How a Minskyan Supercycle Ends

Theoretical Analysis and Empirical Evidence from North-Atlantic economies (France, Germany, US, UK), 1980 to 2024

Cédric Durand, Ayoze Alfageme and Simon Grothe
DEHES, UNIGE
June 2025

Abstract

This contribution examines the limits to financial expansion relative to the real economy, analysing the substantial growth of financial assets from the 1980s through the 2020s. We document how policymaking activism sustained financial expansion beyond the 2008 GFC, creating a puzzle given theoretical expectation of periodic deleveraging. The early 2020s inflation outbreak provides a crucial test case for understanding monetary constraints on financial system support. Drawing on Minsky's financial instability theory, BIS financial cycle analysis (Borio), and the Marxist concept of fictitious capital, we develop a comprehensive framework for analysing these dynamics. We document the Supercycle's evolution from 1980-2024 across four North Atlantic economies using a fictitious capital indicator and principal component analysis. Our analysis reveals three distinct phases: long neoliberal expansion (1980-2007), state-sponsored General Ponzi (2008-2019), and inflation-constrained retreat (2020-2024). Contrary to expectations, no shrinkage occurred during the 2010s as central banks sustained expansion through asset purchases and balance sheet growth. However, the post-COVID inflation period marks a decisive halt, with financial assets contracting relative to GDP. We theorize these constraints through the Non-Asset Busting Interest Rate (NABIR) framework, which formalizes the tension between price stability and financial stability objectives. When inflation forces interest rates above what leveraged financial systems can sustain, monetary authorities face impossible trade-offs. Our findings suggest that financial repression through controlled inflation may enable orderly downsizing of oversized financial systems, with implications for the future of finance-led accumulation regimes.

Key Words

Financial Supercycle - Minsky – Instability – Inflation – Fictitious Capital - Borio

CONTENT

1. Introduction

In 2009, James Crotty concluded “Structural causes of the global financial crisis” by stating: “The scope and severity of the current crisis is a clear signal that the growth trajectory of financial markets in recent decades is unsustainable and must be reversed.” (Crotty, 2009, p. 576). Beyond widespread outrage over the crisis’ devastating socioeconomic consequences, Crotty advanced two reasons for downsizing financial markets. First, he presented a political economy argument: “It is not economically efficient to have such large proportions of income and human and material resources captured by the financial sector”—expecting policymakers to act decisively. Second, and central to his analysis, he identified an endogenous macro-financial limit on finance’s expansion relative to other economic sectors: “It is not possible for the value of financial assets to remain so large relative to the real economy because the real economy cannot consistently generate the cash flows required to sustain such inflated financial claims.”

This paper explores Crotty's second argument. We take as analytical departure point the insights of Magdoff and Sweezy regarding the non-linear dynamics of financial-real economy relationships. Two decades before Crotty's statement, these authors questioned: "Can this seemingly contradictory coexistence of a prosperous and expanding financial sector and a stagnant production sector continue? It is probably safe to say that in the long run the answer is no." However, they recognized that these limits operate through complex mechanisms characterized by floor and threshold effects, institutional adaptations, and policy interventions that can temporarily extend the system's tolerance for financial expansion. They cautiously added: "But this doesn't help much since no one can define the long run (...) the coexistence of stagnation in the productive sector and inflation in the financial sector can continue for a long time" (Magdoff and Sweezy, 2009, pp. 103–104). These non-linearities—involving discontinuous regime shifts, endogenous policy responses, and the elastic nature of monetary and financial constraints—constitute our analytical starting point for examining both continuous post-2008 financial expansion and its limits.

We argue that the prolonged expansion of financial claims since the 1980s (Borio and White 2004; Durand 2017)—termed a Minskyan Supercycle—has been sustained less by income generation fundamentals than by repeated monetary interventions and policy innovations. Notably, post-2008 central banks increasingly absorbed systemic risk through balance sheet expansions, a dynamic described as "state-sponsored General Ponzi." Moreover, we examine how fictitious capital expansion—financial claims like stocks, bonds, and derivatives representing claims on future income but not directly embodying productive capital, whose proliferation drives financial market expansion relative to the real economy— faces endogenous limits that can be analyzed through specific empirical patterns. The post-COVID-19 inflationary burst highlighted tensions between financial and price stability objectives, suggesting constraints on central banks' capacity to preserve both simultaneously. Through empirical documentation and theoretical analysis, the paper examines how these constraints may represent structural limits to monetary accommodation and indicate a possible Supercycle inflection point, with implications for financial hegemony and monetary governance. In building these arguments, we contribute on three fronts: theoretical

integration, comprehensive empirical documentation, and formal analysis of monetary constrains.

First, to situate our argument, we build on three heterodox traditions: Minsky's financial instability hypothesis, Borio's work on financial cycles at the BIS, and the Marxist notions of fictitious capital and pseudo-validation. Despite important differences, these approaches converge on two core principles: that financial instability is endogenously generated, and that meaningful analysis must "think monetary" (Borio 2014, 183). We use this shared foundation to reframe the question of financial fragility not solely as a function of private sector balance sheets, but as institutional and macro-financial dynamics shaped by central bank practices and political-economic regimes. This theoretical synthesis generates specific empirical implications about Supercycle dynamics that guide our systematic investigation.

Second, we document the evolution of the Minskyan Supercycle from 1980 to 2024 across four major North Atlantic economies through a systematic empirical framework that examines the five empirical implications generated by our theoretical synthesis. Using a Partial Least Squares (PLS) index and Principal Component Analysis (PCA), we identify three distinct phases: a long expansion from the 1980s to 2007–08; a state-sponsored General Ponzi phase extending through the 2010s; and a post-COVID contraction marked by inflationary pressures. This approach reveals both the quantitative persistence and qualitative transformation of financial expansion relative to income generation.

Third, we theorize the monetary limits to financial expansion under inflationary conditions. While previous cycles were stabilized by increasingly accommodative central bank interventions, we argue that in a context of rising inflation, this strategy faces constrains. We introduce the concept of a Non-Asset Busting Interest Rate (NABIR) to formalize the boundary beyond which interest rate hikes needed to preserve price stability risk triggering widespread asset deflation. This conceptual contribution outlines a structural contradiction at the heart of the current regime: central banks may be forced to choose between inflation control and financial system integrity, revealing the constrained elasticity of monetary policy at the tail end of the Supercycle.

This paper relates to a growing empirical literature on the Minskyan financial cycle, which has largely focused on the debt dynamics of specific economic sectors—particularly firms' (Águila and Graña, 2023; Davis et al., 2019; Pedrosa, 2019) and households' (Stockhammer and Gouzoulis, 2023). While assessing economic actors' cash flow capacity to sustain balance sheets remains crucial for evaluating the robustness of a given financial liability structure, this paper examines the problem from a different perspective. Our approach centres on the Supercycle as a systemic phenomenon, incorporating more broadly assets' value-to-GDP ratios and policy changes to explore limits to financial-monetary elasticity. Rather than examining how non-financial entities' balance sheet deterioration directly triggers cycle reversals, we explore regulators' capacity constraints in managing endemic financial instability, relating to a second strand of the literature (Dafermos et al., 2023; Palley, 2011; Toporowski, 2020).

Section 2 discusses the concept of Minskyan Supercycle, emphasizing the institutional unfolding since the post-GFC period. Section 3 documents the Supercycle's evolution from

1980 to 2024), singling out that, contra Crotty's expectations, no shrinking of the weight of financial assets occurred in the 2010s, while the post-COVID era seems to halt the expansion. Section 4 examines Crotty's argument about endogenous limits, elaborating a theoretical argument about the monetary limits to the expansion of finance vis-à-vis the rest of the economy with some contextualizing in the post-COVID-19 conjuncture. Section 5 concludes.

2. Furthering a Minskyan Supercycle

Financial cycles involve "self-reinforcing interactions between perceptions of value and risk, attitudes towards risk and financing constraints, which translate into booms followed by busts" (Borio, 2014, p. 183). These endogenous mechanisms affect both financial and real spheres without automatic regularity—length and amplitude depend on policy regimes. As Borio clarifies: "the boom sets the basis for, or causes, the subsequent bust" (Borio, 2014, p. 185).

Minsky's crucial insight shows how policy interventions prolong short financial instability cycles, creating what Palley (2011) terms supercycles (2.1). We examine how post-GFC innovations contained instability while enabling further asset expansion (2.2), then analyze accumulating tensions through pseudo-validation and fictitious capital concepts alongside central banks' deepening financial entanglement (2.3).

2.1. How policymaking contributes to further financial expansion

Minsky's financial instability hypothesis (1975, Ch. 6; 1978, 1986, 1989a) theorizes that fragility increases during upswings. When expectations are met, investors perceive previous risk measures as excessive and pursue greater exposure. A "boom once started lives a precarious life" (Minsky, 1976, p. 112):): safety margins decline throughout cycles, increasing reliance on asset liquidation over cash inflows for debt service. Turning points occur when asset sales depress prices, triggering contagious debt deflation as firms face margin calls (Minsky, 1982, pp. 384–387).

Given this hypothesis, the relative absence of major debt deflations every 5-10 years—particularly their muted character recently—appears puzzling. Minsky (1957b) attributes this to institutionally determined "ceilings" and "floors" that contain cycles. These "non-market determined" limits trigger public intervention upon breach, ensuring "institutions and interventions thwart the instability breeding dynamics that are natural to market economies" (Ferri and Minsky, 1992, p. 80).

These thwarting mechanisms —"floors" and "ceilings"— take two forms. First, direct macroeconomic demand management via fiscal policy requires public budget expansion supporting private growth. "Big Government must be big enough to ensure that swings in private investment lead to sufficient offsetting swings in the government's deficit so that profits are stabilized" (Minsky, 1986, p. 330). Big government diminishes "down side vulnerability of aggregate profits flows" (Minsky, 1992, p. 5)—stabilizing financial structure while increasing complexity through public asset intertwining.

Second, central bank interventions have taken new dimensions. Financial institutions' profit-seeking drives innovation circumventing regulation, increasing systemic risk private counterparties cannot hedge. When risks materialize threatening broader contagion, central banks must "monetiz[e] the vulnerable asset" (Minsky, 1957a, p. 187). Consequently, "Every time the Federal Reserve protects a financial instrument it legitimizes the use of this instrument to finance activity"(Minsky, 1986, p. 106)—interventions that further complexify the financial system.

Minsky established that fiscal policy and central banks' stabilization of unstable economies contributes to new institutions (financial products, asset valuations, risk tools) causing future instability (Minsky, 1957a, 1957b).). Successive interventions transform short cycles into supercycles of increasing fragility (Dafermos et al., 2023; Davis et al., 2019; Durand, 2017, chap. 2; Palley, 2011; Toporowski, 2020)

2.2. Policy innovation and the spiral of financial risk-making since the GFC

Extensive literature argues that this socialization of financial risk heightens macro-financial vulnerabilities —mainstream scholars focus on moral hazard dynamics (Diamond and Rajan, 2012; Farhi and Tirole, 2012; Miller et al., 2002) while Post-Keynesian emphasize the destabilizing role of endogenous expectations (Palley, 2011; Prates and Farhi, 2015). Successive interventions create expectations that governments—particularly central banks—will prevent asset value collapses. This pattern dominated recent decades with amplified central bank actions. The US "Greenspan put" encompassed Fed interventions limiting the 1987 crash, containing the 1998 liquidity crunch, and easing conditions after the 2001 dot-com burst—all involving rate cuts and liquidity injections. Lehman Brothers's bankruptcy represents the exception proving the rule: authorities are constrained to support financial institutions during crises because of finance's structural power (Culpepper and Reinke, 2014).

This power is reinforced by the infrastructural power (Mann, 1984) financial institutions gain as monetary authorities rely on them for asset purchases (Braun, 2020)—interventions that define the new generation of unconventional monetary policies deployed precisely to tame finance's growing instability.

Japan pioneered unconventional policies, with the Bank of Japan's (BoJ) QE through asset purchase programs from the millennium turn combating deflationary pressures. Other G7 central banks adopted these programs alongside lower rates after the GFC (Ueda, 2012), during the eurozone debt crisis and its aftermath (Rostagno et al., 2021, chaps. 4–6) and throughout the COVID-19 pandemic (Afonso and Gomes Pereira, 2025; Cortes et al., 2022; Nozawa and Qiu, 2021). While preventing spiralling asset price collapses and facilitating rebounds, these policies created an environment requiring substantially higher reserves (Bouguelli, 2022).

Importantly, interventions have grown, decisiveness, and scope—expanding eligible assets and covered institutions. This amplification "legitimizes" weak risk management underpinning asset origination, resulting in declining average quality and lengthening maturities (Çelik et al.,

2020). Since longer maturities increase price sensitivity to rate increases, higher rates led to substantial bank portfolio losses. Following Silicon Valley Bank's March 2023 collapse, the Fed implemented another innovation: the Bank Term Funding Program accepting collateral at par value for reserves (Gabor 2023), preventing contagion to regional banks.

Internationally, increased central bank activism has reinforced dollar centrality, at least in the medium term. The Federal Reserve's swap line network with the Bank of England (BOE), Bank of Canada (BOC), European Central Bank (ECB), BoJ and Swiss National Bank (SNB) — established in 2007 — provides crucial funding backstop for global banks during acute market stress (Baba and Packer, 2009; Goldberg et al., 2011). These facilities proved essential for containing GFC fallout on non-US systemic banks' balance sheets (Tooze, 2018, chap. 3) and where reactivated during COVID-19's international spillovers in March 2020 (Davies and Kent, 2020; Ferrara et al., 2022) and amid renewed banking fragilities in spring 2023 (Arnold and Smith, 2023).

These successive interventions show that central banks no longer target individual distressed banks but entire markets, shifting from lender of last resort to market makers of last resort (Gabor 2016, Minsky 1988a)), exposing them to greater political roles (Coombs and Thiemann, 2022).

Central banks have enlarged their toolbox to preserve financial market integrity (Table 1). Yet success carries downsides for broader stability. Thiemann captures the contemporary Supercycle's logic through "the tragedy of macro-prudential reform." Post-GFC central banks' knowledge about financial instability has grown substantially but applies asymmetrically: "Whereas it has become the foundation for quick intervention to contain financial instability as it unfolds, […it] faces substantial hurdles when it seeks to intervene in financial markets in a precautionary manner" (Thiemann, 2024, p. 21). Crisis management knowledge enables successful intervention but ultimately fuels cumulative latent instability through further financial innovation. Asymmetric intervention implies solvency crises are treated as liquidity crises (Tymoigne and Wray, 2013) as QE *de facto* validates the liability structure that underpins an unsustainable growth regime.

Table 1. Main instruments cumulatively deployed by central banks to tame financial instability since the 1980ies

INSTRUMENT	CONTEXT OF EMERGENCE	MECHANISM
INTEREST RATE	FED's Chairman "Greenspan Put" 1987 Black Monday stock market crash	Lower financial burden, ease funding and support de value of financial assets
LIQUIDITY PROVISION	1998 LTCM failure 2001 Dot.com Crisis	Lender of last resort. Support to ailing institution stops domino-like dynamics of failures
QUANTITATIVE EASING	2001 by the. BoJ to fight deflation After the 2008 GFC by the FED, the BoE and the ECB	Market maker of last resort. Direct purchase of assets to support liquidity of entire markets
CENTRAL BANKS' LIQUIDITY SWAPS	2007 in response to response to US dollar funding tensions	Currency swaps between the FED and other central banks allow non-US institutions to access USD liquidity using non-USD denominated collaterals via their domestic central banks

2.3. The metamorphoses of the *pseudo-validation*

Claudio Borio once recommends: "Think monetary!", emphasizing that "the financial system does not just allocate, but also generates, purchasing power, and has very much a life of its own"(Borio, 2014, p. 183). Building on this insight, we draw on the Marxist monetary theory of value, which provides a structural account of money and value emergence from the social relations of production. As Wray (1999) argues, comprehensive monetary theory of production must incorporate both labour and liquidity preference theories of value, operating at distinct analytical levels. In particular, Marx's framework situates financial dynamics within the contradictions of the valorisation process, offering crucial tools for theorizing the tension arising disjunction between finance and production. This perspective is systematized in the work of Riccardo Bellofiore, whose "monetary labor theory of value" (Bellofiore, 2018, 1989) underscores that labor attains social validation only through its monetary expression , and that capital as a social relation is constituted by a monetary *ante-validation* of labour power: financing of production that precedes but sets value creation in motion.

Ante-validation fosters capitalist growth by allowing investment funding without requiring prior savings. It enables credit, equities and other financial assets to circulate as claims drawing rights on future value independently of the effective development of production. Fictitious capital captures this disjunction between financial valorisation and real accumulation and the build-up of structural fragility it entails (Chesnais, 2016, pp. 81–88; De Brunhoff, 1990; Durand, 2017, chaps. 3 & 4; Guttmann, 2008; Harvey, 2006, pp. 266–270; Palludeto and Rossi, 2022). Indeed, as stressed by Suzanne de Brunhoff and Michel Aglietta, there is no certainty that ante-validation by the financial system will be confirmed when financial claims are confronted to the income effectively generated by production. If not, what was considered as ante-validation appears to have been pseudo-validation (Aglietta, 1976, p. 296; Brunhoff, 1979, p. 125, 1976, p. 65): financial asset devaluation and/or income transfers to asset holders reveal that all past economic expectations cannot be fulfilled.

The notion of pseudo-validation requires distinguishing between money as income—arising from value realization in production—and credit money, which anticipates and conditions this realization (Ivanova, 2020, p. 142). Credit becomes income money only if it succeeds in valorising capital through commodity production and exchange. Otherwise, it circulates as fictitious capital subject to pseudo-validation—appearing valuable while lacking productive grounding.

The expansion of such pseudo-validated financial claims under credit money regimes has significantly altered crisis forms in comparison to previous commodity-money regime such as the gold standard. As Ivanova explains:

“Under the commodity-money regime, the mass of the means of payment created by the credit system tended to periodically collapse into the monetary base. This collapse manifested itself as a monetary panic or financial crisis (the more recent term). Under the regime of credit money, where the universal equivalent has lost the link to a money commodity, a similar collapse still occurs frequently during financial crises. However, it manifests itself no longer as a rush to gold, but as a rush to ‘liquidity.’” (Ivanova 2020, 143).

This shift marks a transformation in the *form* of crisis rather than its substance. The contradiction persists: financial claims are valid only to the extent that they are grounded in the realization of value produced through labour. Without such grounding, crises manifest as liquidity demands and fictitious capital devaluation.

Central banks play pivotal roles managing these crises of pseudo-validation by providing liquidity and stabilizing financial markets. Their interventions effectively act as monetary re-validations of fictitious capital to prevent systemic collapse. Yet this monetary re-validation cannot abolish underlying contradictions. As Marx sharply observed, money cannot generate value independently: "as it is an attribute of pear-trees to bear pears" (Marx 1894, vol. III, chap. 24).

Monetary policy's relative autonomy enables temporary pseudo-validation extensions through credit system elasticity and capital valorisation support, but remains constrained by production's material limits, purchasing power's social distribution, and structural positioning within global value chains. As De Brunhoff reminds us, "no monetary policy can abolish the economic causes of financial stresses; the relative autonomy which makes it possible for monetary policy to have an effect also sets the bounds of its field of action" (De Brunhoff 2015, 120). Monetary policy can facilitate the mobilization of idle productive resources through cheapened credit, but success depends on underlying accumulation and demand realization conditions.

Pseudo-validation manifests the bounded character of the accumulation of fictitious capital and the limits of monetary policy in fostering financial stability. In the seventies, inflation was analyzed as a manifestation of this social “pseudo-validation” (Aglietta, 1976, p. 296; Brunhoff, 1979, p. 125, 1976, p. 65) of private works by the credit system –through devaluation in real terms of debts, which nurtured an exacerbation of the distributive conflict with a spiraling effect on prices. Contrastingly, dynamics from the nineties to the COVID-19 outbreak were mostly deflationary. In the context of an overall weakening of labor bargaining power in

Western countries (Amable, 2017; Cauvel and Pacitti, 2022; Duménil and Lévy, 2011; Huber et al., 2022; Kotz, 2015; Stockhammer, 2013) and increasingly global value chains (Amador and Cabral, 2016; Auer et al., 2017; Carballa Smichowski et al., 2021; Cattaneo et al., 2010), financial claims expansion due to asset price inflation and greater credit system elasticity has not contaminated the price system through increasing demand pressure, occurring mostly within the financial system itself. In low inflationary environments, as long as liquidity is preserved in financial markets, financial asset owners can (individually) verify their claims' validity on social wealth (Orléan, 1999).

Growing financial claims vis-à-vis economy size result from monetary ante-validation by the credit system. This ante-validation's pseudo-character became manifest only in several episodes, notably the 2008 financial crisis and—more briefly—during the COVID-19 pandemic financial market crash in March 2020 and in contained episodes such as the Gilts crash threatening UK pension funds in October 2022, or Silicon Valley Bank failure and Credit Suisse rescue in March 2023. In all cases, central banks were forced to mobilize their (credit) monetary power to stabilize financial markets, (re)validating balance sheets inflated by fictitious capital accumulation.

In sum, the theoretical framework developed in this section 2 generates five key empirical implications that can be observed historically. First, given that successive policy interventions transform short financial cycles into an extended Supercycle, fictitious capital accumulation should exhibit distinct phases corresponding to different policy regimes: a long neoliberal expansion (1980s-2007) driven by private sector leverage, followed by a post-GFC period (2008-2019) where the "state-sponsored General Ponzi" configuration makes government debt and central bank balance sheets the primary drivers of continued expansion, and finally a post-COVID period (2020-2024) showing constraint as monetary policy faces the inflation-financial stability dilemma. Second, this periodization should manifest in compositional shifts where early phases dominated by private credit and equity growth give way to increased weight of public sector claims—the empirical signature of the "metamorphoses of pseudo-validation" across monetary regimes. Third, the evolution toward central banks as "market makers of last resort" should be observable through balance sheet expansions, which reflect periods of financial stress and the broadening of intervention scope that legitimizes new categories of financial instruments. Fourth, the policy innovation and the spiral of financial risk-making should produce evolving correlation structures between fictitious capital components across countries and across time within each country, reflecting the institutional transformations that reshape how different asset classes move together over the Supercycle's progression. Fifth, when inflationary pressures emerge and central banks raise interest rates to maintain price stability, fictitious capital accumulation should moderate or reverse as the monetary system reaches the limits of its ability to validate financial claims through credit expansion—the empirical manifestation of constrained pseudo-validation under inflation.

3. Mapping the financial Supercycle (1980-2024)

This section documents financial Supercycle dynamics between 1980 and 2024, guided by the five empirical implications outlined above. We begin by developing a fictitious capital cycle indicator that extends beyond traditional credit-focused measures to capture the broader range of financial stress episodes predicted by our theoretical framework (3.1). Moving

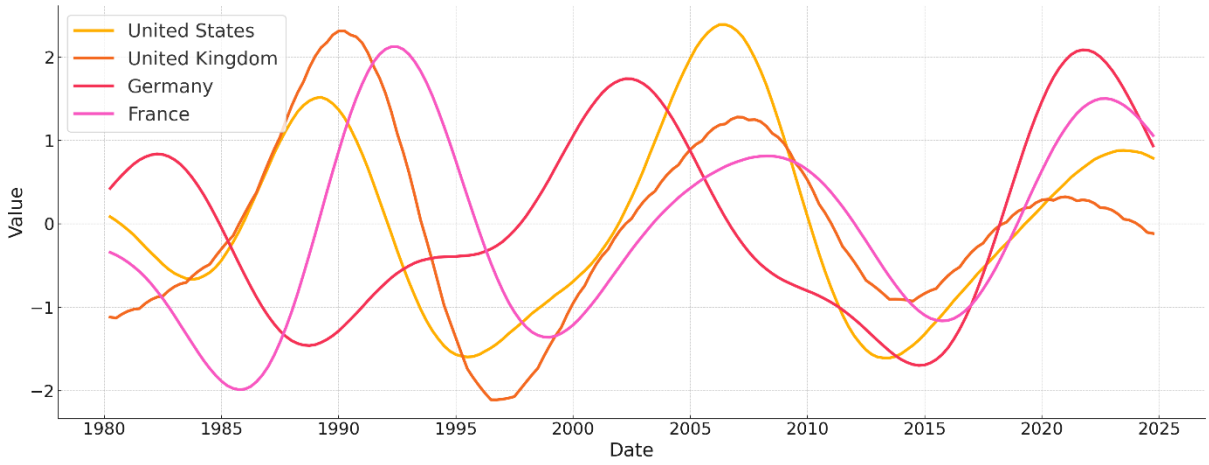
beyond cyclical approaches, we then examine the secular accumulation of fictitious capital (3.2)—the Supercycle itself—documenting the first and second implications about distinct policy regime phases and compositional shifts through ratio analysis and PCA while analysing the third implication through central bank balance sheet dynamics, the fourth implication through evolving correlation structures, and the fifth implication through the moderation of fictitious capital accumulation under inflationary pressures across three identified phases: long neoliberal expansion (1980-2007), state-sponsored General Ponzi (2008-2019), and inflation-constrained retreat (2020-2024) (3.3).

3.1. From Credit Cycles to Fictitious Capital Accumulation: Extending the Analytical Framework

The post-GFC focus on financial stability has centred primarily around credit dynamics, following the historical observation that "every mania has been associated with the expansion of credit" (Kindleberger and Aliber, 2009, p. 64). The Basel III macroprudential framework adopted the private credit-to-GDP ratio as the preferred early warning indicator for banking crises, with BIS economists extending this to include house price dynamics (Borio, 2014; Drehmann et al., 2012). While these credit-focused indicators successfully identify periods of acute banking stress—such as the 2008 crash and March 2020 COVID-19 shock—they systematically omit broader economic crises like the US dot-com bubble burst, revealing the limitations of a banking-centric approach to financial instability (see Figure 1).

This methodological gap reflects a deeper theoretical problem: traditional financial cycle indicators focus on cyclical fluctuations around supposedly equilibrated trends, thereby neglecting the longer-term buildup of financial claims that constitutes the Supercycle phenomenon described in Section 2. The cycle approach in the BIS indicator, by removing secular trends, cannot capture the structural accumulation of fictitious capital—financial claims representing rights to future income but lacking direct productive grounding—that our theoretical framework identifies as central to understanding contemporary financial instability.

Figure 1. BIS measurement of the financial cycle (1980-2024) (data from Drehman - average of the medium-term cycle in the component serie - credit, the credit to GDP ratio and house prices - using frequency based filters)



To address this limitation, we develop a *fictitious capital cycle indicator* that operationalizes the theoretical concepts developed in Section 2. Also in line with the FED's Financial Stability Report (2024) approach to assessing key asset class valuations, our indicator incorporates private and public credit, market capitalization (as a percentage of GDP), and the OECD house price index. This framework reflects our theoretical premise that these diverse forms of fictitious capital should be analysed collectively, as they exert cumulative pressure on current income despite differing in their rhythms and horizons of valorisation. The accumulation of such claims on future valorisation relative to actual economic activity embodies the pseudo-validation dynamics central to our analysis.

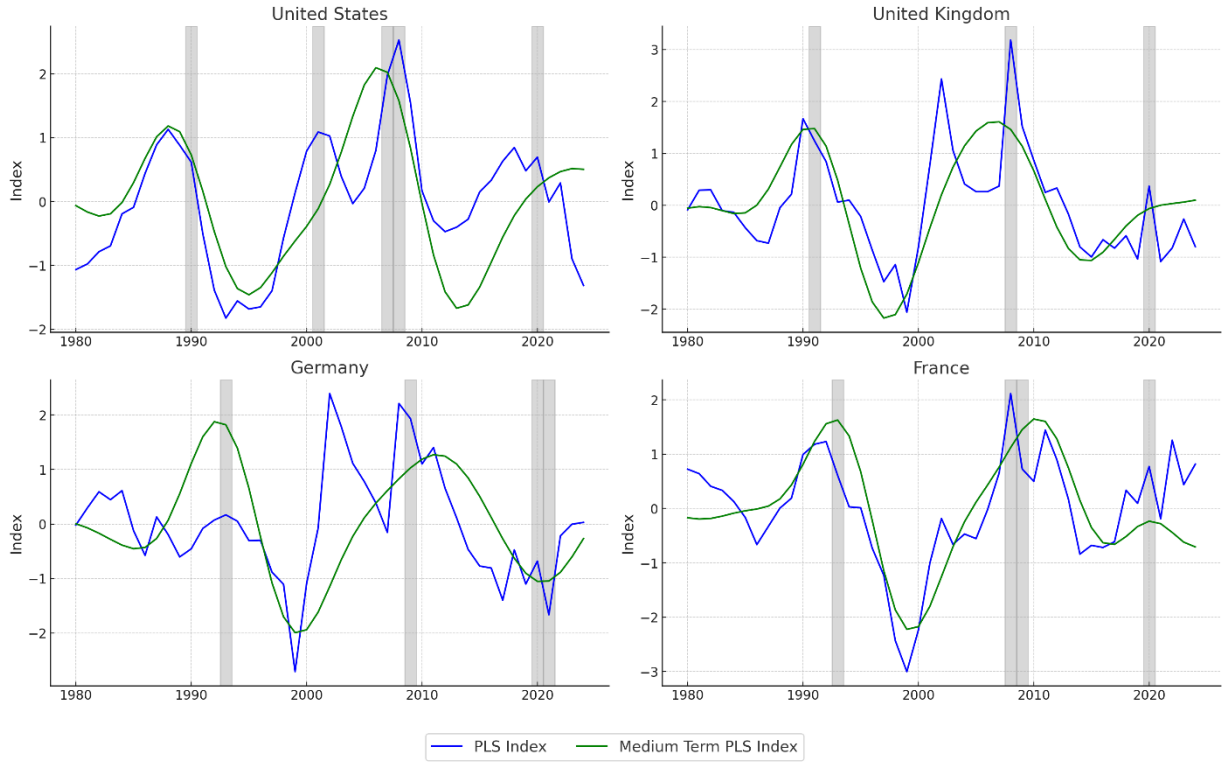
We construct this indicator by synthesizing the five key fictitious capital variables into a composite measure using PLS, with each variable weighted by its empirical association with economic crises. The PLS analysis[1] serves primarily descriptive purposes, showing that our theoretically motivated combination of fictitious capital variables captures periods of financial stress across both banking and economic crisis episodes. This descriptive validation provides empirical grounding for the structural Supercycle analysis that follows in Section 3.3.

Our results in Figure 2 show that the inclusion of public credit and market capitalization alongside private credit does not hinder crisis detection ability—the medium-term filtered version[2] (blue line) aligns with BIS indicators (M Drehmann and Yetman 2020) in signalling the same banking stress periods. More importantly, the standard PLS index (red line) which captures fluctuations across all cyclical components (short, medium and long-term), shows additional crisis episodes such as the 2001 US dot-com crisis, demonstrating that our theoretically motivated expansion beyond credit-centric measures successfully identifies the broader range of pseudo-validation failures that Section 2's framework predicts. This empirical extension provides the methodological foundation for the structural analysis that follows, which examines the long-term accumulation patterns and institutional transformations that define the Minskyan Supercycle through PCA analysis of these same validated variable combinations.

[1] For an explanation of the PLS approach see Appendix, Section 1.

[2] The medium-term PLS index isolates the 8 to 30 years, in line with the BIS indicator (M Drehmann and Yetman 2020), frequency band using Christiano-Fitzgeral filtering before the estimation, thereby removing both short-term noise and secular trends.

Figure 2. The Fictitious Capital Cycle



Note: data from BIS, AMECO,World Federation of Exchanges and CEIC and OECD, authors' calculations. The 5 fictitious capital variables are standardized prior to the PLS regression. The model response variable y is a binary crisis indicator (1 for crisis years, 0 otherwise), Crises year are: for the US 2001, 2007 and 2008; for the UK 1991 and 2007; for Germany 2009; for France 2008.

3.2. The accumulation of fictitious capital

Traditional cycle approaches remove secular trends to assess short-term destabilizing dynamics, thereby neglecting the longer-term buildup of financial claims that constitutes the Supercycle phenomenon. Examining regimes instead involves analysing structural tensions through which "a change of regime takes place, in a morphological transformation"(Aglietta, 2000, p. 20). This section documents the Supercycle's quantitative development, examining fictitious capital accumulation relative to GDP and identifying its structural drivers through PCA.

Methodological approach

Since GDP represents domestic income generation, the evolution of financial asset-to-GDP ratios provides a relevant indicator for questioning the sustainability of fictitious capital accumulation—the core tension between financial claims and the real economy's capacity to validate them. While this measure has limitations, overlooking implied returns, maturity structures, and international interactions, it captures the fundamental relationship between financial expansion and income-generating capacity that underlies our theoretical framework.

PCA serves our analytical purposes by revealing the correlation structure underlying fictitious capital accumulation[3]. As Section 2 argues, the Supercycle involves not just quantitative

[3] A more detailed explanation of PCA can be found in the appendix.

expansion but qualitative transformation in financial dynamics. PCA enables a data-driven, scale-independent representation of the evolving weight of fictitious capital across the economy—including indicators like house price indexes that cannot be expressed as a share of GDP—while also identifying the dominant shared trends across these variables and revealing their relative importance and interconnections.

The expansion of fictitious capital

Figure 3 reveals patterns consistent with our first empirical implication: fictitious capital accumulation exhibits distinct phases, with continuous increase from 1980-2020 (except Germany), followed by the post-COVID rupture that marks the inflation-constrained period. The overall dynamic shows the "Great Moderation," (FED 2013), post-GFC recovery, and post-COVID periods as distinctive moments, separated by the 2008 financial shock and the 2020 pandemic.

Figure 3. The combined weight of the basic forms of fictitious capital as % of GDP: credit to households, to non-financial corporations, to general government, and stock market capitalization (1980-2024) (BIS, AMECO, World Federation of Exchange, and CEIC)

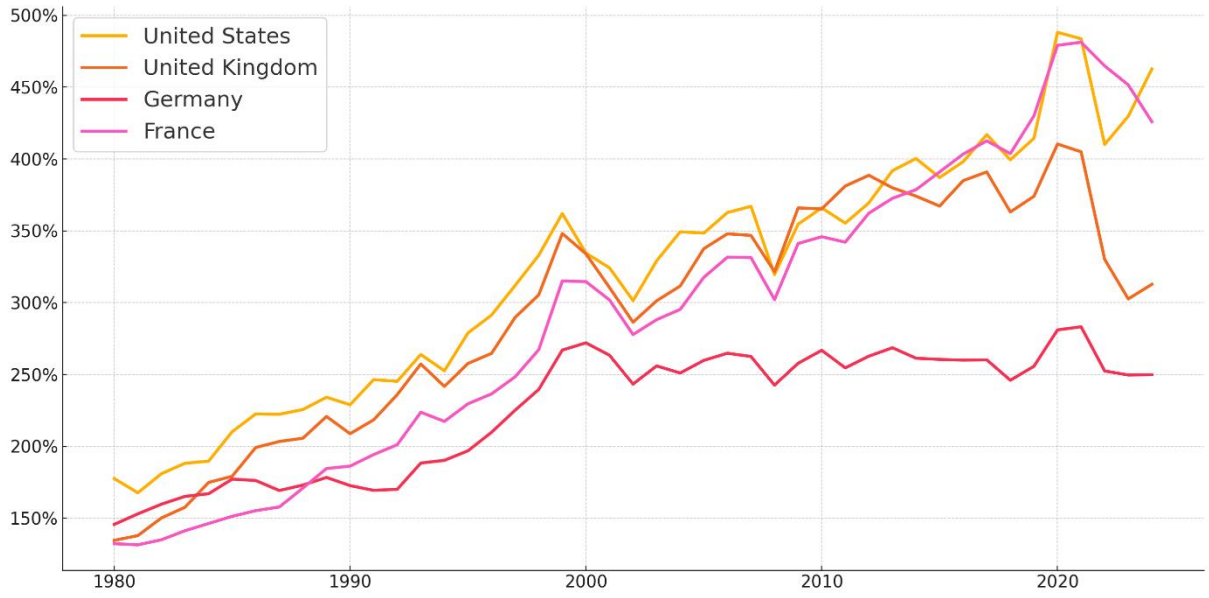


Table 2's 2024 data shows significant country-specific variations in asset class dominance at the end of our study period. France appears most exposed overall, leading in corporate credit (153.2% of GDP) and government debt (104.8%), while UK households are more indebted (77.5%), and US market capitalization weight (155%) surpasses other countries. These patterns reflect different institutional configurations of fictitious capital accumulation across economies.

Table 2. Weight of the main asset classes in 2024 (% of GDP)

	France	Germany	UK	US	AVerage

Credit to Households	61	50.2	**77.5**	70.7	64.9
Credit to NFC	**153.2**	92.3	62.1	75.2	95.7
Credit to Government	**104.8**	57.8	89.4	103.5	88.9
Stock Market Capitalization	107	49.5	83.8	**155**	98.8
Debt Securities issued by FC	**70.7**	37.5	60.2	55.6	57.9

Structural drivers through PCA analysis

PCA reveals the underlying dynamics, with the first component (PC1) explaining approximately 80% of total variance across our fictitious capital variables[4]. PCA provides both weights (showing each variable's relative contribution to the overall variance) and loadings (correlation coefficients between variables and the principal component) of each principal component, allowing us to identify which fictitious capital forms drive the dominant patterns and how strongly they move together within each country's financial system.

Table 3 shows that credit to non-financial corporations plays significant roles across all countries (>20%), emerging as the leading variable in both the US (22.9%) and France (21.2%). However, compositional drivers vary substantially: household credit dominates in the UK (26.2%) with house prices ranking third (23.7%), while Germany diverges significantly with government credit (31.9%) and market capitalization (30.4%) explaining most variance. Notably, house prices contribute minimally in Germany (0.9%) with negative loading (-0.097), indicating distinct housing market dynamics. France exhibits the most balanced contribution across all variables, reflecting a more diversified fictitious capital structure.

These cross-country variations in correlation structures provide evidence supporting our fourth empirical implication about the relationships between fictitious capital components. While temporal evolution requires period-specific analysis, the substantial differences across institutional contexts demonstrate that correlation structures respond to different institutional configurations, suggesting their capacity for transformation over time as institutional arrangements evolve.

[4] Detailed PCA results including PC1 trends (figure A2) and variance explained by each principal component over time (table A2) are presented in Appendix.

Table 3. Weights and Loadings in brackets of PC1 for 1980 to 2024

	Households debt	NFC debt	Government debt	Market Capitalization	House Price
US	14.3 (0.378)	22.9 (0.478)	19.6 (0.443)	21.4 (0.462)	21.9 (0.467)
UK	26.2 (0.512)	24.3 (0.493)	14.2 (0.376)	11.6 (0.340)	23.7 (0.487)
GERMANY	9.6 (0.309)	27.2 (0.522)	31.9 (0.565)	30.4 (0.551)	0.9 (-0.097).
FRANCE	21.1 (0.459)	21.2 (0.460)	20.7 (0.455)	17.8 (0.422)	19.2 (0.439)

3.3. Three moments of the Supercycle: the long expansion, state-sponsored general Ponzi, bowing under a burst of inflation

To assess the dynamic of the Supercycle, we explore the evolution of the main categories of fictitious capital and central banks' balance sheets' growth in terms of percentage points of GDP across the three periods: before the GFC, between the GFC and the COVID-19 pandemic, and after. We combine this with a PCA of our five key fictitious capital variables for each country and period.

The long financial expansion: 1980-2007

During this period, all asset classes expanded substantially relative to GDP: by 115 percentage points in Germany and up to 309 percentage points in the UK (Table 4). This validates our first implication about distinct phases, showing broad-based private sector-driven expansion. The second implication regarding compositional patterns appears in the PCA results, where household credit, market capitalization, and house prices dominated—e.g., in the US: households (48.3%), market capitalization (20.3%), and house prices (17.7%)— across all countries (see result of PCA analysis in appendix table A1).

This *long expansion* of financial claims occurred in the absence of systematic central bank asset purchases. The Bundesbank's relatively larger balance sheet increase reflects its initially smaller size before euro adoption, compared to France or the UK.

Table 4. The long financial expansion. Growth of the weight of main assets classes and central banks' balance sheet (percentage points of GDP) (1980-2007)

	FRANCE	GERMANY	UK	US	AVERAGE
CREDIT TO HOUSEHOLDS	24.5	13.8	64.6	49.1	38
CREDIT TO NFC	40.5	21.9	53.4	20.5	34
CREDIT TO GOVERNMENT	45.9	33.6	2.2	25.7	26.8
STOCK MARKET CAPITALIZATION	88.2	47.5	92.1	94.2	80.5
DEBT SECURITIES ISSUED BY FC			96.5	84.8	90.7
CENTRAL BANK	-0.5	7.6	1.9	0.2	1.1
	x < - 5	-3% < x < +3 ou n.a.	x > + 5	x > + 30	

State-sponsored General Ponzi : 2008-2019

Minsky famously defined Ponzi units as entities whose "cash flows from operations are not sufficient to fulfill either the repayment of principle or the interest due on outstanding debts (…)" (Minsky, 1992, p. 7). Building on this framework, we propose the notion of a State-Sponsored Generalized Ponzi—a macro-financial configuration in which central banks continuously validate the expansion of the financial system balance sheet relative to income. In this configuration, the financial liquidation of past claims is continuously resolved through new credit lines, increasingly underpinned by central bank acceptance as collateral of the very instruments they contribute to generating. This signals that Ponzi dynamics occur systematically rather than individually, with central bank balance sheets becoming the main lever furthering these dynamics through pseudo-validation of an increasing spectrum of financial assets.

This configuration emerges in the second period (Table 5). Supporting our second implication about compositional shifts, household credit retreated (except France) while government debt increased meaningfully (except in Germany) and stock market capitalization continued growing—adding between 22 percentage points in Germany and 80 percentage points in the US. The third empirical implication about central bank interventions is evident in broad-based balance sheet expansions, reflecting the financial system's increasing reliance on monetary authorities for stability maintenance.

Period-specific PCA results (see appendix table A1) reveal the fourth implication about evolving correlation structures. Household credit contributions dropped significantly in the US (from 48.3% to 30.6%) and the UK (from 23.4% to 9.0%), with negative loadings indicating a decoupling from the financial cycle's dominant trend. Simultaneously, government credit

surged in importance—accounting for 48.6% of PC1 in the UK and rising to 22.2% in France—while market capitalization retained or expanded influence (notably 48.3% in France). House prices became primary PC1 contributors in Germany (67.6%) and France (19.5, indicating post-crisis reconfiguration where financial expansion relied less on private leverage and more on asset inflation and public-sector balance sheet growth. NFC credit either declined sharply (to 0.2% in Germany) or remained secondary.

Table 5. State-sponsored General Ponzi. Growth of the weight of main asset classes and central banks' balance sheet (percentage points of GDP) (2008-2019)

	FRANCE	GERMANY	UK	US	AVERAGE
CREDIT TO HOUSEHOLDS	12.9	-6.3	-9.6	-21.2	-6
CREDIT TO NFC	24	1.5	-18.7	3.5	2.6
CREDIT TO GOVERNMENT	52.4	-4.2	55.5	31.9	30.4
STOCK MARKET CAPITALIZATION	52.7	22.2	25.3	80.7	45.2
DEBT SECURITIES ISSUED BY FC	-8.6**		-28	-33-4	-23.3
CENTRAL BANK	18.5	26.1	11.6	4.2	11.4

** 2011-2019

Bowing under a burst of inflation: 2020-2024

The third moment (2020 to 2024) encompasses the COVID-19 outbreak and subsequent inflation burst. The fifth implication about inflation-constrained moderation is clearly observed: financial assets generally declined relative to GDP, aided by inflation-driven GDP increases (Table 6). Central bank balance sheet simultaneously contracted – both in relation to GDP and in nominal terms —indicating that monetary authorities' financial asset validation became unnecessary, which contrast sharply with the previous period.

PCA analysis (see appendix table A1): reveals additional shifts in correlation structures (fourth implication), with household credit and market capitalization loadings turning negative in the US and UK, while housing prices and government credit gained importance in Germany and France. A crucial exception is the US stock market capitalization evolution, where a tech rally contributed to US market concentration and global stock markets focus on mega-capitalization firms positioned at the forefront of the digital transformation and the AI frontier (Nathan, 2024).

Table 6. Bowing under a burst of inflation. Growth of the weight of main assets classes and central banks' balance sheet (percentage points of GDP) (2020-2024)

	FRANCE	GERMANY	UK	US	AVERAGE
CREDIT TO HOUSEHOLDS	-7.2	-5.9	-15.4	-7.5	-9
CREDIT TO NFC	-18.3	-0.9	-21.7	-10.9	-13
CREDIT TO GOVERNMENT	-27.8	-19.7	-52	-25.7	-31.3
STOCK MARKET CAPITALIZATION	0.2	-4.7	-18,1	18.6	-1
DEBT SECURITIES ISSUED BY FC	2.6	-5.6	-30.1	-16.7	-12.4
CENTRAL BANK	-23.1	-16.6	-10.6	-9.9	-15.3

This analysis reveals a three-phase Supercycle: smooth long expansion of financial claims, followed by a turbulent decade preserving financial stability through increased public debt and central bank balance sheet expansion, culminating in orderly retreat amid surging inflation. Contrary to Crotty's expectations, the post-GFC state-sponsored General Ponzi allowed further fictitious capital expansion relative to production. However, this dynamic halted across most financial dimensions alongside the post-COVID-19 inflation outburst, suggesting intimate financial-monetary entanglement has reached structural limits. The following section analyzes these monetary policy constraints in simultaneously supporting financial expansion and reducing inflation.

4. The monetary limits to financial expansion

Section 3's empirical analysis revealed that fictitious capital accumulation exhibited distinct phases culminating in inflation-constrained retreat after 2020, consistent with our fifth empirical impication about moderation under inflationary pressures. This retreat occurred alongside central bank balance sheet contractions and rising interest rates, suggesting structural limits to the monetary accommodation that had sustained the Supercycle through successive crises. While early 2020s inflation originated primarily in supply chain bottlenecks, energy price shocks, and geopolitical tensions (Igan et al., 2022); (Weber et al., 2024), this phenomenon poses fundamental monetary constraints on central banks' financial market stabilization capacity.

This section explores these monetary policy limits within the context of liberalized finance and rising inflation, drawing on the post-COVID-19 experience to formalize the boundaries central banks face when managing the tension between price stability and financial stability objectives.

4.1. Tensions between price stability and financial stability objectives

The empirical patterns documented in Section 3—particularly the state-sponsored General Ponzi configuration—illustrate the tensions between price stability and financial stability that scholars identified before the inflation resurgence. Borio (Borio, 2019, p. 289) noted that changes since the 1980s have "exacerbated such tensions by increasing the monetary system's elasticity," with financial liberalization providing "more scope for outsize financial cycles" while inflation-focused frameworks meant "there was little reason to raise interest rates." Our analysis of central bank balance sheet expansions and asset price support confirms this dynamic empirically.

(Diessner and Lisi, 2020, p. 329) anticipated that central banks' supercycle management role would create "latent threats to fulfilling monetary stability mandates when tested by changing circumstances." The post-COVID experience validates this warning: when inflation emerged, central banks found themselves constrained by the very financial fragilities their previous interventions had sustained. The "financial dominance" configuration they described—where monetary policy becomes subordinated to financial stability concerns—creates inherent contradictions when inflationary pressures require monetary tightening.

These warnings prove prescient given our empirical observations: relying on monetary policy rather than fiscal and regulatory tools to manage both financial and price stability creates structural contradictions that become binding when inflation constrains accommodation.

4.2. How inflationary pressures constrain the ability of monetary policy to preserve financial stability

While inflation need not have monetary origins, it always poses monetary constraints affecting central banks' financial market stabilization ability. Since cash constitutes an asset class, price dynamics alter real returns on financial assets relative to cash or real goods, influencing portfolio behaviour and relative valuations. Rising inflation reduces real interest rates, eventually requiring central banks to raise nominal rates sufficiently to achieve a Non-Accelerating Inflation Real Interest Rate (NAIRIR) that prevents speculative carry trades from accelerating price increases.

However, monetary tightening within highly leveraged financial systems proves extremely risky. Historical evidence across developed countries reveals that financial booms typically emerge during low inflation periods and conclude following monetary tightening. Bordo and Wheelock (2007) document that "booms tended to arise when consumer price inflation was low and end after a period of monetary policy tightening," with "all U.S. booms end[ing] after explicit tightening by the Federal Reserve in response to actual or threatened inflation." This pattern intensifies within the State sponsored generalized-Ponzi configurations documented in Section 3, where financial systems depend heavily on accommodative monetary conditions.

Minsky anticipated this dilemma, warning that anti-inflationary policy could trigger collapse amid speculative structures: "if an economy with a sizeable body of speculative financial units is in an inflationary state, and the authorities attempt to exorcise inflation by monetary

constraint, then speculative units will become Ponzi units and the net worth of previously Ponzi units will quickly evaporate" (Minsky 1992).

We formalize this constraint as the Non-Asset Busting Interest Rate (NABIR)—a nominal interest rate ceiling above which asset markets cannot function without triggering widespread deleveraging. While the NAIRIR establishes a real interest rate floor preserving price stability, the NABIR sets an upper bound determined by financial system leverage and asset valuations. Central banks must navigate between these bounds, but the post-COVID experience suggests this corridor can collapse when inflation forces the NAIRIR above the NABIR, creating impossible trade-offs between monetary objectives.

4.3. A simple model of the monetary policy space

We develop here a simple model where these constraints emerge endogenously. The model incorporates fictitious capital, leverage cycles, and extrapolative expectations into a Minskyan asset pricing structure.

The monetary conditions of price and financial stability

Let $P_t$the aggregate price level in time t. Inflation is defined as the discrete-time growth rate of the price level, $\pi_t = P_t - P_{t-1}/P_{t-1}$. The central bank sets the nominal interest rate $i_t$and the real interest rate is defined in standard fashion as $r_t = i_t - \pi_t$.

To capture the imperfect pass-through of the policy rate to effective borrowing conditions, we distinguish between the policy rate i_t, directly set by the central bank, and the nominal effective rate $\bar{\imath}_t$, which governs actual financial behaviour and asset pricing. We thus define the latter: $\bar{\imath}_t = i_t - \delta(\phi_t)$, where $\delta(\phi_t)$ captures the reduction in effective financing cost induced by central bank interventions in interaction with the functioning of financial makets. We define: $\delta(\phi_t) = \beta_1 BS_t/Y_t + \beta_2 FG_t$, where BS_t/Y_t represents the central bank's balance sheet relative to GDP (Y_t), which grows with credit programs, lending facilities and quantitative easing. FG_t represents forward guidance effects. The real effective interest rate, which constrains speculative asset demand and inflation expectations, is defined as: $r_t = \bar{\imath}_t - \pi_t = i_t - \delta(\phi_t) - \pi_t$.

To anchor inflation, central banks must maintain real interest rates above the NAIRIR threshold, denoted $\bar{r}^{\pi}$. The price stability constraint is given by $r_t \geq \bar{r}^{\pi}$, or equivalently, $i_t \geq \bar{r}^{\pi} + \pi_t + \delta(\phi_t)$.

Financial stability requires agents to roll over debts. Interest payments must not exceed liquid asset values, implying $\bar{\imath}_t D_t \leq A_t$, where $\tau \in (0,1)$ represents a collateral haircut or liquidity parameter—the proportion of asset value realizable under stressed market conditions. A_t denotes aggregate financial asset values and D_t the nominal debt stock. Denoting λ as the leverage ratio A_t/D_t, we obtain $\bar{\imath}_t \leq \tau\lambda_t$. In our framework both leverage and effective collateral usability are endogenous to asset prices and policy interventons. Asset purchase programs—such as QE—not only raise asset prices (which boosts λ_t), but also enhance market liquidity and collateral acceptability, effectively increasing the usable portion of asset values in stressed conditions. We capture this by allowing the collateral multiplier to scale with policy intensity: $\tau_t = \tau(1 + \sigma\phi_t), \sigma > 0$. Substituting this into the financial constraint yields the NABIR—the maximum nominal interest rate consistent with debt servicing without triggering

forced asset liquidations: $\bar{\imath}_t{}^A = \tau(1 + \sigma\phi_t)(\lambda_0 + \gamma A_t)$, with λ_0 as baseline leverage and $\gamma > 0$ the sensitivity of borrowing capacity to asset valuations. This formulation shows how unconventional policies raise the NABIR by both improving collateral liquidity (through ϕ_t) and supporting valuations (through A_t).

Asset prices follow Minskyan-inspired (Gusella and Stockhammer, 2021; Ryoo, 2013; Taylor and O'Connell, 1985) formulation law of motion through recursive dynamics shaped by momentum, extrapolative expectations, leverage feedbacks, and interest rate policy $A_t = A_{t-1}(1 + \mu_t)$. The expected capital gain μ_t is endogenously determined as follows:
$\mu_t = \alpha_1 \left(\frac{A_{t-1} - A_{t-2}}{A_{t-2}}\right) + \alpha_2\theta_{t-1} + \alpha_3\lambda_{t-1} - \alpha_4 r_t.$
Here, α_1 reflects momentum trading (positive feedback from past capital gains), α_2 reflects optimism induced by rising fictitious capital, α_3 denotes leverage-fueled bullishness, and α_4 represents the dampening effect of tighter monetary policy (sensitivity to real interest rates). This formulation embodies Minsky's Financial Instability Hypothesis, whereby rising asset prices and past success encourage increased risk-taking and borrowing, while monetary tightening acts as a destabilizing force.

Leverage is endogenous and responsive to asset valuations, reflecting collateral-based borrowing capacity in financial markets. We specify $\lambda_t = \lambda_0 + \gamma A_t$, where λ_0 represents baseline leverage and $\gamma > 0$ measures how asset appreciation fuels borrowing capacity (borrowing sensitivity to asset prices). This creates feedback where rising asset prices facilitate higher leverage, potentially fuelling further appreciation.

Substituting this dynamic into the NABIR, we obtain $\bar{\imath}^A = \tau(\lambda_0 + \gamma A_t) + \delta(\phi_t)$ indicating that the upper limit on interest rates compatible with financial stability rises with asset prices during booms but collapses during busts when asset prices fall and unconventional monetary policies are withdrawn. Because asset price A_t is recursively determined by expectations and effective interest rates, this introduces a feedback loop where monetary policy affects asset market liquidity indirectly through real effective interest rates while being constrained by asset market fragility.

A formal definition of the policy space

The central bank's policy space is determined by the overlap between NAIRIR and NABIR constraints. This framework extends existing models of endogenous financial constraints (Nikolaidi, 2014) by incorporating the inflation constraint that can make the compatibility condition binding. Substituting the real interest rate definition into the NAIRIR, we require $i_t \geq \bar{r}^{\pi} + \pi_t$. Combining this with the NABIR constraint yields the compatibility condition:

$$\bar{r}^{\pi} + \pi_t \leq \tau(1 + \sigma\phi_t)(\lambda_0 + \gamma A_t)$$

If this holds, central banks can select nominal interest rates that anchor inflation without destabilizing financial markets. However, if violated ($\bar{r}^{\pi} + \pi_t > \tau(1 + \sigma\phi_t)(\lambda_0 + \gamma A_t)$), no interest rate exists that fulfils both constraints simultaneously. Central banks then face a genuine policy dilemma: raising interest rates to control inflation would exceed debt servicing capacity and risk financial crisis, while maintaining financial stability would require tolerating above-target inflation.

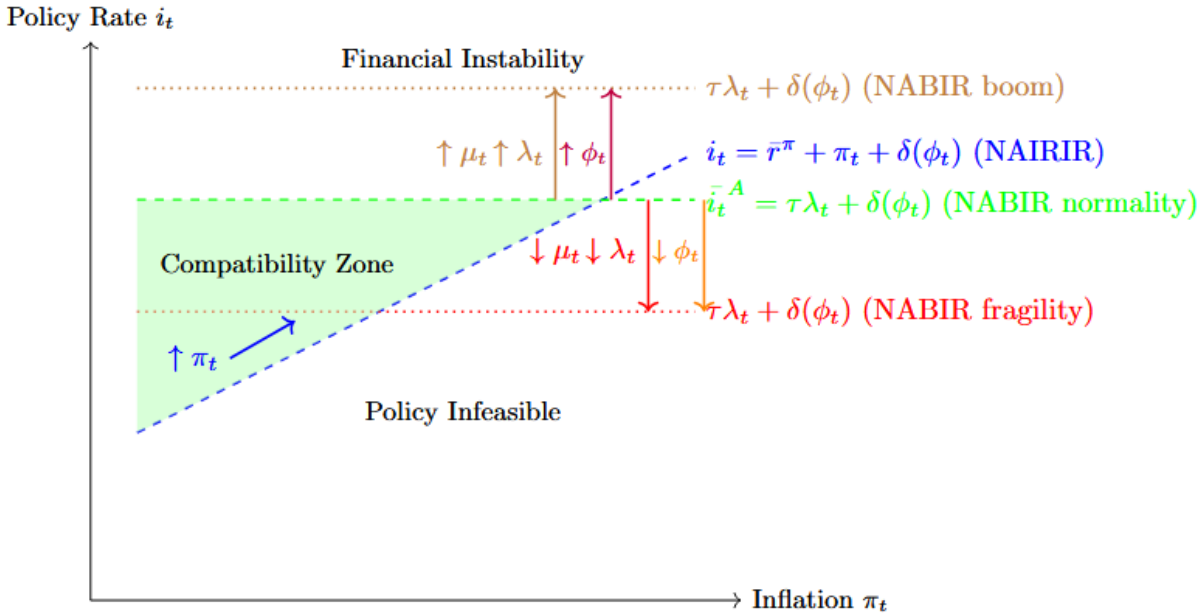
This trade-off is exacerbated by Minskyan asset price dynamics. During expansions, rising A_t and λ_t increase $\bar{\imath}^A$, temporarily relaxing constraints and providing room for monetary

tightening. However, this breeds fragility through system dependence on continued asset price appreciation. If monetary policy tightens aggressively or expectations shift, resulting A_t drops cause sharp λ_t decline, lowering $\bar{\imath}^A$, potentially below the NAIRIR threshold. The compatibility zone collapses.

The NABIR is thus not a fixed but a volatile, fragile endogenous threshold depending on asset valuations and leverage dynamics that monetary policy can destabilize. Central banks' apparent room to manoeuvre during booms proves illusory as system sensitivity to rate increases grows. During downturns, A_t and $\lambda_t$collapse reduces the interest rates upper bound, constraining inflation-fighting capacity without inducing financial distress.

Figure 4 illustrates this dynamic interaction. The upward-sloping blue line represents the NAIRIR constraint ($i_t = \bar{r}^{\pi} + \pi_t + \delta(\phi_t)$), while horizontal lines represent different NABIR constraint states ($i_t > \tau\lambda_t$) varying endogenously with leverage and asset prices: during boom periods (brown dotted line), rising asset values and leverage expand the financial system's rate tolerance, while during financial fragility periods (red dotted line), asset price collapse and deleveraging severely constrain monetary policy. The green compatibility zone where both constraints are satisfied remains inherently unstable due to embedded Minskyan dynamics. When the NAIRIR rises above the NABIR, monetary policy becomes trapped between tolerating inflation and risking financial crisis. Crucially, purple arrows show that unconventional policies (e.g., QE) can temporarily raise the NABIR ceiling, while orange arrows reflect how their withdrawal lowers it—highlighting that such measures offer only temporary relief, not a resolution to the fundamental trade-off.

Figure 4: Interest Rate Compatibility Zone: Price Stability vs Financial Stability, with QE Effects



Note: authors' elaboration.

4.4. Empirical Illustration: QE and the NABIR Boundary in Practice

The extended model developed above highlights how unconventional monetary policy—particularly asset purchase programs—can raise the NABIR by simultaneously supporting asset valuations and improving collateral usability. This endogenous expansion of the financial stability constraint has been central to monetary policy practice in the post-pandemic era.

A clear illustration of this mechanism emerged during the 2023 U.S. banking sector turmoil. As regional banks faced liquidity stress and the market repriced a broad swath of financial assets, the Federal Reserve took action that precisely fits the logic of the model: it raised the policy rate to combat inflation while simultaneously deploying liquidity tools to prevent fire-sale dynamics and shore up valuations. The Fed introduced a temporary lending facility that allowed banks to pledge depreciated assets at par value, effectively raising both the liquidity-adjusted collateral base and the system's tolerance for higher interest rates.

As Chair Jerome Powell stated in March 2023: "The balance sheet expansion is really temporary lending to banks to meet those special liquidity demands created by the recent tensions; it's not intended to directly alter the stance of monetary policy. We do believe that it's working" (Federal Reserve 2023). Boston Fed Governor Susan Collins reiterated in April 2025 that rate hikes need not compromise market functioning thanks to complementary liquidity tools (Jones and Duguid 2025). Such interventions manifest through higher ϕ, boosting both NABIR terms and expanding the interest rate ceiling compatible with financial stability.

Yet, the model clarifies this strategy's structural limits. If inflation continues rising, the left-hand side of the new compatibility condition inequality ($\bar{r}^{\pi} + \pi_t$) climbs. Simultaneously, shocks lowering asset prices A_t or narrowing QE interventions (ϕ) can cause the right-hand side—NABIR—to contract. Moreover, QE cannot expand indefinitely: if interventions are required across increasingly large and heterogeneous asset classes, balance sheet expansion effects spill over into broader monetary conditions. At that point, QE undermines interest rate policy's tightening impulse, weakening its ability to anchor inflation expectations. This is when central banks again face the hard trade-off formalized in: $\bar{r}^{\pi} + \pi_t > \tau(1 + \sigma\phi)(\lambda_o + \gamma A_t)$. Here, no interest rate can fulfill both price stability and financial stability constraints. The policy space collapses, and the dilemma becomes inescapable.

Targeted asset purchase programs can partially dissociate financial stability policy from interest rate policy aimed at taming inflation, allowing central banks to extend monetary policy effectiveness in the post-COVID period. Yet while such techniques provide additional financial system elasticity, they do not eliminate the fundamental contradiction: at some level of fictitious capital accumulation, central banks' pursuit of price stability and financial stability becomes incompatible.

5. Conclusion and discussion: After the hegemony of finance?

This contribution mobilized the Minsky's financial instability hypothesis, Borio's liberal non-mainstream approach to the financial cycle developed at the BIS, and the Marxist concept of

fictitious capital to analyse financial development from 1980 to 2024 for the largest North-Atlantic economies. These approaches share an endogenous conception of financial instability and the ambition to "think monetary" about financial issues, while remaining sceptical about oversized finance and favouring regulatory approaches to financial stability.

From this perspective, this paper offers two main contributions. First, it documented the financial Supercycle through an empirical framework that moves beyond traditional credit-focused indicators to encompass the broader accumulation of fictitious capital. Our analysis revealed patterns consistent with five key theoretical implications: distinct policy regime phases, compositional shifts from private to public sector dominance, central bank balance sheet expansions during stress periods, evolving correlation structures across countries and time, and inflation-constrained moderation of financial expansion. After sustained expansion to the GFC, we observed that, contrary to Crotty's expectations (2009), no shrinkage occurred during the 2010s as the "state-sponsored General Ponzi" configuration sustained financial growth through government debt and central bank asset purchases. The post-COVID era marks a decisive halt, with generalized contraction of financial assets relative to GDP (except US tech stocks) alongside inflation and monetary tightening.

Second, we theorized the monetary limits to financial expansion by formalizing the tension between price stability and financial stability objectives. The NABIR (Non-Asset Busting Interest Rate) framework demonstrates how inflation can constrain central banks' capacity to support financial systems when the required anti-inflation interest rates exceed what leveraged asset markets can sustain. While targeted asset purchases allowed some navigation of this dilemma post-COVID, our analysis suggests this represents tactical adaptation rather than resolution of the fundamental constraint.
The implications are twofold. First, despite central banks' tactical success in managing recent inflation, the price-financial stability dilemma represents a structural constraint as supercycles reach maturity. Second, financial repression through controlled inflation could enable orderly downsizing of oversized financial systems, potentially enlarging state capacity for industrial policy and development banking while avoiding the disruptive asset collapses that typically end financial booms. Reflating the economy would free some space for borrowers (Dittli and Napier, 2021) and, in particular, enlarge the ability of states to exert an increasing command over the investment function through a variety of tools, such as industrial policy or development banking. From a policy perspective, our analysis of the interplay between monetary dynamics and economic and financial valorisation processes invites further research into the boundaries of central banks' monetary space in a financialized context, a specific region of the broader discussion concerning the general relativity of fiscal space (Assa and Morgan, 2025).

More broadly, our analysis suggests that further expansion of historically oversized financial systems in North Atlantic economies faces structural limits. In the context of debates regarding systemic shifts away from finance-led accumulation regimes (Dafermos et al., 2023; Duménil and Lévy, 2011; Durand, 2022; Kotz, 2015), this research highlights the monetary dimension as a crucial locus of transformation. The retreat from financial hegemony would likely unfold through monetary changes affecting not only inflation regimes but also dollar centrality and digital currencies (Eichengreen, 2025; Monnet, 2025) —transformations that

must be understood within broader questions about US hegemony in the global system (Braun and Durand, 2025; Burbaumer, 2024; Galanis et al., 2022; Ivanova, 2019).

6. References

Afonso, A., Gomes Pereira, F., 2025. Unconventional monetary policy in the Euro area: Impacts on loans, employment, and investment. Int. J Fin Econ 30, 190–220. https://doi.org/10.1002/ijfe.2913

Aglietta, M., 2000. A Theory of Capitalist Regulation: The Us Experience, Classics Series. Verso.

Aglietta, M., 1976. Régulation et crises du capitalisme: l'expérience des Etats-Unis, Perspectives de l'économique. Calmann-Lévy.

Águila, N., Graña, J.M., 2023. Not all zombies are created equal. A Marxist-Minskyan taxonomy of firms: United States, 1950-2019. International Review of Applied Economics 37, 3–22. https://doi.org/10.1080/02692171.2022.2045911

Amable, B., 2017. Structural crisis and institutional change in modern capitalism: French capitalism in transition, First edition. ed. Oxford University Press, Oxford ; New York, NY.

Amador, J., Cabral, S., 2016. GLOBAL VALUE CHAINS: A SURVEY OF DRIVERS AND MEASURES. Journal of Economic Surveys 30, 278–301. https://doi.org/10.1111/joes.12097

Arnold, M., Smith, C., 2023. Central banks announce dollar liquidity measures to ease banking crisis. Financial Times.

Assa, J., Morgan, M., 2025. The General Relativity of Fiscal Space: Theory and Applications. Review of Political Economy 1–35.

Auer, R., Borio, C., Filardo, A., 2017. The globalisation of inflation: the growing importance of global value chains. BIS Working Papers.

Baba, N., Packer, F., 2009. From turmoil to crisis: Dislocations in the FX swap market before and after the failure of Lehman Brothers. Journal of International Money and Finance 28, 1350–1374. https://doi.org/10.1016/j.jimonfin.2009.08.003

Bellofiore, R., 2018. The Multiple Meanings of Marx's Value Theory. Monthly Review 69, 31–48.

Bellofiore, R., 1989. A monetary labor theory of value. Review of Radical Political Economics 21, 1–25.

Borio, C., 2019. On Money, Debt, Trust, and Central Banking. Cato J. 39, 267.

Borio, C., 2014. The financial cycle and macroeconomics: What have we learnt? Journal of Banking & Finance 45, 182–198. https://doi.org/10.1016/j.jbankfin.2013.07.031

Bouguelli, R., 2022. From one crisis to another (2008–2020): a transformative decade for the Fed. Journal of Economic Issues 56, 1076–1102.

Braun, B., 2020. Central banking and the infrastructural power of finance: the case of ECB support for repo and securitization markets. Socio-Economic Review 18, 395–418. https://doi.org/10.1093/ser/mwy008

Braun, B., Durand, C., 2025. America's Braudelian Autumn. Phenomenal World. URL https://www.phenomenalworld.org/analysis/americas-braudelian-autumn/ (accessed 6.23.25).

Brunhoff, S. de, 1979. Les rapports d'argent, Intervention en Economie Politique. Presses Universitaires de Grenoble, Grenoble.

Brunhoff, S. de, 1976. État et capital: recherches sur la politique économique, Intervention en économie politique. Presses universitaires de Grenoble, Grenoble.

Burbaumer, B., 2024. Chine/États-Unis. Le capitalisme contre la mondialisation. La découverte, Paris.

Carballa Smichowski, B., Durand, C., Knauss, S., 2021. Participation in global value chains and varieties of development patterns. Cambridge Journal of Economics 45, 271–294. https://doi.org/10.1093/cje/beaa046

Cattaneo, O., Gereffi, G., Staritz (Eds.), 2010. Global value chains in a postcrisis world: a development perspeptive. World Bank.

Cauvel, M., Pacitti, A., 2022. Bargaining power, structural change, and the falling U.S. labor share. Structural Change and Economic Dynamics 60, 512–530. https://doi.org/10.1016/j.strueco.2022.01.007

Çelik, S., Demirtaş, G., Isakkson, M., 2020. Corporate Bond Market Trends, Emerging Risks and Monetary Policy. OECD Capital Market Series.
Chesnais, F., 2016. Finance capital today: corporations and banks in the lasting global slump. Brill.
Coombs, N., Thiemann, M., 2022. Recentering central banks: Theorizing state-economy boundaries as central bank effects. Economy and Society 51, 535–558. https://doi.org/10.1080/03085147.2022.2118450
Cortes, G.S., Gao, G.P., Silva, F.B., Song, Z., 2022. Unconventional monetary policy and disaster risk: Evidence from the subprime and COVID–19 crises. Journal of International Money and Finance 122, 102543.
Crotty, J., 2009. Structural causes of the global financial crisis: a critical assessment of the 'new financial architecture.' Cambridge Journal of Economics 33, 563–580. https://doi.org/10.1093/cje/bep023
Culpepper, P.D., Reinke, R., 2014. Structural power and bank bailouts in the United Kingdom and the United States. Politics & society 42, 427–454.
Dafermos, Y., Gabor, D., Michell, J., 2023. Institutional supercycles: an evolutionary macro-finance approach. New Political Economy 1–20. https://doi.org/10.1080/13563467.2022.2161497
Davies, S., Kent, C., 2020. US dollar funding: an international perspective. Bank for International Settlements. CGFS Papers 65.
Davis, L.E., de Souza, J.P.A., Hernandez, G., 2019. An empirical analysis of Minsky regimes in the US economy. Cambridge Journal of Economics 43, 541–583. https://doi.org/10.1093/cje/bey061
De Brunhoff, S., 1990. fictitious capital, in: The New Palgrave Dictionary of Economics. pp. 3409–3410.
Diamond, D.W., Rajan, R.G., 2012. Illiquid Banks, Financial Stability, and Interest Rate Policy. Journal of Political Economy 120, 552–591. https://doi.org/10.1086/666669
Diessner, S., Lisi, G., 2020. Masters of the 'masters of the universe'? Monetary, fiscal and financial dominance in the Eurozone. Socio-Economic Review 18, 315–335. https://doi.org/10.1093/ser/mwz017
Dittli, M., Napier, R., 2021. Russell Napier: «We Are Entering a Time of Financial Repression» [WWW Document]. The Market. URL https://themarket.ch/interview/russell-napier-we-are-entering-a-time-of-financial-repression-ld.4628 (accessed 6.23.25).
Drehmann, M., Borio, C.E., Tsatsaronis, K., 2012. Characterising the financial cycle: don't lose sight of the medium term!
Duménil, G., Lévy, D., 2011. The crisis of neoliberalism. Harvard University Press.
Durand, C., 2022. The End of Financial Hegemony? New Left Rev 13–13.
Durand, C., 2017. Fictitious Capital: How Finance Is Appropriating Our Future. Verso Books.
Eichengreen, B., 2025. Opinion | The Genius Act Will Bring Economic Chaos. The New York Times.
Farhi, E., Tirole, J., 2012. Collective Moral Hazard, Maturity Mismatch, and Systemic Bailouts. American Economic Review 102, 60–93. https://doi.org/10.1257/aer.102.1.60
FED, 2024. Financial Stability Report- Asset Valuations [WWW Document]. URL https://www.federalreserve.gov/publications/November-2024-Asset-Valuations.htm (accessed 2.15.25).
Ferrara, G., Mueller, P., Viswanath-Natraj, G., Wang, J., 2022. Central Bank Swap Lines: Micro-level Evidence. SSRN Journal. https://doi.org/10.2139/ssrn.4106664
Ferri, P., Minsky, H.P., 1992. Market processes and thwarting systems. Structural change and economic dynamics 3, 79–91.
Galanis, G., Koutny, C., Weber, I., 2022. Systemic Cycles of Accumulation, Spatial Expansion, and Chaos: Adding a Missing Link. https://doi.org/10.7275/H4HG-E505
Goldberg, L., Kennedy, C., Miu, J., 2011. Central bank dollar swap lines and overseas dollar funding costs. Economic Policy Review 17, 3–20.
Gusella, F., Stockhammer, E., 2021. Testing fundamentalist–momentum trader financial cycles: an empirical analysis via the Kalman filter. Metroeconomica 72, 758–797.
Guttmann, R., 2008. A Primer on Finance-Led Capitalism and Its Crisis. Revue de la Régulation [en ligne].
Harvey, D., 2006. The limits to capital. Verso.
Huber, E., Petrova, B., Stephens, J.D., 2022. Financialization, labor market institutions and inequality. Review of International Political Economy 29, 425–452. https://doi.org/10.1080/09692290.2020.1808046
Igan, D., Rungcharoenkitkul, P., Takahashi, K., 2022. Global supply chain disruptions: evolution, impact, outlook.
Ivanova, M.N., 2020. Marx's Theory of Money: A Reappraisal in the Light of Unconventional Monetary Policy. Review of Radical Political Economics 52, 137–151. https://doi.org/10.1177/0486613419856727

Ivanova, M.N., 2019. Inequality, financialization, and the US current account deficit. Industrial and Corporate Change 28, 707–724. https://doi.org/10.1093/icc/dtz005
Kindleberger, C.P., Aliber, R.Z., 2009. Manias, panics, and crashes: a history of financial crises, 5. ed., [repr.]. ed, Wiley investment classics. Wiley, Hoboken, NJ.
Kotz, D.M., 2015. The rise and fall of neoliberal capitalism. Harvard University Press.
Magdoff, H., Sweezy, P.M., 2009. Stagnation and the Financial Explosion. NYU Press.
Mann, M., 1984. The autonomous power of the state: its origins, mechanisms and results. European Journal of Sociology 25, 185–213. https://doi.org/10.1017/S0003975600004239
Miller, M., Weller, P., Zhang, L., 2002. Moral Hazard and the US Stock Market: Analysing the "Greenspan Put." The Economic Journal 112, C171–C186. https://doi.org/10.2307/798366
Minsky, H.P., 1992. The Financial Instability Hypothesis. The Jerome Levy Economics Institute Working Paper.
Minsky, H.P., 1986. Stabilizing an unstable economy, 1. [print.]. ed, A Twentieth Century Fund report. Yale Univ. Press, New Haven, Conn.
Minsky, H.P., 1982. Debt deflation processes in today's institutional environment. PSL Quarterly Review 35. https://doi.org/10.13133/2037-3643/13136
Minsky, H.P., 1976. John Maynard Keynes. Mc Graw Hillk, New York.
Minsky, H.P., 1957a. Central banking and money market changes. The Quarterly Journal of Economics 71, 171–187.
Minsky, H.P., 1957b. Monetary systems and accelerator models. The American Economic Review 47, 860–883.
Monnet, E., 2025. Cryptomercantilism: Donald Trump's monetary doctrine. SUERF Policy Brief.
Nathan, A., 2024. Market concentration: How big a worry? Top of Mind, Goldman Sachs Global Macro Research.
Nikolaidi, M., 2014. Margins of safety and instability in a macrodynamic model with Minskyan insights. Structural Change and Economic Dynamics 31, 1–16.
Nozawa, Y., Qiu, Y., 2021. Corporate bond market reactions to quantitative easing during the COVID-19 pandemic. Journal of Banking & Finance 133, 106153. https://doi.org/10.1016/j.jbankfin.2021.106153
Orléan, A., 1999. Le pouvoir de la finance. Éditions Odile Jacob, Paris.
Palley, T.I., 2011. A theory of Minsky super-cycles and financial crises. Contributions to Political Economy 30, 31–46.
Palludeto, A.W.A., Rossi, P., 2022. Marx's fictitious capital: a misrepresented category revisited. Cambridge Journal of Economics 46, 545–560. https://doi.org/10.1093/cje/beac017
Pedrosa, Í., 2019. Firms' leverage ratio and the Financial Instability Hypothesis: an empirical investigation for the US economy (1970–2014). Cambridge Journal of Economics 43, 1499–1523. https://doi.org/10.1093/cje/bez004
Prates, D.M., Farhi, M., 2015. The shadow banking system and the new phase of the money manager capitalism. Journal of Post Keynesian Economics 37, 568–589.
Rostagno, M., Altavilla, C., Carboni, G., Lemke, W., Motto, R., Saint Guilhem, A., Yiangou, J., 2021. Monetary policy in times of crisis: A tale of two decades of the European Central Bank. Oxford University Press.
Ryoo, S., 2013. The paradox of debt and Minsky's financial instability hypothesis. Metroeconomica 64, 1–24.
Stockhammer, E., 2013. Why Have Wage Shares Fallen? An Analysis of the Determinants of Functional Income Distribution, in: Lavoie, M., Stockhammer, E. (Eds.), Wage-Led Growth: An Equitable Strategy for Economic Recovery. Palgrave Macmillan UK, London, pp. 40–70. https://doi.org/10.1057/9781137357939_3
Stockhammer, E., Gouzoulis, G., 2023. Debt-GDP cycles in historical perspective: the case of the USA (1889–2014). Industrial and Corporate Change 32, 317–335. https://doi.org/10.1093/icc/dtac043
Taylor, L., O'Connell, S.A., 1985. A Minsky crisis. The Quarterly Journal of Economics 100, 871–885.
Thiemann, M., 2024. Taming the Cycles of Finance?: Central Banks and the Macro-prudential Shift in Financial Regulation, 1st ed. Cambridge University Press. https://doi.org/10.1017/9781009233125
Tooze, J.A., 2018. Crashed: how a decade of financial crises changed the world. Viking, New York.
Toporowski, J., 2020. Financialisation and the periodisation of capitalism: appearances and processes. Review of Evolutionary Political Economy 1, 149–160.
Tymoigne, E., Wray, L.R., 2013. The Rise and Fall of Money Manager Capitalism: Minsky's half century from world war two to the great recession. Routledge.
Ueda, K., 2012. The effectiveness of non-traditional monetary policy measures: the case of the Bank of Japan. The Japanese Economic Review 63, 1–22.

Weber, I.M., Lara Jauregui, J., Teixeira, L., Nassif Pires, L., 2024. Inflation in times of overlapping emergencies: Systemically significant prices from an input–output perspective. Industrial and Corporate Change dtad080. https://doi.org/10.1093/icc/dtad080

Wray, L.R., 1999. Theories of value and the monetary theory of production. Working Paper.