 3 (2021), pp. 391–413; Lars Gjesvik, "Private Infrastructure in Weaponized Interdependence," *Review of International Political Economy*, Vol. 30, No. 2 (2023), pp. 722–46.

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benefits that accrue to certain parts of the world above others due to agreements, alliances, and other social interconnections between state and non-state actors. As these social relations are increasingly digitized and "datafied," their speed of interactions increases with implications for the key benefits of reduced transaction costs, but also for stability. Transaction ease and flexibility—such as the ability to trade 24/7 or to switch off and pull the plug when major volatilities occur—can stand in tension with the benefits of stability. A misplaced message, hack of a computer server, or severed cable can and has led to market crashes that can contribute to undermining hegemonic stability.[45] Unforeseen glitches and hiccups can render an increasingly digital monetary system increasingly unpredictable, with errant algorithms, distributed ledgers, and other digital technologies enhancing both efficiencies while at the same time decreasing stability. Such instability on its own is unlikely prompt change and challenges to monetary hegemony. For that, political motivation and action is required.

Last but far from least, infrastructures underpin international monetary *power*. As a determinant of dollar dominance, power must be understood as enabled *and* as disabled by socio-technical relations between human practices and non-human objects. Within a state, "national political infrastructure" as "public institutions and politics created by government as a framework for economic and social relations" have long been seen as altered in ways measured by various indictors (political instability, rule of law, graft, regulatory burden, voice, and political freedom, government effectiveness).[46] So-called "infrastructural power"[47] enacts and maintains political dominance,[48] but can also spur counter-hegemonic challenges to such dominance.[49] Building on the useful insights studies employing this concept have promulgated,[50] our infrastructural approach is more STS-inflected, thereby attending less solely to the *national* dimensions of such power and emphasizing the unanticipated dimensions of socio-technical relations rather than a more linear understanding of change.

The global "politics of infrastructure" [51] allows for a nuanced understanding of how dynamics of change and continuity within the likes of financial infrastructures have wider implications beyond them. Global political systems, with their wider-structural inclusions and exclusions, socio-economic inequalities and crisis-prone characteristics are all produced, maintained, and ultimately changed based on more micro-level, everyday practices and objects.[52] Infrastructures are the essential, yet often backgrounded, features of international power, including monetary power. The hegemonic power the dollar derives from US direct and indirect control of seemingly esoteric messaging systems like the Worldwide Interbank Financial Telecommunications (SWIFT) system for bank-to-bank relations.[53] Yet, exclusions from such systems through

[45] Malcolm Campbell-Verduyn, Marcel Goguen, and Tony Porter, "Finding Fault Lines in Long Chains of Financial Information," *Review of International Political Economy*, Vol. 26, No. 5 (2019), pp. 911–37.

[46] Steven Globerman and Daniel Shapiro, "Global Foreign Direct Investment Flows: The Role of Governance Infrastructure," *World Development*, Vol. 30, No. 11 (2002), pp. 1899–919.

[47] Michael Mann, *The Sources of Social Power: Volume II* (New York: Cambridge University Press, 1993).

[48] Schwartz, "American Hegemony," pp. 490–519.

[49] Jeremy Green and Julian Gruin, "RMB Transnationalization and the Infrastructural Power of International Financial Centres," *Review of International Political Economy*, Vol. 28, No. 4 (2020), pp. 1028–54. Even if international dominance is at times at odds with domestic infrastructural power and if quasi-state actors like central banks are involved in more narrative manners, see Linda Weiss and Elizabeth Thurbon, "Power Paradox: How the Extension of US Infrastructural Power Abroad Diminishes State Capacity at Home," *Review of International Political Economy*, Vol. 25, No. 6 (2018), pp. 779–810; Nathan Coombs, "Narrating Imagined Crises: How Central Bank Storytelling Exerts Infrastructural Power," *Economy and Society*, Vol. 51, No. 4 (2022), pp. 679–702.

[50] Nathan Coombs, "Infrastructural Power in Financial Governance: Its Meaning, Applications, and Varieties," in Carola Westermeier, Malcolm Campbell-Verduyn, and Barbara Brandl, eds., *The Cambridge Global Handbook of Financial Infrastructure* (Cambridge: Cambridge University Press, 2025), pp. 37–48.

[51] Amina Nolte, "Political Infrastructure and the Politics of Infrastructure," *City*, Vol. 20, No. 3 (2016), pp. 441–54.

[52] Colin McFarlane and Jonathan Rutherford, "Political Infrastructures: Governing and Experiencing the Fabric of the City," *International Journal of Urban and Regional Research*, Vol. 32, No. 2 (2008), pp. 363–74.

[53] De Goede and Westermeier, "Infrastructural Geopolitics," pp. 1–12.

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the likes of international sanctions can generate searches for alternatives to support counter-hegemonic power.[54] To paraphrase the heterodox economist Hyman Minsky,[55] the very stability infrastructures can produce in international monetary relations may also generate instability through risk taking as excluded participants attempt to establish alternative socio-technical relations. To maintain monetary hegemony therefore it is important to ensure that exclusions producing stability for some are rare or insignificant enough to avoid generating instability for all.

In sum, our infrastructural perspective combining broad understandings of the *scope* and *areas* of infrastructures provides a framework for examine how infrastructure shape the three key dimensions of monetary hegemony, namely function, benefits and power. However, infrastructures and their (re-) formation are also influenced by broader political and economic factors as we turn to next.

Infrastructure (re-)formation: sedimentation and beyond

Each of the traditional dimensions of monetary hegemony emerge, are sustained, and eventually challenged by political and economic choices regarding material objects and social practices, as well as their combination in specific socio-technical relations in, at and across national borders. These mechanisms of infrastructure (re-)formation can more clearly and parsimoniously conceptualized, we argue here, through the notion of "sedimentation." In elaborating "infrastructural geopolitics" focusing specifically on international payments, de Goede and Westermeier harness the notion of "sedimentation" to describe how "a slow layering of particular political choices [. . .] become hardened inside infrastructure."[56] Though elaborated in a focus on payments, sedimentation is part of the broadened scope and area of infrastructures that we argue underpin US dollar dominance more generally. These include socio-economic negotiations between state representatives, such as Harry Dexter White and John Maynard Keynes representing the USA and UK, respectively, in the 1940s Bretton-Woods summit.[57] US proposals for the dollar-centered international monetary order became materially implemented in both the pre- and post-World War II eras. The lengthy and painstaking process of establishing and maintaining dollar hegemony through socio-political negotiation, coercion, and economic sanction occurred in parallel with growing material movements of commodities trade, exchange of energy and mining resources facilitated by ports and safeguarded by military dominance.[58]

Dollar dominance sedimented as a result of various piecemeal choices by numerous human organizations interfacing with material objects. From the Federal Reserve to the US Navy, American institutions catalyzed and supported dollar hegemony—but never alone and always in relation with other human organizations that would not be possible without the material means of communicating, negotiation, implementing and upholding agreements, treaties, and alliances. De Goede and Westermeier[59] and other infrastructural approaches to international

[54] Emine Akcadag Alagoz, "Creation of the Asian Infrastructure Investment Bank as a Part of China's Smart Power Strategy," *The Pacific Review*, Vol. 32, No. 6 (2019), pp. 951–71; Malcolm Campbell-Verduyn and Francesco Giumelli, "Enrolling into Exclusion: African Blockchain and Decolonial Ambitions in an Evolving Finance/Security Infrastructure," *Journal of Cultural Economy*, Vol. 15, No. 4 (2022), pp. 524–43; Suisheng Zhao, ed., *China's New Global Strategy: The Belt and Road Initiative (BRI) and Asian Infrastructure Investment Bank (AIIB), Volume I* (London: Routledge, 2020).

[55] Hyman Minsky, *Stabilizing an Unstable Economy, Vol. 1* (New York: McGraw-Hill, 2008).

[56] De Goede and Westermeier, "Infrastructural Geopolitics," p. 5.

[57] James Boughton, "Why White, Not Keynes? Inventing the Postwar International Monetary System," IMF Working Paper WP/02/52 (2002).

[58] Falin Zhang, "Economic Statecraft and the Formation of International Monetary Power," *World Economics and Politics*, No, 1 (2022), pp. 103–29.

[59] De Goede and Westermeier, "Infrastructural Geopolitics," pp. 1–12.

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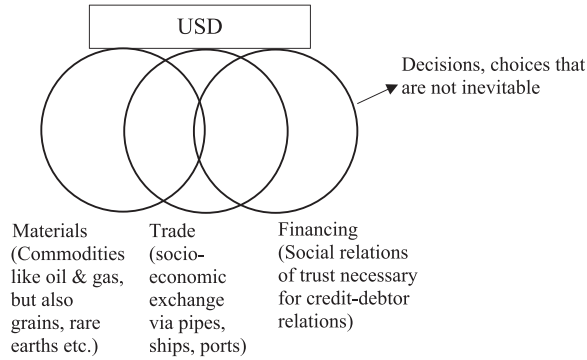


Fig. 2 Sedimentation of socio-technical relations underpinning dollar dominance

finance as well as security have foregrounded the important example of the Society for the SWIFT, a cooperative utility initially formed by 239 banks from 15 countries in 1973 to facilitate cross-border payments. Though it was not created exclusively for a particular currency and a certain country, SWIFT became centered around financial messaging services for some currencies, with 50.61% of transactions in USD and 22.36% in EUR in 2023.[60] The socio-material relations between (central) banks along with a host of other financial and political institutions underpinned by digital technologies have contributed to the sedimentation of the infrastructure underpinning US dollar hegemony. These relations are not fixed: they can both change and solidify as persistent decisions are taken to propel and safeguard the likes of the SWIFT in a world of constant flux.

This "doubling-down" on earlier choices is what we call *re-sedimentation*: a process reinforcing the socio-technical relations underpinning monetary hegemony. Like sedimentation in an initial instance of infrastructural formation, re-sedimentation involves on-going layering of decisions sustaining existing socio-technical relations, often in the face of their challenge by emerging alternative configurations of human practices and technical objects. Such challenges entail that sedimentation is not a foregone process or a necessarily re-occurring one. In other words, there is no pre-determined path to ensure sedimentation will occur. Our emphasis on *re-*sedimentation emphases the possibility that reinforcing earlier choices not automatically occur given possible challenges and changes that can always arise to prevent either sedimentation or, indeed, re-sedimentation. The layering of choices regarding materials, trade, and financing depicted in Figure 2 were for instance challenged in the breakdown of the Bretton Woods system which threatened but ultimately expanded US dollar dominance following the commodities-dollar recycling system in which "petrodollars" were made to be the central currency for international exchange of oil and gas in particular.

In addition to *re-sedimentation*, we further build on and expand de Goede and Westermier by elaborating on other three processes of sedimentation. First is what we call *neo-sedimentation*, which refers to the process whereby the socio-technical relations enabled a monetary challenger become layered into the practices and objects that sustain existing monetary hegemony. *De-sedimentation*, in turn, involves the progressive decoupling and elimination of socio-technical relations underpinning monetary hegemony with an opposing set of relations formed to challenge monetary hegemony. *Con-sedimentation*, finally, is the more active consolidation of infrastructures supporting existing conditions of monetary hegemony based on the incorporation of novel socio-technical relations that do not necessarily challenge. Each

[60] Excluding transactions within the Eurozone, see SWIFT, "RMB Tracker, 2023," https://www.swift.com/our-solutions/compliance-and-shared-services/business-intelligence/renminbi/rmb-tracker.

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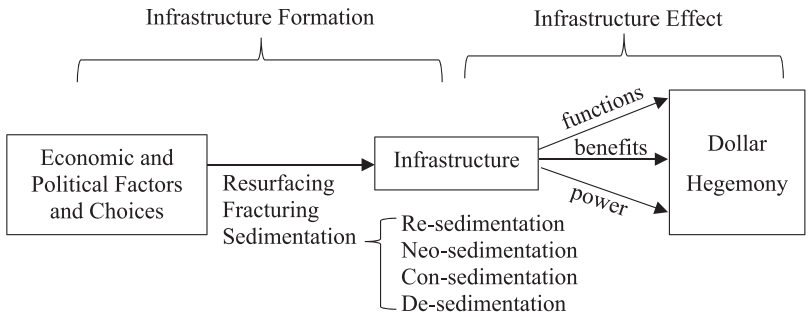


Fig. 3 An infrastructural analytical framework

of these processes involves pro-active and reactive contributions from the hegemonic power, but also stems from unexpected and unanticipated outcomes of at times unconnected events and processes. This dynamism informs our outline of future scenarios of dollar hegemony whose infrastructural relations are continually in flux, whether through their challenge, (re-)emergence, or incorporation of particular political and economic choices over time.

Summarizing the infrastructural analytical framework

Our infrastructural framework emphasizes connections and consists of two sets of relations. The first, infrastructure formation, is how economic and political factors and choices are transformed into infrastructure. The second, infrastructural effects, are how infrastructures influence the three dimensions of dollar hegemony. Previous studies have examined the direct influences of economic and political factors on the dollar hegemony through both qualitative and quantitative methods. We emphasize the significant mediating effects of infrastructure between the two sides, namely how factors and choices influence functions, benefits, and power of dollar hegemony by shaping the infrastructure through three mechanisms adopted from Goede and Westermeier, resurfacing, fracturing, and sedimentation. We extend sedimentation into four specific forms, which we specify as re-, neo-, con-, and de-sedimentation.

A simplified depiction of the infrastructural framework for analyzing futures of dollar hegemony is shown in Figure 3 below. Foregrounding the political choices underpinning socio-technical relations we can gain insights into the (re-)formation of infrastructures underpinning monetary dominance via a focus of their benefits, functions, and power possibilities.

The mechanisms through which socio-technical relations stabilize and change are crucial to pinpointing how infrastructures shape the future of dollar hegemony. Drawing on de Goede and Westermeier who identified a trio of "key pathways,"[61] namely sedimentation, resurfacing, and fracturing, our framework adopts resurfacing and fracturing, while expanding sedimentation to four specific forms. Resurfacing refers to "the ways in which infrastructural dispositions come to the surface of political discussion again," while fracturing means "the moment in which new, rival understandings and (infra)structures may be built and take root."[62] Like de Goede and Westermeier,[63] we see infrastructure as "not simply a tool for hegemonic power" but as agents themselves forming "stumbling blocks and sites where hegemonic power is shaped, blocked, and routed in specific ways." The processes in which economic and political factors and choices influence the formation and changes of infrastructure are eventually via the four extended forms of sedimentation, namely re-, neo-, con-, and de-sedimentation. The extensions

[61] De Goede and Westermeier, "Infrastructural Geopolitics," pp. 1–12.
[62] Ibid., p. 5.
[63] Ibid., p. 4.

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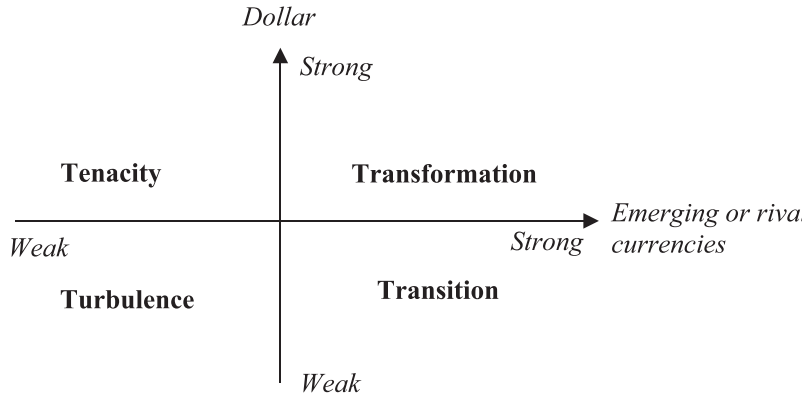


Fig. 4 The monetary futures quartet

of sedimentation and different combinations of the pathways de Goede and Westermeier outlined underpin each scenario of dollar hegemony discussed in the next section.[64]

In sum, our analytical foregrounding of infrastructure points toward what is shaped by socio-technical relations that are typically overlooked in broader existing IPE analysis. Our framework complements existing approaches to understand monetary hegemony. Political and economic factors identified in IPE literatures shape infrastructure through key mechanisms (what we call infrastructure formation) while, in turn, infrastructure shapes dollar hegemony through the three elements of functions, benefits, and power (producing what we call infrastructure effects).

Four scenarios of future

This section lays out four scenarios of future monetary hegemony based on our infrastructural framework. *Transition* sees dollar dominance gradually being replaced as a *neo*-sedimentation will bring forward new monetary infrastructures. *Turbulence* also sees the dollar losing its dominant position as results of *de*-sedimentation without one hegemonic alternative emerging as a replacement. *Transformation* sees dollar dominance remaining but its infrastructural underpinnings morphing in important ways not necessarily stemming from a specific challenger, namely *con*-sedimentation. *Tenacity* sees dollar dominance remaining without much, if any, change of significance in monetary infrastructures due to the *re*-sedimentation of socio-technical relations. Our quartet of monetary future scenarios are plotted along two axes in Figure 4 to emphasize that actual real-world outcomes, which we consider in the final section, may fall between the ideal scenarios we lay out along with questions that future research can and should explore in examining which scenario is occurring, or may have occurred.

Transition: toward new international monetary hegemony

Our first scenario of monetary future, transition, sees the dollar's dominant position in international monetary system fracturing and an infrastructure under sovereign, super-sovereign, or non-sovereign currencies sedimenting in its place. The formation of monetary hegemony is first and foremost a process of sedimentation as international monetary choices become layered onto one another in ways that "harden" into the socio-technical relations, namely infrastructure formation. The transition from seemingly "hard-wired" monetary infrastructures can occur

[64] De Goede and Westermeier, "Infrastructural Geopolitics," pp. 1–12.

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gradually in this first scenario of future, through a four-part pattern we identify wherein, in an initial instance, resurfacing occurs as political and economic choices which had become backgrounded socio-technical relations are denaturalized and return to the fore. More formal international political negotiations of previously settled choices then become re-opened. Prior choices and everyday practices, taken-for-granted objects, and socio-technical relations can also become contested, and rival ones may be made, including attempts at reshaping the monetary power structure. As part of this process of fracturing, dollar dominance wanes and ultimate ceases. A new process of neo-sedimentation occurs. The simplified mechanism of monetary infrastructural transition is as follow:

sedimentation→ resurfacing → fracturing→ neo-sedimentation.

There is a great deal of precedent pointing to transition to another sovereign currency as a likely future scenario for monetary hegemony. Regional and international hegemonic currencies from the Dutch guilder to the Pound Sterling were all bolstered by seemingly settled infrastructures until new rival infrastructural relations were formed, including underpinning the dollar.[65] The infrastructural basis of US monetary hegemony has been maintained through the sedimentation of various inter-state agreements, including the Jamaica Accords as well as via the creation and expansion of technical systems like SWIFT that have sedimented dollar dominance since the 1970s. Only with the rise and expansion of China-US competition in the 2020s has there been a resurfacing of the politics underlying earlier, seemingly settled choices in ways that may be undermining the dollar-centered international monetary system.[66] Attempts to sediment alternative monetary choices include China establishing the *renminbi* (RMB) Cross-border Interbank Payment System (CIPS), as well as bilateral currency swap lines and offshore RMB centers. Nevertheless, at the time of writing these alternative choices have yet to sediment widely into international infrastructures in ways that illustrate the traditional functions, benefits, or power of monetary hegemony.

Transition may also be toward a form of monetary hegemony underpinned by a super-sovereign currency. Once again, however, the precedents suggest this scenario is unlikely. Bancor in 1940s was proposed by the UK as a core part of the *Keynes Plan*, which lost its competition with the USA's *White Plan* during the fracturing of the Pound Sterling hegemony of the pre-World War Two era. While Keynes' proposed Special Drawing Rights (SDRs) were finally created in 1969 as an international reserve asset, they have in no way sedimented an alternative to dollar dominance, even though the Chinese RMB gained more weight (12.28%) in the SDR valuation basket. An alternative supernational reserve currency was proposed by the former governor of the People's Bank of China (PBOC), Zhou Xiaochuan in 2009. Zhou's proposal arose wide attention and debate on international monetary reform (resurfacing). Yet this was more policy rhetoric and not what we understand as fracturing.

A final possibility is that transition can entail a return to non-sovereign currencies, particularly to a commodity money centered infrastructure, as indeed long existed in world monetary history. Although it is often proposed, going "back to gold standard" or "back to Bretton Woods"[67] alone does not sediment alternative choices, practices, and objects into concrete socio-technical relations underpinning the global political economy. Those alternatives that

[65] Otero-Iglesias and Steinberg, "Reframing the Euro vs. Dollar Debate Through the Perceptions of Financial Elites in Key Dollar-Holding Countries," p. 184; Robert A. Mundell, "The International Impact of the Euro and its Implications for Transition Countries," in Mario I. Blejer and Marko Škreb, eds., *Central Banking, Monetary Policies, and the Implications for Transition Economies* (New York: Springer, 1999), p. 407.

[66] Stephanie Christine Winkler, "Strategic Competition and US–China Relations: A Conceptual Analysis," *Chinese Journal of International Politics*, Vol. 16, No. 3 (2023), pp. 333–56; Falin Zhang, "Power Contention and International Insecurity: A Thucydides Trap in China–US Financial Relations?" *Journal of Contemporary China*, Vol. 30, No. 131 (2021), pp. 751–68.

[67] Robert A. Mundell, "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science*, Vol. 29, No. 4 (1963), pp. 475–85; Robert Zoellick, "The G20 Must Look beyond Bretton Woods," *Financial Times*, November 7, 2010; Massimo Amato and Luca Fantacci, "Back

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Table 3 Summary of ill-fated monetary hegemony challenges

		Resurfacing	Fracturing	(Neo) sedimentation
Sovereign currencies	1960s French Franc	Yes	Yes	No
	1970s German Mark	Yes	Yes	No
	1980s Japanese Yen	No	No	No
	2000s Euro	Yes	Yes	Partially
	2010s Chinese Yuan	Yes	Yes	No
Super-sovereign	1940s Bancor	Yes	Yes	No
	1970s SDR	Yes	No	Partially
	2010s Chinese proposal	Yes	No	No
Non-sovereign	Gold standard	Yes	No	No
	Private digital currency	Yes	Yes	Partially

have materialized, like private digital currencies, have substituted sovereign international currency functions to some extent. Crypto-assets in particular have aroused growing official regulation and restriction worldwide,[68] especial so-called stablecoins like Tether and USD Coin which, as their name suggests, are supposedly pegged to the US dollar in ways that reinforce rather than reduce dollar dominance.

Table 3 summarizes potential transition scenarios as well as examples of previous challenges. There is one further possibility of neo-sedimentation hinting, but remaining far from actually forming, at possible pathways for monetary hegemony transition. Despite not originally being intended as a challenge to dollar dominance, the euro has established *regional* monetary infrastructures and gained some shares in *global* payment and international reserve. Our infrastructural perspective emphasizes, on the one hand, the eurozone's TARGET2 for real-time gross settlement and the Continuous Linked Settlement (CLS) for settlement of foreign exchange provide some potential to contribute to a wider hegemonic challenge. However, on the other hand, the eurozone and European Union as a whole have remained limited by a weak political foundation, the strong network effects of the dollar, and US geopolitical influence.[69] Only since the re-election of President Trump have European policy-makers begun to overtly contemplate a more "global role" for the Euro and "digital sovereignty" more generally.[70] Yet, both internal and external constraints have—and will likely—continue preventing this regional project from sedimenting alternative choices for monetary hegemony beyond Europe.

Turbulence: toward instability in international monetary relations

Turbulence describes the situation in which dollar dominance fractures while an alternative infrastructure fails to sediment. A classic historical case is the international monetary chaos

to Which Bretton Woods? Liquidity and Clearing as Alternative Principles for Reforming International Money," *Cambridge Journal of Economics*, Vol. 38, No. 6 (2014), pp. 1431–52.

[68] Ying Huang and Maximilian Mayer, "Digital Currencies, Monetary Sovereignty, and U.S.–China Power Competition," *Policy and Internet*, No. 14 (2022), pp. 324–47.

[69] Martin Feldstein, "The Failure of the Euro: The Little Currency that Couldn't," *Foreign Affairs*, Vol. 91, No. 1 (2012), p.105; Randall Germain and Herman Schwartz, "The Political Economy of Failure: The Euro as an International Currency," *Review of International Political Economy*, Vol. 21, No. 5 (2014), pp. 1095–122.

[70] Christine Lagarde, "Europe's 'Global Euro' Moment," European Central Bank, 17 June, 2025, https://www.ecb.europa.eu/press/blog/date/2025/html/ecb.blog20250617~7de14a39c3.en.html.

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during the two World Wars. Pound sterling was declining in dominance, yet the emerging dollar infrastructure was not able nor the USA willing to establish the socio-technical relations necessary for a hegemonic currency. This scenario proceeds as resurfacing occurs in previous monetary choices being called into questions despite alternative choices were not sedimenting into a challenger monetary infrastructure. Possible alternatives fail to supersede the previous hegemon resulting in currency chaos. This logic is depicted in a simplified manner as follow:

sedimentation→ resurfacing/fracturing → de-sedimentation.

One prominent indication of this scenario being possible in the future lies in current trends toward de-dollarization. There has been a growing tendency of countries worldwide attempting to eschew use of the USD going back to the aftermath of the US-centered global financial crisis of 2008 and the subsequent weak US economic growth that followed in the decade thereafter, which culminated in increased geopolitical concerns with US financial sanctions attempting to cut growing numbers of states and persons from the dollar's monetary infrastructure. Such actions, McDowell finds, "provoke anti-dollar policies among targets, and in some cases correlate with de-dollarization."[71] Domestically, the reoccurring US debt ceiling cliff-hanger politics has further catalyzed de-dollarization forces increasing even in allied countries across world regions, from Latin America[72] to sub-Saharan Africa,[73] as well in the Caucasus and central Asia[74] and East Asia. In some cases, de-dollarization has involved the creation of alternative bilateral and regional cross-border payment systems using local or non-dollar currencies.[75] These emerging infrastructural elements are summarized in the following Table 4. Overall, the USD's share in official foreign reserves decreased from 66% in the first quarter of 2015 (the highest in the past decade) to 57.8% in 2024. This decline, however, is not caused by a strong competitor but rather stems from attempts at currency diversification. Meanwhile, the Euro's shares were also dropping from 27.06% in Q1 of 2010 to 19.8% in 2024.[76] The IMF concludes in a 2022 report that a quarter of the dollar's drop shifts to the RMB while three quarters to nontraditional reserve currencies, which indicates a "stealth erosion of dollar dominance."[77] The dominance of dollar monetary infrastructure declines, yet is not replaced, which has resulted in waves of de-dollarization.

The slow but steadily growing fragmentation of the dollar-centered international monetary system has increased monetary power competition among major economies vying yet so far failed to sediment alternative infrastructures. Further decline in dollar hegemony is not inevitable of course. Yet there remains strong potential for chaos and instability, driven by global imbalances, the spillover effects of US monetary policy, and competitive currency devaluations.[78] Erosion of international monetary leadership has long been considered a key source of the instability of world economy,[79] particularly due to the lack of infrastructural alternatives. These twin tendencies have a high potential to reinforce each other: with a weakening dollar

[71] McDowell, *Bucking the Buck*, p. 5.

[72] Eduardo Levy-Yeyati, "Financial Dollarization and De-dollarization in the New Millennium," FLAR Working Paper, January 2021, https://flar.com/wp-content/uploads/2019/05/Financial-dollarization-and_0.pdf.

[73] Mauro Mecagni et al., "Dollarization in Sub-Saharan Africa Experience and Lessons," IMF, May 2015, https://www.imf.org/external/pubs/ft/dp/2015/afr1504.pdf.

[74] Selim Cakir et al., "Reducing Dollarization in the Caucasus and Central Asia: What Could Help Make Further Progress," IMF WP/22/154 (2022).

[75] Bank for International Settlements, "Exploring Multilateral Platforms for Cross-border Payments," January 2023, https://www.bis.org/cpmi/publ/d213.pdf, p. 15.

[76] International Monetary Fund, "Currency Composition of Official Foreign Exchange Reserves (COFER)," 2025, https://data.imf.org/en/Data-Explorer?datasetUrn=IMF.STA:COFER(7.0.0).

[77] Serkan Arslanalp, Barry J. Eichengreen, and Chima Simpson-Bell, "The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies," IMF WP/22/58 (2022).

[78] Xinhua, "How U.S. Dollar's Hegemony Creates Global Chaos," 4 April, 2023, https://english.news.cn/20230404/899db095ce3b4dfbbd0710ee2782d15e/c.html.

[79] Barry Eichengreen, "Hegemonic Stability Theories of the International Monetary System," NBER Working Paper No. 2193 (1987), https://www.nber.org/papers/w2193.

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Table 4 De-dollarization tendency in major economies

National or Regional Economies	Infrastructure Construction
African Continental Free Trade Area (AfCFTA)	Pan-African Payment and Settlement System (PAPSS). Enabling intra-African trade transactions in their local currency.
ASEAN	Exploring an ASEAN Local Currency Transaction Framework
Asian Clearing Union	Claimed to launch a new cross-border financial messaging system as an alternative to SWIFT
Brazil and Argentina	Intend to launch a currency union called the "sur" (the south)
BRICS nations	Proposing a new currency "BRIC" and a new payment system "BRICS Pay"
China	Cross-Border Interbank Payment System (CIPS), bilateral currency swap lines, and digital RMB payment, clearing, and settlement systems
Common Market for Eastern and Southern Africa (COMESA)	COMESA Clearing House (CCH). Enabling trade in local currencies.
East African Community (EAC)	East African Payment System (EAPS). Transactions in the EAC local currencies
EU	TARGET2, EURO1, STEP2-T, CLS
France, Germany and the UK (E3)	Instrument in Support of Trade Exchanges (INSTEX) (dissolved in March 2023)
India	RuPay; plans to link its own domestic financial messaging system with Russia's SPFS and China's CIPS; trades in rupees with Russia, Mauritius, Iran, and Sri Lanka (Malik 2023)
Indonesia	Introducing a new national payment system to replace VISA and MasterCard in state-owned institutions and companies
Russia	System for Transfer of Financial Messages (SPFS), MIR Payment system,
Southern African Development Community (SADC)	Real-Time Gross Settlement (SADC-RTGS) System. Payments denoted in ZAR (South African rands).
Southern Common Market (Mercosur)	Local Currency Payment System (SML)
Nordic Countries	P27 Nordic Payment. Payments in the Nordic currencies and the Euro

infrastructure, the USA becomes less willing and able to sacrifice its interests to solve systemic problems and fulfill the role as an international currency issuer; meanwhile, with weakening international leadership, increasing disorder of international monetary system may cause neo-mercantilist or even autarkic national policies. In sum, in the turbulence scenario of future inter-state monetary competition and rival monetary objects may replace the grudging inter-state cooperation and technical systems underpinning the infrastructures of dollar dominance.

Transformation: toward new wine in an old bottle

Our third scenario, transformation, involves the maintenance of dollar hegemony through a *con*-sedimentation process that involves a profound morphing of infrastructural relations. Here dollar hegemony persists, yet in a different form as its underlying monetary infrastructures are (self-) modified less in reaction to a clear and present challenge than due to a catering to

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(inter-) national political and market demands for transformation. Transformations can be both *reactive* to crises within or beyond the international monetary system as well as *proactive* like institutional innovation. They stem both from *within* the hegemonic country as well as from *beyond* it as infrastructures of dollar dominance transcends national borders.

A historical precedent exists with the collapse of the Bretton Woods system shifting the basis of dollar dominance from a peg to gold to the credit-based dollar infrastructure. This transformation of the infrastructural basis of monetary hegemony involved socio-technical practices establishing the "gold pool" and SDRs to defend the Bretton Woods system, as well as the birth of the SWIFT to facilitate cross-border payment. Further infrastructural changes involved petrodollar recycling discussed above along with the more recent permanent currency swap arrangements between the Fed and the central banks of major allies. This scenario plays out largely through the following mechanism:

sedimentation→ resurfacing/fracturing→ con-sedimentation.

There currently exist two possibilities for con-sedimentation of the dollar dominance. The first is a resetting of the dollar-centered "international monetary (non)system"[80] underpinning dollar dominance since the early 1970s. Such a transformation of the existing "ad hoc non-system"[81] would involve infrastructural reforms addressing longstanding critiques surrounding, *inter alia*, the asymmetric-adjustment problem, the Triffin dilemma and inequity biases.[82] Yet addressing these flaws in any "re-set" of socio-technical relations underpinning dollar dominance may be insurmountable as they involve major concessions of American power.

The second, and more likely, path to transformation of the infrastructural underpinnings of dollar dominance involves digitization. As the hegemonic power, the USA has sat back and let other countries ranging from Bahamas to Nigeria roll out central bank digital currencies while China, India, and Russia run pilots of CBDCs.[83] Although plans for a digital dollar are far less developed, the USA is involved in current CBDC cross-border standardization efforts through international financial institutions it dominates, including the IMF and Financial Stability Board, as well as SWIFT and the Bank for International Settlements.[84] The major regional CBDC cross-border experiments are also being undertaken at the time of writing in the eurozone and Eastern Caribbean, both regions closely allied with the USA. The USA's attitude and policy toward private digital currency became clearer with the 2025 *GENIUS Act* regulating and encouraging the development of dollar-backed stablecoins as well as the *Anti-CBDC Surveillance State Act* prohibiting the Federal Reserve from developing or issuing a CBDC without explicit authorization from the Congress. In short, what the USA is attempting is a transformative tweak of the infrastructural underpinnings of dollar hegemony from a reliance on (fr)enemies (allied and non-allied states with large dollar reserves) and long-standing technical systems to more novel and less pliable non-state digital token issuers supporting the dollar. As US Treasury Secretary Scott Bessent put in 2025: "we are going to keep the US [dollar] the dominant reserve currency in the world, and we will use stablecoins to do that."[85]

Table 5 outlines the various socio-material underpinnings of traditional dimensions of monetary hegemony in a digital age. Our infrastructural perspective stresses how no one single actor, decision and technology on its own will transform dollar hegemony. Rather, like the scenarios

[80] José Antonio Ocampo, *Resetting the International Monetary (Non)System* (Oxford: Oxford University Press, 2017).

[81] Ocampo, *Resetting the International Monetary (Non)System*, p. 21; John Williamson, *The Failure of World Monetary Reform, 1971–74* (New York: New York University Press, 1977), p. xiii.

[82] Ocampo, *Resetting the International Monetary (Non)System*, p. 47.

[83] Marc Lanteigne, "'E-breakout'? Weaponised Interdependence and the Strategic Dimensions of China's Digital Currency," *Chinese Journal of International Politics*, Vol. 15, No. 2 (2022), pp. 140–62.

[84] Bank for International Settlements, "Options for Access to and Interoperability of CBDCs for Cross-border Payments," *Committee on Payments and Market Infrastructures* (2022).

[85] Cited in Brady Dale, "Stablecoins Will Preserve Dollar Dominance, Bessent Says," *Axios*, 7 March, 2025, https://www.axios.com/2025/03/07/trump-stablecoins-dollar.

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Table 5 Infrastructure effects of digitalization on dollar dominance

	Function (store of value, medium of exchange, unit of account)	**Benefits** (stability, reduced costs, flexibility)	**Power** (*over* others; *to* determine debates)
Material Objects	Digitization alters speeds, locations of how and where currency is stored, how it is exchanged and counted. US less solely in control but still dominant in each key function	Efficiencies and flexibilities of digital dollar enhances instability	Digital dollar enables global panopticon for control over others and power to steer monetary flows
Social Practices	Digital dollar better fulfills key functions due to competition from growing digital alternatives	Digital communication creates greater opportunities for dialog, exchange but also misunderstanding, tensions	Reduced but persistent US power in ICT and technical operability standards setting, intellectual property rights

discussed above, this one involves gradual choices in socio-technical relations—among human actors and material objects—that sediment into transformations, metaphorically pouring new wine into the old bottle of the US dollar. Digital currencies are related to the dollar in different forms, from stablecoins backed by the dollar to digitized fiat currency in the form of CBDC. While the growth of these digital monetary infrastructures may alter the underpinnings of dollar dominance, the USA can retain its dominance as an interoperable "center" and benefit from the interoperable functions, these digital objects and the varied practices. The main infrastructural changes underpinning dollar hegemony in this scenario involve standard setting and other socio-technical practices that draw in not only traditional financial firms but also Big Tech and smaller financial technology (fintech) start-ups. Especially the growing overlap between Big Tech and Big Finance in the US parallels that of competitors who are already piloting digital versions of their national currencies, like China.[86] The digital transformation of dollar dominance, however, may not necessarily depend on China or other (groups of) countries establishing counter standards and infrastructures of digital interoperability. The con-sedimentation process underlying this third scenario have built on the existing benefits of flexibility and openness provided by American(—dominated) ICT standards in fostering new protocols, which enable international dollar dominance to persist.[87]

Tenacity: continuing dollar dominance in spite of it all

A final scenario of future also depicts continuity in US monetary hegemony, yet due to *re*-sedimentation of existing infrastructural relations rather than transformation of existing infrastructures. This includes persistent proactive US efforts to suppress rival infrastructures from

[86] Dirk A. Zetzsche et al., "From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance," *New York University Journal of Law & Business*, No. 14 (2017), pp. 393–446.

[87] Alan Dupont, "An Analysis of China's Proposal to Control and Centrally Manage the Internet," *Journal of Telecommunications and the Digital Economy*, Vol. 8, No. 2 (2020), pp. 159–66; Tim Nicholas Rühlig and Tobias Ten Brink, "The Externalization of China's Technical Standardization Approach," *Development and Change*, Vol. 52, No. 5 (2021), pp. 1196–221; Zhang, Cui, and Campbell-Verduyn, "Digital RMB vs. Dollar Hegemony?" pp. 483–508.

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sedimenting through both market practices and statecraft that seek to steer material developments. At the same time, tenacity also include reactive efforts of the USA to respond to crises, increasingly of its own making like the 2007–2008 meltdown. The tenacity of the *status quo* of the dollar hegemony here reflects not only the soft power standardization discussed in the previous scenario but also the continued overt exercises of political and economic power, like financial and technological sanctions.[88] The tenacity scenario has, like other scenarios, historical precedents: the USA has long undertaken various forms of statecraft to guard the dollar's hegemonic position, through its military[89] and economic might. It continues to do so in the present day at the time of writing as sanctions are continually extended to financial and technology sectors, as well as to a range of challengers. This scenario envisions a continuation of tactics, methods, and other policy practices to maintain dollar dominance. The key mechanism of tenacity is as follow:

Sedimentation→ resurfacing→ re-sedimentation.

A key question here is whether the USA can underwrite the costs of existing practices and instruments that sustain its monetary dominance. The ability to finance such statecraft while running historically large deficits is maintained by the continuing global demand for US debt, primarily through global circulation of Treasury Bills. Yet, widening of US deficits, growing debates over the federal debt in debt ceiling standoffs within increasingly polarized domestic politics, and international re-alignment that harm the dollar's international role raise doubts about the possibilities for the re-sedimentation of US monetary hegemony.[90] The key economic statecrafts maintaining the dollar hegemony are summarized in Table 6.

This final scenario sees, despite it all (e.g. the major disadvantages of, and challenges to, dollar infrastructures), the US dollar maintaining its dominant international position. Present trends suggest this scenario is not unlikely: the US dollar has remained the top global payment currency since August 2013 with the exception of two brief periods in October 2020 and May 2021,[91] and still occupies nearly half of the global payments (47.19% in June 2025), while the closest challenger, the euro, only one quarter (23.87%) which is slightly higher than the Euro's share in official foreign reserves (19.8% in 2024).[92] De-dollarization is not inevitable, nor is further dollarization. Instead, the future may look very much like the present, in spite of it all.

Comparing scenarios and possibilities of future

Monetary hegemony and its future can be understood in nuanced fashion by the scope and interconnected areas that broadened notions of infrastructures as socio-technical relations cover. This previous section elaborated four possible scenarios of dollar dominance from our infrastructural perspective: *transition,* where dollar hegemony is replaced as infrastructural evolution leads dominant currency to declines and challenger to arise; *turbulence* as loss of dollar hegemony without any alternative infrastructures, but potentially many competing sets of socio-technical relations, entailing a growing degree of international monetary disorder; *transformation*, in which dollar dominance remains but its core infrastructural underpinnings shift, with for instance stablecoins and Big Fintech replacing traditional support of the dollar's role from both allied and competitor states alike; and finally *tenacity,* wherein dollar dominance

[88] Vinícius G. Rodrigues Vieira, Krishna Chaitanya Vadlamannati, and Yuanxin Li, "Dispositional Balancing and Hegemonic Order: US Response to China's Financial Statecraft," *Chinese Journal of International Politics*, Vol. 16, No. 1 (2023), pp. 1–30.

[89] Alan Greenspan, *The Age of Turbulence: Adventures in a New World* (New York: The Penguin Press, 2007).

[90] Mcdowell, *Bucking the Buck*.

[91] SWIFT, "RMB Tracker, 2023."

[92] SWIFT, "RMB Tracker, Monthly Reporting and Statistics on Renminbi (RMB) Progress towards Becoming an International Currency," July 2025, https://www.swift.com/sites/default/files/files/rmb-tracker_july-2025.pdf; International Monetary Fund, "Currency Composition of Official Foreign Exchange Reserves (COFER)," 2025.

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Table 6 The US economic statecrafts safeguarding dollar hegemony

Economic Statecraft	Laissez-faire	Incentive	Negotiation	Protection	Coercion	Sanction
Major Policy Areas	trade, exchange rates, market intervention	loan, foreign aid, duty exemption, procurement, debt relief	all areas	Trade, finance, high-technology	all areas	trade, finance, high-tech
Relationality	unilateral	bilateral or multilateral	bilateral or multilateral	unilateral	bilateral or multilateral	unilateral
Degree of Conflict	Medium-low	Lowest	Low	Medium-high	High	Highest
Typical Cases	Overlooking "unfair discrimination" of emerging countries against the US goods and capital	Formed a triangular flow of dollars by providing aids to Germany after WWI	The deal with Saudi Arabian countries to create the petrodollar system	Japan-US trade friction in the 1980s and China-US trade friction since 2017	Coercing the UK to lift currency controls and trade protection via the Lend-Lease Act	Economic sanctions against de-dollarization countries

Source: Falin Zhang, "Economic Statecraft and the Formation of International Monetary Power," *World Economics and Politics*, No.1 (2022), pp. 122–123.

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Table 7 Comparison of the four futures of dollar dominance

	Transition	**Turbulence**	**Transformation**	**Tenacity**
Mechanism	sedimentation→ resurfacing→ fracturing→neo-sedimentation	sedimentation→ fracturing→de-sedimentation	sedimentation→ resurfacing →con-sedimentation	Sedimentation→ resurfacing→re-sedimentation
Key Condition	Neo-sedimentation	De-sedimentation	Re-sedimentation	Con-sedimentation
Possibility	Low	Medium-low	Medium-high	High
Challenger Objects	Euro, SDRs, Private digital currencies	Multi-polar currencies	Resetting the "non-system," a digital dollar	All emerging currencies
Challenger Practices from Competing States	Strong	Strongest	Low	Lowest
Time Horizon	Long	Medium-long	Medium-short	Short
Historical Precedent	From Sterling Pound to the USD in 1940s	The chaos in during the two World Wars	From Bretton-Woods system to Jamaica system	Statecrafts to maintain petro-dollar since 1970s
Key Questions to Further Explore from Infrastructure Perspectives	How are traditional objects and practices of dollar dominance being replaced by alternative socio-technical arrangements?	How are traditional objects and practices of dollar dominance being undermined but not fully replaced by alternative socio-technical arrangements?	How are traditional objects and practices of dollar dominance being replaced by alternative socio-technical arrangements while existing monetary hegemony is being maintained?	How are key objects and practices underlying dollar dominance being maintained and extended?

remain as the infrastructural foundations established since the 1970s continue to support the current form of monetary hegemony. Table 7 compares mechanisms, key conditions, possibilities, potential challengers, intensity of inter-state competition, time, and historical cases of the four scenarios.

Our infrastructural perspective pushes against determinist analysis, stressing instead how monetary hegemony is never set in stone. All four scenarios of future outlined above vary in their underlying mechanisms and possibilities for continuity and change over time. They are also interrelated to each other and in practice may not be mutually exclusive. Scenarios could very much overlap, for instance with the dollar system transforming during the tenacity of the previous system, or evolve from one to the other. We encourage the further refinement of our scenarios and elaboration of others, including ones that in between the four we outlined, via examination of the research questions in Table 7, especially as the "wild card" of technological development looms. The advent of technologies of like the blockchain underlying crypto-assets and (even more) rapid advances in artificial intelligence all lead us to resist deterministic analysis.

Nevertheless, the most likely scenario we foresee as possible in the nearest future as that of *tenacity*. At present, the USA appears to be undertaking serious attempts at consolidating

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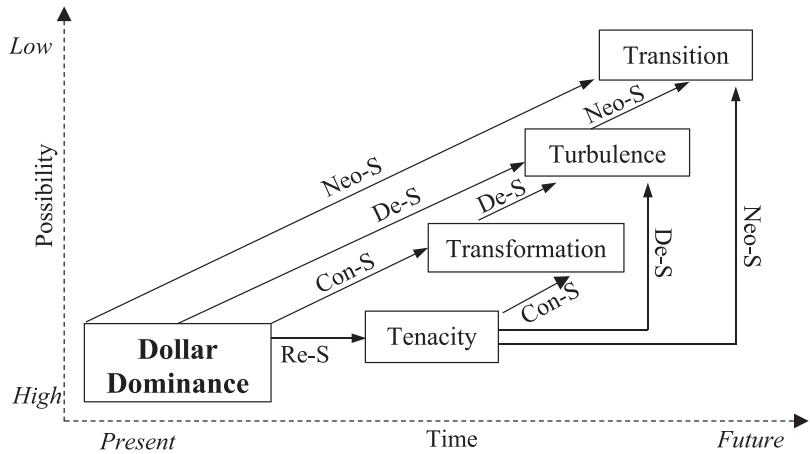


Fig. 5 Future scenarios in comparison. Note: "-S" refers to sedimentation

and *re*-sedimenting the infrastructural relations underpinning the dominant international position of the dollar through market channels and more importantly through active practices of international statecraft. Beyond the USA and the direct efforts of American administrations is simply the sheer lack of alternative options for stable monetary relations. The *transformation* scenario is a close second likelihood in our view. Should de-dollarization tendencies continue to grow and processes of *de*-sedimentation kick-in to higher gear, *turbulence* would emerge as a third most likely scenario. If any country or group of countries takes advantage of such turbulence and initiates another round of sedimentation, a new monetary infrastructure may become dominant (*neo*-sedimentation). Yet, such a *transition* scenario in our view is currently the least despite becoming more likely the further we extrapolate into the future.

Figure 5 illustrates what we see as possibilities for dollar dominance varying over time. These crucially depend, as we have argued, on infrastructural processes of con-, re-, de-, and neo-sedimentation. We hope these processes and our general infrastructural framework will inform contemplation of dollar hegemony futures, a speculative topic, to be sure, but one which IR and IPE scholars should nevertheless engage and generate analytically informed insights upon, given the immense importance of the dollar in world order.

Conclusion

International monetary dominance is and should be understood as a fundamentally political phenomenon. Existing literatures politicizing the seemingly technical and natural monetary relations within and between countries stress both quantitative factors and qualitative logics regarding the functions, benefits, and power of sovereign currencies at international arena. In elaborating an infrastructural perspective on the future of dollar dominance, this article has politicized the mechanisms, relations, and formations underpinning continuities and changes in monetary hegemony. Our relational understanding of infrastructures considers the relations between micro-level objects and practices that shape and steer wider macro-level functions, benefits, and politics of monetary hegemony. It links the micro and macro levels through a meso-level analysis offering insights into the future that are "grounded" in presents and pasts trends, showing how monetary hegemony evolves out of socio-technical relations between seemingly mundane, micro-level "things," including technical objects and political-economic

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practices. This "grounding" connects together the existing literature's focus on benefits, functions, and powers that all tend to be considered separately, while resisting the prioritization of any single determinant of monetary hegemony. The approach outlined in this article (a) integrates complementary insights from IPE and STS, (b) challenges established IPE perspectives on monetary dominance, showing how they can benefit from attention to micro-foundations while highlighting how STS can gain from greater engagement with macro-trends, and (c) refines the broader "infrastructural turn" in IPE by interrogating socio-technical arrangements to illuminate possible monetary futures.

In sum, dollar dominance is too complex a phenomenon to reduce to one set of variables and one particular scenario. Yet, such complexity does not entail that any effort to anticipate futures is unproductive. Gazing into the crystal ball remains essential for interdisciplines like IPE to avoid being caught off guard and maintaining a nuanced sense of where the future may lie.[93] The infrastructural perspective we have outlined provides a means of speculating on scenarios of future that are grounded in theoretical and empirical insights rather than fictions. Future research can productively build on or outline further scenarios than we have elaborated here, adding to or testing the quartet of four T's (tenacity, turbulence, transition, and transformation). Such scenarios of dollar dominance may also be compared with other areas of future US dominance that both overlap with finance and technological trends, but also move beyond them such as hegemony in education and knowledge production, or even entertainment and leisure activities. Infrastructural lenses, in conclusion, provide productive avenues for considering and connecting past, present, and future dominance in international politics.

Conflict of interest

None declared.

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93 Robert Gilpin, "Three Models of the Future," *International Organization*, Vol. 29, No. 1 (1975), pp. 37–60.

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