

MPIfG Discussion Paper 24/3

Triffin Reloaded

The Matrix of Contradictions around
Global Quasi-State Money

Herman Mark Schwartz

Herman Mark Schwartz
Triffin Reloaded: The Matrix of Contradictions around Global Quasi-State Money

MPIfG Discussion Paper 24/3
Max-Planck-Institut für Gesellschaftsforschung, Köln
Max Planck Institute for the Study of Societies, Cologne
May 2024

MPIfG Discussion Paper
ISSN 0944-2073 (Print)
ISSN 1864-4325 (Internet)

© 2024 by the author(s)

About the author

Herman Mark Schwartz is a professor in the Department of Politics at the University of Virginia in Charlottesville, USA.
Email: schwartz@virginia.edu

MPIfG Discussion Papers are refereed scholarly papers of the kind that are publishable in a peer-reviewed disciplinary journal. Their objective is to contribute to the cumulative improvement of theoretical knowledge. Copies can be ordered from the Institute or downloaded as PDF files (free).

Downloads

www.mpifg.de

Go to *Publications / Discussion Papers*

Max-Planck-Institut für Gesellschaftsforschung
Max Planck Institute for the Study of Societies
Paulstr. 3 | 50676 Cologne | Germany

Tel. +49 221 2767-0

Fax +49 221 2767-555

www.mpifg.de

info@mpifg.de

Abstract

What explains the US dollar's role in the global economy and the tensions affecting its likely persistence? Most analyses start from Triffin's dilemma, which accurately captured specific but partial tensions of a global monetary system based on essentially fixed exchange rates, gold backing for its core currency, and relatively robust capital controls. Triffin's approach, and those based on it, struggles to explain the tensions in a system with floating exchange rates and fiat money, because Triffin and successors assume a commodity theory of money, a loanable funds model for credit creation, and the "triple coincidence" of monetary, legal, and economic zones. Approaching the question from different premises – chartalist money, endogenous credit creation, and interlocked global balance sheets – enables us to see four factors behind the antinomies or dilemmas that structure the dynamics and durability of US dollar centrality. Those four factors are adequate credit creation and thus global aggregate demand growth, current account deficits for the core, domestic legitimacy in major economies, and the dollar's status as global quasi-state money.

Keywords: Balance of payments, foreign debt, geo-economics, international financial system, money, power, reserve currency

Zusammenfassung

Wie lässt sich die Bedeutung des US-Dollars in der Weltwirtschaft erklären? Was hat das mit den Spannungen auf sich, die über den Fortbestand der Dollar-Dominanz entscheiden? Die meisten Analysen nehmen das Triffin-Dilemma zum Ausgangspunkt, das spezifische Spannungen des globalen Geldsystems einst gut erfasste. Dieses System basierte im Wesentlichen auf festen Wechselkursen, einer goldgedeckten Leitwährung und Kapitalverkehrskontrollen. Triffins Ansatz und darauf aufgebaute Analysen haben aber Schwierigkeiten, wenn es um die Spannungen in einem Geldsystem mit Fiatgeld und frei schwankenden Wechselkursen geht. Triffin und seine Nachfolger nahmen die Warentheorie des Geldes und das Loanable-Funds-Modell der Kreditschöpfung als stimmig und die dreifache Koinkidenz von Währungs-, Rechts- und Wirtschaftsräumen als gegeben an. Wenn wir das Problem hingegen unter den Prämissen des chartalistischen Geldes, der endogenen Kreditschöpfung und miteinander verzahnter globaler Bilanzen betrachten, lassen sich hinter den Unvereinbarkeiten und Dilemmata vier Faktoren erkennen, die für die Dynamiken und die Dauerhaftigkeit der Dollar-Dominanz entscheidend sind: eine angemessene Kreditschöpfung und damit ein Wachstum der globalen Gesamtnachfrage; Leistungsbilanzdefizite der Kernländer; innenpolitische Legitimität in den großen Volkswirtschaften; und der Status des Dollars als globales Quasi-Staatgeld.

Schlagwörter: Auslandsverschuldung, Geld, Geoökonomie, internationales Finanzsystem, Leitwährung, Macht, Zahlungsbilanz

Contents

1	Introduction	1
2	Money, credit, and the state	5
3	Three dilemmas, not one	12
4	Three antinomies around resource transfer, legitimacy, financial stability, and differential growth	21
	Antinomy 1: Credit expansion and financial crises	21
	Antinomy 2: Differential growth versus current account deficits	24
	Antinomy 3: Differential growth and current account deficits versus legitimacy and popular support	26
5	Concluding remarks	28
	References	29

Triffin Reloaded: The Matrix of Contradictions around Global Quasi-State Money

1 Introduction

I was totally wrong in underestimating the duration and the size of the U.S. deficits that foreign central bankers would be willing to absorb, at the cost of an inflationary explosion of world monetary reserves and of a multiple expansion of the money supply in their countries under the traditional system of fractional reserve requirements.

Robert Triffin (1978, 4)

Banks create money, and money is a sovereign good. States decide what we can do with it.

Jean Lemierre, chairman, BNP Paribas (quoted in Favas 2020)

There's an infinite amount of cash at the Federal Reserve.

Neal Kashkari (Minneapolis Federal Reserve President, March 2020)¹

The simple reality is that we live in a dollar world: on the real side, where dollar invoicing is dominant; on the financial side, where dollar funding is essential to global banks and non-financial corporations; and on the policy side, where dollar anchoring and dollar reserves are prevalent. ... [S]ince 1971 the centrality and dominance of the dollar has increased in all dimensions.

Pierre-Olivier Gourinchas (2021, 266, 268)

What tensions surround use of the US dollar as “global quasi-state money” – a neologism for the dollar’s dominance and centrality in the world economy I explain below – in the contemporary global economy? What do these tensions tell us about the likely persistence of dollar dominance in the face of waning US economic and military predominance, and the rise of alternative global payments systems? Most answers to this question ultimately address it through a partly incorrect version of the liquidity versus confidence dilemma or contradiction Robert Triffin (1960) elaborated sixty-four years ago. As Triffin posed it, the dollar dilemma rested on the contradiction between the fact that the world needed a steady expansion of dollar-denominated trade credit to remove a major source of deflation in the global economy, yet the expanding volume of offshore dollar holdings would eventually exceed the US state’s capacity to redeem dollars with gold at its USD 35 per ounce par. Later work updated and generalized Triffin’s definition of confidence in redeemability to confidence in the US economy itself or, more narrowly, the US state’s ability to make good on its debt instruments. This reflected the shift in the apparent US net international investment position from creditor to debtor.

Acknowledgment: Thanks for comment and criticism from Lucio Baccaro, Randall Germain, Martin Höpner, Geoffrey Underhill, and MPI participants at lectures on June 6, 20, and July 7, 2023. As well, I owe obvious intellectual debts to Steffen Murau.

1 *Economist*, “America’s Federal Reserve,” February 23, 2023, <https://www.economist.com/culture/2023/02/23/a-new-book-traces-the-evolution-of-the-feds-extraordinary-powers>.

Those later analyses follow Triffin's foundational assumptions about the nature of money and credit, namely a commodity theory of money in which money precedes credit and necessarily has some arbitrary commodity backing, and a loanable funds model of credit creation in which savings necessarily precede lending and investment. I label this view the "Sovereign Currency View" (SCV) below, both to signal its primary intellectual location and that we are investigating credit and money at a global rather than the purely domestic level. In the SCV, money and by extension credit can only exist in one place at one time – thus Triffin sees the US as "exporting" locally created money. And the SCV accords priority in money creation to private actors – American households and firms that save (or not) dollars that might then be exported to the world, as well as the state, on account of its fiscal deficits. The SCV often understands those private actors as homogeneous financial and less often non-financial firms whose choices determine which currency emerges out of a tournament among potential international currencies (Cohen 1998, 114). Finally, the SCV has a methodologically nationalist epistemology (Schwartz and Blyth 2022; Wimmer and Glick Schiller 2022), implicitly assuming what Avdjiev, McCauley, and Song Shin (2016) call the "triple coincidence" or overlap of political decision-making area, economic area, and monetary area. These assumptions mislead with respect to contemporary dollar dynamics, which is why those post-Triffin analyses repeatedly mis-forecast dollar decline since the 1970s (Bergsten 2009; Eichengreen 2011, 121, 150–51; Kindleberger 1981, 316; Triffin 1978). In particular, the SCV misunderstands the role of the US current account deficit and assigns too much importance to formal foreign exchange reserves.

By contrast, an analysis rooted in the different assumptions of the credit theory of money (Ingham 2004a; Mehrling 2010; Murau and Pforr 2023) yields a more accurate understanding of the dollar's role in the global economy and its surprising resilience in the face of persistent US current account deficits, a steadily worsening net international investment position (i.e., rising net foreign debt), and recurrent challenger currencies. Paralleling the SCV nomenclature, I call this the "Global Credit View" (GCV). Murau (2018) and Murau, Rini, and Haas (2020; Murau, Pape, and Pforr 2021) provide archetypical statements of the market-based GCV. The GCV's DNA stems from Triffin's contemporaries Susan Strange and Robert Cox (1987).² In the GCV and credit theory of money, credit predates and produces money, and banks endogenously create credit that the state validates at its discretion. Endogenous credit creation also establishes links across the balance sheets of banks and non-bank financial and non-financial firms. Credit instruments on those balance sheets are hierarchical, and actors continually seek to transform their assets into higher forms with more stable par values (Murau, Rini, and Haas 2020). Thus, unlike the SCV, the GCV sees states rather than private financial actors as the critical, though not necessarily exclusive, actor in financial markets. While public and private credit expand in a coevolutionary fashion (Bodenhorn 2000; 2002; Murau 2023), the inherent tendency towards excess (speculative) credit creation

2 Note that these two views overlap with but are not isomorphic with what Cohen (2007) called the American versus British or European views of International Political Economy.

and thence crisis (Minsky 1977; 1986) means the state often has the last word in this hierarchical financial system. Finally, the GCV abjures the triple coincidence in favor of a complex global division of labor whose financial side decidedly does not map neatly onto discrete, sovereign states. A central global – not “international” – currency emerges from and is one manifestation of a global power hierarchy. US dollar-denominated assets linked to the US state and Federal Reserve system sit at the top of that hierarchy.

Although the US share of global GDP and global trade has declined since the 1960s, the US dollar currently occupies the top of the global monetary hierarchy, acting *de facto* as the unit of account for the highest-powered money (Murau, Rini, and Haas 2020; Murau, Pape, and Pforr 2021). This despite a gradual decline in relative US economic predominance. In 1965 the US accounted for 38 percent of world GDP, 14 percent of global trade, and was becoming a major oil importer. From the 1990s onward, the US share stabilized at roughly 25 percent of nominal global GDP, roughly 9 percent of global trade, and, until roughly 2020, the US remained the world’s largest net oil importer. Yet in the past decade the dollar still accounted for a predominant and disproportionate share of global cross-border lending (c. 60 percent), cross-border bond issues net of intra-eurozone issues (c. 65 percent), trade invoicing (c. 80 percent outside of Europe and 50 percent overall), foreign exchange transactions (c. 90 percent out of 200 percent) and, though significantly less important than in Triffin’s day, foreign exchange reserves (c. 60 to 65 percent) (Akinci et al. 2022; Aldasoro et al. 2020; Bertaut, von Beschwitz, and Curcuru 2021; Gourinchas 2021; McCauley 2021). Dollar-denominated debt constitutes roughly 90 percent of cross-border debt for non-financial firms and 60 percent of public debt in the emerging markets (EMDEs) that currently constitute about half of global GDP (FSB 2022, 7–10). Many countries anchor their currency exchange rate against the dollar (Ilzetzki, Reinhart, and Rogoff 2019), although this is increasingly difficult to distinguish from anchoring against the renminbi (McCauley and Shu 2019). Finally, with respect to the most important indicator of dollar dominance, non-US banks do 80 percent of the cross-border lending done in dollars, and this constitutes roughly a third of their cross-border exposure (more if intra-eurozone lending is netted out). As Aldasoro, Ehlers, and Eren (2022, 2; see also Beck 2022; Beck and Knafo 2020) say, “US dollar funding is the lifeblood of international banking,” reflecting the large share of dollar-denominated liabilities on non-US banks’ cross-border balance sheets.

Why then “global quasi-state money”? The global quasi-state money neologism flows from a neo-chartalist approach to credit and money (Knapp 1924; Mitchell-Innes 1914; Wray 1998; 2004).³ As noted above, endogenous credit creation implies a persistent danger of excessive credit creation (Minsky 1986; Bauerle-Danzman, Winecoff, and Oatley 2017). In a world without capital controls or comprehensive global level regulation, competitive pressures force and induce banks to generate unsustainable levels of credit across formal monetary jurisdictions, increasing the danger of a general crash by adding exchange rate risks to the normal credit, maturity, and interest rate risks. In a

3 Cohen (1998, 11) explicitly dismisses the Knapp/chartalist view of money.

self-contained national financial system, the local central bank can step in and rescue an overextended banking sector by exchanging its own assets (so-called outside or state money) for banking system liabilities, with the state's taxation power backing the central bank's newly created liabilities. But at the global level?

The dollar is not full-fledged state money at the global level. While domestic tax capacity backs domestic bailouts, no formal global state tax capacity backs the liabilities the US Federal Reserve system creates in those rescues. Indeed, when the Fed makes losses it simply issues IOUs to itself, to be redeemed from future profits. The US state largely lacks the legal, emotional, and bureaucratic authority/capacity to demand and compel payment of taxes in other polities, and thus does not emit state money in the truest sense. We can regard the vast and continuing US current account deficit as an unrequited transfer akin to taxes, but this is clearly not the same thing as the tax capacity most rich OECD states possess. Yet the US dollar clearly functions as state money for most of the global economy, in the sense that it backs non-US banks doing the bulk of offshore dollar lending, which in turn, as noted above, constitutes the bulk of offshore lending. Foreign and offshore use of the dollar as the predominant global unit of account enables – Hardie and Maxfield (2016) would argue forces – the US Federal Reserve system to bail out non-US banks via their local central banks in such a crisis. Thus the “quasi” in quasi-state money. Simultaneously the dollar is anchored in the set of political institutions around trade and security that Susan Strange (1971; 1989) identified as a global transnational empire centered on the United States. The intersection of security, credit, and trade concerns around, for example, petrodollars and Mideast (in-)security evidences the US role as hegemon or imperial center most strongly. Thus the “state” in global quasi-state money.

Yet as Triffin argued, and as SCV analysts have echoed, an exorbitant burden matches the exorbitant privilege accorded to the US economy by virtue of issuing the highest-powered currency and having most global credit denominated in its own unit of account. Conventionally that burden manifests as the current account deficit and an erosion of traded sector employment. These conventionally comprise what the SCV understands as a Triffinesque liquidity versus confidence threat to the dollar: private lenders' fear that an increasingly indebted economy cannot make good on those liabilities might induce them to stampede to some other currency. As of 2023, the US net international investment position was 66 percent of US GDP, and gross liabilities were nearly double US GDP. That said, both ratios are very sensitive to exchange rate changes – net debt was 80 percent of GDP in 2021 due to weaker European stock markets and a stronger dollar – and potentially mislead because of tax avoidance and evasion by US firms – much of what is “owed” to entities registered in the Cayman Islands, for example, is owed to entities controlled by US firms.

From the GCV standpoint, however, the strengths and weakness of the dollar are somewhat more complex. Confidence is a matter of global power, domestic political sustainability, and differential GDP growth (Schwartz 2009). The US current account deficit validates the new global liquidity that staves off capitalism's inherent deflationary ten-

dencies. In particular, the deficit also offsets deflation stemming from energy exporters' efforts to transform illiquid raw materials like oil into liquid financial assets. All told, as I will argue below, use of the dollar as the unit of account for the majority of global cross-border credit creation and as global quasi-state money generates three contradictions that include and go beyond Triffin's dilemma, creating a more complex set of policy choices. Unsurprisingly, this complexity leads to recurrent crisis and – so far unsuccessful – challenges to the dollar's role.

This discussion paper thus has four remaining sections. Section 2 contrasts the differing underlying assumptions behind the money theory of credit-based SCV and the credit theory of money-based GCV, including a discussion of the political aspects of the US empire sustaining the dollar as global quasi-state money. Section 3 lays out Triffin's dilemma in relation to the money theory of credit-based SCV and contrasts it with the credit theory of money-based GCV. Section 4 builds on the GCV to describe and explain the three antinomies or contradictions. Section 5 concludes, with brief consideration of why various challenger currencies have yet to generate a multi-currency world let alone dethrone the dollar.

2 Money, credit, and the state

Two cleavages define different positions on money and credit (Murau and Pforr 2023). These foundational cleavages revolve around what came first: Is money prior to credit or the reverse (Schumpeter 1954)? And, in the debate between chartalists (Knapp 1924; Mitchell-Innes 1914) and metallists (Menger 1892), is money originally a state-based or a market-based institution?

The Sovereign Currency View rests on a monetary theory of credit. In a monetary theory of credit, money is simply a politically neutral social convention that resolves the problem of a “double coincidence of wants” in situations of barter and thus lowers transaction costs in exchange. Mainstream economics views money simply as a special kind of commodity that private actors have agreed to use to avoid the frictions involved in barter. Money comes into being by convention. Either private actors converge upon a specific, special commodity which they use to reduce transaction costs in exchange, or the state selects that commodity and enforces it on those private actors. Money here is prior to and distinct from credit and has no effect on actual production. Changes in the supply of money only affect nominal, not real values.

Money becomes a unit of account to denominate debts only after its use as a means of exchange. In effect, an asset is simply an exchange value pushed into the future. Because money pre-exists credit, new credit (assets and liabilities) comes from prior savings – the loanable funds model. Actors voluntarily reduce their consumption, and direct the re-

sidual from their income to agents, usually but not necessarily banks (Hoffman, Postel-Vinay, and Rosenthal 2000), who then relend those funds to different actors. Banks are simply intermediaries who potentially can lend out a multiple of their deposit base if the state permits them to engage in fractional reserve banking. In this imaginary, international lending involves a transfer of money from one location to another. Thrifty Germans save from their paychecks, and they loan that money to profligate BMW-buying Americans. That money, those savings, cannot be in two places at the same time, which is why Triffin and subsequent SCV-type analysts see current account deficits arising from inadequate savings (or its mirror image, consumption in excess of local production).

The mono-locality of money is particularly true for metallists like Triffin, who saw money as anchored in gold reserves and understood balance of payments issues in terms of Hume's specie flow mechanism. This mono-locality gives rise to Triffin's dilemma, if we understand inflation as a growing disparity between the unit of account and its gold anchor. From Triffin's point of view, the optimal way to stabilize the supply of money and thus the price level is by tying money to a scarce physical commodity like gold that the political authorities cannot manipulate. From the point of view of more realistic economists and sophisticated "goldbugs," the optimal solution is a money supply that grows in tandem with the economy, controlled by a central bank governed by rules rather than discretion (Kydland and Prescott 1977). But the money supply cannot accommodate both the US domestic growth rate and the desired rate of growth for global trade if those growth rates differ. Someone, somewhere, will suffer either inflation or deflation.

What about the state and any potential hierarchy of moneys? Consistent with Minsky's (1986, 255) comment that "Everyone can create money; the problem is to get it accepted," the monetary view of credit does not rule out a domestic hierarchy of money that might range from central bank money and central government debt through corporate and mortgage bonds all the way down to store discount coupons and frequent flyer miles. In a state-centric monetary theory of credit, state fiat money necessarily has the highest degree of acceptability, backed as it is by the state's coercive power. But state-imposed fiat money is impossible internationally, given the absence of a genuine authoritative and legitimate legal entity backing that fiat money. So, while in principle the monetary theory of credit allows for both state- and society-centric origins for money, in its SCV version international money must arise from private choices. The absence of an international state means that popularity among private users determines which money will be central and what any commodity backing will be (Cohen 1998, 114; Eichengreen, Mehl, and Chițu 2018, 4–5, 186–97). Network effects – lower transaction costs – then reinforce its use. Even in Kindleberger's (1967; Despres, Kindleberger, and Salant 1966) more sophisticated understanding of dollar centrality, Europeans opted to lend short-term to the United States while borrowing long-term in order to acquire safe, liquid assets. These private choices generate fragility for dollar centrality. If transaction costs for using other currencies fall, or if maturity preferences change, then private actors might easily migrate to using those currencies, as Eichengreen (2011, 8–9, 119, 124) has explicitly argued.

Even where the SCV accepts that money in global use can exhibit a hierarchy of state (and implicitly market) moneys (Cohen 1998), the choice of which specific common currency rests on private actors adjudicating the relative utility and durability of various competing hard currencies. Cohen's (1998, 114; my emphasis) currency pyramid emerges from market contestation rather than power: "narrow at the top, where a few *popular* currencies circulate; increasingly broad below, reflecting varying degrees of *competitive* inferiority." Those currencies were in principle initially backed by gold, albeit sometimes indirectly through a potential exchange with the US dollar. This link to gold underlay private actors' confidence in the dollar during Bretton Woods 1 and through that their ability to veto state activity. Thus, both Eichengreen (2007; 2011) and Cohen (1998; 2007; Cohen and Benney 2014) view private actors as ultimately possessing primacy over all states, not just those lower in the global monetary hierarchy. States that lost credibility, especially around fiscal issues (Eichengreen 2007; 2011, 160; Eichengreen, Mehl, and Chițu 2018) and/or balance of payments deficits (Cohen 1998, 11), risked capital flight and speculation against their currency. Here the moneys of different states vary in acceptability based on the balance of payments situation for their underlying economies. This is a price rather than a power relationship, so even the state issuing the central currency could lose credibility.

This view stems from the methodological stance of the SCV. Methodologically, the SCV approach identifies bottom-up, unit-level choices as the source for what we observe in the world, often ignoring fallacies of composition (Cohen 2007; Strange 1982; Schwartz and Blyth 2022). On this view, autonomous national units with fundamentally similar levels of "monetary sovereignty in a Westphalian sense" (Murau and van 't Klooster 2022, 1319) issue currencies that circulate inside a national economic space regulated by the local state – Avdjiev, McCauley, and Song Shin's (2016) triple coincidence. The global monetary hierarchy emerges from bottom-up market actors seeking lower transaction costs, not a top-down global structure of power, which is why the SCV attends so much to the possibility that spontaneous panics or currency switching by private investors will trigger a flight from the dollar. Network effects reinforce this essentially voluntary choice and its transaction-cost-lowering consequences, while potential defection from that network rests on almost daily calculations about the costs of using and holding the central currency. This approach saw state and private as distinct actors and accorded equal status to them.

By contrast, in a credit theory of money, credit (assets and liabilities) precedes money, and money is primarily a unit of account for those credits. Money still has a special status in its cash form, because cash always exchanges at par for debts denominated in the same unit of account. But money and credit have no commodity basis. In turn, this means that states and banks can create money "out of thin air," that is to say, simply by making ledger entries. The special status of banks, and particularly the central bank, in the economy is precisely this license to create money (Hockett and Omarova 2016). Banks create money by simultaneously extending a loan to a borrower (creating an asset for the bank and a liability for the debtor) and funding that loan by creating a deposit for the borrower (creating a liability for the bank and an asset for the borrower) (Mehrling 2010).

The credit theory of money has both state-centric and market-centric versions, just like the monetary theory of credit. But these differ in both subtle and blatant ways. On the private market side, as noted above, actors, particularly banks, can create money rather than intermediating existing savings in their credit operations. In the aggregate, in theory, these new assets and liabilities on everyone's balance sheets should net out to zero. In quotidian operations, newly created bank credit typically ends up as reserves at the central bank, which validates this new credit (Hockett and Omarova 2016; Mehrling 2020). But the theoretical balance between assets and liabilities both at the individual and aggregate level can also come undone on account of two asymmetries between private assets and liabilities. The first asymmetry is the maturity mismatch between deposits, which generally are short-term, and loans, which generally are long-term. This creates the danger of bank runs.

The second, and related, asymmetry is that deposits (bank liabilities) at least nominally exist at par value, while Minsky's (1986, 255) problem of acceptability chronically plagues bank assets. The mark-to-market value of bank assets can potentially deviate from par if interest rates change, or if the value of collateral backing those loans changes. Falling interest rates and rising collateral values obviously help banks, and indeed drive the upswing in Minsky's instability cycle. But the reverse is also possible (Pettis 2001). If collateral becomes impaired and/or loans go into default, depositors may run the bank, demanding the immediate liquidation of their deposits. A large enough hit to collateral (as with the housing values underpinning subprime mortgage-backed securities in 2008), or a sharp rise in interest rates that devalues mark-to-market assets (as with Silicon Valley Bank's Treasury bonds in 2023), can trigger a general financial collapse. Thus "inside money" – as in, created inside the financial system – is vulnerable to devaluations that bring down the entire system if they cannot be used to extinguish debts at their par value.

By contrast, state money is always acceptable, conditional on state capacity. To the extent that the state has a monopoly of violence, rests on the exercise of infrastructural power, and has effective taxation power (Mann 1984), it can define what constitutes the highest-powered, most generally acceptable money by accepting that money as payment for tax debts/liabilities, and by creating its own liabilities as part of its day-to-day operations (Murau and Pforr 2023 dissent somewhat). State money is conventionally called "outside money," because it is created outside the financial system and without an immediate corresponding asset matching the new liability, and by contrast with private inside money, where money creation simultaneously generates matching assets and liabilities.

Critically, the state's – more precisely the central bank's – ability to create outside money enables it to bail out, at its discretion, a financial system in which the nominal value of bank or other lender assets has fallen significantly while the nominal value of their liabilities has not. Thus Ingham (2004b, 25; 2004a, 181) flatly claims that no fully stateless money or credit is possible: "Money is a form of sovereignty and as such it cannot be understood without reference to an authority." In the 2008-2010 crisis, the US Federal Reserve bailed out banks by buying impaired mortgage-backed securities (MBS) from

those banks at par (Schwartz 2009); more generally, central banks lend freely at penalty rates to calm markets (Mehrling 2010). Central banks anchored in high-capacity states do not go bankrupt. When the US Federal Reserve loses money (as it did in 2023, because its quantitative easing policy caused it to accumulate large volumes of low-interest rate bonds), it simply writes itself an IOU which it will offset with future profits.

At the theoretical level, the state and private versions of the credit theory of money differ in their understanding of money qua money, that is, cash and bank deposits (Murau and Pforr 2023). In the private version, money is a special form of credit that retains its par value. In the chartalist version, some money is fiat money, that is, state-issued tokens that command resources in return for their utility in tax payments, and some money is the special form of credit at par. But practically speaking, public and private credit historically expanded in a coevolutionary process whose endpoint is the near universal overlap of bank and state physical money we observe today, rather than the historical separation of state money and banknotes. For example, even in the gold standard era, state (i.e., provincial, *länder*) banks in the antebellum US south issued bonds backed by their tax capacity to privately organized planters' banks, which then issued mortgages funded by sale of those bonds into the London capital market (Bodenhorn 2000; 2002). Similarly, Murau (2023) shows how the Prussian state used state-owned off-balance sheet financial institutions to expand public credit, by crowding in private resources, and in turn private banks expanded their lending operations knowing that the Prussian (and later German) state stood behind them (Tilly 1992). Prussian mortgage institutions (*Raiffeisen*) likewise emerged as cooperative landowner (*Junker*) dominated banks backed by the state-owned *Hypotheken-Aktienbank* (Schwartz 2019a).

In normal times, dollar dominance in global credit creation endows the Federal Reserve with considerable power. Its interest rate decisions and the related shifts in the dollar's relative strength reverberate through the rest of the world economy. A stronger dollar superficially (in Econ 101 terms) might be expected to lead to more rapid, export-led growth for countries supplying the US economy. But it actually correlates with slower growth in emerging markets (EMDEs) as higher import and borrowing costs dampen local profits and investment, as local central banks tighten in order to stabilize their exchange rate (and thus offshore debt service), and as a slowing US economy dampens US import growth (Bruno and Shin 2015; Obstfeld and Zhou 2023). This relationship is not symmetrical. A stronger renminbi, for example, causes effects that do line up with the naïve Econ 101 expectation – slower Chinese export growth and rising exports elsewhere.

In crisis times, the Fed's power becomes even more apparent. All financial systems built on endogenous credit creation are inherently unstable. As Minsky (1986) argued, stability breeds instability by encouraging actors to take on increasing degrees of risk and rewarding them for doing so – at least until the crash. Politically, excess credit creation tends to worsen income inequality, strengthening the influence of risk-taking winners. But the “quasi” in quasi-state money creates additional problems and instabilities specific to the dollar-centric global monetary system. Though all systems of financial regu-

lation are porous and subject to arbitrage and gaming, the lack of an authoritative regulator at the global level makes destabilizing regulatory arbitrage even easier.⁴ As Murau, Pape, and Pforr (2021; Aldasoro et al. 2020; Mehrling 2010; Schwartz 2018) argue, this makes much of the global financial system rely on the Federal Reserve's ability to create outside money in times of crisis, and makes liquidity management an especially difficult problem for cross-border banking based on intermediation (Beck 2022) as well as endogenous credit creation. This last resort power, combined with what Mehrling (2010) has termed the Federal Reserve's role as dealer of last resort, suffices to pin the quasi-state money label on the dollar. No other currency or central bank has a symmetrical or reciprocal influence on the US financial system. This asymmetry de facto goes beyond the mere fear of losses that Kirshner (2008, 420, 425; see also Bordo and McCauley 2017) sees as anchoring adhesion to the dollar: "States (and private actors within states) that use the dollar (and especially those that hold their reserves in dollars) develop a vested interest in the value and stability of the dollar." Rather, Minsky's (1986) survival constraint, an existential issue, not a fear of simple losses, binds.

Finally, as noted above, the US state does not possess explicit tax capacity at the global level (though it does try to tax US citizens' income regardless of where they actually live). The link between outside money and the state's ability to expand the tax base that serves as the implicit asset offsetting the explicit liability created by emitting outside money is weaker at the global level. In the ideal typical case of domestic money, the state can take for granted that its taxation power creates a tacit asset that matches the liability generated when its central bank bails out the financial system. In relatively closed economies, the state can pursue *echt*-Keynesian (Keynes [1936] 1964; but see also Schumpeter 1934) policies of state-subsidized or -funded investment whose immediate inflationary impulse is absorbed as new supply comes online. That new supply expands the state's tax base, generating an asset that matches the liability the state created via new money creation. Here the chronic post-1970s US current account deficits serve two purposes. They are an unrequited transfer of real resources to the United States, allowing its public and private actors to consume, invest at home and abroad, and fund a global military reach with weaker trade-offs than otherwise. In this sense they are quasi-tax revenues. And by pumping additional demand into the world economy, they offset the deflation that would otherwise accompany capitalism's natural tendency to generate it, and the more specific deflationary impulse from payment to net oil exporters (more on this below).

Nonetheless, the United States occupies a unique position in the global economy, which is again why we can talk of the state in global quasi-state money. The United States sits at the center of a global empire – in every sense of the word – encompassing much of the world. The political, military, economic, and financial orders of empires are hierarchical, asymmetrical, and heterogeneous. With respect to asymmetry, we live in a world

4 For a domestic example, see the discussion of private lending in Robin Wigglesworth, "The Private Credit Golden Moment," *Financial Times*, July 7, 2023. <https://www.ft.com/content/42297b43-7918-4734-b6d5-623c6d6fa00f>.

in which, as Susan Strange (1987, 565) observed, the United States alone possessed “the power to choose and to shape the structure of the global political economy.” Other actors were or are largely “price takers” of the consequent global economic system, including its trading order (Gruber 2000). The United States rewrote the global monetary order in the 1970s and the global trading order in the 1980s, and it appears ready to revise the global trading order again today. Other actors – at least so far – cannot do this. Asymmetry also characterizes production, in the sense of control of profitability. US firms dominate the dynamic and high-profit sectors of the world economy, capturing 35.1 percent of cumulative global profits for the 4,382 firms ever appearing on the *Forbes Global 2000* list, 2006 to 2023, and a similar 35.2 percent of cumulative profits for the over 20,000 global ultimate owners with annual sales over USD 100 million in the *Orbis* database, 2010 through 2019.⁵ Both data points are disproportionate relative to the 24 percent US share of global GDP. Finally, the United States remains the only military power with a global reach, including, critically, a global logistics capacity. China remains a fundamentally regional power despite steadily and considerably diminishing the US ability to project military power into the western Pacific.

For our purposes the asymmetry, hierarchy, and heterogeneity of credit arrangements matter most. As noted above, roughly 60 percent of global lending is dollar-denominated, with 80 percent of that originated by non-US banks. These banks typically end up with roughly one-third of their cross-border balance sheet denominated in dollars – even more if we net out intra-eurozone lending on the argument that this is not true cross-border lending on account of monetary union. This exposes those banks to the risk that their home central bank cannot bail them out if the collateral backing their dollar-denominated lending collapses. The same is not true for US banks. The Federal Reserve asymmetrically backs other actors in the global financial system, as the 2008-2010 crisis and the 2020 Covid pandemic show. That backing is both hierarchical and heterogeneous, as the four tiers of access to Federal Reserve swap and repo lines briefly elaborated below will show (Murau, Pape, and Pforr 2021). These asymmetries come together in the fact that the United States can massively subsidize an ambitious transformation of new energy and domestic manufacturing production through the 2022 CHIPS and Inflation Reduction Acts subsidies without concerns about its balance of payments.

Moreover, the “state” in quasi-money is even more apparent when we turn to the salience of US government and government-guaranteed securities in global capital markets. The very large and liquid asset market which the SCV sees as the source of lower transaction costs and network effects is primarily a creature (and creation) of the US state. Treasury bonds, Fannie Mae⁶ or Freddie Mac mortgage-backed securities and direct debt, and municipal bonds constituted 77 percent of US fixed income securities

5 Author calculations from the *Forbes Global 2000* annual lists and the Bureau van Dijk *Orbis* database.

6 While the two “Government Sponsored Enterprise” giants were nominally privately owned from 1968 to 2008, everyone believed they had an implicit government guarantee for their debt.

on average from 2007 to 2021; US fixed income securities in turn constituted an average 38.3 percent of global fixed income securities (SIFMA 2022). Put differently, roughly 30 percent of the global fixed income pool is US government-guaranteed bonds, so actors in current account surplus economies looking for fixed income securities, actors building derivatives on fixed income securities, and actors on the borrowing side of repo find the market is largely a market in US state securities. More subtly, actors looking for equities rather than fixed income securities would find that the shares of firms whose profits depended on state-created intellectual property rights comprised a substantial part of the US equity market. US equities comprised 36.1 percent of global equity capitalization on average from 2007 to 2021, but the trend has been upward, peaking at 42 percent in 2021 (SIFMA 2022).

We can now return to Triffin and his successors to understand why his dilemma was a specific, time-bound instantiation of the more general tensions across endogenous credit creation, current account recycling, differential growth favoring the emitter of global quasi-state money (here the United States), and the need for quasi-state money to stabilize any global financial system. These antinomies (soft contradictions) drive dollar dynamics, bringing endogenous sources of decay for the dollar into sharper focus than the original or updated versions of Triffin's dilemma.

3 Three dilemmas, not one

This section revisits Triffin's original dilemma and its successors, focusing first on the deflationary pressures in the global economy that ultimately animate the antinomies sketched below. These deflationary pressures signal why endogenous credit creation matters, allowing us to see how three antinomies around use of the dollar arise. The subsequent section explores those antinomies in terms of their specifics. But a preview here helps orient the discussion of deflationary pressure. The three antinomies revolve around adequate global credit creation, the core central bank's ability to act as the ultimate lender, buyer, and dealer of last resort in financial markets, the core economy's ability to act as a buyer of last resort in goods markets, and legitimacy in domestic and international politics. Credit, deficits, legitimacy, and global quasi-state money ... but of these, quasi-state money is the most important, because the global economy is first a system of power and only second a set of exchange-based markets. The tensions across these problems generate three different long-term antinomies:

Nationalization in the 2008 crisis validated that belief. Their mortgage-backed securities have long had equal status with Treasuries as bank reserves and indeed banks preferentially hold them as reserves.

1. an antinomy between the new credit creation (not just trade finance or foreign exchange reserves) needed to offset the secular deflation characterizing capitalism and the recurrent financial crises that flow from excess credit creation; Triffin's original dilemma was a specific and contingent instance of this antinomy. Related to this, the presence of quasi-state money backing both subordinate financial systems and the new credit they create increases use of dollar-denominated credit and thus increases the probability of crisis-inducing currency mismatches and vulnerability to Federal Reserve monetary policy
2. an antinomy between the center's economic growth and validation of externally created credit; while current account deficits transfer real resources to the center, they also work against the differential growth securing the center's position in and dominance over its empire, including, critically, the economic basis for dollar centrality/dollar as global quasi-state money
3. an antinomy between financial stability and legitimacy; the issuer's current account deficits and financial bailouts tend to undermine the domestic and international legitimacy for the political structures and power blocs supporting use of that quasi-state money in the first place, particularly as bailouts aggravate existing tendencies towards rising income inequality

Triffin's original dilemma emerged from the Sovereign Currency View's monetary theory of credit. Private actors and states desired a smooth expansion of trade finance in the post-Depression, postwar world characterized by capital and exchange controls, still considerable barriers to trade, and the export of (mostly) fully built-up commodities. The desynchronization of national business cycles – itself a consequence of capital controls – meant that trade surpluses could drive growth while trade deficits might open up supply bottlenecks throttling growth (Shonfield 1965, 61–70). With most trade dollar-invoiced, this implied the expansion of dollar-denominated credit in global markets that Triffin supported. But in the 1950s and well into the 1960s the issue of confidence referred not to the US economy as a whole but rather to the narrower question of convertibility into gold at USD 35 per ounce. The US maintained a positive, if shrinking, trade balance until 1971. Its current account deficit stemmed from unrequited military and foreign aid transfers as well as the offshore cost of war in Southeast Asia. Confidence, for Triffin (1960; 1962), was confidence in convertibility at USD 35 per ounce, not the issue of differential growth. That said, postwar reconstruction meant that the United States was on the wrong side of differential growth relative to western Europe and Japan.

As noted above, Triffin is the DNA for the SCV, which is best – in all senses of the word – proxied in classic works by Eichengreen (2007; 2008; 2011) and Cohen (1998) and policy-oriented analyses by Bergsten (1975; 1987; 1997; 2009; 2015). The SCV transformed Triffin's concern with convertibility into gold into a more general concern with confidence in the US economy. But in doing so these analysts remained faithful to the indicators that Triffin's loanable funds assumption and monetary theory of credit sug-

gested as the key indicators of US monetary power. Thus, they continued to focus on the proportion of foreign exchange reserves held in dollar-denominated assets, and on the scale of the US current account deficit. For the SCV, a declining share of reserves and a rising deficit in relation to GDP were unambiguous signs of decaying dollar dominance. This made sense in a world where current account deficits might threaten a fixed exchange rate, and reserves acted like a household's savings to cover unexpected shortfalls of income in relation to outgo. (See, for a recent random example, Gavin 2004, 21: "Liquidity is simply another word to describe reserve assets that are transferred from debtor to surplus countries to cover their payments gap.")

Despite the lack of isomorphism between Triffin's assumptions and the current global financial system, the "liquidity-confidence" dilemma continues to structure most discussions of the dollar's durability. Those discussions see the US current account deficit and associated rising net foreign debt as problems that might spook the faceless and homogeneous private investors populating equally undifferentiated global investment markets.⁷ Thus, for example, Gourinchas (2021, 289–93) posits a new Triffin dilemma in which the shrinking US share of global GDP conflicts with a growing global economy's need for safe assets in the form of US Treasury debt backing repo (repurchase) agreements. This approach partly opens the door to the importance of differential growth, and breaks with gold, but remains a fundamentally economic rather than power-centered approach to money and global finance.

That said, Triffin's concern with preventing potential deflation is valid, even if his focus on liquidity rather than credit creation misses the mark. The contemporary world economy is a capitalist economy, and as such it is inclined towards secular deflation (Schumpeter 1934; Brenner 2006).⁸ Capitalist competition driving deflation is a systemic factor. Recency bias around the post-Covid inflation suggests not, but the important word in the sentence is *secular*. It is not only prices for specific commodities that have fallen over the past 170 years but even more importantly the price of desired types of goods. The real cost of 1 kWh of electricity fell from USD 8.76 in 1890 to USD 1.15 in 1920 to USD 0.10 in 2023. Goods whose nominal price has seemingly risen, as with the typical automobile, often incorporate considerable new content; compare the 1980 Toyota Corolla or VW Golf with any contemporary Corolla or Golf. Secular deflation implies downward pressure on profits and increased pressure on indebted entities who need free cash flow to service their debts. In this context, new credit creation denominated in dollars serves to keep prices from falling further. This is obviously true for the vast central bank money creation in the 2008-2010 and 2020-2021 crises, as well as the less appreciated Federal Reserve

7 That said, in the run-up to the 2008 global financial crisis, analysts like Eichengreen (2007) and Cline (2005) also worried about state actors, particularly China, turning away from dollar-denominated assets.

8 See also the *Economist's* industrial commodities price index at <https://www.economist.com/graphic-detail/2014/01/09/more-valleys-than-hills>, which shows the trend from 1845 to 2014.

efforts to forestall deflation after the 2001 internet crash. But even in normal times, the endogenous credit creation and US current account deficits help to offset this deflation.

By contrast, starting from the Global Credit View's credit theory of money and understanding the dollar as global quasi-state money provide a sharper and more accurate assessment of the antinomy between credit creation and confidence. The GCV helps clarify the cases and consequences of endogenous credit creation in dollars. Four factors drive that credit creation, which does, as Triffin argued, help offset potential deflation in global markets. Each in turn drives one of the dilemmas or antinomies noted above. But each also significantly contributes to what we can call "Hirschman lock-in," after Albert Hirschman's (1945) seminal work on eastern European dependence on the interwar German import market. Offsetting deflation puts more dollar-denominated credit onto global balance sheets, tying financial systems to the dollar as global quasi-state money.

Hirschman lock-in is rooted in the accelerated deepening of the global division of labor after the 1970s and its associated expansion of trade relative to global GDP, the nature of oil exports/imports, the institutional structures of export surplus economies (Klein and Pettis 2021; Schwartz 2009), and the inherent dependence of development policies on credit-financed imports of capital goods. Note that virtually all export surplus economies are successful late developers, so the third and fourth factors are linked. The third is in some sense a special, and more important, case of the fourth. Each of these four factors increases the demand for endogenously created credit either domestically in the United States or offshore. Critically, offshore credit creation makes non-US banks reliant on the Federal Reserve in times of crisis, as noted above. Hirschman lock-in thus differs from the SCV's network-based lock-in, which rests on unmeasurable increasing returns from lower transaction costs.

These two charts (Figure 1, Figure 2) help orient the discussion below. They present cumulative current account deficits and surpluses in real 1992 US dollars from 1992 to 2021.

First, trade, which was Triffin's main concern. In Triffin's day (and in many Econ 101 textbooks today) trade is an exchange of wholly built-up commodities across national boundaries using their own currencies, as in the triple coincidence Avdjiev, McCauley, and Song Shin (2016) criticize. When production is (almost) entirely domestic, financing for production occurs in local currency. But as Shin (2017) has argued, the increasing complexity of global commodity chains magnifies the need for trade finance and, though he does not discuss this, quite possibly creates a demand for dollar-based production finance. Many components and indeed many partially built commodities will pass across several global borders before final sale. Shin notes that each of these steps in a global commodity chain requires financing, and those financial claims must be maintained until final sale. Thus global trade and financial flows grow in lock-step.

This resembles a firm's internal or external financing of more complex commodities at a purely domestic level, but with three critical differences. First, the shift from arm's

Figures 1 and 2 Shares of cumulative current account deficits and surpluses in constant 1992 dollars, 1992–2022

Figure 1 Deficit countries

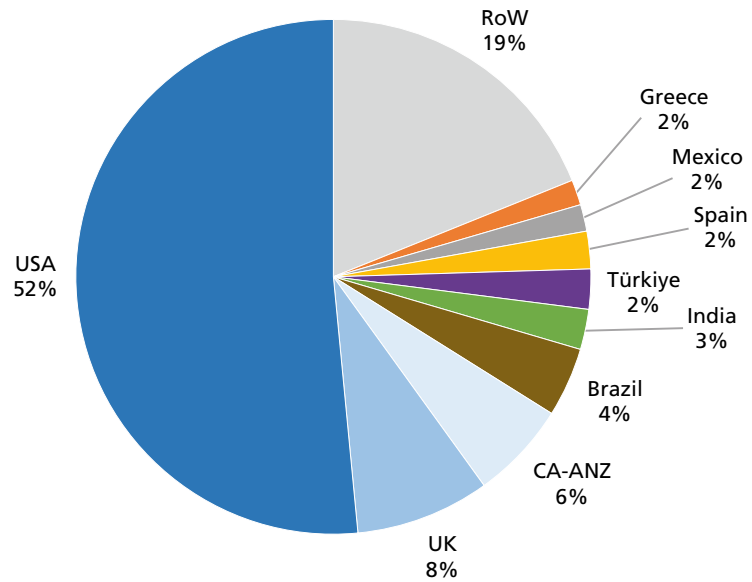
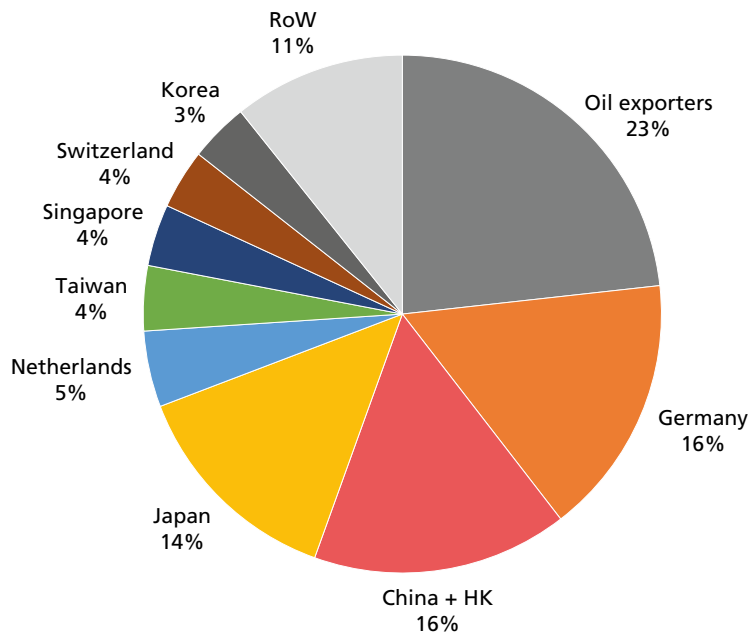


Figure 2 Surplus countries



RoW = Rest of World; CA-ANZ = Canada, Australia and New Zealand.
 Source: Based on IMF *World Economic Outlook* database,
<https://www.imf.org/en/Publications/WEO/weo-database/2023/October>

length trade in the fully built-up commodities that characterized most trade before the 1960s or 1970s requires a vast expansion of trade finance (though not necessarily domestic finance) in volume terms. Second, this expanded volume carries exchange rate risk, unlike domestic transactions. Third, though Shin does not discuss this, the fact that roughly one-third of global trade is administered trade inside transnational firms (and another third is trade between those firms and various semi-captive suppliers) (UNCTAD 2013, 135) increases the likelihood that financing is done in dollars, as those transnational firms extend credit to their internal and external suppliers.

US firms obviously operate natively in dollars. But, notably, non-US firms and in particular firms from the global south typically borrow in dollars for their international transactions. McCauley, McGuire, and Sushko (2015, 190) estimated that dollar credit to non-US, non-financial firms was already approximately USD 8 trillion in 2014. So at a very basic level the liquidity part of Triffin's dilemma persists. If global banks could not or did not generate new credit to fund these operations, firms presumably would face higher domestic production costs or be unable to export, slowing growth. Furthermore, the majority of non-US firms are able to borrow in dollars at lower interest rates than in their native currency (McCauley, McGuire, and Sushko 2015, 192, 194–95), which creates an incentive to borrow in dollars. While US residents ended up holding roughly one-third of US dollar-denominated bonds issued by offshore borrowers (McCauley, McGuire, and Sushko 2015, 197), borrowers and the banks generating this new credit need to find dollar revenue to service that debt. This locks them into serving the US market or other markets willing to transact in dollars.

Second, oil. Oil exports might be profoundly deflationary in the absence of endogenous credit creation. This structural economic factor pushes in the direction of dollar- (and as we will see, sterling-) denominated pricing for that credit. Oil is an illiquid asset whose production generates Ricardian rents (see also Hotelling 1931). In principle, these rents should be transformed into a liquid asset after extraction, as Norway does through its Pension Fund Global. PFG currently owns 1.5 percent of all global equities by value, and about 0.5 percent of global bond markets. In practice, many oil producers consume the rent – *vide* Nigeria – treating it like lottery winnings spent on vacations and expensive cars. But not all oil exporters do this, and net oil exports account for 23 percent of cumulative current account deficits in real 1992 dollars or 27 percent of nominal cumulative current account surpluses from 1992 to 2021.⁹ In a loanable funds world, financing this aggregate deficit would be profoundly deflationary by channeling income into passive savings and reducing aggregate demand. Indeed, policymakers feared exactly this outcome in the early 1970s. In an endogenous credit creation world, new credit can offset this drag on demand. From 1992 to 2021 the ten largest emerging market net oil importers accounted for just over 12.4 percent of cumulative global

9 Author calculation from IMF *World Economic Outlook* database, <https://www.imf.org/en/Publications/WEO/weo-database/2023/October>.

current account deficits.¹⁰ And net oil imports accounted for nearly half of US current account deficits in the '00s.

Three reasonable assumptions suggest that oil exporters who are generating an aggregate current account surplus by transforming oil into a liquid asset will accumulate these surpluses mostly in dollar-denominated assets. First, as noted above, the bulk of globally available assets were and are dollar-denominated, limiting alternatives. Second, to the extent that net oil export revenue is invested in non-dollar assets, this will tend to displace the original holders back into the larger and more elastic pool of dollar-denominated assets – the dollar proceeds from sale of assets must go somewhere! Every seller must find a home for their proceeds, so ultimately non-dollar sellers of assets must have open financial systems. Finally, net oil importers running current account deficits will need to borrow to fund those oil purchases, and lenders will want to and need to denominate those loans in dollars rather than soft local currencies to assure repayment at something close to real value.

But why dollar denomination for most of that new credit and most of those new assets? The second structural factor here is the relationship between oil and the military and production aspects of empire. To understand why, we need to start with Schumpeter's argument about the sources of growth in capitalist economies and its relationship to hegemonic powers. Put simply – and I think uncontestedly – historically hegemonic powers necessarily possess some organizational or material advantage that enables them to become a hegemonic power in the first place. In the industrial or capitalist era, that means possessing overwhelming industrial might, and typically faster growth than potential rivals. For Schumpeter (1939; 1954; Perez 2003), new growth waves always comprised a package of new production processes, new consumer goods, new transport modes, new corporate organizational formats, and, critically, a new energy source. And these arose in their full form in both of the post-1800 global hegemons, Britain and the United States.

Insofar as a key precondition for global domination is a large, rapidly growing economy that is at the technology forefront, some degree of domination over the key new energy input is not surprising, though parsing the degree to which this is structural or contingent is difficult.¹¹ Nonetheless, this is not a purely naturalistic factor (i.e., it just happens that Texas has huge oil fields and Newcastle has coal), as continued dollar pricing of oil shows. Much as Britain was the largest producer and exporter of coal in the sterling era (Varian 2017), the United States either was the largest exporter of oil or was able to maintain dollar pricing of oil in the contemporary era (Spiro 1998; Yergin 2009).

10 Author calculation from IMF *World Economic Outlook* database, <https://www.imf.org/en/Publications/WEO/weo-database/2023/October>.

11 Note that solar and wind power, unlike coal or oil, are not geographically concentrated, though the production of solar modules currently is. However, producing modules simply requires a commitment of resources, not acquisition of potential oil-bearing territories. Solar and wind thus represent a potential break in the congruence of hegemonic powers and control over key energy resources.

Structurally, the country generating global quasi-state money surely starts as a net energy exporter and naturally prices those exports in its own currency, and, unsurprisingly, both Britain and the United States priced energy exports in their own currency. Dollar (sterling) pricing for oil (coal) means that net energy importers must find dollars (sterling) to buy that energy or forgo transport and production technologies that use it. In the contemporary world, the biggest net oil exporters are fragile states facing significant geostrategic threats; 52 percent of cumulative net oil exports by value from 2003 to 2021 come from sixteen relatively vulnerable or unstable polities.¹² The political exchange of oil pricing in dollars for military security, which started with Roosevelt and Ibn Saud in 1944 and was reinforced in the 1970s, is a contingent factor in economic terms, though structural in geostrategic terms.

While any given net energy importer might be able to price exports in something other than dollars, in the aggregate this is not possible. Historic pricing in dollars, reinforced by geopolitically enforced pricing in dollars, forces net importers to find dollar sources of borrowing and thence revenue to service that borrowing. The major sources for those dollars would be net energy exporters and the successful late developers with net exports. Energy imports thus reinforce the accumulation of claims denominated in dollars on net exporters' balance sheets, and dollar liabilities on net energy importers' (and net importers' in general) balance sheets.

All that said, dollar pricing for oil is clearly subject to geopolitical contestation. Russia and Iran have tried to price oil exports in euro and renminbi. But this remains a relatively limited share of the market. Negotiations between India and Russia to buy oil with rupees in 2023 collapsed after three months. Likewise, China has induced some Gulf exporters to price in renminbi, stabilizing prices for Chinese energy users. This is a more profound issue, given that China is the world's second largest oil importer (USD 3.45 trillion cumulatively 2003–2021, versus USD 3.5 trillion for the United States).¹³ That said, Saudi Arabia's 1.7 mmbpd of exports to China account for less than 2 percent of daily oil trade. Again, though, what those Gulf states do with their renminbi ("petroyuan") receipts remains an open question. China's closed capital account limits their ability to translate invoice renminbi into renminbi-denominated assets. Meanwhile roughly three-fourths of EU energy imports are priced in dollars.

Late development dynamics create the third and fourth factors inducing endogenous credit creation in dollars, respectively on the supply and the demand side of endogenous credit creation. Here again, dollar denomination is a structural feature both in terms of use and with respect to offsetting deflation. First, successful efforts at late development tend to leave those winners with permanently depressed domestic demand. Successful late development requires and reinforces domestic political institutions and actors fa-

12 Calculated from data at <https://intracen.org/resources/data-and-analysis/trade-statistics>, my assessment of vulnerability or instability.

13 Calculated from data at <https://intracen.org/resources/data-and-analysis/trade-statistics>.

voring local demand repression. As Klein and Pettis (2021) argue, successful late developing economies have income distribution favoring firms over households, producing perpetual domestic demand deficits. Growth, and more importantly the economies of scale that drive profitability, requires net exports to offset this demand deficit. While currencies lower in Cohen's (1998) global pyramid might anchor credit systems in these regional or national economies, financial systems in each of these systems tend to accumulate dollar-denominated liabilities and assets precisely because they run export surpluses against the center. Net exports (Figure 2) imply an accumulation of assets, rather than a transformation of export earnings into local currency or increased imports. Exporters opt for dollar-denominated assets rather than increased consumption in order to continue "enjoying" net exports. As noted above, some of that asset accumulation must go into dollar-denominated assets, if only because US equity and bond markets have a disproportionate weight in global financial markets. But equally so, efforts to prevent their own currency appreciation suggest recycling surpluses as dollar lending to would-be developers.

The fourth factor driving continued dollarization is ongoing efforts at late development. Poor countries are unable to produce a comprehensive package of capital goods domestically, and many are net oil importers, creating the demand side that meets the supply of dollars accumulated by Klein and Pettis' successful exporters. They borrow in order to capitalize industry or build infrastructure to service their own firms' and foreign firms' exports. And they borrow in order to buy the oil needed for the wide range of petrochemical inputs into agriculture and plastics production. On the one side this borrowing adds to global aggregate demand. On the other, any success at late industrialization tends to depress global prices for the same reasons elaborated for factor three above.

This might seem like a loanable funds model in which offshore banks intermediate "savings" by net exporters back to net importers, and it says nothing at all about which currency ends up denominating surplus countries' asset holdings. However, this intermediation is only the second step in an endogenous credit creation process. The United States accounted for just over half of cumulative global current account deficits in real terms from 1992 to 2021, and with the other Anglo countries accounts for almost exactly two-thirds of cumulative deficits (Figure 1).¹⁴ All of these countries have credit- and immigration-driven housing booms in which rising housing prices expand the collateral backing endogenous credit creation by local banks. This endogenous credit creation is the origin of their current account deficits (Kohler 2022; 2023), which, when gross flows net out, leaves offshore banks with a loanable residual. But those offshore banks also endogenously create credit for would-be late developers financing capital goods imports.

The Klein and Pettis (2021) analysis takes for granted the degree to which the US and Anglo economies more easily generate housing-related endogenous credit to match suc-

14 Indeed, Fichtner (2016) sees the Anglo economies as a unified and globally dominant financial space.

successful developers' desire for net exports. But this factor relates to their own late development trajectories as high-wage, largely family farming, agricultural export-driven political economies. Those trajectories generated robust domestic mortgage markets servicing spatially extensive urban and rural settlements (Blackwell and Kohl 2018; Link and Maggor 2020; Schwartz 2019a). While US policy responses to the Great Depression bank failures reconstructed the mortgage system as a debtor-friendly credit-generating machine that Fannie Mae and Freddie Mac put on steroids (Schwartz 2012), housing policy and finance in Australia, Canada, and New Zealand also favored credit expansion (Bol  at 1985).

4 Three antinomies around resource transfer, legitimacy, financial stability, and differential growth

Endogenous credit creation at the global level and inside the United States (and to a lesser extent the other four Anglo economies) helps offset the global deflation inherent to capitalism and, more specifically, generated by transnational firms' expansion of world trade via deliberate efforts to arbitrage across wage and productivity differentials, oil exporters' desire to transform oil into financial assets, and the demand repression inherent in successful and ongoing efforts at late development. At the same time, for all their positive effect in offsetting deflation, these current account deficits are no free lunch. They threaten the domestic sources of support for the US dollar's role as global quasi-state money, as well as potentially undermining the US economic edge over potential peer rivals.

Antinomy 1: Credit expansion and financial crises

Three interacting antinomies – soft contradictions or sources of endogenous decay for dollar dominance and the stability of the US empire overall – exist. The first can be understood as a kind of super-Triffin dilemma, in which growth-promoting global credit creation conflicts with the differential growth needed to maintain US superiority versus potential rivals. In many ways Robert Gilpin (1975; 1981) was the first to highlight this danger, implicitly referencing Marxist theories of uneven and combined development (Trotsky 1936; Allinson and Anievas 2009) and again, implicitly, Schumpeter's (1939) arguments about leading sectors. Gilpin argued that hegemons – he mostly reserves “empire” for pre-industrial social formations – provided public goods to their peripheries, by which he meant all subordinate social systems, and not just the poor countries captured in dependency theory's use of the term. Public goods like security, some kind of common legal framework, and a common currency for international trade all enabled those peripheries to catch up to hegemons whose dominance rested on their prior possession of the Schumpeterian package of leading sectors. Indeed, Gilpin (1975) ar-

gued, public policy and corporate profit seeking might accelerate that catch-up as when US multinational firms brought the mass production, assembly line production package to Europe.¹⁵ I will pick up the broader tension between current account deficits and differential growth below, but here I highlight the narrower issue foregrounded in the discussion of money above: all credit expansions end in tears (Minsky 1986).

For neo-Triffinites like Gourinchas (2021; Gourinchas and Jeanne 2012), this narrower issue resolves into the ratio between US ability to generate safe assets and the global need for such safe assets. As in credit theories of money, Gourinchas argues that all financial systems are hierarchical and that the highest-powered credit instruments and money at par ultimately validate credit instruments with lesser degrees of acceptability. Gourinchas notes that the US share of the global economy has been shrinking and is likely to shrink even further as the other big EMDEs continue to grow. This makes Gourinchas (2021) less sanguine about long-term stability than Gourinchas and Jeanne (2012), who argued that falling interest rates would ease the US ability to supply the ultimate safe asset, its public debt, to the world. While I think that the straight-line extrapolations of Chinese, Indian, etc., growth are all too rosy – not least because the effects of climate change will be felt most strongly in the hot and densely populated parts of Asia – the US share of global GDP did shrink in nominal terms (which matters more in financial markets than purchasing power parity-adjusted terms)¹⁶ from its post-World War II position of overwhelming dominance.

Much as Gilpin argued about Europe in the 1960s, US and other rich country transnational firms have expanded and upgraded production in the EMDEs, and in a handful of those EMDEs aggressive state policy has cultivated both growth and world-class exporters. But as Gourinchas (2021) himself notes, relative size depends to a degree on exchange rates. In 1971, the US share of global GDP had fallen to only 18 percent on the back of the devaluations Nixon set in train. But the US share of global GDP has been stable at around 22 to 24 percent since the '00s. Perhaps more important, the US share of rich country GDP at nominal exchange rates has increased from an average of 31.7 percent in the 1991–1995 quinquennium to an average of 41.9 percent in that of 2017–2021. This has increased the relative weight of the dollar in top-tier safe assets.

Despite this, Gourinchas is correct that the growing global need for credit expansion to finance not just trade (including oil import deficits for the foreseeable future) and development creates a mismatch with the potential supply of US government and government-guaranteed assets. The issue here is partly political and partly economic. Economically, a rising volume of US government debt, particularly in relation to US GDP,

15 Gilpin's (1975) analysis elides the role the US state played through the Marshall Plan and other policy initiatives, but the point is that both public and private US behavior enabled faster catch-up than might be expected.

16 PPP-adjusted GDP is irrelevant in financial crisis and quotidian repo markets because financial instruments trade at their nominal values. PPP-adjusted GDP might matter for other issues, like military and production strength, however.

makes macroeconomic policy extremely difficult. As we saw in early 2023, Federal Reserve interest rate hikes intended to stem inflation generated huge mark-to-market losses at major banks, requiring a massive bailout of Silicon Valley Bank and a moral-hazard-creating expansion of deposit insurance coverage to what were de jure uninsured deposits. The former suggests limits to the Fed's inflation-fighting ability, while the second encourages even more risk-taking in the banking sector. Neither helps the dollar's global standing.

Second, at current interest rates, the growing volume of federal public debt means that interest payments already exceed defense spending. In the absence of rate decreases by the Fed they will be higher than their 1991 peak, relative to GDP. This also hinders the Fed's ability to control inflation, because higher interest rates strain the federal budget. While deflation seems the more likely worry, given the flood of Chinese manufacturing exports coming onstream, deflation lowers federal tax revenue relative to the fixed debt burden, and similarly stresses global dollar debtors whose export revenues decline. The dollar-based financial system thus faces an expanded version of Triffin's old dilemma in the absence of substantial US differential growth.

Third, expanded credit at the global level expands the scale of currency mismatch non-US debtors face, and thus the risk of crisis when the Federal Reserve alters its interest rate stance. After the 2008 crisis, extremely low interest rates and the related quantitative easing policy pushed rich country investors into EMDE markets, causing currency appreciation (Schwartz 2016). EMDE firms, meanwhile, rushed to borrow at low rates and then often engaged in carry trades into their higher interest rate domestic markets, expanding EMDE debts in both domestic and hard currencies. Both behaviors eroded EMDE competitiveness relative to Chinese and rich country producers. Unfortunately, the reverse situation of rising US interest rates is also damaging. It raises borrowing costs for EMDE borrowers. It also raises the cost of imported intermediate goods. In principle, the Federal Reserve pays no attention to foreign markets (Schwartz 2016), but in practice it is hard to see how it cannot consider the reverberations of EMDE default back through non-US lenders to the Fed's swap lines with core central banks. While this does not necessarily produce the binding constraint that Hardie and Maxfield (2016) hypothesize, it does constrain Fed policy to a degree. In principle, an expanding US economy again resolves this issue as it expands the US capacity to act as a Kindlebergerian importer of last resort. But here a second antinomy emerges.

Antinomy 2: Differential growth versus current account deficits

The second dilemma is akin to the other side of the original Triffin and neo-Triffin dilemma, namely confidence in the sustainability of the US economy. But here we should understand this as a question of differential growth favoring the center in the context of current account deficits. Triffin argued that sufficient liquidity in the form of trade

finance risked undermining confidence in the US state's ability to redeem dollars for gold at a fixed exchange rate. More subtly, for neo-Triffinites, the erosion of the US trade surplus threw into question the US economy's ability to redeem dollars in goods and services, because expanding the US money supply fast enough to meet global trade needs generated domestic inflation that raised US relative unit labor costs (RULCs) and undermined US competitiveness.

Fast forward to today, when the US current account is consistently and seemingly perpetually in deficit. This generates what the SCV can see as a super-Triffin dilemma between US fiscal and household deficits and the drag on the core economy that continual current account deficits create on the one side, and the need for safe assets to liquify repo markets and provide reserves against losses for non-US banks on the other. Slower growth in the central economy calls into question its ability to validate assets denominated in its money. While non-US banks and governments can generate and sell US dollar-denominated claims (Bordo and McCauley 2017, 16–17), ultimately someone needs to backstop these claims, as noted in the first antinomy (Binder 2023).

Current account deficits do not necessarily subtract from GDP growth. But the coincidence of deficits with an output gap does suggest a drag on growth. The US economy has combined deficits and an output gap in twenty-five of the past forty non-Covid years (1980 to 2019 and thirteen of the past twenty at 0.6 percent), with a negative output gap averaging 0.5 percent of GDP. Equally so, US capacity utilization has drifted downward in each business cycle (trough to trough) from the one ending in the first quarter of 1975 (which averaged 84.8 percent capacity utilization) to the one ending in the fourth quarter of 2009 (77.6 percent); indeed, as of November 2023, US capacity utilization stood at 78.6 percent despite the enormous monetary and fiscal responses to Covid.¹⁷ Nonetheless, the US economy has largely been on the right side of differential growth over the past thirty-plus years in both aggregate and per capita terms. While a few smaller developed economies have outpaced US growth, the larger ones – Japan, Germany, and both the eurozone and EU as a whole – have not (Table 1). Obviously, several developing countries have outgrown the United States, with China of course the outstanding and most problematic example. Overall, though, the United States has had surprisingly robust growth despite current account deficits, its size (which makes it harder to beat the average), and its position at the technology frontier.

Triffin's original simple dilemma between liquidity and confidence can thus be understood as a more complex antinomy between the purposes and tools of empire. All successful empires balance extraction with the institutionalized provision of order and standards, as well as the transmission of production and cultural technologies. Empires exist to extract resources from their peripheries on behalf of various elite constituen-

17 Output gap data calculated from OECD *Economic Outlook* database at <https://OECD-ilibrary.org>; capacity utilization data from the Federal Reserve Bank at <https://fred.stlouisfed.org/series/TCU#0>.

Table 1 Differential growth in GDP and GDP per capita: cumulative percentage increase from 1992 to 2021

	Δ GDP (current USD)	Δ GDP (real local currency)	Δ GDP per capita (real local currency)
USA	258	102	56
Australia, Canada, New Zealand	309	–	–
EU	136	–	–
Eurozone	117	–	–
France	111	51	32
Germany	100	42	37
Japan	26	21	20
China	3509	1135	924
China + Hong Kong	2940	–	–

IMF *WEO* database at <https://www.imf.org/en/Publications/WEO/weo-database/2023/April>

cies. Imperial order, standards, stability, and demand transmission enable peripheries to catch up with the center in economic and, potentially, military terms (Gilpin 1981; Mann 1986). Catch-up increases the volume of resources the center can harvest from the periphery via tax farming in the past and trade deficits today (among other things), but, as China's rise shows, risks creating potential peer rivals in those peripheries.¹⁸

The dollar's role as quasi-state money for a US-centered empire enabled a vast flow of imports, and a corresponding cumulation of current account deficits into foreign-held dollar-denominated assets. The imperial center's dilemma around differential growth is that enabling peripheries to grow richer generates more harvestable resources but simultaneously enables those peripheries to potentially challenge the center. Classical Marxist thought saw convergence as innate to capitalism, with Trotsky (1936, 19) noting "capitalism inherently and constantly aims at economic expansion ... [and] the conversion of self-sufficient provincial and national economies into a system of financial interrelationships equal[izing] the economic and cultural levels of the most progressive and the most backward countries." Resource extraction and the differential growth needed to secure that extraction are thus in tension. Deficits also undermine the financial and physical basis for military superiority, as the difficulties scaling up munitions production for Ukraine revealed. Indeed, US industrial production largely moved sideways from the 2008 crisis through 2023.¹⁹

That said, the tsunami of federal subsidies unleashed in the misnamed Inflation Reduction Act 2022 and the CHIPS Act 2022 have generated a near doubling of investment in manufacturing facilities. The state's gamble here pits the apparent lack of a balance of payments constraint against a revival of US manufacturing that might reduce future trade deficits. The US state pulled off this kind of Bourdieuvian recalibration of capital

18 Space constraints prohibit a full discussion of US policy towards China since the early 1990s, but those policies provide a caution against the belief that state actors have perfect foresight and ability to act.

19 Federal Reserve Bank data at <https://fred.stlouisfed.org/series/INDPRO>.

three times in the past sixty years. First, Nixon's demolition departing from Bretton Woods in favor of floating exchange rates. Second, a two-decade-long campaign to shift profitability towards intellectual property rights-rich firms – largely US firms – via the extra-territorialization of US IP law through the TRIPs agreement of the World Trade Organization and subsequent trade negotiations (Sell 2003; 2010; Schwartz 2019b). Third, the Obama administration's transformation of oil extraction into a manufacturing process via fracking, which enabled the United States to become the largest oil producer in the world by 2023 and eliminate oil imports as a source of current account deficits. But these three successes are no guarantee that the current round of overt industrial policy will succeed in maintaining differential growth favoring the United States relative to the rest of the OECD and, perhaps more importantly, China.

Antinomy 3: Differential growth and current account deficits versus legitimacy and popular support

David Calleo and Susan Strange (1984, 99) perceptively wrote that “no integrated international monetary regime is likely to survive unless the domestic economic and social order in each major country is in harmony with the international regime.” Resource extraction in the form of trade or current account deficits creates a third tension between that extraction and domestic political support for use of the dollar as global quasi-state money (Germain and Schwartz 2014; 2017). Continual current account deficits generate endogenous dynamics undermining the legitimacy of free trade in US politics (*vide* Trump, of course, but Biden has not reversed Trump's trade policies in any great degree). In principle, central elites could use part of the resource flow to buy support from domestic groups exposed to trade competition, much as British financial elites bought votes for free trade with cheap food imports. In the United States, imports from low wage countries, particularly clothing and housewares, benefited the broader population. The costs from trade deficits fell more narrowly regionally and racially, as collapse of the southern textile industry largely hurt Black women. Cheaper imports helped drive down the cost of consumer non-durables and even more strongly durables in the US economy from the 1980s forward. Non-durables prices rose 13 percent more slowly than the average price index (CPI), and durables a remarkable 60 percent more slowly until the Covid shock.²⁰ But as imports began to erode durables production and thus white male employment in the Midwest manufacturing zone after 2000, tolerance for free trade and thus the current account deficits needed to power global growth evaporated. It is no accident that Trump eked out his 2016 victory on the basis of very narrow margins in the manufacturing states of Michigan, Pennsylvania, and Wisconsin.

20 Calculated from Federal Reserve Bank data at <https://fred.stlouisfed.org>, series CPIAUCSL, CUSR0000SAN, CUSR0000SAD, and CUSR0000SASLE.

The inverse is true in the major current account surplus countries, where the translation of surpluses in asset accumulation by firms and related elites compresses domestic mass consumption (Klein and Pettis 2021) and thus long-term legitimacy. Household consumption in the twelve major surplus economies averaged about 47 percent of GDP, 1992 to 2021, as compared to 67 percent in the United States, and 62 percent for the twelve largest deficit countries.²¹ To be sure, the average German is hardly poor, but, first, the issue is consumption relative to productivity rather than absolute income, and second, income and wealth inequality have become politically salient issues in Germany. Populist challenges to politics-as-usual are not unique to the United States. Resource extraction and the domestic legitimacy needed to sustain use of the US dollar as quasi-state money (on both sides of the exchange) are thus in tension.

Growth, of course, cures all political ills. But the first two antinomies highlight the problems inherent in endogenous credit creation in pursuit of growth. Europe currently finds itself in a difficult institutional and economic bind. Institutionally, the European Central Bank's single-minded pursuit of price stability, the EU-level Growth and Stability Pact, and the German debt brake (along with parallel if uncodified mindsets in Austria, Denmark, the Netherlands, and Sweden) all militate against any wide-ranging effort to boost local income and thus local demand. Economically, the bulk of European exports are in price-sensitive sectors (Baccaro and Pontusson 2016), reinforcing the institutional bias towards lower local aggregate demand.²² Yet at the same time, industrial policy akin to the US IRA and CHIPS Acts risks both local inflation and a shift towards current account deficits. The EU north could probably manage its public debt in the face of current account deficits, as most of these countries are substantial net creditors in global markets. Denmark and Sweden, for example, had net international investment positions over 35 percent of GDP towards the end of 2023. But overall, the eurozone had a net positive position of only 2.3 percent, reflecting negative positions in the south (ECB 2024). This makes public debt there vulnerable to investor sentiment in a way that it is not in the United States.

Here Klein and Pettis (2021) correctly assess that income inequality – class warfare in their view – is driving global imbalances, even if they take the dollar's central role for granted. In both the United States and Europe this inequality is driving populist politics and pressure for trade protection. Yet growth cannot occur in the absence of new credit creation.

21 Calculated from data at <https://www.oecd-ilibrary.org/statistics>.

22 Most, not all. Obviously firms like ASML, LMVH, machine tool manufacturers, and to an extent the pharmaceutical sector are less price-sensitive. But the profit data unambiguously suggest significant limits on pricing power (Schwartz 2019b).

5 Concluding remarks

Thus, four critical and largely political elements interact in a global monetary system anchored by the dollar as quasi-state money: credit creation, current account or trade deficits, domestic legitimacy, and differential growth. Each of these simultaneously supports yet conflicts with the others. Imperial centers run current account or trade deficits in order to extract resources from their empires. These deficits help generate new credit and thus a growth impulse that offsets what would otherwise be the deflationary norm in peacetime capitalism. Triffin identified a very specific instantiation of the tension between these two poles that later analysts expanded into a more general concern that rising current account deficits and inflation would undermine confidence in the dollar. More generally, the expansion of global credit could permit faster catch-up growth by peripheries, undermining the center's relative economic and thence military power. Imperial centers need to generate differential growth in their favor to prevent a loss of confidence while still being able to absorb real resources from subordinate economies. In short, the question of differential growth at a global level generates an antinomy around the dollar as quasi-state money.

The core central bank also needs to sustain its currency as quasi-state money. This creates an antinomy between global use of the currency and in particular the current account deficits that put that money into circulation, and between control over domestic inflation and the rising net international debt that the core's current account deficits generate. This creates a tension between the dollar's role as global quasi-state money and differential growth because sustained deficits also tend to hollow out the traded sectors in the economy in the absence of an active industrial policy. A key dynamic sustaining use of the dollar as quasi-state money is the combination of recycling (loanable funds) and endogenous credit creation by offshore and non-core banks. Put as simply and concisely as possible, empires fend off global deflation through an expansion of global credit denominated in their money, but this comes at the cost of widening deficits and net debt for the central country and the risk of delegitimizing financial crises and employment losses. The dollar's role as global quasi-state money backing both growth and financial systems in the rest of the empire is the key active lever the center deploys with respect to the global financial system. That said, the center also needs an active industrial policy to generate differential growth in its favor and a robust welfare state or side payments to contain domestic dissent. Balancing these tensions is difficult. Nonetheless, the US government successfully rewrote the rules of the global monetary and trade system in the 1970s and 1980s. It is now attempting the same rewrite through an overt industrial policy and the promulgation of new institutional supports for use and origination of dollar credit by non-US banks. It remains to be seen if this will be as successful as the prior rebooting of the global monetary system.

References

- Avdjiev, Stefan, Robert N. McCauley, and Hyun Song Shin. 2016. "Breaking Free of the Triple Coincidence in International Finance." *Economic Policy* 31 (87): 409–51.
- Akinci, Ozge, Gianluca Benigno, Serra Pelin, and Jonathan Turek. 2022. "The Dollar's Imperial Circle." *FRB of New York Staff Report* 1045, Federal Reserve Bank of New York, New York.
- Aldasoro, Inaki, and Tomas Ehlers. 2018. "The Geography of Dollar Funding of Non-US Banks." *BIS Quarterly Review*, December 2018, Bank for International Settlements, Basel.
- Aldasoro, Inaki, Tomas Ehlers, Patrick McGuire, and Goetz von Peter. 2020. "Global Banks' Dollar Funding Needs and Central Bank Swap Lines." *BIS Bulletin* 27, Bank for International Settlements, Basel.
- Aldasoro, Inaki, Tomas Ehlers, and Egemen Eren. 2022. "Global Banks, Dollar Funding, and Regulation." *Journal of International Economics* 137. <https://dx.doi.org/10.17632/hhgj4pm4tp.1>
- Allinson, Jamie, and Alexander Anievas. 2009. "The Uses and Misuses of Uneven and Combined Development: An Anatomy of a Concept." *Cambridge Review of International Affairs* 22 (1): 47–67.
- Andrews, David, ed. 2006. *International Monetary Power*. Ithaca: Cornell University Press.
- Baccaro, Lucio, and Jonas Pontusson. 2016. "Rethinking Comparative Political Economy: The Growth Model Perspective." *Politics and Society* 44 (2): 175–207.
- Bauerle Danzman, Sarah, William Winecoff, and Thomas Oatley. 2017. "All Crises are Global: Capital Cycles in an Imbalanced International Political Economy." *International Studies Quarterly* 61 (4): 907–23.
- Beck, Mareike, and Samuel Knafo. 2020. "Financialization and the Uses of History." In *The Routledge International Handbook of Financialization*, edited by Philip Mader, Daniel Mertens, and Natacha van der Zwan, 136–46. London: Routledge.
- Beck, Mareike. 2022. "Extroverted Financialization: How US Finance Shapes European Banking." *Review of International Political Economy* 29 (5): 1723–45.
- Bergsten, C. Fred. 1975. *The Dilemmas of the Dollar*. New York: Council on Foreign Relations.
- Bergsten, C. Fred. 1987. "Economic Imbalances and World Politics." *Foreign Affairs* 65 (4): 770–94.
- Bergsten, C. Fred. 1997. "The Dollar and the Euro." *Foreign Affairs* 76 (4): 83–95.
- Bergsten, C. Fred. 2009. "The Dollar and the Deficits: How Washington Can Prevent the Next Crisis." *Foreign Affairs* 88 (6): 20–38.
- Bergsten, C. Fred. 2015. "Time for a Plaza II??" Working Paper, James A. Baker III Institute for Public Policy of Rice University, Houston, TX. <https://scholarship.rice.edu/bitstream/handle/1911/91918/WorkingPaper-Plaza-Bergsten-092515.pdf>
- Bertaut, Carol, Bastian von Beschwitz, and Stephanie Curcuru. 2021. "The International Role of the US Dollar." *Federal Reserve Bank*, October 6. <https://www.federalreserve.gov/econres/notes/feds-notes/the-international-role-of-the-u-s-dollar-20211006.html>
- Binder, Andrea. 2023. *Offshore Finance and State Power*. New York: Oxford University Press.
- Blackwell, Timothy, and Sebastian Kohl. 2018. "The Origins of National Housing Finance Systems: A Comparative Investigation into Historical Variations in Mortgage Finance Regimes." *Review of International Political Economy* 25 (1): 49–74.
- Bodenhorn, Howard. 2000. *A History of Banking in Antebellum America: Financial Markets and Economic Development in an Era of Nation-Building*. New York: Cambridge University Press.
- Bodenhorn, Howard. 2002. *State Banking in Early America: A New Economic History*. New York: Oxford University Press.
- Boléat, Mark. 1985. *National Housing Finance Systems: A Comparative Study*. London: Croom Helm.
- Bordo, Michael D., and Robert N. McCauley. 2016. "The Current Account Version of the Triffin Dilemma." *Atlantic Economic Journal* 44: 171–82.
- Bordo, Michael D., and Robert N. McCauley. 2017. "Triffin: Dilemma or Myth?" *BIS Working Paper* No. 684, Bank for International Settlements, Geneva.
- Brenner, Robert. 2006. *The Economics of Global Turbulence: The Advanced Capitalist Economies from Long Boom to Long Downturn, 1945–2005*. London: Verso.

- Bruno, Valentina, and Hyun Song Shin. 2015. "Cross-Border Banking and Global Liquidity." *The Review of Economic Studies* 82 (2): 535–64.
- Calleo, David, and Susan Strange. 1984. "Money and World Politics." In *Paths to International Political Economy*, edited by Susan Strange, 91–125. London: George Allen & Unwin.
- Cline, William. 2005. *The United States as a Debtor Nation*. Washington DC: Peterson Institute.
- Cohen, Benjamin. 1998. *The Geography of Money*. Ithaca: Cornell University Press.
- Cohen, Benjamin. 2007. "The Transatlantic Divide: Why Are American and British IPE So Different?" *Review of International Political Economy* 14 (2): 197–219.
- Cohen, Benjamin. 2015. *Currency Power: Understanding Monetary Rivalry*. Princeton: Princeton University Press.
- Cohen, Benjamin, and Tabitha Benney. 2014. "What Does the International Currency System Really Look Like?" *Review of International Political Economy* 21 (5): 1017–41.
- Cox, Robert. 1987. *Production, Power and World Order: Social Forces in the Making of History*. New York: Columbia University Press.
- Despres, Emile, Charles P. Kindleberger, and Walter S. Salant. 1966. *The Dollar and World Liquidity: A Minority View*. Washington, DC: Brookings Institution.
- ECB (European Central Bank). 2024. "Euro Area Quarterly Balance of Payments and International Investment Position: Third Quarter of 2023." *European Central Bank*, January 11. Accessed February 11, 2024. <https://www.ecb.europa.eu/press/stats/bop/2024/html/ecb.bq240111~33c8af04bb.en.html>
- Eichengreen, Barry. 2007. *Global Imbalances and the Lessons of Bretton Woods*. Boston: MIT Press.
- Eichengreen, Barry. 2008. *Globalizing Capital: A History of the International Monetary System*. Princeton: Princeton University Press.
- Eichengreen, Barry. 2011. *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System*. New York: Oxford University Press.
- Eichengreen, Barry, Arnaud Mehl, and Livia Chițu. 2018. *How Global Currencies Work: Past, Present, and Future*. Princeton: Princeton University Press.
- Favas, Matthieu. 2020. "Economist Special Report: International Banking." *Economist*, May 7. <https://www.economist.com/special-report/2020-05-09>
- Foullis, Patrick. 2015. "Economist Special Report: The Sticky Superpower." *Economist*, October 3. <https://www.economist.com/special-report/2015-10-03>
- Fichtner, Jan. 2016. "Perpetual Decline or Persistent Dominance? Uncovering Anglo-America's True Structural Power in Global Finance." *Review of International Studies* 43 (1): 3–26.
- FSB (Financial Stability Board). 2022. "US Dollar Funding and Emerging Market Economy Vulnerabilities." Report, April 26, Financial Stability Board, Basel. <https://www.fsb.org/wp-content/uploads/P260422.pdf>
- Gabor, Daniella. 2020. "Critical Macro-Finance: A Theoretical Lens." *Finance and Society* 6 (1): 45–55.
- Gavin, Francis. 2004. *Gold, Dollars, and Power: The Politics of International Monetary Relations, 1958–1971*. Chapel Hill, NC: University of North Carolina Press.
- Germain, Randall, and Herman Mark Schwartz. 2014. "The Political Economy of Failure: The Euro as an International Currency." *Review of International Political Economy* 21 (5): 1095–122.
- Germain, Randall, and Herman Mark Schwartz. 2017. "The Political Economy of Currency Internationalization: The Case of the RMB." *Review of International Studies* 43 (4): 765–87.
- Gilpin, Robert. 1975. *US Power and the Multinational Corporation: The Political Economy of Direct Foreign Investment*. New York: Basic Books.
- Gilpin, Robert. 1981. *War and Change in World Politics*. Cambridge: Cambridge University Press.
- Gourinchas, Pierre-Olivier, and Olivier Jeanne. 2012. "Global Safe Assets." *BIS Working Paper* No 399, Bank for International Settlements, Geneva.
- Gourinchas, Pierre-Olivier. 2021. "The Dollar Hegemon? Evidence and Implications for Policymakers." In *The Asian Monetary Policy Forum: Insights for Central Banking*, edited by Steven Davis, Edward Robinson, and Bernard Yeung, 264–300. Singapore: World Scientific.
- Gruber, Lloyd. 2000. *Ruling the World: Power Politics and the Rise of Supranational Institutions*. Princeton: Princeton University Press.

- Hardie, Iain, and Sylvia Maxfield. 2016. "Atlas Constrained: The US External Balance Sheet and International Monetary Power." *Review of International Political Economy* 23 (4): 583–613.
- Hardie, Iain, and Helen Thompson. 2021. "Taking Europe Seriously: European Financialization and US Monetary Power." *Review of International Political Economy* 28 (4): 775–93.
- Hirschman, Albert O. 1945. *National Power and the Structure of Foreign Trade*. Berkeley: University of California Press.
- Hockett, Robert C., and Saule T. Omarova. 2016. "The Finance Franchise." *Cornell Law Review* 102 (2): 1143–218.
- Hoffman, Philip T., Gilles Postel-Vinay, and Jean-Laurent Rosenthal. 2000. *Priceless Markets: The Political Economy of Credit in Paris, 1660–1870*. Chicago: University of Chicago Press.
- Hotelling, Harold. 1931. "The Economics of Exhaustible Resources." *Journal of Political Economy* 39 (2): 137–75.
- Ilzetzki, Ethan, Carmen M. Reinhart, and Kenneth S. Rogoff. 2019. "Exchange Arrangements Entering the 21st Century: Which Anchor Will Hold?" *Quarterly Journal of Economics* 134 (2): 599–646.
- Ingham, Geoffrey. 2004a. *The Nature of Money*. Cambridge: Polity.
- Ingham, Geoffrey. 2004b. "The Nature of Money." *Economic Sociology* 5 (2): 18–28.
- Keynes, John Maynard. (1936) 1964. *The General Theory of Employment, Interest and Money*. New York: Harcourt Brace Jovanovich.
- Kindleberger, Charles P. 1967. "The Politics of International Money and World Language." *Essays in International Finance* No. 61, International Finance Section, Department of Economics, Princeton University.
- Kindleberger, Charles P. 1981. *International Money: A Collection of Essays*. Boston: Allen & Unwin.
- Kirshner, Jonathan. 1997. *Currency and Coercion: The Political Economy of International Monetary Power*. Princeton: Princeton University Press.
- Kirshner, Jonathan. 2008. "Dollar Primacy and American Power: What's at Stake?" *Review of International Political Economy* 15 (3): 418–38.
- Klein, Matthew, and Michael Pettis. 2020. *Trade Wars Are Class Wars*. New Haven, CT: Yale University Press.
- Kohler, Karsten. 2022. "Capital Flows and Geographically Uneven Economic Dynamics: A Monetary Perspective." *Environment and Planning A: Economy and Space* 54 (8): 1510–31.
- Kohler, Karsten. 2023. "Capital Flows and the Eurozone's North-South Divide." *Politics and Society*, published online June 2, doi: 10.1177/00323292231168251.
- Knapp, Georg. 1924. *The State Theory of Money*. Translated by H. M. Lucas and J. Bonar. London: Macmillan and Co.
- Kydland, Finn, and Edward Prescott. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *The Journal of Political Economy* 85 (3): 473–91.
- Link, Stefan, and Noam Maggor. 2020. "The United States as a Developing Nation: Revisiting the Peculiarities of American History." *Past and Present* 246 (1): 269–306.
- Loriaux, Michael. 1991. *France after Hegemony: International Change and Financial Reform*. Ithaca: Cornell University Press.
- Mann, Michael. 1984. "The Autonomous Power of The State: Its Origins, Mechanisms and Results." *European Journal of Sociology* 25 (2): 185–213.
- Mann, Michael. 1986. *The Sources of Social Power. Volume 1: A History of Power from the Beginning to AD 1760*. Cambridge: Cambridge University Press.
- McCauley, Robert N. 2021. "The Global Domain of the Dollar: Eight Questions." *Atlantic Economic Journal* 48 (4): 421–29.
- McCauley, Robert N., Patrick McGuire, and Vladyslav Sushko. 2015. "Global Dollar Credit: Links to US Monetary Policy and Leverage." *Economic Policy* 30 (82): 187–229.
- McCauley, Robert N., and Chang Shu. 2019. "Recent Renminbi Policy and Currency Co-Movements." *Journal of International Money and Finance* 95: 444–56.
- Mehrling, Perry. 2010. *The New Lombard Street*. Princeton: Princeton University Press.
- Mehrling, Perry. 2020. "Payment vs. Funding: The Law of Reflux for Today." *INET Working Paper* No. 113, Institute for New Economic Thinking at the Oxford Martin School, Oxford.

- Menger, Karl. 1892. "On the Origin of Money." *The Economic Journal* 2 (6): 239–55.
- Minsky, Hyman P. 1977. "The Financial Instability Hypothesis: An Interpretation of Keynes and an Alternative to 'Standard' Theory." *Challenge* 20 (1): 20–27.
- Minsky, Hyman P. 1986. *Stabilizing an Unstable Economy*. New York: McGraw-Hill.
- Mitchell-Innes, Alfred. 1914. "The Credit Theory of Money." *Banking Law Journal* 31 (2): 151–68.
- Murau, Steffen. 2018. "Offshore Dollar Creation and the Emergence of the Post-2008 International Monetary System." *IASS Discussion Paper*, June 2018, Institute for Advanced Sustainability Studies (IASS), Potsdam.
- Murau, Steffen. 2023. "Sovereign Debt Issuance and Transformation of the Monetary Architecture in Prussia and the German Empire, 1740–1914." *Background Paper*, July 23, Dezernat Zukunft, Institute for Microfinance, Berlin.
- Murau, Steffen, and Jens van 't Klooster. 2022. "Rethinking Monetary Sovereignty: The Global Credit Money System and the State." *Perspectives on Politics* 21 (4): 1319–36.
- Murau, Steffen, and Tobias Pforr. 2023. "Shadow Money in the History of Monetary Thought." *Review of Political Economy*, published online November 2, doi: 10.1080/09538259.2023.2272140.
- Murau, Steffen, Joe Rini, and Armin Haas. 2020. "The Evolution of the Offshore US-Dollar System: Past, Present and Four Possible Futures." *Journal of Institutional Economics* 16 (6): 767–83.
- Murau, Steffen, Fabian Pape, and Tobias Pforr. 2021. "The Hierarchy of the Offshore US-Dollar System: On Swap Lines, the FIMA Repo Facility and Special Drawing Rights." *GEGI Study*, February 2021, Global Economic Governance Initiative, Global Development Policy Center, Boston University, Boston, MA. <https://doi.org/10.48440/iass>
- Obstfeld, Maurice, and Haonan Zhou. 2023. "The Global Dollar Cycle." *NBER Working Paper* 31004, National Bureau for Economic Research, Cambridge, MA.
- Perez, Carlota. 2003. *Technological Revolutions and Financial Capital*. Cheltenham: Edward Elgar.
- Pettis, Michael. 2001. *The Volatility Machine: Emerging Economies and the Threat of Financial Collapse*. New York: Oxford University Press.
- Schumpeter, Joseph A. (1918) 1991. "Crisis of the Tax State." In *Joseph A. Schumpeter: The Economics and Sociology of Capitalism*, edited by Richard Swedberg, 99–140. Princeton: Princeton University Press.
- Schumpeter, Joseph A. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. New Brunswick, NJ: Transaction Publishers.
- Schumpeter, Joseph A. 1939. *Business Cycles*. New York: McGraw Hill.
- Schumpeter, Joseph A. 1954. *History of Economic Analysis*. New York: Oxford University Press.
- Schwartz, Herman Mark. 2009. *Subprime Nation*. Ithaca: Cornell University Press.
- Schwartz, Herman Mark. 2012. "Housing, the Welfare State, and the Global Financial Crisis: What Is the Connection?" *Politics and Society* 40 (1): 35–58.
- Schwartz, Herman Mark. 2016. "Banking on the FED: QE1-2-3 and the Rebalancing of the Global Economy." *New Political Economy* 21 (1): 26–48.
- Schwartz, Herman Mark. 2018. "International Money after the Crisis: What Do We Know?" In *Critical Junctures in Mobile Capital*, edited by Jocelyn Pixley and Helena Flam, 131–55. Cambridge: Cambridge University Press.
- Schwartz Herman Mark. 2019a. "Covering the Private Parts: The (Re-)Nationalisation of Housing Finance." *West European Politics* 43 (3): 485–508.
- Schwartz, Herman Mark. 2019b. "American Hegemony: Intellectual Property Rights, Dollar Centrality, and Infrastructural Power." *Review of International Political Economy* 26 (3): 490–519.
- Schwartz, Herman Mark, and Mark Blyth. 2022. "Four Galtons and a Minsky: Growth Models from an IPE Perspective." In *Diminishing Returns: New Politics of Growth and Stagnation*, edited by Lucio Baccaro, Mark Blyth, and Jonas Pontusson, 98–114. New York: Oxford University Press.
- Sell, Susan. 2003. *Private Power, Public Law: The Globalization of Intellectual Property Rights*. Cambridge: Cambridge University Press.
- Sell, Susan. 2010. "TRIPS Was Never Enough: Vertical Forum Shifting, FTAs, ACTA, and TPP." *Journal of Intellectual Property Law* 18 (2): 447–78.

- Shin, Hyun Song. 2017. "Globalisation: Real and Financial." Presentation on the BIS Annual Report by Mr Hyun Song Shin, Economic Adviser and Head of Research of the BIS, on the occasion of the Bank's Annual General Meeting, Basel, June 25. <https://www.bis.org/speeches/sp170625b.htm>
- Shonfield, Andrew. 1965. *Modern Capitalism: The Changing Balance of Public and Private Power*. New York: Oxford University Press.
- SIFMA (Securities Industry and Financial Markets Association). 2022. *2022 Capital Markets Factbook*. New York NY: SIFMA.
- Spiro, David. 1999. *The Hidden Hand of American Hegemony: Petrodollar Recycling And International Markets*. Ithaca, NY: Cornell University Press.
- Strange, Susan. 1971. "The Politics of International Currencies." *World Politics* 23 (2): 215–31.
- Strange, Susan. 1982. "Cave! hic dragones: A Critique of Regime Analysis." *International Organization* 36 (2): 479–96.
- Strange, Susan. 1987. "The Persistent Myth of Lost Hegemony." *International Organization* 41 (4): 551–74.
- Strange, Susan. 1989. "Towards a Theory of Transnational Empire." In *Global Changes and Theoretical Challenges*, edited by Ernst Otto Czempiel and James N. Rosenau, 161–76. Lexington: Rowman & Littlefield.
- Tilly, Richard. 1992. "An Overview on the Role of Large German Banks up to 1914." In *Finance and Financiers in European History 1880–1960*, edited by Youssef Cassis, 93–112. Cambridge: Cambridge University Press.
- Triffin, Robert. 1960. *Gold and the Dollar Crisis: The Future of Convertibility*. New Haven: Yale University Press.
- Triffin, Robert. 1962. "Crisis and Reform in the International Monetary System: Two Lectures." Presented at Queen's University, Kingston, Canada.
- Triffin, Robert. 1964. "The Evolution of the International Monetary System: Historical Reappraisal and Future Perspectives." *Essays in International Finance* No. 12, International Finance Section, Department of Economics, Princeton University.
- Triffin, Robert. 1978. "Gold and the Dollar Crisis: Yesterday and Tomorrow." *Essays in International Finance* No. 132, International Finance Section, Department of Economics, Princeton University.
- Trotsky, Leon. 1936. *The Third International after Lenin*. New York: Pioneer Publishers.
- UNCTAD (United Nations Conference on Trade and Development). 2013. *Global Value Chains: Investment and Trade for Development*. Geneva: UNCTAD.
- Varian, Brian. 2017. *The Course and Character of Late-Victorian British Exports*. PhD diss., London School of Economics.
- Wimmer, Andreas, and Nina Glick Schiller. 2002. "Methodological Nationalism and Beyond: Nation-State Building, Migration and the Social Sciences." *Global Networks* 2 (4): 301–34.
- Wray, L. Randall. 1998. *Understanding Modern Money*. Cheltenham: Edward Elgar.
- Wray, L. Randall, ed. 2004. *Credit and State Theories of Money: The Contributions of A. Mitchell Innes*. Cheltenham: Edward Elgar.
- Yergin, Daniel. 2009. *The Prize: The Epic Quest for Oil, Money & Power: With a New Epilogue*. New York: Free Press.

Recent Titles in the Publication Series of the MPIfG

MPIfG Discussion Papers

DP 24/2
A. v. d. Heide
Dealing Government Bonds: Trading Infrastructures and Infrastructural Power in European Markets for Public Debt

DP 24/1
A. Maschke
Talking Exports: The Representation of Germany's Current Account in Newspaper Media

DP 23/6
T. Ergen, L. Schmitz
The Sunshine Problem: Climate Change and Managed Decline in the European Union

DP 23/5
I. Stamm, A. Sandham
A Bitter Adjustment for German Family Capitalism: Succession and a Changing Ownership Transfer Regime

DP 23/4
L. Baccaro, B. Bremer, E. Neimanns
What Growth Strategies Do Citizens Want? Evidence from a New Survey

DP 23/3
R. Mayntz
Paradigm Shifts in Macroeconomics

DP 23/2
S. Hadziabdic
Turning No Tides: Union Effects on Partisan Preferences and the Working-Class Metamorphosis

DP 23/1
D. Tisch, E. Ischinsky
Top Wealth and Its Historical Origins: An Analysis of Germany's Largest Privately Held Fortunes in 2019

DP 22/9
M. Höpner, L. Baccaro
Das deutsche Wachstumsmodell, 1991–2019

DP 22/8
E. Neimanns, N. Blossy
From Media-Party Linkages to Ownership Concentration: Causes of Cross-National Variation in Media Outlets' Economic Positioning

DP 22/7
J. Beckert
Verkaufte Zukunft: Dilemmata des globalen Kapitalismus in der Klimakrise

DP 22/6
L. Baccaro, S. Hadziabdic
Operationalizing Growth Models

DP 22/5
Z. Barta, L. Baccaro, A. Johnston
Signaling Virtue or Vulnerability? The Changing Impact of Exchange Rate Regimes on Government Bond Yields

DP 22/4
A. v. d. Heide, S. Kohl
Private Insurance, Public Welfare, and Financial Markets: Alpine and Maritime Countries in Comparative-Historical Perspective

MPIfG Books

J. Beckert
Verkaufte Zukunft: Warum der Kampf gegen den Klimawandel zu scheitern droht
Suhrkamp, 2024

S. Rasic (Hg.)
Wege aus dem Kapitalismus? Autorengespräche mit Colin Crouch, Nancy Fraser, Claus Offe, Wolfgang Streeck und Joseph Vogl
Nomos, 2023

B. Bremer
Austerity from the Left: Social Democratic Parties in the Shadow of the Great Recession
Oxford University Press, 2023

A. van der Heide
Dealing in Uncertainty: Insurance in the Age of Finance
Bristol University Press, 2023

L. Wansleben
The Rise of Central Banks: State Power in Financial Capitalism
Harvard University Press, 2023

A. Marktanner
Behördenconsulting: Unternehmensberater in der öffentlichen Verwaltung der Bundesrepublik, 1970er- bis 2000er-Jahre
De Gruyter Oldenbourg, 2023

B. Braun, K. Koddenbrock (eds.)
Capital Claims: Power and Global Finance
Routledge, 2023

L. Baccaro, M. Blyth, J. Pontusson (eds.)
Diminishing Returns: The New Politics of Growth and Stagnation
Oxford University Press, 2022

Ordering Information

MPIfG Discussion Papers
Order printed copies from the MPIfG or download PDF files from the MPIfG website (free).

MPIfG Books
At bookstores; abstracts on the MPIfG website.

www.mpifg.de
Go to "Publications."

New Titles

Consult our website for the most complete and up-to-date information about MPIfG publications and publications by MPIfG researchers. To sign up for newsletters and mailings, please go to the MPIfG website. On request to info@mpifg.de, we will be happy to send you our "Recent Publications" brochure.