Central Banking in Perilous Times: An Open-Ended Chronicle

Abstract: Conventional understanding relegated the role of central banking to benchmark interest rate guidance which is supposed to have direct and straightforward impact on real economy. Accordingly, central banks are praised for and supposed to stay independent from treasuries and money markets while indirectly influencing both of them by that guidance. This article provides hints for an alternative explanation by investigating central bank dual connection with treasuries and private finance, especially money markets. It recounts the main financial episodes of the last decades from this institutional monetary economic perspective through a dynamic systems analysis covering money and financial aggregates, pointing to the peculiar ways in which this connection has been organised under the market-based (asset-based) finance regime and its systemic failure since 2007.

Keywords: money aggregates, sectoral debt, currency areas, financial crisis, liquidity management, public debt management, monetary policy, central banking, systemic risk, macroprudential regulation

JEL Classification: E42, E51, E58, E60, E62

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*Corresponding author: Yuri Biondi, CNRS, Paris, France, E-mail: yuri.biondi@gmail.com

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Central Banking: Current Challenges and Future Perspectives


1 Transformation of Central Banking Since 2007

Central bank exceptional monetary policies have become the ‘new normal’ since the North-Atlantic Financial Crisis of 2007–08 (Biondi, 2016a, 2016b; CONVIVIUM, 2013a, 2013b). These policies have been justified as an emergency response to urgent matters such as the coronavirus pandemic in 2020–21 and the energy crisis since 2022. Since 2015, central bank active role has been further called to fight yet another emergency labelled ‘climate change’ in both US and EU (Cœuré, 2018; ECB, 2022). In fact, behind exceptionalism, these policies show fundamental changes in the ways Western central banks interact with treasuries and financial institutions.

In the so-called times of Great Moderation (roughly 1980s–2007), central banking was praised for and supposed to staying independent from treasuries and so-called

money markets,\textsuperscript{2} while indirectly influencing both of them by setting the interest rate of reference (Goodhart, 2010). This narrow understanding of central banking was upheld by referring to dynamic stochastic general equilibrium modelling (DSGE), which scoped out banking and financial investment funds as financial intermediaries which passively channel that interest rate guidance toward real economy as denoted by growth and inflation rates, a monetary policy consensus denoted by the so-called Taylor’s rule and labelled ‘New Neoclassical Synthesis’ or ‘New Keynesian Model’ (Bernanke, 2015; Goodfriend, 2007). Consequently, money aggregates were neglected in theory and practice as critical dimensions to be governed (Biondi & Zhou, 2019), while the constitutional monetary connection between public debt management and monetary policy was dismissed as a relic of the past (Biondi, 2018b providing further references).

In a nutshell, the main if not the only mission to be achieved by central banking was monetary policy in the restricted form of benchmark interest rate guidance,\textsuperscript{3} surely supposing ‘The financial market’ and its single interest rate to be unique for borrowing and lending for all involved actors. Comprehension of the financial system was reduced to such a financial market self-governed by equilibrium (CONVIVIUM, 2019; Thiemann, 2023b, 53 ff. and Table 2.1), ignoring non-market financial organisations such as banks (depository financial institutions), investment funds (non-depository financial institutions) and the central banks themselves. Consequently, the various layers of money aggregates which constitute the financial system were mingled together, while the structural distinction between financing expenditures by providing credit, and refinancing (or leveraging) outstanding credit positions – including in case of liquidity needs – was ignored (Biondi, 2018a). According to Coombs and Thiemann (2022, 547), this narrow and formalistic representation was functional to a

newly facilitated growth of credit [which] fuelled the expansion of private and public indebtedness that was at the centre of the financialized, asset-led growth regime that came to install itself first in the United States and the United Kingdom (Aglietta, 2000), subsequently expanding to other developed countries.

\textsuperscript{2} For sake of simplicity, we acquiesce and abide here to the popular expression which label as ‘markets’ the web of interbank credit facilities including repurchase agreements (repos) deployed in treasury management and enabling funding and refinancing of the money manufacturing process (Biondi, 2018a; Biondi & Zhou, 2019).

\textsuperscript{3} According to Werner (2002, 112), applied literature acknowledges three standard tools through which a central bank can implement monetary policy: (i) reserve requirements; (ii) discount arrangements and related terms and conditions including rates; and (iii) the supply of reserves to the banking system via open market operations, repurchase agreements (repos) or lending. He further adds credit guidance by focusing on the Bank of Japan’s case study.
By contenting itself with targeting consumer price inflation, the US Federal Reserve (FED) and other central banks left money aggregates and asset inflation unattended, upholding a macroeconomic process made dependent on financial investment, financial market-making and the wealth effect generated by asset-price inflation (Boyer, 2013; Gabor & Ban, 2016). Deregulation and liberalisation of global financial markets under an expanding International US Dollar (USD) Exchange Standard complemented and upheld this process. Monetary, legal and military dominance was supposed to sustain and stabilise it transnationally under the so-called Washington Consensus.

The North-Atlantic Financial Crisis of 2007–08 challenged this ‘past normal’, opening the door to the present transformative time in which central banks have been actively and massively intervening on both public debt management and money markets, financing and refinancing both treasuries and financial institutions. Nowadays, according to Coombs and Thiemann (2022, 552):

> central banks have become the largest players in financial markets and the great unelected powers of contemporary political economies.

This article aims to develop a dynamic systems analysis covering money aggregates in view to assess the ways in which this transformation has been enacted. By lifting the veil of ‘the financial market’ daydream, it points to the underlying evolving positions created and held by the various members of the financial system (Biondi, 2018a; Biondi & Zhou, 2019). On the one hand, this analysis provides evidence on the functional connection of central banking with public debt management and inter-bank credit management. On the other hand, it points to the peculiar ways in which this connection has been organised under the market-based finance regime and its systemic failure since 2007 (Braun, 2020; Walter & Wansleben, 2020). This connection goes beyond benchmark interest rate guidance to include managing money aggregates, sovereign debt and cross-border transactions.

Our analysis engages in a historical inquiry nurtured by illustrative episodes and descriptive statistics of stylised facts. It reconstructs the story of, and offers an explanation for the transformation encountered by central banking since 2007. Accordingly, this transformation did not happen as a sudden response to urgent rescue operations needed to cope with exogenous crises. Quite the contrary, it is a consequence of the rise and crack of a peculiar market-based finance regime featured by structural demand for never-ending liquidity provision. In a pure financial market, positions are transacted and settled immediately without recourse or reversing; a quantity changes hands and a price (that is, a quantity of money) is paid for it at the same time. Such a market is liquid as long as market participants are willing to transact and it does not depend on credit. From this financial market perspective, money itself is understood as a commodity having two prices, one denominated in local currency (the interest rate) and another one in foreign currencies (the exchange rates). However, we do not live in a pure financial market. That peculiar demand for liquidity is needed since the financial system members (bank
and non-bank) act presuming that more funding is always available and financial assets can always be sold or refinanced. A better name for such liquidity is short-term indebtedness. In other words, financial system members become dependent on leveraging positions which are meant to be sold or refinanced rather than held for longer-term returns. As soon as never-ending financial debt expansion is threatened by mutual distrust triggered by or triggering financial distress, its structural dependency on liquidity (that is, short-term indebtedness) is revealed and exposed to systemic failure (Allen, 2013; Özgöde, 2022; Thiemann, 2023b; Tucker, 2014), forcing central banks to step-in through money issuance and other ‘exceptional’ monetary policies (Quantitative Easing). This intervention differs from the old-fashioned lending of last resort (LOLR), which was supposed to assure short-term cash needs against self-liquidating collateral (commercial paper) or short-term treasury bills at penalty rates for a sustainable (that is, self-sufficient) banking system issuing cash-equivalent deposits. Instead, central banking becomes entangled with private financial actors in their own leveraging and securitisation practices, ending-up fostering further financialisation – a structurally unstable and vulnerable financial system regime – through state powers.

Our analysis may contribute to the academic debate accompanying these central bank interventions in recent times (Coombs & Thiemann, 2022). For sake of simplicity and ignoring all the features and nuances of specific analyses, this debate can be divided between two opposite sides, in line with the received divide between state and market which features economic thinking. On the one hand, interventionists build upon claimed emergencies to argue for central bank support to public policies concerned with various wars against the coronavirus, the climate change and surely the ‘Russian threat’. They advocate for state intervention as a sort of unquestioned blessing, welcoming the central bank involvement through exceptional monetary policies (Moutot, 2020). On the other hand, traditionalists stress the inflationary pressure generated by these policies and fear the mingling together of monetary policy with political will. They praise central bank independence, criticise the (central) bank – treasury nexus but often neglect addressing the other connection between central banking, money markets and private financial institutions (Dabrowski, 2021; Hartwell, 2023).

Our article aims at contributing to this debate by recounting the main episodes of this yet unfolded transformation of central banking in recent times, by reconsidering those episodes through the lens of central bank dual connection with treasuries and money markets (Wansleben, 2023). From this perspective, central banking plays a pivotal role at the core of the money system which establishes and governs the purchasing power over economy and society (Biondi, 2018a). Our analysis does not only provide evidence of this connection, but it aims at questioning the peculiar form it took especially since 2007. The North-Atlantic Financial Crisis of 2007–08 exposed the intrinsic fragilities of market-based finance while its ‘liaison dangereuse’ with governments and central banks just worsened in the meanwhile, raising
issues of central bank entanglement with rent-seeking speculative financial actors which promoted financialisation (Walter & Wansleben, 2020). Although our remarks are general and may be adapted to other regions, specific attention will be paid to the euro as currency, the Eurozone as currency area, and European Union (EU) as geopolitical region.

The rest of the article is organised as follows. Section 2 recounts recent history by pointing to the neglected connection between central banking and money markets, featuring money aggregates management. Section 3 recounts it through the connection between central banking and public debt management, including its issuance and refinancing. Section 4 recalls central bank role in managing cross-border transactions including exchange rates and monetary reserves in the context of an international monetary order under pressure. A summary of the main argument and its implications for financial stability in the verge of the US bank crisis of 2023 concludes.

2 The Rise and Systemic Failure of Market-Based Finance and Its Dependence on Never-Ending Refinancing

The path-breaking intervention of central banks in 2007 to rescue the respective financial systems cannot be properly contextualised without remembering the development of market-based finance since the 1970s (Wansleben, 2023). This development has been featuring financial systems throughout the ‘past normal’ time between 1980s and 2000s. Market-based finance consists of a transformative institutional reorganisation of regional and cross-border financial systems, promoting active global financial markets while expanding the role of financial actors, motives and ideas in economy and society. This complex phenomenon has been also addressed in terms of asset-backed (asset-based) finance, financialisation and assetisation (Birch & Muniesa, 2020; Zhang & Andrew, 2021).

Accordingly, bank business models4 were reformed and transformed prompting disruptive ‘financial innovation’ and ‘modernisation’, while regulatory separation between various bank activities was weakened if not disbanded, fostering financial holding companies which enact universal banking (Wilmarth, 2009). According to Fligstein (2021, 30):

4 Roengpitya et al. (2017) denote four bank business models: (i) traditional commercial banking with retail-funding through deposits; (ii) commercial banking through wholesale-funding through bonds and interbank markets; (iii) trade banking involving holding securities portfolios funded in the interbank and wholesale markets; and (iv) the universal banking model which is a mix of the other three.
One of the great business stories of the 1980s and 1990s was financial innovation. At the core of this period of innovation was the idea of securitization. The innovation was seeing that any asset that generated a cash flow could be turned into a security that could be sold to an investor.

Traditional commercial banking – which grants and holds large loan portfolios through retail-funding – was criticised, while securitisation and wholesale-funding, often on a short-dated basis, through bonds and interbank credit facilities was favoured (Biondi & del Barrio, 2018; Butzbach & von Mettenheim, 2015; Butzbach et al., 2020; Fligstein, 2021; Goodhart, 2010). Figure 1 shows the relative size and evolution of outstanding liabilities by sector in US and EU economies over recent decades.

Furthermore, bank trading activities were fostered and facilitated for which banks issue, hold and trade securities portfolios funded through interbank and wholesale markets (Hardie et al., 2013). A nexus between banks as security originators (under the so-called ‘originate to distribute’ model), asset management funds and financial investment funds as security holders – possibly controlled by the same financial holding companies than the originating bank entities – was encouraged, including by pension reforms (Biondi & Sierra, 2018). Even credit provision was reorganised to fit this new asset-based organisation. For instance, real estate credit shifted from enabling access to residential housing based upon household salaries at regulated conditions, towards financing and refinancing real estate ownership based upon its current market value.

In this context, corporate management, corporate organisation and corporate governance were also transformed and submitted to the rising power of financial actors through shareholder primacy and shareholder value orientation (Aglietta, 2000; Boyer, 2013; CONVIVIUM, 2013a). Concerning EU, legislative delegation to the International Accounting Standards Board (IASB) featured the reform of financial accounting standards promoting the fair value accounting model, which facilitates financialisation by enabling current value accounting to determine profits and losses on financial instruments, including on unsettled financial positions (Biondi, 2011). This accounting model also facilitated leveraged acquisitions by accounting for goodwill as a non-depreciated asset (Biondi, 2013; ELI, 2023).

Consequently, the ‘past normal’ time was featured by material growth of financial assets (Figure 16) and financial liabilities (Figure 1; FCIC, 2011, 64 ff.). Some of these positions were issued on active financial markets in which financial institutions trade them including with each other and with financial investment funds. Other positions were managed through shadow banking and shadow central banking, that is, private money creation outside the regulated and insured traditional banking system (CONVIVIUM, 2018; Gorton, 2010; Pozsar et al., 2010; Ricks, 2011). In this context, thanks to the Securities Industry Association lobbying efforts, US Federal Reserve (FED) lending-of-last-resort (LOLR) powers were further extended for non-bank entities since the 1991 amendment to section 13(3) of the Federal Reserve Act (FRA). Before this regulatory change, those powers were limited by constraints on eligible collaterals, which used to be restricted to US government securities and become to be ‘secured to the satisfaction of the FED’ as per depository
**Figure 1:** Outstanding liabilities by institutional sector in US and EU.

**Upper panel:** US debt outstanding by sector (1988–2022). US debt outstanding includes debt securities (open market paper, treasury securities, agency- and GSE-backed securities, municipal securities, and corporate and foreign bonds) and loans (depository institution loans not elsewhere classified (n.e.c.), other loans and advances, mortgages, and consumer credit). Non-consolidated, seasonally adjusted levels for Central Bank (FED), total liabilities are shown, non-seasonally adjusted levels.


**Lower panel:** Euro area total liabilities by institutional sector (1999–2022). Euro area total liabilities comprise: monetary gold and SDRs, currency and deposits, short-term debt securities, long-term debt securities, loans, shares and other equity, insurance and pension schemes, other accounts payable and financial derivatives non-consolidated, non-seasonally adjusted quarterly levels.

bank entities. This extension may have provided subsidies and incentives to grow for asset-based finance (FCIC, 2011, p. 37). For instance, the rescue of the American International Group (AIG) insurer was made possible by these extended powers on 16 September 2008 (FCIC, 2011, chapter 19; Ricks, 2016, 197–99). Moreover, in 1999, the FED started transacting in repos secured by mortgage-backed securities, and in 2005, responding to FED demands, the US Congress approved safe harbour exemption to repos with mortgage and asset-backed securities collateral, encouraging a further expansion in repos undergirded by the fabrication of reputed safe assets within the financial sector (Gabor, 2016, 982; Wansleben, 2023, 168). In parallel, repo arrangements were fostered in the European context through the Settlement Finality Directive in 1998 and the Financial Collateral Arrangements Directive in 2002 (Braun, 2020; Wansleben, 2023, 170–1 and Figure 4.3).

Notwithstanding its misleading labelling as market-based, this new financial architecture largely relies on opaque expansion of off-balance sheet positions – including derivatives which often carry on implicit leverage (Biondi, 2020; Borio et al., 2022; FCIC, 2011 chapter 3, 45 ff.; Omarova, 2009; Stout, 2011; US Senate Investigations Subcommittee, 2013). These positions hide outstanding exposure while enabling maximising bank shareholder value by shareholder equity economising (Biondi & Graeff, 2020; Wilmarth, 2009). Figure 2 shows the declining share of shareholder equity in a sample of European banks between 2001 and 2007, reaching negative net levels in 2006 and 2007, just before the crack of 2007–08. The official report of the US Financial Crisis Inquiry Commission (FCIC, 2011, pp. 20–1) reveals an analogous situation in US banking through the lead-up toward the 2007–08 crack:

As of 2007, the five major investment banks—Bear Stearns, Goldman Sachs, Lehman Brothers, Merrill Lynch, and Morgan Stanley—were operating with extraordinarily thin capital. By one measure, their leverage ratios were as high as 40 to 1, meaning for every $40 in assets, there was only $1 in capital to cover losses. Less than a 3% drop in asset values could wipe out a firm. To make matters worse, much of their borrowing was short-term, in the overnight market—meaning the borrowing had to be renewed each and every day. For example, at the end of 2007, Bear Stearns had $11.8 billion in equity and $383.6 billion in liabilities and was borrowing as much as $70 billion in the overnight market. It was the equivalent of a small business with $50,000 in equity borrowing $1.6 million, with $296,750 of that due each and every day. One can’t really ask “What were they thinking?” when it seems that too many of them were thinking alike.

In this context, asset management funds – on behalf of financial investment funds – were key partners in managing originated financial assets which were meant to be

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traded and refinanced rather than held for long-term returns (Ashcraft & Schuermann, 2008; Fligstein, 2021). Pressure for financial returns now sought financial rents in the form of pay-outs (dividends and share buybacks) and capital gains based on increasing security market prices (ELI, 2023). In other words, a rent-seeking speculative financial regime was organised which structurally depends on never-ending refinancing (liquidity provision).6

Issuances of commercial paper (CP) and negotiable certificates of deposit (NCD), as well as the so-called repo ‘markets’ are critical here. In a repo transaction, what is functionally a short-term credit arrangement between the seller (borrower) and the buyer (lender) of a financial asset is engineered to look like a sale accompanied by the promise to either buy it back or renew (roll-over) the deal.7 As the buyer becomes the

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6 According to Fligstein (2021, page 150 and Figure 5.4), “from 1949 until about 1990, the share of profits in finance was anywhere from 5 to 15% of the total in the economy, roughly in line with their weight in the economy. But beginning in the 1990s, it began to increase. From 2000, it went from about 25% to a peak of 40% in 2003. It remained above 30% until 2008” and above 20% until 2021. According to Wolf (2023), “the marriage of risky and often illiquid assets with liabilities that have to be safe and liquid within undercapitalised, profit-seeking and bonus-paying institutions regulated by politically subservient and often incompetent public sectors is a calamity waiting to happen”.

7 “This repo transaction—in essence a loan—made it inexpensive and convenient for Wall Street firms to borrow. Because these deals were essentially collateralized loans, the securities dealers borrowed nearly the full value of the collateral, minus a small “haircut.” Like commercial paper, repos were renewed, or “rolled over,” frequently. For that reason, both forms of borrowing could be considered “hot money”—because lenders could quickly move in and out of these investments in search of the highest returns, they could be a risky source of funding.” (FCIC, 2011, 31).
legal owner of that pledged asset, he may re-use the same asset, for instance in another repo agreement with another buyer. This re-use (re-hypothecation) process may imply long repo-chains, increasing the interconnectedness of the financial system (Singh, 2014) while enhancing leverage and inter-bank money creation. Traditionally, repos have represented a possible liquidity channel for banks (depository financial institutions, that is, regulated banks); but they do constitute the main source of funding through refinancing for leveraged investing depending on shadow banking, that is, unregulated banking activities (Pozsar, 2015). Leveraged investment vehicles use this instrument to further lever their portfolios and their market-trading activities, thanks to shadow bank vehicles which stand as counterparties in repo arrangements. From a functional perspective, a similar result is obtained when money market funds offer fractional-reserve lending and deposit-like accounts (or cash-equivalent redeemable and/or transferable shares) to other financial institutions, implementing shadow central banking activities (Biondi, 2018a; FCIC, 2011, chapter 2). Both the repo machinery (cash against collateral) and the money market funding lay at the heart of the shadow banking system, providing short-term funding from and for wholesale financial arrangements among financial institutions (Thiemann, 2023b, chapter 7). They result in monetising financial papers through a never-ending refinancing process based upon leveraging on short-term debt (liquidity) provision.

After early warning distresses triggered by the East-Asian financial crisis of 1997–98 (and the concomitant collapse of the financial investment firm Long-Term Capital Management – LTCM) and the dot-com bubble burst of 2001–02 (FCIC, 2011, 47–8 and chapter 4), the rising star of market-based finance fell down into a systemic failure which has been ongoing since 2007 (CONVIVIUM, 2013b; FCIC, 2011, chapter 13). Private monetisation processes proved unsustainable, triggering a long-standing liquidity crisis in its refinancing-based financial mechanism which cannot be sustained without never-ending liquidity provision. Money markets started dis-functioning (Ricks, 2011) and US yield curves inverted as they did in 2001 (Kahn & Nguyen, 2022; Masters, 2022; Wiggersworth & Rennison, 2019). Figure 3 shows the daily time series of the spread between 10-Year US Treasury Constant Maturity and the Federal Funds Rate (T10YFF) between 1962 and 2023; an inverted curve implies negative spreads. Figures 4 and 5 (upper panel) show respectively Effective Federal Funds Rate (EFFR) and Overnight Bank Fund Rate (OBFR), signalling the money market conditions (inter-bank credit facilities); increases and peaks may signal distress. Figure 5 (lower panel) shows interbank credit spreads and volume as indicators of interbank lending conditions. As concerns about the health of bank

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8 Liquidity strains keep repeating ever since, see: Dizard (2022), Lahart (2022), Tyson (2022), and Mackintosh (2022).
Figure 3: Daily spread between 10-year US treasury constant maturity and the federal funds rate (T10YFF). Time window: 2 January 1962 – 11 January 2023. A negative value may signal distress in money and financial markets, announcing or provoking a recession.

Source: Federal Reserve Bank of St. Louis, 10-year treasury constant maturity minus federal funds rate [T10YFF], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/T10YFF, January 12, 2023.

Figure 4: Effective federal funds rate (EFFR).
The US federal funds market consists of domestic unsecured borrowings in U.S. dollars by depository institutions from other depository institutions and certain other entities, primarily government-sponsored enterprises. The effective federal funds rate (EFFR) is calculated as a volume-weighted median of overnight US federal funds transactions reported in the FR 2420 report of selected money market rates. Time window: 3 July 2000 – 30 December 2022. Peaks may signal distress in money markets (inter-bank credit facilities).

Figure 5: Overnight bank fund rate (OBFR), spreads and volume (OBFRVOL).

Upper panel: Overnight bank fund rate (OBFR).
The overnight bank funding rate is a measure of wholesale, unsecured, overnight bank funding costs. It is calculated using federal funds transactions, certain Eurodollar transactions, and certain domestic deposit transactions. The overnight bank funding rate (OBFR) is calculated as a volume-weighted median of overnight federal funds transactions, Eurodollar transactions, and the domestic deposits reported as “Selected Deposits” in the FR 2420 report. Time window: 1 March 2016 – 7 April 2023. Peaks may signal distress in money markets (inter-bank credit facilities).


Lower panel: OBFR spreads (monthly averages, left scale) over OBFR 99th percentile (blue line) and three-month interbank rates for the US (red line), OBFR volume (daily, right scale).

Organization for economic co-operation and development (OECD), three-month or 90-day rates and yields: interbank rates for the United States [IR3TIB01USM156N], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/IR3TIB01USM156N, March 30, 2023.
counterparties spread, lending banks may reduce exposure by cutting volumes, while demanding higher interest rates to compensate for the counterparty risk. Both spreads may therefore indicate the part of the interest rates banks paid other banks that is due to this credit risk. Strains in the interbank lending repeatedly appear through the period (see also FCIC, 2011, 355 and Figure 20.1).

The systemic failure of market-based finance since 2007 is explained by the longer-run financial development that put marketable assets and short-term funding at the heart of the financial system (Biondi, 2018a; Ricks, 2011; Shin, 2011). Such a financial system organisation is made dependent on market-based banking which is structurally exposed to endogenous fluctuations in prices and volumes, implying a boom-bust pro-cyclical dynamics amplified by mark-to-market accounting, securitisation, leveraging and short-term refinancing.

In order to rescue ‘The financial market’ under distress, central banks stepped in funding, buying and refinancing unsustainable positions by private financial institutions, replacing them with public sector positions on central bank balance sheets (Braun, 2020; Ricks, 2012). The monetary base expanded abruptly and materially (Figure 6). In so doing, central banks factually added back management of money aggregates to their institutional mission, in a clear shift away from the past normal doctrine. Following (and in contrast with) Bagehot’s traditional wisdom, central banks acted as lenders (and buyers) of last resort for safe (and not so safe) assets, ending up monetising both good (and bad) assets as well as rescuing good (and bad) bankers. This intervention does not only provide evidence of the functional connection of central banking with treasuries and money markets, but it raises issues of central bank entanglement with rent-seeking speculative financial actors which promoted financialisation (Walter & Wansleben, 2020). From this perspective, the central bank role as buyer of last resort is quite problematic (Birk

9 To be sure, the FED and the ECB had monetary policy approaches managing monetary aggregates, which were gradually disbanded. Exceptional monetary policies (quantitative easing) were justified as instrumental to lowering long-term interest rates, but they resulted in building-up material reserve positions at the central bank. Consequently, these policies shifted monetary/financial aggregates from inter-bank positions (money markets) and lending positions (financial markets) toward central bank reserves (primary liquidity). Through its action, the central banks factually moved away from a narrow mandate of interest rate guidance only, providing direct intervention in financial and money markets (debt markets).

10 Tucker (2014, 16) denotes four schools of thought concerning lending-of-last-resort (LOLR): “(1) The “free banking” school: abolish the central bank as a state LOLR; (2) The Richmond Fed view: lend only via open market operations to the market as a whole, and so do not lend bilaterally: i.e. abolish the discount window; (3) A view sometimes attributed to the New York Fed: lend to anybody, solvent or insolvent, and sometimes on soft terms, where necessary to keep the credit system going; (4) The “classic” Bagehot view: lend freely to solvent but illiquid firms against good collateral at a high rate of interest.”
Figure 6: US and EU total monetary bases (BOGMBASE and ILM.M.U2.C.LT00001.Z5.EUR).

Upper panel: US total monetary basis (BOGMBASE).
The monthly series equals total balances maintained by the FED plus currency in circulation. Time window: 1st January 1959 to 1st November 2022.

& Thiemann, 2020), since it may generate incentives (moral hazard) and subsidies (public money plundering) for risky positions – including on disruptive innovation such as biotechnologies, digital technologies and renewable energies – being assured that successful bets generate financial investment profits while unsuccessful ones may be sold out to central banks which end up issuing money on bad assets (Thiemann, 2023b; Wansleben, 2023 and Table 1.2). In this scenario, when investments are subsidised by treasuries, those bets are even more lucrative and attractive (Gabor, 2021).

Arisen in the US and UK financial systems, the financial crisis of 2007–08 triggered exceptional monetary policies (also labelled Quantitative Easing) by treasuries and central banks in those currency areas. This Anglo-American crisis further spread through Europe by passing through the Greek debt crisis as a triggering event since 2010. After quite a long hesitation (Figure 6 lower panel; Wansleben, 2023, 214–15), the European Central Bank (ECB) agreed to move in the same direction (Herbert et al., 2021) under Mario Draghi’s leadership, who previously worked at the World Bank (1980s), the Italian treasury (1991–2001), Goldman Sachs (2001–2006), and the Bank of Italy (2006–2011).

But these rescue operations were not the end of the story. They failed to address all the underlying systemic fragilities exposed by the crack of 2007–08. Financial arrangements which were at the origin of financial instability were not radically reformed while ‘The financial market’ equilibrium myth was upheld (Ban et al., 2016; Bavoso, 2017, 2021; Braun, 2020; Fink 2023; Hynes et al., 2022; Thiemann, 2023b). For instance, the Swedish crisis management approach of 1990–1994 (Drees & Pazarbasioglu, 1998) – featuring distressed bank nationalisation, reorganisation and shareholder bailing-in – was not adopted by US and only partly in UK (Biondi, 2016a, 2016b), while quantitative easing fostered leveraged financial investment and financial asset monetisation even further, establishing itself as the ‘new normal’. A parallel with Japan would be quite misleading. It is true that, in order to cope with a banking and financial crisis (Werner, 2002), Japan organised a policy

11 For the UK case study, see Biondi (2016a, 2016b). According to the BoE (2022), the Asset Purchase Facility employed to fund the HM Treasury is now expected to be refunded. This may pass debt positions from the APF to the HM Treasury, which still relies on the BoE to refinance its positions. Currently, the public debt held by the BoE is netted out under consolidation rules.

12 The geopolitical dimension of the Japanese crisis should be mentioned, with the United States taking several initiatives in the 1980’s to curtail Japan’s competitive advantage, including the Semiconductor Accord of 1986, forcing market-leading Japanese semiconductor companies to share their intellectual properties; and the Plaza Accord of 1985, enabling the USD sharp depreciation and the Japanese Yen sharp appreciation (from 260 Yen for one USD in February 1985 to 123.6 in December 1988, source: https://fred.stlouisfed.org/series/EXJPUS#). US Congressional use of Section 301 further pursued the threat of sanctions and the opening of Japanese markets for US companies (Grier, 1992).
response based upon active management of monetary aggregates and the yield curve, as well as central bank monetisation of public debt (Biondi, 2018b). But Japan is an export-led creditor country recycling corporate and household savings into a locally held and locally denominated sovereign debt; its macroeconomic process maintains internal demand in a mature economy with high social welfare and an ageing population.

Between 2016 and 2019, money markets conditions worsened and in September 2019 started dis-functioning, triggering US FED massive intervention (Timiraos, 2019; Timiraos & Kiernan, 2019; Timiraos & Kruger, 2019 and Figures 4, 5, and 7), while the US yield curve inverted, again (Wigglesworth & Rennison, 2019 and Figure 3). Throughout the whole period since 2000s, the international monetary system remained materially unbalanced between creditor countries such as Japan, China, Germany and Russia, and debtor countries such as the US.

It was through this turbulent time period that Western policy-makers called for three emergencies: (i) the coronavirus pandemic in 2020; (ii) the climate change

![Figure 7: US FED, repurchase agreement (repo) transactions (by settlement date).](https://www.newyorkfed.org/markets/omo_transaction_data#rrp)

In a repo transaction, the New York Fed purchases securities under an agreement to resell those securities in the future in order to temporarily add reserve balances to the banking system.


This geopolitical dynamics somehow resonates with the US strategy to counter Chinese development - including semiconductor-related policies - in recent years.
announced catastrophe since 2015; and (iii) the escalation of the Ukrainian conflict since February 2022. Section 3 will consider central bank involvement in the first two situations, while Section 4 will consider cross-border currency implications of the third one.

3 Voluntarist State Intervention and Its Recourse to Central Bank Support: The Cases of Pandemic Management and Climate Change

Central bank involvement in funding public policy cannot be taken for granted, especially when assessed against the benchmark of the ‘past normal’ (1980s–2000s). At that time, austerity policies were praised by national and international actors, and accompanied by the new public management and new public governance movements. All together, they favoured privatisations and outsourcing of public service including through private-public partnerships (whenever possible), deregulation, downsizing of public administration including tenured public servants, and an overall favour for the business sector and the private financial sector. These reforms were accompanied by a preferred reference to international standards in many fields including accounting regulation – the case of the International Public Sector Accounting Standards (IPSAS) being emblematic here –, along with fostering issuance of sovereign debt on international financial markets, denominated in either local or foreign currencies.

From this perspective, central banks were not expected to fund public sector spending, and the role of public debt as safe asset was downplayed (Biondi, 2018b). However, since 2007, the ‘new normal’ for central banking appears to include direct and material involvement in funding and refinancing public (and private) debt issuances. Figures 8 and 9 provide evidence for this involvement. Figure 8 shows the sharp increase of public debt in both absolute and relative-to-GDP terms since 2007 (Figure 8 upper panel), along with the sharp increase in total assets held by central banks over the same period (Figure 8 lower panel). Figure 9 connects the two phenomena by showing estimated amounts of sovereign debt held by the respective central banks.

In fact, the ways in which the policy responses to the coronavirus pandemic (Section 3.1) and the climate change (Section 3.2) were organised show a political will to expand spending quickly and materially, while serving vested financial interests even at detriment of the general interest, raising issues of public policy capture by financial actors and oligarchic elites. According to Wansleben (2023, 211), “with ever more activism (market support and asset purchases), [central bank] policy effects increasingly appear particularistic and distributional rather than general and diffuse. Larger and larger interventions help to save and support particular finance-related actors, markets, and strategies, but they do not instigate broad-based growth.”
Figure 8: Central government debt outstanding and total assets of central banks since 2007.

**Upper panel:** Central government debt outstanding (2007–2021).

**Lower panel:** Balance sheets of the Eurosystem (EU), the FED (US) and the BoJ (Japan), 2006–2020, local currency amounts (relative size over GDP is not included).

Chart 1 footnote: balance sheets of the European Central Bank and related network (Eurosystem), the US Federal Reserve (FED) and the Bank of Japan – BoJ (in amounts). Data retrieved from: ECB, FED, BoJ. Amount in billions of euros (€), dollars (S$), and yen (¥).

**Sources:** OECD (2020), Figure 1.9 (upper panel); Banque de France (2021), Chart 1 (lower panel). Reprinted with permission.
Figure 9: Sovereign debt amount and share held by domestic central banks over time.


Source: Data retrieved from International Monetary Fund – IMF, Sovereign debt investor base for advanced economies, 29 April 2022, designed by Arslanalp and Tsuda (2014).
3.1 A War Against the Virus: Coronavirus Pandemic Management in 2020–21

While viral appearance and spreading are well-known issues of public health, the policy response to the coronavirus pandemic – through mass and prolonged lockdowns, as well as RNA-based mass vaccination – was guided by new pandemic management models developed since the 2000s (Biondi, 2021). As a matter of fact, economies were affected by these novel policy measures more than by the viral spread itself, as for a preventative war against the coronavirus was fought on the basis of forecasting models (Biondi, 2021; Ioannidis, 2020).

In this context, central bank support was pivotal in enabling governments to both provide financial assistance to economies affected by lockdowns, and pay for both mass vaccination deployment and digital infrastructure development (a form of central bank support sometimes termed ‘monetary financing’). Moreover, central banks intervened to support financial systems directly and indirectly affected by those policy measures (ECB, 2020; FED, 2020). Again, central bank monetisation was deployed to rescue the financial system(s) put under distress, although financial distress as signalled by US money markets appeared since September 2019 (Figures 3–5 and 7).

This new approach to pandemic management maximises spending by fostering mass testing and vaccination for all (Biondi, 2022). For instance (Figure 10), by 31 December 2021, US performed more than 718 million tests, implying that the entire population was tested more than twice on average. However, people did not use to be tested for cold and flu and other mild diseases. An alternative old-fashioned approach would recommend testing only serious cases, such as those which require hospital admission. And hospital admissions related to Covid-19 were only 29.11 million in US over the same time window (24 times less).

Moreover (Figure 11), by 31 December 2021, US administered more than 511 million vaccine doses, seeking to vaccinate most of its population. However, an alternative approach would recommend targeting vulnerable people (mainly the oldest and fragile ones). And US population over 65 years old is around 55 million (nine times less).

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13 Yet in 2019, the World Health Organisation (WHO) guidelines concerning non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza, did reject contact tracing, quarantine of exposed individuals, entry and exit screening, and border closure as suitable responses for respiratory viruses (WHO 2019).

14 It is suggestive to remind that those policies were then marked-to-model as does accounting for financial instruments in financial reporting of financial entities.
How did governments sustain all this bold quick and large spending for mass testing and universal vaccination? Mainly though public debt issuance and its monetisation by central banks (Figure 6). According to the OECD Report on 2020, “OECD governments borrowed USD 18 trillion from the markets in 2020, equal to almost 29 % of GDP”. In this way, they repeated and extended exceptional central bank measures taken to respond to the North-Atlantic Financial Crisis of 2007–08 (ECB, 2020; FED, 2020). In addition, OECD central banks purchased government bonds; in 2020, “total net purchases by major central banks reached USD 4.5 trillion in 2020, more than half of the new securities (i.e. excluding securities issued to roll over existing debt) issued by OECD sovereigns in the year” (see also Figures 8 and 9).

**Figure 10:** Number of tests and hospital admissions in US and UK by 31 December 2021.  

<table>
<thead>
<tr>
<th>Number of Tests by 31 December 2021</th>
<th>Hospital admissions: 29.11 million (29,104,771)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US: 718.11 million (2,157.02 per 1000 people)</td>
<td></td>
</tr>
<tr>
<td>UK: 368.86 million (5,407.88 per 1000 people)</td>
<td></td>
</tr>
</tbody>
</table>

| Vaccine doses by 31 December 2021 |  
|----------------------------------|-------------------------------------------------|
| China: 2,082.00 million (196.32% relative to population) | Over 65 years old (13.5% in 2020): 143 million people |
| European Union: 741.58 million (166.02%) | Over 65 years old (20.6% in 2020): 92 million |
| UK: 133.31 million (195.45%) | Over 60 years old (22% in 2011): 15 million |
| US: 511.94 million (154.36%) | Over 65 years old (16.6% in 2020): 55 million |
| World: 9.16 billion (118.74%) | Over 60 years old (13.8% in 2020): 1.08 billion |

**Figure 11:** Vaccine doses (number and in proportion of total population) and older population (number and share) for a sample of regions, by 31 December 2021.  
3.2 A War Against Climate Change Since 2015

A parallel with this emergency response may be established with another political fight against the climate change catastrophe that has been announced since 2015. Again, central banks have been called to support yet another fight justified by forecasting models (Barker, 2023; McNider & Christy, 2014; Thompson, 2022). Consequently, a ‘subsidy splurge’ and ‘unprecedented investments in clean technologies’ have been pledged by both US and EU, including by ‘loosening restrictions on subsidies in Europe and accelerating permits for new projects’ (Fleming et al., 2023).

Climate change is just one of the matters concerning environmental sustainability of an economy. Assessing its origin, its present and future magnitude, and its socio-economic impact is not without debate in a relatively young and politically-entrenched field (NGFS, 2022; for a contrarian view, see for instance World Climate Declaration 2022). For instance, Figure 12 shows global temperature as measured by NOAA satellites since 1979, pointing to one of the most claimed impacts of climate change, that is, global warming (see also Barker, 2023; McNider & Christy, 2014). This measurement differs from those based upon surface-based thermometer records of temperature, raising reasonable doubts of measurement quality and reliability.

15 It has nevertheless become the climax of international environmental politics since the adoption of the so-called Paris Agreement in 2015: “The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 °C, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects” (UN, 2023a). Authoritative information on the status of the Paris Agreement, including information on signatories to the Agreement, ratification and entry into force, is important to understand the actual commitment of key players (UN, 2023b).

16 According to Omrani et al. (2022), “The Northern Hemisphere (NH) is characterized by several multi-decadal climate trends that have been attributed to anthropogenic climate change. These trends include the large-scale Atlantic warming, strengthening of the positive North-Atlantic-Oscillation (NAO) or Northern Annular Mode (NAM), Artic stratospheric cooling, multi-decadal modulation in the Arctic sea-ice, and changes in Eurasian and Mediterranean temperature and precipitation. The recent weakening and reversing of several NH-climate trends, despite the ongoing anthropogenic forcing (Figures 1 and 7), has increased the interests in understanding and predicting the decadal-to-multi-decadal climate variability. Several efforts have been made, but a general physical framework linking these trends is still lacking.” [footnotes providing references were removed].
Specific policy responses cannot be straightforwardly derived by climate change. These responses require critical decisions; in other words, they involve political discretion. While environmental sustainability is quite comprehensive an issue (ELI, 2023), climate change has been reduced to targeting carbon dioxide (CO2) emissions mainly from fossil-fuel based energy production and transportation. It should be remembered that these latter activities have been pivotal in any macroeconomic process based upon production and employment (Liberty Energy, 2022); and that living beings including human beings breathe out the carbon dioxide for living, while plants use it and create the oxygen the former breathe in (Lacombe, 2017).

In this context, the ongoing push for green financial investing (including carbon footprint management and reporting) might result in fostering assetisation of natural resources, promoting their financial value exploitation which does create and serve financial interests over those resources, but it does not necessarily pursue a more sustainable economy (ELI, 2023; Green Finance Observatory, 2022; NatureFinance, 2022). For instance, EU political choices dealing with these emissions appear to favour a

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17 On privatisation, commodification and financialisation of water, see the report presented to the 76th UN General Assembly by the Special Rapporteur on the human rights to safe drinking water and sanitation (Arrojo-Agudo, 2021). Accordingly, “on 7 December 2020, for the first time in history, a
finance-based response that includes establishing special financial rules for ‘green’ security issuances and ‘green’ portfolio management (European Commission, 2023a), as well as a financial market for carbon dioxide emission permits (Avi-Yonah, 2011; European Commission, 2023b). In this context, it should be remembered that financial regulation used to separate banking (depository financial institutions), finance (investment banking), commerce and industry (Fligstein, 2021, chapter 3; Gigliobianco & Giordano, 2012; Giordano, 2010; Omarova, 2013, 2009; Wilmarth, 2009).

In particular, electric engines and cars were promoted for ‘green’ transportation, while renewable energies were promoted as ‘green’ energy production sources. Both solutions may be questioned by looking after the financial interests and the geopolitical stakes behind them (Harper, 2022). According to Rauh and de Zeeuw (2021):

At the COP26 U.N. climate change conference [held in Glasgow on 31 October – 13 November 2021], a group of 450 financial firms pledged $130 trillion in capital to finance the transition to net-zero emissions. Government mandates have already driven large private capital flows into expanding renewable energy, and now financial firms are eager to kick the phase-out of fossil fuels into high gear.

The finance industry’s palpable excitement is electrifying to climate activists and the politicians who cater to them. Wall Street is now squarely on their side. Yet the enthusiasm of asset managers and banks is hardly surprising. Any government mandate that a large amount of capital must be swiftly retired and replaced creates a tremendous opportunity for financiers, no matter the underlying reason.

Somehow corroborating this claim, on March 11, 2016, Winkler (2016), editor-in-chief-emeritus at Bloomberg, wrote an opinion titled “Stop Bashing Wall Street. Times Have Changed. Financial firms are doing more to help U.S. consumers and businesses than they have in decades.” Quite an astonishing ideological convergence seems to emerge between green activists seeking to deploy market pricing and praise higher prices in view to reduce consumption of natural resources, financial actors seeking to create and exploit property rights over these resources, and corporate and neoristocratic elites benefitting from rent positions over these rights.

Concerning electric cars, new entrants such as Tesla were idolised (Mims, 2022) in the making of a new market for those cars, while huge subsidies were involved. However, some EU Member States, industry leaders and experts have been questioning the purely political EU decision to ban traditional cars in few years, affording the hazard to puzzling transportation needs for most EU people (for instance, tradable water price futures index was launched on the Chicago Stock Exchange on the Nasdaq Veles California Water Index (NQH2O). Nasdaq developed the NQH2O Index in partnership with Veles Water Limited” (ibid., 6). Since its first quote on 4 September 2019, its value has more than quadrupled at 1021.9 on 3 April 2023.
Financial Times, 2023; Lomborg, 2013a, 2013b; WSJ, 2023b). As a matter of fact, electric vehicles have been available for decades during the XX century: no one was especially interested in using or producing them. The most recent ones have limited autonomy, take long time to recharge, last less and cost more than traditional vehicles, use heavy batteries which are polluting to produce and contain a lot of highly polluting and scarce metals, and need electricity to run. Imagine how good it would be for the environment to use coal or frantic oil and gas to produce the electric power needed for running electric cars. Actual carbon emissions of electric cars depend indeed on the energy mix which is deployed.

Concerning energy production, the push toward renewables has been made in the context of the EU internal energy market which was progressively introduced to replace incumbent public monopoly regimes previously established by Member States (EU, 2022). This energy market provides lucrative opportunities for financial intermediaries which make this market, including by issuing and trading derivatives, as well as establishing so-called ‘energy utility companies’, which do not factually produce but are still labelled utilities (quite a misnomer indeed). In this context, renewable energies constitute subsidised investment opportunities of relatively small scale, which deliver intermittent energy provision that triggers energy market price volatility. This intermittence makes the energy system dependent on weather conditions, threatening energy security provision. Indeed energy security needs to be assured by over-investment in intermittent production capacity, which must be further coupled with non-intermittent energy sources powered by water, nuclear or fossil fuel such as crude oil, coal, and natural gas.

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18 Betting on energy and commodities proved to be a lucrative affair, see Fletcher (2023) for the Citadel’s case study and Yergin (2023).
19 California constitutes an illustrative case study of an energy market combined with renewables and electric cars, featuring an early move to a deregulated electric market, actually creating a market which has replaced a previous non-market managed system; and subsidised pushes toward renewable sources and electric cars, which shall replace fossil-fuel cars by law since 2035. The California’s policies have been leading to disaster for decades, the Enron case study being emblematic there: speculative waves in electricity prices, upper mean electricity prices, provision shortage during peaks, overall insecurity and difficulty to assure access to consumers, productive underinvestment, and now, difficulties to charge electric vehicles, puzzling transportation in a region where cars are essential to move around people and wares (Oppel & Gerth, 2002; WSJ, 2022). In July 2013, J.P. Morgan agreed to pay $410 million to regulators to settle accusations that the bank’s traders manipulated electricity markets in California and the Midwest (Mufson, 2013).
20 Along with the German term Energiewende – which defines the German policy fostering solar and wind energy production –, German language has another term, the Dunkelflaute, the dreaded scenario feared by energy professionals—literally meaning the dark doldrums, a period with little solar and wind electricity (grey skies, misty cloud cover and almost no wind) along with high electricity demand because of low temperatures. This appears to be quite the typical weather around north and central Europe through the wintertime.
At the first glance, long-term sustainability assessment of these critical technological choices on energy and transportation appear to be better assured by involving public development banks (IMF, 2022) rather than central bank monetary policy, if public intervention is deemed to be suitable to pursue them. At the same time, an energy market may not be the most suitable institutional design when public investment and provision security are both essential and critical to systemic performance. The EU energy crisis triggered by warfare sanctions (see next Section 4) shows the grand failure of the EU energy market concept and its organisation based upon subsidies and market-making by financial intermediaries. Historically speaking, public monopolies were organised to assure large, affordable and secure provision of electricity in many EU Member States.

In sum, both policies on pandemic management and climate change show voluntarist state intervention in close alliance with private finance. In both cases, quick and large public spending has been committed including through public debt issuance supported by central bank policies. At the same time, yet another pathbreaking war was engaged in response to the escalation of the Ukrainian conflict.

4 Globalisation at Issue and Dedollarisation in Its Perilous Making

According to a long interview with Angela Merkel (Hildebrandt and di Lorenzo 2022), the former Germany’s chancellor, the Ukrainian conflict has to be contextualised in the post-soviet reorganisation which is yet unsettled after more than three decades. From this perspective, the recent escalation of the Ukrainian conflict since February 2022 may be interpreted as a post-soviet civil war, which some of the past EU leaders before 2019 have dealt with more diplomatic precaution. The new ones have committed to embrace rearmament and identitarian political posturings, the same inebriating cocktail which nurtured the escalations to WWI and WWII in Europe one century ago. Consequently, unprecedented sanctions against Russia were implemented as warfare instruments, along with a cobelligerent military support to the Ukrainian government coordinated by the NATO (EU Council, 2023). Sanctions puzzled oil and gas agreements between Russia and several European countries including Germany and Italy, as well as other industrial and commercial cross-border relationships between Russia and Europe.

21 As a matter of fact, the European Commission preferred taxing low-cost energy producers, reinforcing subsidies to renewables, and protecting energy utility companies against market volatility (von der Leyen, 2022).
This article cannot deal with all the geopolitical and socio-economic implications of this warmongering political choice for Europe. But it modestly aims to foreshadow its ongoing implications for cross-border monetary arrangements. Both the geopolitical implications of the Ukrainian conflict escalation and the related sanctions against Russia affect the international monetary order based upon the US Dollar (Section 4.1). In this context, some countries including China have been seeking to develop alternative cross-border monetary arrangements which may complement and substitute the USD-based system (Section 4.2). At the same time, the US FED has been implementing sharp interest rate increases (Figure 15), which contributed to trigger a new US bank crisis in March 2013 (Section 5).

4.1 The ‘Exorbitant Privilege’ Went to War

To date, since the disbandment of the USD Exchange Standard announced by the US President Nixon’s Administration on 15 August 1971 (Graetz & Briffault, 2019), the USD currency has somehow maintained its status as the pivotal currency for cross-border financial transactions, that is, its so-called ‘exorbitant privilege’ (Figure 13). Since October 2016, the IMF added the China’s renminbi along with US Dollar, euro, Japan’s yen, and British pound to the Special Drawing Rights (SDR) Basket, but its share in foreign exchange reserves remained quite limited (IMF 2016).

![Figure 13: World currency composition of official foreign exchange reserves (COFER).](https://data.imf.org/?sk=E6A5F467-C14B-4AA8-9F6D-5A09EC4E62A4)

In fact, recent events have been challenging this international state of monetary affairs (Roubini, 2023), including the unbalance between creditor and debtor countries, the series of financial crises since the 2000s, the exceptional monetary and fiscal policies led by the US FED and US Treasury (Figure 6), and the unprecedented sanctions against Russia including the ban from accessing the international payment system called SWIFT (Society for Worldwide Interbank Financial Telecommunication) and the freezing of Russia’s central bank reserves held abroad. According to Arslanalp and Simpson-Bell (2021), “the share of US dollar reserves held by central banks fell to 59%—its lowest level in 25 years—during the fourth quarter of 2020, according to the IMF’s Currency Composition of Official Foreign Exchange Reserves (COFER) survey” (Figure 13). Moreover, the share of US federal debt held by foreign and institutional investors has diminished from almost 50% just before the North-Atlantic Financial Crisis of 2007–08 to around 30% beginning 2023 (Figure 14); in particular, between March 2018 and January 2023, Russia dropped almost all its holdings, China reduced them by 328 billion USD, while the United Kingdom increased them by 343 billion USD (Figure 14). In 2016, US Treasury Secretary Jack Lew – testifying at the US Senate Appropriations Subcommittee (2016) hearing on the FY2017 budget for the Treasury Department on Capitol Hill in Washington on 8 March 2016 – was already alerting on this fragile situation (as reported by Reuters, Torbati, 2016):

[Jack Lew:] “The more we condition use of the dollar and our financial system on adherence to U.S. foreign policy, the more the risk of migration to other currencies and other financial systems in the medium-term grows.”

In this context, China’s President Xi (2022) was clear and vocal against politicizing food and energy issues and using them as tools and weapons:

President Xi stressed that food and energy security is the most pressing challenge in global development. The root cause of the ongoing crises is not production or demand, but interrupted supply chains and international cooperation. […] Any attempt to politicize food and energy issues or use them as tools and weapons must be resolutely opposed. Unilateral sanctions must be removed, and restrictions on relevant scientific and technological cooperation must be lifted.

Addressing the Atlantic Council on 13 April 2022, US Treasury Secretary Yellen (2022) delivered a special address on the next steps for Russia sanctions and ‘friend-shoring’ supply chains:

The war in Ukraine and sanctions against Russia highlight the pivotal role of China. […] China has recently affirmed a special relationship with Russia. I fervently hope that China will make something positive of this relationship and help to end this war. Going forward, it will be increasingly difficult to separate economic issues from broader considerations of national interest, including national security. The world’s attitude towards China and its willingness to embrace further economic integration may well be affected by China’s reaction to our call for resolute action on Russia.
Figure 14: US federal debt holdings, including by foreign and international investors (FDHBFIN).

Upper panel: Share of US federal debt held by foreign and international investors (FDHBFIN).
Source: https://fred.stlouisfed.org/graph/fredgraph.png?g=10yac.


Middle panel: Evolution of US federal debt holdings since January 1st, 1970 (Billions of USD).
Current geopolitical tensions have to be understood in the evolving context of international relationships. According to Subacchi (2023):

For two decades, Sino-Western integration powered the global economy and seemed to foster greater geopolitical stability. But now that China has moved well beyond being a mere exporter of low-cost labor-intensive garments and electronics, both the economics and the politics of its rise have fundamentally changed.

From this perspective, geopolitical stakes, pandemic management policies, digital financial innovation and the internationalisation of the renminbi, the Chinese currency, are mingled together (Chen, 2023; Subacchi, 2023; WENHUA ZONGHENG, 2023). In a WSJ opinion, Jamie Dimon (2023), chairman and CEO of JPMorgan Chase & Co., plea Americans to marshal US strengths, ‘not only military but also moral, economic and diplomatic’, through: (i) ‘rededicate ourselves to the qualities and principles that made America great’; (ii) ‘develop a Marshall Plan for global energy and food security’; (iii) ‘increase military spending, along with our allies, as much as necessary to protect the world’; (iv) ‘recover our economic dynamism’; (v) ‘deal with China thoughtfully and without fear’, concluding that


Concerning geopolitical stakes of the Ukrainian conflict, see also an exclusive WSJ interview to H. Kissinger (Russell Mead, 2022) and his conflicting view with G. Soros (Secor, 2022).
If America leads well, China will be better off forming partnerships with a strong Western world than with Russia, Iran and other such nations.

Together, we can ensure America’s leadership for the next 100 years.

Addressing the plenary session of the UN General Assembly on 24 September 2019, UN Secretary General Guterres (2019) was already “warning against the great fracture”, with the world’s two largest global economies [China and US] creating two separate and competing worlds, each with its own dominant currency, trade and financial rules, their own Internet and artificial intelligence capacities and its own zero-sum geopolitical and military strategies.

4.2 Emergence of Alternative Cross-Border Monetary Arrangements

From a transnational perspective, policies on pandemic management and climate change have been affecting cross-border transactions, featuring the return of active state controls over borders, not only in China but also in US, Japan and EU. In this context, the dominant position of the USD as international currency of reference may be at issue, confronted with an emergent de-globalisation trend (Goldman 2023; Reuters 2023). Notwithstanding sanction risks, rumours and news circulate on development of alternative cross-border monetary arrangements for bilateral and multi-lateral transactions between Russia, India and China among other countries. Importantly, China’s President Xi told Gulf Arab leaders that China would work to buy oil and gas in renminbi (Said & Kalin, 2023), a move that would support Beijing’s goal to establish its currency internationally and weaken the U.S. dollar’s grip on world trade (Lo, 2023; Pozsar et al., 2023; Reuters, 2022; Roubini, 2023). According to Sergey Glazyev, Minister in Charge of Integration and Macroeconomics of the Eurasia Economic Union (EAEU), it is realistic to expect increasing bilateral trade in local currencies, as it is the case between Russia-China, Russia-India, Iran-India, Russia-Iran, China-Iran, China-Brazil, and China-Saudi Arabia (Escobar, 2022, 2023; Moreira, 2023). The International Monetary Fund (2023, chapter 3 and Figure ES.14) provides evidence of increasing global economic and financial fragmentation and material reduction in cross-border capital allocation especially for banks (cross-border claims, around less 15%) and investment funds (cross-border equity and bond portfolios, around less 25%).

23 ASEAN Finance Ministers and Central Banks are discussing how to reduce dependence on the US Dollar, Euro, Yen, and British Pound for financial transactions and move to settlements in local currencies (ASEAN Briefing, 2023).
In this context, cross-border central bank digital currencies (BIS, 2022; Saudi Central Bank, 2021) and other alternative international payment systems may be organised and thus contribute to the emergence of a variety of international monetary regimes, progressively displacing the surviving USD Exchange Standard (Lo, 2023; Pozsar, 2022; Roubini, 2023). While the private development of digital currencies is currently under distress, showing the usual evidence of yet another financial scam by ruthless shadow banksters with political connections (Palma et al., 2022; Zuckerman & Osipovich, 2022), digital currency plans and multi-currency payment platforms by central banks (BIS, 2023) and the early move by the People’s Bank of China into issuing a central bank digital currency (Kynge & Yu, 2021; Yamaoka, 2019) may represent another path-breaking transformation.

It is worth remembering that, on the hedge of the North-Atlantic Financial Crisis on 12 December 2007, the FED (2007) extended USD currency swap lines to the European Central Bank (ECB) and Swiss National Bank (SNB) in view “to address elevated pressures in short-term funding markets,” without having to fund foreign financial institutions directly. These lines were extended to other central banks in 2008 and become permanent since 2013 (Borio et al., 2022; FED, 2013). In parallel, according to Steil et al. (2021), “since 2009, China has signed bilateral currency swap agreements with 32 counterparties. The stated intention of these swaps is to support trade and investment and to promote the international use of renminbi” (see also Liu & Papa, 2022; Pozsar, 2022; Roubini, 2023).

Under the USD-centered cross-border monetary order, the current account surpluses of creditor countries such as China, Russia and Saudi Arabia were largely being recycled into traditional reserve assets like US Treasuries (Figure 13; FCIC, 2011, 419–20). Such recycling has backed and upheld the US Dollar ‘exorbitant privilege’ over international trade and finance. According to Pozsar (2022), this recycling is much less in place for some countries including China (Figure 14): If less trade is invoiced in US dollars and there is a dwindling recycling of dollar surpluses into traditional reserve assets such as [US] Treasuries, the “exorbitant privilege” that the dollar holds as the international reserve currency could be under assault.

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24 In the context of market-based finance, its backing by shadow banking and its need of never-ending monetisation, issuance of private currencies has been surely seen as the final Eldorado. On responsible Fintech and private digital currencies, see Bayat et al. (2022) and Mance (2022).

25 John J. Ray III is a veteran insolvency professional who oversaw the liquidation of Enron. He said in a US court filing on Thursday that FTX was the worst case of corporate failure that he had seen in his more than 40-year career: “Never in my career have I seen such a complete failure of corporate controls and such a complete absence of trustworthy financial information as occurred here. From compromised systems integrity and faulty regulatory oversight abroad, to the concentration of control in the hands of a very small group of inexperienced, unsophisticated and potentially compromised individuals, this situation is unprecedented.” (Ray, 2022).
Such an alternative use of US reserves may accelerate de-dollarisation, since it does not longer fund US public debt and it does not longer pass through US financial institutions. It has been creating a sort of Asia-dollar system (echoing the eurodollars of some decades ago, see Braun et al., 2021; Fink, 2023), while more bilateral transactions have been settled without recourse to USD-denominated funding. According to Naef et al. (2022), the renminbi’s unconventional route to reserve currency status may pass through trade invoicing and settlements, central bank swap lines, and offshore renminbi markets.

In this context, the US FED signalling tighter monetary policy by raising its interest rate of reference since March 2022 (Figure 15) may be interpreted as a way to defend the USD and its international position, confronted with decreasing recycling in US securities of USD-denominated reserves by creditor countries including China (Tyson, 2022). At the same time, the ECB and the Bank of England have raised their benchmark rates while maintaining a lower level than the US FED. Moreover, this sudden and sharp raise may slow down further selling on US debt securities, locking up holders which would encounter losses by selling them before maturity, since higher interest rates reduce current market value, implying unrealised mark-to-market losses. This raise has been compared with the Volcker’s shock that restored the credibility of the US dollar in the 1980s by coupling an unprecedented series of interest-rate hikes with a liberalisation of capital movements that allowed the US government to monetise its growing debt on international markets (Fantacci & Gobbi, 2023).

![Figure 15](image)

**Figure 15:** Nominal and deflated US federal funds effective rate from 1 July 1954 to 1 February 2023. **Sources:** Board of governors of the federal reserve system (US), federal funds effective rate [FEDFUNDS], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/FEDFUNDS, March 20, 2023.

Federal Reserve Bank of Atlanta, sticky price consumer price index less food and energy [CORESTICKM159SFRBATL], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CORESTICKM159SFRBATL, March 21, 2023.
In this context, central bank support to public spending and public debt management may be interpreted as a way to refilling monetary reserves in their currency areas, adding back cross-border transactions management to central bank agendas. To be sure, these reserves are a consequence of protracted quantitative easing, which now implies material interest payments to banks and losses for central banks. Their connection with international finance is only suggestive, but it is not unreasonable to think that international affairs have been playing some role in recent financial developments (see also IMF, 2023, chapter 3). In a similar vein, we may imagine central banks being directly or indirectly, openly or secretly involved in supporting the war efforts including announced rearmament programs in Europe and Japan, as well as an eventual reconstruction program in Ukraine.

5 Concluding Remarks on the Verge of the US Bank Crisis of 2023

It’s lending, not spending (New York Times, August 22, 1961)

According to the IMF Global Financial Stability Report (IMF, 2022), financial stability around the world continue to be threatened by: (i) the policy response of central banks to higher inflation they contributed to provoke; (ii) financial market volatilities and the deterioration of market liquidity which amplifies price moves; (iii) in Europe, the energy crisis triggered by disproportioned warfare sanctions and the failure of the energy market with its flawed design; (iv) in China, the property sector vulnerability exacerbated by sharp declines in home sales pressuring developers. The report also shows that the current climate change strategy – including in emerging market and developing economies – cannot be sustained without the public sector, affording the hazard to organise another cash rain of state aid over private actors involved in it. Last but not least, the report highlights the contribution of open-end investment funds to fragilities in asset markets. Accordingly,

open-end investment funds play a key role in financial markets, but those offering daily redemptions while holding illiquid assets can amplify the effects of adverse shocks by raising the likelihood of investor runs and asset fire sales. This contributes to volatility in asset markets and potentially threatens financial stability.

In March 2023, referring to the FSOC (2022) report, Yellen (2023) acknowledged unaddressed vulnerabilities in ‘shadow banks’ (non-bank financial intermediaries) such as money market and open-end funds, hedge funds, and digital asset issuers (cryptocurrencies). The FSOC (2022, 9) states that
The Council has identified vulnerabilities in hedge funds, open-end funds, certain collective investment funds, and money market funds (MMFs) due to their scale, leverage, interconnectedness, and ability to engage in liquidity and maturity transformation. Some of these vulnerabilities have the potential to amplify shocks, including recent unexpectedly persistent inflation and the associated rise in interest rates.

In other words, the IMF (2022) and the FSOC (2022) reports repeat again the same story which occurred during the North-Atlantic financial crisis of 2007–8, now exacerbated by the effects of Quantitative Easing (Figure 16). The intrinsic fragilities of market-based finance and its ‘liaison dangereuse’ with governments and central banks just worsened in the meanwhile (FSB, 2022; IMF, 2023; Ren, 2023).

The Silicon Valley Bank (SBV) – the 16th largest bank in the US, whose CEO, Gregory Becker, was on the Board of Directors of the Federal Reserve Bank of San Francisco between 2019 and 2022 included – fiasco and its emergency rescue in March 2023 are illustrative. “Just like many of the banking titans after the global financial crisis of [2007–2008], tech tycoons appear to favour the privatisation of profits and the socialisation of losses. There are few libertarians in a financial foxhole,” writes Thornhill (2023); SVB had been providing financial services to “almost half the venture capital-backed tech and life sciences businesses in the US as well as start-ups across Europe, India, Israel and China.” Its asset portfolio was then exposed to businesses operating in fintech, biotech and climate tech, segments which are entangled with political connections (WSJ, 2023a). According to Vandevelde et al. (2023):

SVB provided banking services to such companies, making its deposit base vulnerable to a drought in venture capital funding. It also lent freely to them, expecting to be repaid not from the cash flows of the business, but from the eventual bonanza when new investors supplied another round of capital. Highly unusually for a bank, SVB received warrants in many of the companies it financed, in effect a bet that any losses on its loan books could be covered if just a few of the companies went on to become unicorns.

According to documents reviewed by the WSJ (Ackerman & Michaels, 2023), the US FED was raising concerns about risk management at SVB starting at least four years before its failure in March 2023.26 When the First Citizens bank agreed acquiring SVB after the Federal Deposit Insurance Corporation (FDIC, 2023) seized it, the deal excluded roughly 95 USD billion of assets (securities and loans) out of 167 USD billion (56.9 %), while the remaining 72 USB billion were acquired at a discount of 16.5 USD billion (22.9 %) with further guarantees against losses beyond five USB billion, along with 56.5 USD billion of remaining deposits; accordingly, liquidation value of the SVB entire loan portfolio appears to be estimated at 55.5 USD billion (33.2 %). The FDIC

26 See also FED (2023c) review and accompanying documentation
Figure 16: Main monitoring aggregates of the FSB’s global monitoring report on non-bank financial intermediation (2022).

Upper panel: US – total financial assets by sector.


Lower panel: Euro area – total financial assets by sector.

The European Central Bank (ECB) provided the euro area aggregated data. The euro area jurisdictions are Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain. Exchange rate effects were netted out by using a constant end-2021 exchange rate across all past years to convert local currency data into U.S. dollars.

(2023) estimates the cost of the failure of SVB to its Deposit Insurance Fund (DIF) to be approximately 20 USD billion, mainly to protect uninsured deposits (Figure 17).

After the coronavirus inflowing bonanza during 2020–21, commercial bank deposits were experiencing outflows in favour of non-bank financial institutions such as money market funds (Ensign, 2022, 2023; Figure 17), which were experiencing material inflows since beginning 2017 up to a record level of 5.18 USD trillion in December 2022 (Singh, 2023 and Figure 18). Since March 2021, the US FED has been draining liquidity out of money market funds through reverse repo purchase of treasuries (Figure 19), up to more than 2 USD trillion since May 2022, currently paying a 4.8 % annualized rate over them, far above the rates on offer at most banks. According to Hall and Sargent (2022, 6), until March 2021 the Fed had mostly refrained from making these reverse repo trades; according to Wallerstein and Timiraos (2023), some analysts contend that this program is effectively draining funds from the
banking system, where it otherwise could be invested or lent out, surely assisting the FED’s effort to raise benchmark interest rates. At the same time, commercial banks were confronted with unrealised mark-to-market losses on longer-term debt securities portfolios (Wirz, 2023) including US treasuries, after the sudden and material interest rate hikes engineered by the FED (Figures 4, 5, and 15). Distress in interbank lending conditions appeared since the end of 2021 (Figure 5 lower panel). Some US banks became exposed to joint solvency and liquidity risks, as they were in the eighties under the Volcker’s shock (Benoit et al., 2023; FCIC, 2011, 34 ff.). Confronted with financial distress by US banks such as SVB, Signature Bank and First Republic Bank, and by European banks such as Credit Suisse and Deutsche Bank, financial markets started discounting bank shares severely.

Responding to this new US-originated bank crisis, concomitant with the financial distress of Credit Suisse, one of the Global Systemically Important Banks (G-SIBs),27 the US authorities promised to protect bank deposits beyond regulatory thresholds as they did between end-2008 and end-2012.28 In particular, the FED (2023a) promised

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27 According to Credit Suisse (2023), “on March 19, 2023, Swiss Federal Department of Finance, the Swiss National Bank and FINMA have asked Credit Suisse and UBS to enter into the merger agreement. Pursuant to the emergency ordinance which is being issued by the Swiss Federal Council, the merger can be implemented without approval of the shareholders. The consummation of the merger remains subject to customary closing conditions,” including material adverse exit clause based upon the increase of USB credit default swap rate during the period between the signing and closing of the deal.

28 In 2008:Q4, the standard insurance amount of 100,000 USD was temporarily increased to $250,000 under the Emergency Economic Stabilization Act of 2008. In 2010:Q4, it was made permanent under Dodd-Frank Act of 2010. Additionally, in 2008:Q4, the FDIC guaranteed in full, all non-interest bearing transaction accounts (checkable deposits) under the Transaction Account Guarantee Program (TAGP)
additional funding provision through the creation of a new Bank Term Funding Program (BTFP), offering loans of up to one year in length to banks and other eligible depository institutions pledging U.S. Treasuries, agency debt and mortgage-backed securities, and other qualifying assets as collateral. Figure 20 shows use of this program together with discount window borrowing by 6 April 2023. Collateralised assets will be valued at par “with recourse beyond the pledged collateral,” a condition which takes into account the fact that the collateral may be impaired. At the same time, as in 2007, the FED (2023b) enhanced the provision of liquidity via the

through 2010:Q4. The guarantee in full of all non-interest bearing transaction accounts was extended through 2012:Q4 under the Dodd-Frank Act 2010. All deposits of International Banking Facilities (IBFs) remained uninsured.
standing U.S. dollar liquidity swap line arrangements in a coordinated action with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. The network of swap lines among these central banks is a set of available standing facilities which serve as an important liquidity backstop to ease strains in global funding markets denominated in USD.

In this context, 2022 (or 2008) central bank discussions focusing on conventional measures of inflation and employment show inherent tension between central bank worldview, its ideology and the factual policies put in place.29 Flawed economic modelling assumes that inflation does only and always depend on unemployment, so that inflation may only be reduced by massive monetary punishment, a violent recession, and a purge of the labour force.

Our dynamic systems analysis provides hints for an alternative explanation. Current inflation appears to depend on monetary drivers (Borio et al., 2023; Hall and Sargent 2022; King, 2022)30 and the unreformed financial market-making which has

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29 See also Fligstein (2021, chapter 8) and Thiemann (2023a, 53 ff. and Table 2.1). According to Wansleben (2023, 8), “crucially, while financial transactions (combined with statutory regulations) provide the operational basis of monetary policy, it is not straightforward how central banks can use these operations effectively to influence macroeconomic variables such as the rate of inflation or economic output. The functional use of financial transactions for such purposes raises formidable implementation and transmission problems.” Our dynamic systems analysis points to this functional use of financial powers by central banks in their connection with treasuries and money markets.

30 According to the IMF managing director, Georgieva (2022, since 1h02m28s), “I think we are not paying sufficient attention to the law of unintended consequences. We take decisions with an objective in mind and rarely think through what may happen that is not our objective. And then we wrestle with the impact of it. Take any decision that is a massive decision, like the decision that we need to spend to support the economy. At that time, we did recognize that maybe too much money in
been further fostered by exceptional monetary policies (Quantitative Easing) and large and quick public spending since the market-based finance regime crack in 2007. In this situation, fiscal policy might help, including by taxing excess profits and financial capital gains, that is, paper profits which came out of quite an oligarchic socio-economic process of paper money printed on demand through government debt issuance, public spending for some, and central bank accommodative support. Further fiscal and monetary expansion is expected by policy responses to the sanctions-driven energy crisis and the climate change announced catastrophe, as well as the rearment and reconstruction plans. In this context, inflationary drifts may appear to some as a way out for indebted states and indebted financial actors to reduce their burden at the expense of creditor countries and savers, employees and pensioners, although all the dynamic systemic effects of such an inflationary move may trigger unexpected consequences and implications, while further distressing international monetary relationships.

Contrary to the received doctrine, our analysis highlights the dual connection of central banking with treasuries and private finance including private monetary financial institutions (banks). From this systemic perspective, central banking plays a role in managing public and private debts, money issuance including monetisation (money aggregates), and cross-border transactions including exchange rates and currency reserves management, beyond its better-known role in providing benchmark interest rate guidance. How to accommodate all these roles with the general interest is an open question which nowadays remains unfortunately unasked.

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