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Institutional supercycles: an evolutionary macro-finance approach

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ABSTRACT

We build upon the Minskyan concepts of 'thwarting mechanisms' and 'supercycles' to develop a framework for analysing the dynamic evolutionary interactions between macrofinancial, institutional and political processes. Thwarting mechanisms are institutional structures that aim to stabilise the macrofinancial system. The effectiveness of these structures changes over time as a result of profit-seeking innovations and long-run destabilising processes. New institutional structures emerge in response, influenced by political and ideological conflicts. This generates a secular cyclical pattern in capitalism, the 'supercycle', with a longer duration than standard business and financial cycles. To illustrate this, we develop a macrofinancial stability index which we use to identify two supercycles in the G7 countries in the post-war period. We label these the industrial capitalism supercycle and the financial globalisation supercycle. For each, we apply a four-phase classification system, based on the effectiveness of institutions, customs and political structures for stabilising the macrofinancial system. The supercycles framework can be used to explain and anticipate macro financial and thus political developments, and moves beyond approaches in which these developments are treated as exogenous shocks.

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Introduction

Institutional change is a central feature of capitalism. Recent decades have seen growing interest in the study of institutions (Williamson 1998, Hall and Soskice 2001, Blyth 2002, Acemoglu et al. 2005, Hodgson 2015, North 2018), but a comprehensive theory of institutional change in contemporary capitalism remains elusive. Economics and related disciplines have largely focused on uni-directional accounts in which particular institutional formations promote growth and stability. Yet institutional structure is also driven by economic events. Turbulent macroeconomic and financial processes drive changes in labour market institutions, systems of macroeconomic management and financial regulation. Financial globalisation leaves governments increasingly beholden to international forces (Rey 2015). Institutional change alters the balance of power between labour, capital and rentiers which, in turn, influences macroeconomic outcomes (Kalecki 1943, Baccaro and Pontusson 2016).

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With notable exceptions (Aglietta 1979, Boyer 2000, Jessop and Sum 2006, Gabor 2020), the political economy literature tends to treat institutional change as if it were driven by exogenous macroeconomic or financial shocks, such as shifts in inflation or the policy interest rate. Conversely, macrofinancial developments are typically explained as arising from exogenous institutional change, such as alterations to financial regulation or labour market legislation.

In this paper, we develop an evolutionary framework that connects both macroeconomic and financial processes with institutional change. Following Palley (2011) and extensions in the Regulation School tradition (Guttmann 2016), we use two largely overlooked concepts in Minsky's analysis of financial capitalism to explain cyclical historical patterns of institutional effectiveness and macrofinancial stability. The first, 'thwarting mechanisms', reflects Minsky's insight that although capitalism is inherently unstable, this instability rarely becomes explosive because of the existence of 'customs, institutions or policy interventions' that tame destabilising forces (Ferri and Minsky 1992, p. 84). Thwarting mechanisms counteract the inherent instability of capitalism, allowing for long periods of high economic activity and social and financial stability.

However, the effectiveness of thwarting mechanisms varies over time and is weakened by the profit-seeking actions of economic agents. This endogenous erosion introduces new sources of long-run instability and crisis, which, in turn, lead to the development of new thwarting mechanisms. The rise and fall of thwarting mechanisms generates a secular cycle in macrofinancial stability. This 'supercycle' is the second concept we borrow from Minsky and Palley.

Building upon these Minskyan concepts we (i) develop a novel classification of institutions based on their stabilisation capacities, (ii) explicitly introduce long-run cycle phases into a periodisation of capitalism, (iii) develop an index that captures macrofinancial stability and (iv) analyse the dynamic macroeconomic role of shadow banking using a critical macro-finance approach (Gabor 2020).

We proceed as follows. We first introduce our theoretical supercycles framework and present an index of macrofinancial stability that we apply to G7 countries for the post-World War II period. We then describe the main features, thwarting mechanisms and phases of each of what we label the industrial capitalism supercycle and the financial globalisation supercycle respectively.

The supercycles framework

Minsky is best known for his analysis of financial business cycles, driven by the interactions between expectations, fixed capital assets, and the financing of those assets (Wray and Tymoigne 2009, Nikolaidi 2017). However, Minsky's writings also contain less well-known insights about the interactions between macrofinancial processes and institutional change. Palley (2011) develops these insights, drawing a distinction between Minskyan 'basic cycles' and supercycles.[1] In our framework, the basic cycle includes all short-run and medium-run economic fluctuations generated by the interactions between financial and real factors both domestically and globally: in addition to the corporate balance sheet-bank nexus of Minsky (see e.g. the findings in Stockhammer *et al.* 2019), this also includes cyclical dynamics generated by accumulation of household debt, shifts in income distribution, and shifting patterns of global demand, trade and portfolio investment.[2] Basic cycles thus capture both business cycles and (domestic and global) financial cycles.[3]

Why do basic cycles rarely become explosive? The answer lies in Minsky's concept of thwarting mechanisms: 'customs, institutions or policy interventions that make observed values of macroeconomic variables different from what they would have been if each economic agent pursued "only his own gain"' (Ferri and Minsky 1992, p. 84). Thwarting mechanisms reduce the amplitude of basic cycles, constraining instability by imposing ceilings and floors on the dynamic path of the economic system.

We distinguish between *floor* and *ceiling* thwarting mechanisms. Floor mechanisms aim to ensure a minimum level of aggregate demand, either through deliberate policy interventions (e.g. activist fiscal policy) or as a side effect of other developments (e.g. expansion of household debt to maintain consumption spending). Conversely, ceiling mechanisms impose upper limits on economic

expansion by restricting activities that may enhance growth but also generate instability. Examples of ceiling mechanisms include inflation targeting, financial regulation aimed at reducing procyclicality and leverage, and capital controls which restrict speculative financial inflows.

The supercycle is a long-run institutional and political cycle over which the effectiveness of a particular configuration of thwarting mechanisms first increases and then declines. We postulate that macrofinancial stability is primarily driven by the effectiveness of thwarting mechanisms. We therefore define four phases of the supercycle: expansion, maturity, crisis and genesis. During the *expansion* phase, newly introduced thwarting mechanisms are effective, leading to economic expansion and broad social and financial stability: economic and financial activity is disrupted by the recessions of the basic cycles, but thwarting mechanisms prevent a systemic crisis.

Economic agents adapt to the new institutional environment, innovating to preserve or increase profits, and thereby reducing the effectiveness of thwarting mechanisms. Mechanisms introduced to reduce one source of instability may over the long run become destabilising: a mechanism that stabilises economic activity might simultaneously generate inflationary pressures or lead to rising private indebtedness. Once the effectiveness of thwarting mechanisms starts to decline, the cycle enters the *maturity* phase, during which economic expansion continues but macrofinancial stability is decreasing.

This ultimately leads to *crisis* when the institutional framework is no longer sufficient to constrain the dynamics of the basic cycle. At this point, a basic-cycle recession leads to deep economic, political and social instability, and institutional restructuring. While government intervention may stabilise the economy, broad-based recovery is impossible: the institutional structure no longer ensures macrofinancial stability. The ensuing *genesis* phase sees attempts to establish a new configuration of thwarting mechanisms. The next supercycle will begin when – or if – effective new mechanisms are introduced. In the case that – for political, social or technological reasons – such mechanisms cannot be introduced, the crisis phase will be prolonged, accompanied by political and social turmoil, as new institutional structures emerge.

The supercycle shares similarities with the 'mode of regulation' in the Regulation School: both concepts provide a periodisation of capitalism based on norms, institutions and organisational patterns that temporarily stabilise capitalism over a specific period (Boyer 2005, Jessop and Sum 2006, Guttmann 2016). There are important differences, however. First, in the Regulation School, the mode of regulation is assumed to accompany a specific 'accumulation regime': this emphasises the specifics of productive processes on the supply side. In contrast, our supercycle emphasises the links between aggregate demand, the financial system and institutional change, reflecting the critical macro-finance concern with the co-evolution of financial structure and macroeconomic policy institutions (Gabor 2020). Second, our institutional supercycle relies on an explicit four-phase classification system that makes clear how cyclical patterns emerge. Although the modes of regulation imply a cyclicality as well, the exact drivers of this cyclicality are less clear-cut in the Regulation School.

The supercycles framework also builds upon the concept of macro-regimes in Blyth and Matthijs (2017), wherein the growth regime is defined by the choice of target of macroeconomic policy, which in turn reflects the balance of power between social classes: a full employment target reflects strong labour, while inflation targets reflect a powerful financial sector. We extend the concept of macro-regimes in two ways. First, we postulate that political conflict and the distribution of power influences not only target selection but also the specific architecture of thwarting mechanisms aimed at maintaining broader macrofinancial stability and avoiding political instability. Second, in our framework, the process by which thwarting mechanisms are eroded is specific to each supercycle: the strength of labour in the 1970s undermined the wage-price consensus, giving rise to inflationary pressure, while the strength of finance in the 2000s constrained the effectiveness of financial regulation.

The supercycles framework shares some features with the recent literature that attempts a synthesis between comparative political economy and post-Keynesian growth models (Baccaro and

Pontusson 2016, Stockhammer 2022). Growth models are the result of thwarting mechanisms: a wage-led growth model, for example, reflects thwarting mechanisms that keep wage-driven consumption spending strong enough to maintain aggregate demand and economic growth. The supercycles framework highlights that such mechanisms – and thus any given growth model – will ultimately lose effectiveness because of endogenous institutional erosion.

Macrofinancial stability and the two supercycles

To quantitatively capture the evolution of macrofinancial stability in G7 countries, we develop the Macrofinancial Stability Index (MSI). The MSI is constructed using a number of 'floor', 'ceiling' and 'corridor' macroeconomic and financial variables. To ensure macrofinancial stability, these variables should either be prevented from decreasing without limit (e.g. economic growth, employment rate), increasing without limit (e.g. credit-to-GDP ratios), or both (e.g. inflation).

Let (i) f_1, f_2, ..f_n be n floor variables and $f_{\max 1}$, $f_{\max 2}$, ..$f_{\max n}$ and $f_{\min 1}$, $f_{\min 2}$, ..$f_{\min n}$ their maximum and minimum values over the entire period under investigation, (ii) c_1, c_2, ..c_m be m ceiling variables and $c_{\max 1}$, $c_{\max 2}$, ..$c_{\max m}$ and $c_{\min 1}$, $c_{\min 2}$, ..$c_{\min m}$ their maximum and minimum values and (iii) cor_1, cor_2, ..cor_q be q corridor variables and $cor_{\max 1}$, $cor_{\max 2}$, ..$cor_{\max q}$, $cor_{\min 1}$, $cor_{\min 2}$, ..$cor_{\min q}$ and cor_{med1}, cor_{med2}, ..cor_{medq} their maximum, minimum and median values. Let also w_f, w_c and w_{cor} be the weights of floor, ceiling and corridor variables, respectively. The MSI is calculated as one minus a weighted average of the normalised distances of floor, ceiling and corridor variables from their maximum, minimum and median values respectively:

$$MSI_t = 1 - \frac{w_f}{n}\left[\frac{|f_{\max 1} - f_{1t}|}{|f_{\max 1} - f_{\min 1}|} + \frac{|f_{\max 2} - f_{2t}|}{|f_{\max 2} - f_{\min 2}|} \ldots + \frac{|f_{\max n} - f_{nt}|}{|f_{\max n} - f_{\min n}|}\right] - \frac{w_c}{m}\left[\frac{|c_{\min 1} - c_{1t}|}{|c_{\max 1} - c_{\min 1}|} + \frac{|c_{\min 2} - c_{2t}|}{|c_{\max 2} - c_{\min 2}|} \ldots + \frac{|c_{\min m} - c_{mt}|}{|c_{\max m} - c_{\min m}|}\right] - \frac{w_{cor}}{q}\left[\frac{|cor_{med1} - cor_{1t}|}{|cor_{\max 1} - cor_{\min 1}|} + \frac{|cor_{med2} - cor_{2t}|}{|cor_{\max 2} - cor_{\min 2}|} \ldots + \frac{|cor_{medq} - cor_{qt}|}{|cor_{\max q} - cor_{\min q}|}\right]$$

The MSI thus takes values between 0 (minimum stability) and 1 (maximum stability).[4]

We calculate the MSI for the G7 countries since the 1960s/1970s (the starting year differs for each country depending on data availability). We use economic growth and the employment rate as floor variables, the credit-to-GDP ratio, the bank leverage ratio and current account deficit-to-GDP ratio as ceiling variables and the inflation rate and the house price growth rate as corridor variables.[5] The variables and the data used for construction of the index are described in Table A1.[6] In our calculations, floor, ceiling and corridor variables are weighted equally (i.e. $w_f = w_c = w_{cor} = 1/3$).

Figure 1 shows the MSI for the US (top pane) and the UK (bottom pane) alongside a timeline of key events and institutional developments. The figure also highlights the phases of the two post-war supercycles (see following sections).

Macrofinancial stability in the US exhibits a cyclical pattern with peaks in the late 1960s and late 1990s, and troughs in the early 1980s and following the crisis of 2008. During 2012–2019, macrofinancial stability increased. A similar pattern is observed in the UK, with the exception that there was a decline in stability in the years preceding the UK's exit from the European Exchange Rate Mechanism, followed by a recovery. The MSI for the other G7 countries behaves in a similar way (see Figure A1 in the Appendix), with the exceptions of Germany and Japan. In Germany, stability deteriorated in the 1990s and improved in the 2000s, due to specific factors such as reunification and the increase in export demand resulting from adoption of the euro.[7] In Japan, the early onset of stagnation led to stability declining in the 1990s. Despite these differences, it is clear that G7 countries experienced common secular cyclical movements in their macrofinancial stability in the post-World War II period.[8]

We use the four-phase classification system of the supercycles framework to explain these common cyclical movements. We postulate a positive relationship between the MSI and the

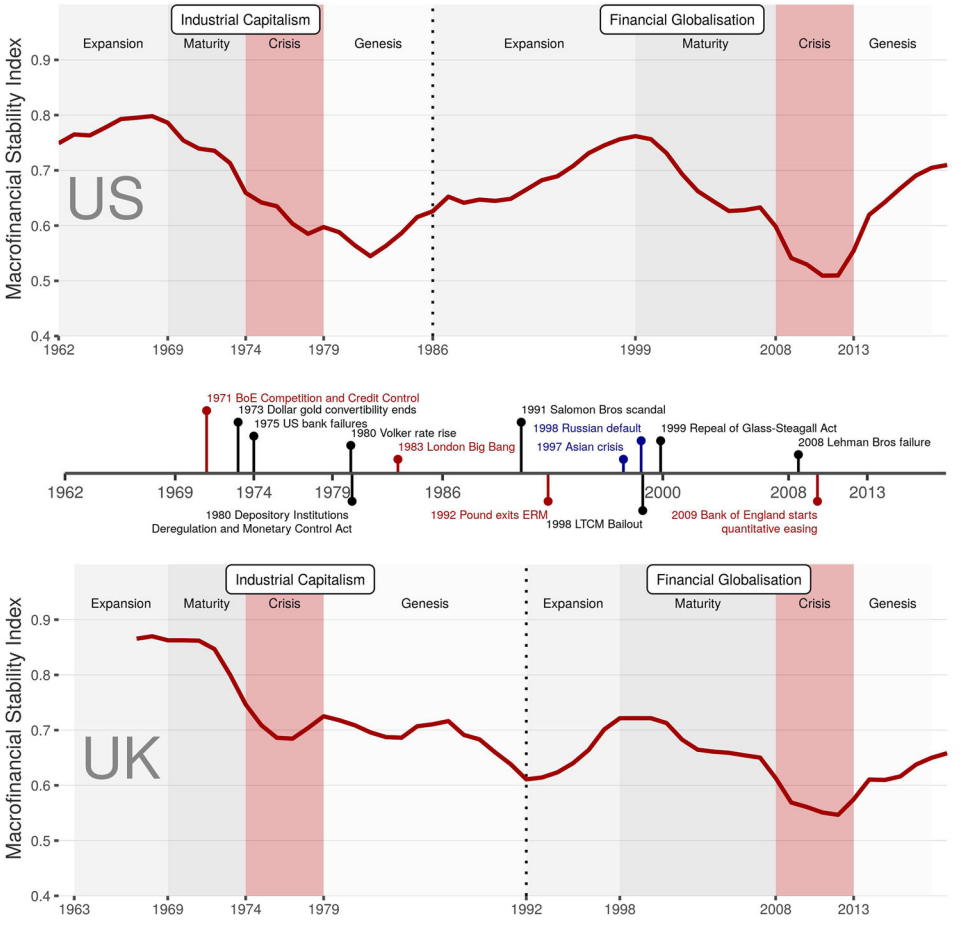

Figure 1. Macrofinancial Stability Index (MSI) and supercycles, US (1962-2019) and UK (1967-2019).
Note: The figure depicts the 5-year moving average of the MSI. The data sources are reported in Table A1.

effectiveness of thwarting mechanisms: the MSI increases during the expansion and genesis phases and declines during the maturity and crisis phases. The phases shown in Figure 1 are identified based on this postulated relationship in conjunction with our analysis of the evolution of the architecture of thwarting mechanisms. We therefore identify two post-war supercycles: the industrial capitalism (IC) supercycle and the financial globalisation (FG) supercycle.[9] Table 1 summarises the main features of each supercycle, along with the drivers of basic cycles, the main thwarting mechanisms and the causes of erosion of these mechanisms. In the subsequent sections we provide a detailed account of the institutional architecture and thwarting mechanisms that prevailed during each of the two supercycles, and the outcomes for macrofinancial stability.[10] Our analysis covers the G7 countries, with a particular focus on the US since the main institutional changes that drove the supercycles took place there and affected the rest of the G7 economies.

The industrial capitalism supercycle

Main features and basic cycles

The period immediately following World War II marks the start of the expansion phase of the IC supercycle. The defining feature of this period is the relationship between the capital investment

Table 1. Two post-war supercycles.

		Industrial capitalism (IC) supercycle	Financial globalisation (FG) supercycle
Key feature		Financing expensive capital assets	Production and preservation of tradable financial assets
Basic cycle drivers		Fragile corporate balance sheets	Neorentier-driven fragile financial balance sheets
		Cyclical functional distribution	Global financial cycle Cyclical functional distribution
Thwarting mechanisms	*Ceiling mechanisms*	Glass-Steagall Act Bretton Woods Wage-price consensus	Basel Monetarism/Inflation targeting
	Floor mechanisms	Wage policy Fiscal policy Industrial policy Welfare state Accommodative banking system/Lender of last resort	Export-led growth Debt-led growth Lender of last resort
Causes of erosion	*Innovations*	Eurodollar markets	Shadow banking Collateral-based liquidity provision
	Long-run processes	Growing bargaining power of workers Productivity slowdown Declining US trade balance	Growing private debt accumulation

of industrial firms and macroeconomic dynamics: the basic cycle was driven by the interacting dynamics of corporate investment and financing (as in Minsky's financial instability hypothesis; see e.g. Stockhammer *et al.* 2019 for empirical evidence), and by the interaction of functional income distribution and aggregate demand (see Table 1).[11] The financial systems of high-income capitalist nations financed the production of expensive and long-lasting capital assets: in this age of weak and immobile finance, bankers sought to ensure that the debts of corporations could be serviced without disruption to the development of the industrial capital structure. The architecture of thwarting mechanisms – from labour market institutions to the welfare state and capital controls – created a balance of power between labour and big capital (Blyth 2002).

Thwarting mechanisms

Over a long period during the IC supercycle, a range of mechanisms ensured – or aimed to ensure – that the growth of total expenditure kept pace with the expansion of capacity, by setting a floor under the level that total expenditures could fall to in periods of crisis and recession (see Table 1). Wages kept pace with productivity growth, alongside a generous welfare system, so that consumption expenditures grew in line with productive capacity. In many high-income countries, investment spending was supported by bank credit, in the context of long-run relationships between industrial capitalists and banks. Counter-cyclical government spending was widely accepted as a policy tool.

The supercycle was characterised by a wage policy consensus under which it was broadly accepted that real wages should grow in line with productivity (Levy and Temin 2007). A range of institutional mechanisms, including support for trade union membership and incorporation of trade unions into wage bargaining processes, ensured that wages kept pace with rising productivity. Steady wage growth translated into growth in consumption, and thus demand for the rapidly increasing industrial output. This in turn ensured that profits were maintained, stimulating sustained growth in capital investment. Between 1940 and 1970, in G7 countries, government consumption spending (on health, education and so on) and transfer payments rose more rapidly than GDP, while military expenditures declined as a share of total spending. Government investment grew steadily, at roughly the same pace as GDP (Glyn *et al.* 1990).

Central banks and the commercial banking system accommodated this regime of steady growth in wages, consumption and government expenditure: banks were willing to finance long-lived

capital assets because it was expected that non-financial firms would meet their debt payment commitments since (i) steady growth of aggregate demand was expected and (ii) in the presence of product market regulation and oligopolistic structures, firms would operate under mark-up pricing, meaning that money wage increases would not squeeze profit margins (Epstein and Schor 1990).[12] As a result, both capacity utilisation and profit margins would be preserved, maintaining firms' profitability and ensuring that debts would be repaid. In turn, it was in bankers' interests to ensure that debt could be rolled over at affordable terms.

Throughout the 1950s and much of the 1960s, this institutional structure placed a floor under aggregate demand and investment growth, thwarting stagnationary tendencies and ensuring steadily rising productivity, incomes and living standards.

The IC supercycle was also characterised by a particular configuration of ceiling thwarting mechanisms (see Table 1). Trade unions played a dual role; in addition to ensuring that wage growth kept pace with productivity growth, wage bargaining, particularly in the US also served to hold wage growth in check, ensuring that wages would not grow in excess of productivity, squeezing profits and lowering investment spending (Brenner 2006). Some countries experimented with income policies that restrained wage growth (Tomlinson 1987). Nonetheless, as trade union membership grew, and wartime national pay bargaining gave way to more localised factory level bargaining, wage growth in excess of productivity led to a gradual decline in the profit share in most high-income countries during the 1950s and 1960s (Glyn and Sutcliffe 1972).

Finance was constrained by both the international monetary and financial architecture and by national financial regulation. The Bretton Woods system of fixed-but-adjustable exchange rates eliminated both the macroeconomic volatility resulting from exchange rate movements, and the potential for speculation on such movements. Controls on cross-border financial flows, to prevent destabilising 'hot money' flows, were widely implemented under the Bretton Woods system (Helleiner 1994). Credit subsidies and ceilings on deposit and loan rates constrained retail banking, while the Glass-Stegall Act enforced the separation of investment and commercial banking activity, curtailing speculative activities by commercial banks. As a result, 'banking crises were almost non-existent in the heyday of Bretton Woods' (Bordo *et al.* 2001, p. 57).

Erosion of thwarting mechanisms, crisis and genesis

During the expansion phase, effective floor thwarting mechanisms kept unemployment low. Alongside expansion of the welfare state, this reduced the cost of job loss and strengthened the bargaining position of labour: as productivity growth slowed in the late 1960s, unions were able to enforce continued high real wage growth. The resulting squeeze in profits led to slowing capital investment and, as firms raised prices in an attempt to preserve profit margins, a wage-price spiral arose (Marglin 1990). This spiral eroded the wage policy and the wage-price consensus that served as floor and ceiling thwarting mechanisms respectively during the IC supercycle (Table 1).

At the same time, the international institutional architecture came under increasing strain. The US trade surpluses of the 1950s and 1960s, driven by post-war reconstruction in Europe and Japan, gave way to deficits by the 1970s, alongside persistent German and Japanese surpluses. The resulting downward pressure on the dollar was intensified by a private institutional innovation: the rise of the Eurodollar market (Table 1). From around 1957, there was rapid growth in dollar-denominated banking outside the US, with London at the centre. This was driven by a number of factors, including US regulatory changes such as the introduction of 'Regulation Q' which placed a ceiling on the rate of interest that US banks could pay on deposits; this led to competition for dollar deposits from offshore subsidiaries in London that could pay higher rates (Moffitt 1984, Strange 1986). In the 1960s, the Eurodollar markets provided a mechanism for offshore dollars to be 'recycled' back to the headquarters of US banks, but in the 1970s this flow went into reverse: 'speculators borrowed dollars in the Eurodollar markets and promptly sold them for other currencies, so that foreign

central banks found it necessary to buy dollars on a large scale in order to prevent the undue appreciation of their currencies' (Tew 1977, p. 164).

By 1971, the scale of reserve outflows meant that a run on the gold reserves of the US was becoming inevitable; Nixon announced a 'temporary' suspension of dollar convertibility into gold, with the intention of forcing surplus countries to abandon their pegs to the dollar. The move was successful and marked the beginning of the end of the Bretton Woods system, and the start of the crisis phase of the IC supercycle in which rising inflation and high unemployment accompanied the disorderly transition to floating exchange rates. Oil price hikes in 1973 and 1979 destabilised the system further and helped to cement floating rates, initially intended as a temporary measure when introduced in 1973, as a permanent feature. This greatly reduced the issue of 'dollar overhang' – the problem of excess dollars held outside the US – because dollar FX reserves were now seen as a blessing not a burden. As a result, interest in coordinated international monetary reform waned and the position of the US – which wanted to make floating exchange rates permanent and opposed an enhanced role for IMF special drawing rights (SDRs) – was strengthened. In 1974, capital controls on dollar outflows from the US and inflows into other countries were substantially liberalised.

A run of bank failures in the US and Germany in 1974, including Bankhaus Hersatt, Franklin National and First National of San Diego, led to the founding of the Basel Committee at the end of 1974, but no further action was taken as contagion appeared limited. The economic crisis lasted through most of the 1970s, until the decisive shift in policy direction under Reagan and Thatcher marked the start of the genesis phase (see Figures 1 and A1), ushering in the new configuration of thwarting mechanisms that would characterise the financial globalisation (FG) supercycle (see Table 1).

A defining feature of the early Reagan and Thatcher years was the drive to curtail inflation by sharply reducing the bargaining power of labour, in many cases in direct confrontation with workers' organisations. Under successive governments in the US and the UK, legal frameworks protecting workers' rights and collective bargaining were progressively dismantled (Silvers and Slavkin 2009). In the US, the minimum wage, introduced as part of the New Deal in the 1930s, no longer increased in line with prices and productivity. The project of dismantling the post-war welfare state was initiated (Stedman Jones 2014). Tax structures became steadily less progressive (Piketty and Saez 2007). Instead of full employment, the stated objective of macroeconomic policy shifted to control of inflation, to be achieved by constraining the growth of the money supply.

The resulting recession and mass unemployment proved effective in constraining wage demands, but came at the cost of weakening aggregate demand. As wage growth stagnated, and protection of those on lower incomes was removed, spending could not keep pace with productivity. New thwarting mechanisms were required to sustain demand. At the national level, the expansion of private debt substituted, at least partially, for lost purchasing power. Internationally, the possibility of sustained current account imbalances in the post-Bretton woods system allowed some countries to rely on exports to supplement domestic demand (the promise that flexible rates would eliminate such imbalances was oversold). But debt expansion required further changes; the new national and international institutional structure provided the environment for the emergence of the so-called shadow banking system, facilitating an expansion of private debt and financial system leverage to hitherto unseen scales of magnitude and complexity.

Flexible exchange rates did not eliminate the cross-border imbalances that ultimately overpowered the Bretton Woods system: the total surpluses of creditor nations such as Japan and Germany doubled between 1973 and 1979 (Strange 1986, p. 8). Neither did the adoption of floating exchange rates eliminate exchange rate volatility – on the contrary, volatility increased along with the volume of trading on foreign exchange markets. With central banks no longer committed to intervention in these markets, private actors needed to hedge exchange rate risks: this was achieved by purchasing forward contracts, while investing funds short term. Strange argues that this is the reason for the concurrent growth in both derivatives and money markets: 'this is the link that connects the foreign exchange market with the short-term credit market, exchange rates with interest rates' (Strange 1986, p. 12).

From the 1980s onwards, the system of financial regulation put in place in the US, as part of the New Deal, including the Glass-Steagall act, separating commercial banking and investment banking activities, began to be unwound. The loosening of regulations on banks and mortgage lenders, and on inter-state mergers and acquisitions activities, paved the way for the boom in mortgage lending. In 1968, Fannie Mae was converted from a government agency into a 'government-sponsored private institution': a 'profit-seeking, shareholder owned company, tasked with creating a secondary market for mortgages made to low- and moderate-income borrowers' (Silvers and Slavkin 2009, p. 325). The nascent mortgage-backed securities (MBS) market of the 1970s led to the development of the 'agency passthrough' market in the 1980s, in which securities issued by institutions owned or sponsored by the government were traded. In 1982, regulatory changes facilitated the issuance of mortgage-backed securities by financial institutions without government sponsorship, and in 1984 legislation was introduced allowing private investors to hold MBS (Thompson 2009, Berliner et al. 2016). By 1993, 60% of mortgages were securitised, and, in 2004, private, non-government sponsored firms' issuance of MBS surpassed issuance by Fannie May for the first time (Silvers and Slavkin 2009).

In the US, the Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA) removed caps on deposit interest rates, allowed mortgage lenders to issue checking deposits, and encouraged competition among bank and non-bank financial institutions. Retail depositors shifted to higher-interest money market funds, while firms replaced bank credit with the issuance of commercial paper. Similar changes had arrived earlier in the UK, with the introduction of Competition and Credit Control by the Bank of England in 1971 (Goodhart 2014). In London, the Big Bang of 1983 abolished the distinction between stockbroking and market-making and proprietary trading activity. Banks bought out stockbroking firms, and moved into investment banking activity (Chick 2013). Light touch regulation attracted foreign banks, which joined those involved in Eurodollar lending. Regulators in other jurisdictions came under increasing pressure to maintain competitiveness by following suit and deregulating their financial systems. The stage was set for the financial globalisation supercycle.

The financial globalisation supercycle

Main features and basic cycles

The election of Reagan and Thatcher cemented the foundations of the financial globalisation supercycle. The dynamics of the basic cycle shifted as large corporations turned to capital markets and banks to mortgage borrowers. Cyclical dynamics driven by mortgage lending and household consumption expenditure replaced the interaction between bank lending and corporate investment of the industrial capital supercycle, altering the nature of the monetary circuit (Michell 2017). This household credit-driven process required greater systemic leverage than a circuit driven by corporate borrowing for capital investment. Shadow banking made this possible: it allowed banks to avoid Basel capital requirements, using securitisation to move assets off balance sheets while simultaneously generating a flow of assets that would provide the collateral needed to satisfy the growing demands of owners and managers of wealth. Growing concentrations of wealth (and liquidity in the form of corporate cash pools and official FX reserves) led to rising demand for financial securities (see Table 1).

The emergence of a securities-based credit system alongside the dismantling of capital controls fundamentally transformed the role and nature of finance, giving rise to a new type of actor: the *neorentier*. Neorentiers are (mostly global) financial institutions whose activities are oriented towards the production and collateral-based financing of new asset classes. They include market-based banks, global institutional investors and asset managers. Neorentier profitability is substantially influenced by daily changes in asset prices via mark-to-market balance sheet effects, driving cycles of liquidity and leverage (Adrian and Shin 2010, Lindo 2013, Peer 2016, Gabor 2018, Gabor

and Vestergaard 2016, 2018). Neorentiers evolved into global actors capable of influencing institutional and regulatory change, and therefore the architecture of thwarting mechanisms (Hardie and Howarth 2013). Minsky used the term 'money manager capitalism' to capture neorentiers' increasing influence on the financial system and the economy (Minsky and Whalen 1996, Wray 2011, Whalen 2012).

We thus update the concept of the rentier to reflect evolutionary changes during the FG supercycle. The financialisation literature defines rentiers as the recipients of income from financial activities, focusing primarily on traditional financial assets such as stocks and bonds (Epstein and Jayadev 2007, Stockhammer 2008, van Treeck 2009, Hein 2015). This does not accurately reflect the transformation of the global financial system since the 1970s. Neorentiers are a distinct type of rentiers. They differ from traditional rentiers in that their profits primarily come from shadow banking activities, such as derivatives trading, repo transactions and pooling and tranching of risk. Neorentiers alter the functions of traditional financial assets, and thus the role of rentiers. Securitisation allows banks to escape the limits to loan expansion set by capital requirements and to disconnect loan defaults with on-balance sheet risks. Developments in repo markets influence system-wide leverage and the liquidity of the financial system, affecting the demand for securities and thus the cost of (securities) financing for firms and governments (Adrian and Shin 2010, Gabor 2016).

The erosion of the IC thwarting mechanisms facilitated the rise of shadow banking. The rollback of public welfare provision, the switch from 'pay as you go' to 'funded' pension schemes and wealth concentration arising from higher income inequality and states' weaker ability to tax multinationals and wealthy individuals gave rise to large-scale institutional asset management such as insurance and pension schemes (Toporowski 2000, Haldane 2014, Lysandrou 2016). Neorentiers successfully pressured for open capital accounts and the re-organisation of local financial systems around collateral-based finance (Gabor 2018), often through international financial institutions (Kentikelenis and Babb 2019). Hedge funds targeted higher returns through repo-based leverage. Broker dealers, often part of global banking groups, deployed their balance sheets to connect neorentiers seeking leverage to those seeking safety in money market deposits via collateral-intensive relationships (Pozsar 2014). Banks transformed their business models towards market-based finance, under pressure from the loss of corporate customers and depositors chasing higher returns via shadow banking (Liikanen 2012). Traditional rentiers became increasingly dependent on the actions of neorentiers.

The drivers of the basic cycle thus shifted from corporate lending and capital investment to mortgage lending, housing investment and bond financing in an increasingly internationalised and market-based financial system. The activities of neorentiers started driving the fluctuations in the availability and cost of credit, either directly (e.g. through the effects of repo markets and mortgage-backed securities on bond yields and mortgage lending) or indirectly via the effects of shadow banking on the fragility of balance sheets across the financial system. This shift took place alongside the transition to a new architecture of thwarting mechanisms.

Thwarting mechanisms

In many high-income countries, most notably the US, wage growth declined from the high rates of the 1960s more sharply than productivity growth (Glyn 2007). From the 1990s onwards, increasing concentration led to higher corporate mark-ups, particularly in the US, and a falling wage share in national income. Pay restraint and the growing importance of high 'value added' and high mark-up sectors, such as technology and finance, eased the profit squeeze from the IC supercycle – at least at the aggregate level. While corporate earnings recovered, shifts in income distribution also brought stagnationary tendencies: weak or even negative income growth for lower income households constrained consumption spending, while business investment remained weak for much of the period, even as profits recovered.

The ideological shift on macroeconomic management brought independent inflation targeting central banks alongside increasingly market-financed fiscal deficits.[13] Mass privatisation reduced

the state's economic footprint, while previous gains on employment protection and unemployment benefits were substantially rolled back (Glyn 2007). Growth increasingly relied on rapid expansion of leverage and increasing financial activity.

New financial institutional structures were required to enable leverage to expand beyond traditional constraints. During the expansionary phase of the FG supercycle (see Figures 1, and A1), shadow banking expanded significantly, absorbing the flow of assets resulting from the continued expansion of credit. Securitisation and the originate-to-distribute model allowed banks to transform illiquid assets such as mortgage loans into marketable securities. These securities were financed with short-term liabilities such as repos and asset-backed commercial paper (ABCP) (Krishnamurthy et al. 2014).

Collateral became critical for funding neorentier balance sheets. Neorentiers issue short-term repo deposits secured by bond collateral (analysed as *shadow money* by Gabor and Vestergaard 2016, 2018), borrowing from institutional cash pools who acquire legal ownership of collateral, and can liquidate if borrowers default (Pozsar 2014). Repo borrowing translates rising asset prices into increasing leverage capacity because collateral is marked to market (Adrian and Shin 2010).[14] While the turn to collateral reflects faith in 'market liquidity' as an effective substitute for regulatory oversight (Bini Smaghi 2010, Sissoko 2019), liquidity is not guaranteed: sudden declines in collateral prices can lead to margin calls, liquidity spirals and fire-sales of collateral securities, amplifying asset price deflation and exacerbating liquidity shortages (Brunnermeier and Pedersen 2009, Adrian and Shin 2010).

The rise of collateral-based finance changed the relationships between central banks, governments and the financial markets. In the 1990s, central banks in high-income countries collectively sanctioned neorentiers' turn to money-market funding by deregulating repo markets and introducing regular auctions facilitated by primary dealers in the sovereign bond markets (Gabor 2016).

These reforms intended to develop liquid government bond markets, a pre-requisite for achieving low borrowing costs for governments and the smooth transmission of monetary policy. But reforms also entrenched the 'infrastructural power' of finance (Braun 2020): by becoming critical in the achievement of fiscal and monetary policy targets, neorentiers enhanced their ability to oppose unwanted policy interventions or tighter regulatory measures (Gabor 2016). The rising power of neorentiers thus served to discipline states and central banks, curbing the effectiveness of fiscal, monetary and regulatory thwarting mechanisms.

Easy credit conditions allowed sustained expansion of private debt, enabling aggregate demand to keep up with productive capacity in the face of weak income growth and government retrenchment. Savings ratios fell throughout the 1980s and 1990s in Anglo-Saxon economies. Credit-financed consumption took over from capital investment and wage-led consumption as the driver of growth in many countries, placing a floor under aggregate demand (Glyn 1990, Baccaro and Pontusson 2016).

Not all G7 countries relied on debt-financed consumption expenditure: some, such as Germany, relied instead on export demand to maintain growth. High export demand was, however, possible due to debt-financed imports of other countries. Thus, the debt-financed consumption expenditures of Anglo-Saxon economies provided a floor to both domestic and global aggregate demand; at the same time, financial activity became increasingly cross-border, as neorentiers looked to global bond markets to fill their portfolios. Basic cycles became increasingly synchronised across borders, shaped by the global financial cycle (Rey 2015).

The FG thwarting mechanisms could not match the performance of the IG supercycle: growth in income per capita and productivity was lower than in the expansion and maturity phase of the previous supercycle. Despite anti-inflation rhetoric, the period was characterised by progressively looser credit conditions, resulting from both financial system expansion, and progressively lower policy interest rates. Volatility in asset prices increased, forcing central banks to extend lender of last resort (LOLR) support, for instance with the secondary bank crisis in the UK or the Continental Illinois and Savings and Loans crises in the US.[15] But the effectiveness of this thwarting mechanism

would come under pressure in a supercycle increasingly reliant on collateral-based liquidity provision.

Erosion of thwarting mechanisms, crisis and genesis

The FG supercycle relies on two main ceiling thwarting mechanisms: bank capital regulation and inflation targeting (see Table 1). Neither proved effective. The microprudential focus of Basel regulations effectively ignored shadow banking and cross-border market-based financial activity. The apparent success of inflation targeting in generating the so-called 'great moderation' – in reality the result of forces largely outside of central bank control – drove the hubristic belief that 'macroeconomics [had] succeeded' (Lucas 2003, p. 1). When confronted with the possibility that low policy rates encourage leverage, central banks decided that it was more expedient to clean up after asset bubbles than lean against them. The shift to monetarism and then inflation targeting thus encouraged shadow banking and cemented the infrastructural power of neorentiers.

While shadow banking initially facilitated debt-led economic expansion, it rendered this expansion progressively more fragile due to rising systemic leverage and collateral-based interconnectedness. This became apparent with the failure of Long-Term Capital Management (LTCM) in 1998, the first episode of global volatility triggered by repo-financed leveraged positions in securities. Following the Asian financial crisis of 1997 and the Russian crisis the following year, LTCM saw increasingly large margin calls on these liabilities and was eventually rescued by its largest counterparties to avoid fire sales of collateral securities (Rubin *et al.* 1999). Central banks in the BIS Committee on the Global Financial System described LTCM as the first global crisis of collateral (Gabor 2016).

The collapse of LTCM marked the start of the maturity phase of the FG supercycle in most G7 countries (see Figures 1 and A1): shadow banking began eroding the thwarting mechanisms of the supercycle in a system with two key vulnerabilities. First, the floor imposed by credit expansion turned out to be weak and reliant on repeated loosening of monetary conditions in order to support asset prices. Second, neorentiers' increasing reliance on daily mark-to-market across repo and derivatives contracts introduced new pro-cyclical financial mechanisms, reinforcing movements in asset prices, market liquidity and leverage and thus credit conditions.

Rather than stronger financial regulation, the technocratic response to LTCM's collapse was to use collateral as a 'disciplinary' thwarting mechanism: neorentiers were to value collateral to market daily and improve their risk management regimes (Rubin *et al.* 1999), so that the prospect of falling collateral prices and the thus funding pressures for collateral-based liabilities would keep leverage in check. To encourage this shift, central banks adopted neorentier practices of collateral-based liquidity provision: by 2000, central banks in high-income countries replaced outright interventions in government bond markets, whether for monetary policy implementation or lender of last resort support, with repo lending (Gabor and Ban 2016). Central banks promoted government bonds as safe assets for collateral-based finance (CGFS 1999), downplaying the possibility that inadequate volumes of public debt would induce shadow banking innovation to increase the supply of 'safe assets' via securitisation (Coeuré 2016, Gabor 2016, Gabor and Vestergaard 2018).

The discipline of collateral proved illusory. Following Lehman's collapse, neorentiers turned away from private collateral, triggering liquidity and haircut spirals on previously 'safe' assets (Gorton and Metrick 2012). This called into question the effectiveness of central banks' lender of last resort function: the classic LOLR function was premised on restoring trust in banks not collateral. As trust shifts from banks to collateral, ensuring the liquidity of markets for collateral securities becomes a key condition to maintain resilience of neorentiers' liabilities. LOLR repo loans are ill-equipped to deal with declining collateral market liquidity (Dooley 2014): if central banks make emergency loans against collateral securities that fall in price, they have to call margin on those loans, thus reinforcing falling prices and worsening funding liquidity conditions for borrowers (Mehrling *et al.* 2013, Gabor and Ban 2016, Barthélemy et al. 2018). If dealer-brokers become unwilling to make markets in securities, the only way to maintain the liquidity of a securities-based credit system in the face

of sustained selling is for the ultimate provider of liquidity—the central bank—to absorb a flow of securities onto its own balance sheet as they are sold, stabilising the price.

In response to the erosion of the traditional LOLR mechanism, central banks introduced two innovations: first, an expansion of the LOLR framework to include new types of collateral and collateral swaps and, second, a securities market maker of last resort (MMLR) function. The former has enabled banks to access emergency liquidity against a broader set of assets on their balance sheets, and dealers to obtain the collateral needed to fund market-making activity. But this may not be sufficient to stabilise systemic neorentier balance sheets if banks and dealers remain unwilling to purchase securities on the scale required to restore market liquidity. Some central banks therefore adopted a formal MMLR facility. MMLR targets collateral market liquidity instead of banks' funding liquidity: central banks step in to purchase securities when no one else will, placing a floor on the prices of securities used as collateral by neorentiers (Gabor 2016, 2020). Despite some overlap, MMLR is functionally different to quantitative easing (QE), which involves purchases that raise the prices of both public and privately-issued securities, making liabilities collateralised with these securities cheaper. Notably, the Bank of England was the first central bank to adopt QE in 2009, and before the COVID-19 pandemic, the only one to formalise MMLR in 2015 (Carney 2015).

While crisis-era innovations succeeded in preventing financial system collapse and depression, sustained growth has not returned. Key features of the institutional architecture of the FG supercycle persist: weak and 'flexible' labour, high inequality and government retrenchment. Without a change in this architecture, it is difficult to identify a likely source of sustained demand growth other than a return to credit expansion. But for a period of sustained credit expansion there must be demand for credit, lenders must perceive borrowers as creditworthy, and the banking and financial system must have spare capacity. In a securities-based credit system, both loan originators and the buyers and funders of securitised loans must perceive loans as sufficiently safe. In the post-GFC period, high debt stocks, low growth, weak investment, fiscal retrenchment and the persistence of inequalities have limited the perceived creditworthiness of much of the private sector while the most creditworthy sector, large corporations, has direct access to the bond markets. Further, banks and financial institutions are now subject to stricter regulation and scrutiny due to Basel III. Liquidity and capital requirements impose constraints on credit expansion, both for institutions that lend directly (as loan originators) or indirectly (as buyers of securities).

While institutional changes improved the effectiveness of stabilising mechanisms in the period prior to the pandemic, the ongoing push for asset-based welfare (Finlayson 2009) reinforces the structural drivers of neorentier capitalism without delivering a new source of stability. When the pandemic struck, a new configuration of thwarting mechanisms that could foster stability and expansion had not yet emerged. If successful, the ongoing genesis period will generate thwarting mechanisms that will reflect the rapid institutional change that has occurred as a result of the pandemic and greater awareness of the potential for future pandemics. Inevitably, the thwarting mechanisms of a potential next supercycle will also be driven by the even greater climate crisis.

Conclusion

Drawing on Minsky, this paper develops a framework for the analysis of 'institutional supercycles' in capitalism. We develop an index that demonstrates secular cyclical macrofinancial stability in G7 countries in postwar capitalism. We explain this as resulting from the emergence and erosion of thwarting mechanisms over two post-war supercycles.

Our approach opens possibilities for a wider research programme in macroeconomics, political economy and evolutionary finance. Further research is needed on the links between macrofinancial stability and thwarting mechanisms, and on the links between technological developments and institutional supercycles. Most urgently required, given the pandemic and climate crises, is a detailed understanding of the current genesis phase and the prospects for thwarting mechanisms that could underpin a new 'green' supercycle.

Notes

1. Ryoo (2010) has developed a dual cycle framework based on Minsky, which however does not incorporate endogenous institutional change. Institutional change has been analysed within other Minskyan accounts (e.g. Whalen 2012, Argitis 2017) but without the explicit use of a cyclical framework, as in Palley (2011).
2. This broader approach aligns with the formal Minskyan literature (Nikolaidi 2017, Nikolaidi and Stockhammer 2017) which has shown that Minskyan dynamics can be combined, for example, with endogenous changes in income distribution (Goodwin-Minsky models), consumption norms-led household debt (Minsky-Veblen models) and housing prices (real estate price Minsky models).
3. Domestic financial cycles typically exhibit a lower frequency than traditional business cycles (Borio 2014, Aldasoro et al. 2020) and are closely related to medium-term fluctuations in GDP (ECB 2018, Stockhammer et al. 2019). Global financial cycles seem to have a shorter duration than domestic financial cycles (Aldasoro et al., 2020).
4. An implication of the index construction method is that the value taken by the index depends on the period selected, because index values are calculated relative to historical country-specific minima, maxima and median values. The index is therefore primarily of use for analysing relative changes in a single economy, rather than making direct cross-country comparisons.
5. The evolution of the index remains almost the same when house price growth is removed as a corridor variable and/or share price growth is included as a floor variable.
6. The R code for compiling the MSI and Figures 1, A1 and A2 is available at: https://github.com/jomichell/supercycles-msi
7. The MSI for Germany is not reported in Figure A1, but is available at: https://github.com/jomichell/supercycles-msi
8. Figure A2 in the Appendix depicts the MSI when maximum, minimum and median values are calculated separately for each supercycle instead of using the entire period under investigation. The fluctuations in the MSI are similar to those in Figures 1 and A1, with one main difference: in Figure A2 the MSI values during the FG supercycle are, on average, closer to the MSI values during the IC supercycle. This difference is explained by the better overall macrrofinancial performance during the IC supercycle relative to the FG supercycle.
9. The time frame of these two supercycles corresponds approximately to the Fordist and the post-Fordist regimes in the Regulation School (see Friedman 2000).
10. In this paper we do not explicitly analyse the role of technology. However, we consider technological change to be a prerequisite for the emergence of an institutional supercycle, as per the literature on Kondratieff waves (see e.g. Grinin *et al.* 2017). Following Perez (2010, 2016), the IC supercycle corresponds to the 'deployment' period of the 'Age of Oil, Autos and Mass Production', while the FG supercycle largely coincides with the 'installation' period of the 'Age of Information and Communication Technologies'.
11. On the latter, debate persists on whether such cycles should be regarded as 'profit-led' with a procyclical wage share (à la Goodwin) or 'wage-led' with a countercyclical wage share, and whether cyclicality requires the interaction between financial and distributional factors (Blecker 2016, Stockhammer 2017). All of these possibilities are consistent with our framework.
12. Credit accommodation was not uniform across countries. Bank financing was predominant in France, Italy and Japan while credit markets were relatively underdeveloped and monetary policy was accommodative: relatively weak labour meant that greater monetary accommodation was possible without generating inflationary pressure from wage increases. In the UK, the US and Germany, with greater independence of central banks, less bank intermediation and stronger labour, monetary policy was less accommodative.
13. In reality, after the period of high interest rates at the start of the 1980s helped bring inflation under control by producing mass unemployment, monetary policy was gradually loosened as a way to maintain aggregate demand in the face of stagnationary tendencies. Fiscal deficits expanded rapidly following the oil shocks of 1974 and the breakdown of the Bretton Woods system, and persisted in Europe and the US—despite sustained efforts to limit them—until the mid-1990s.
14. Mechanically, a repo entails the sale and repurchase of collateral (financial securities) such that the difference in price implies the interest rate of the 'loan', while that the cash borrower retains economic ownership of collateral for the duration of the contract.
15. For a historical account of the LOLR facility, see Kindleberger (1996).

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Appendix

Table A1. Variables and data sources used for the construction of the Macrofinancial Stability Index (MSI).

Variable	Data sources	Definition/remarks
Floor variables		
Economic growth	OECD [Canada, France, Germany, Italy, Japan, UK] and FRED [US]	–
Employment rate	OECD	Defined as 1 minus the unemployment rate.
Share price growth	OECD	Growth rate of a share price index estimated by OECD. The index is calculated from the prices of common shares of companies traded on national or foreign stock exchanges.
Ceiling variables		
Credit-to-GDP ratio	BIS	The credit to the non-financial sector is used.
Current account deficit-to-GDP ratio	Jordà et al. (2017) [Canada: −1980; Germany: −1990; France:−1998; Italy:−1994; Japan: −1995; UK:−1954;US:−1959] and OECD [Canada: 1981-2019; Germany:1991-2019; France: 1999-2019; Italy:1995-2019; Japan: 1996-2019; UK:1955-2019; US:1960-2019]	–
Bank leverage ratio	Jordà et al. (2021)	Defined as the bank assets to capital ratio
Corridor variables		
Inflation rate	OECD	Growth rate of the consumer price index.
House price growth rate	Jordà et al. (2017) [Canada, Germany, France, UK, US: −1970; Japan: −1960] and OECD [Canada, Germany, France, Italy, UK, US: 1971-2019; Japan: 1961-2019]	Growth rate of a house price indicator that captures how residential property prices change over time.

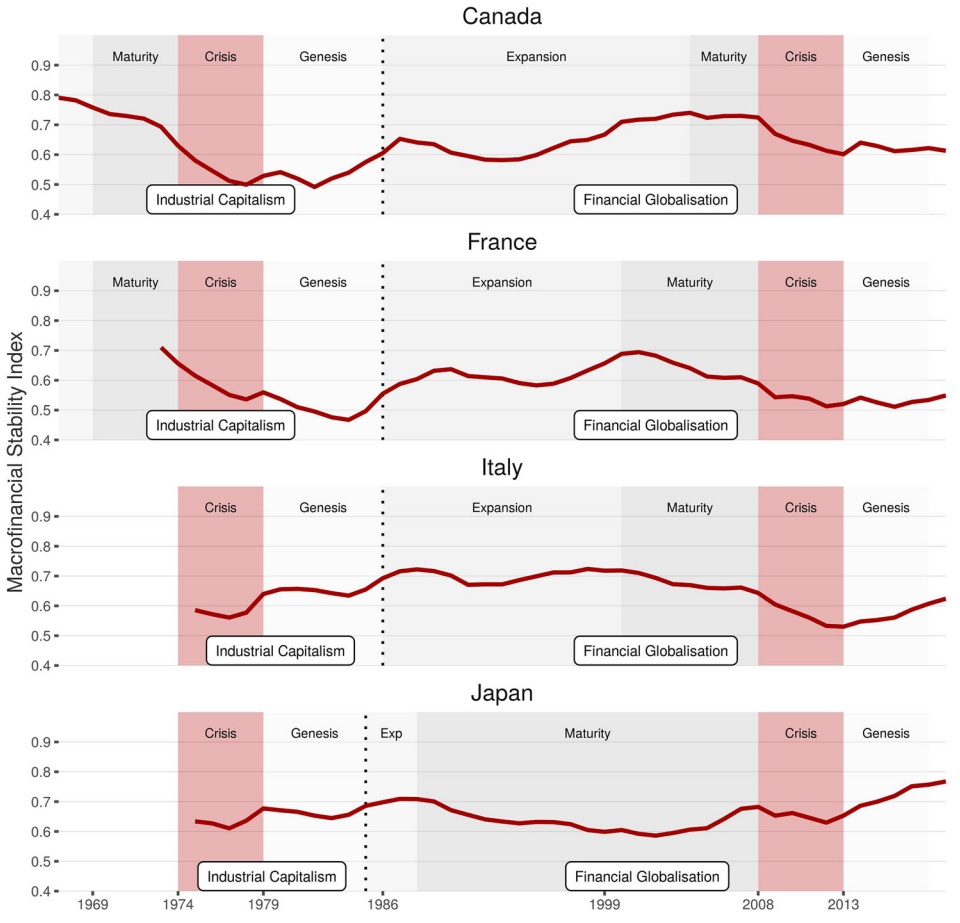

Figure A1. Macrofinancial Stability Index (MSI) and supercycles, Canada (1966-2019), France (1973-2019), Italy (1975-2019) and Japan (1975-2019).
Note: The figure depicts the 5-year moving average of the MSI. The data sources are reported in Table A1.

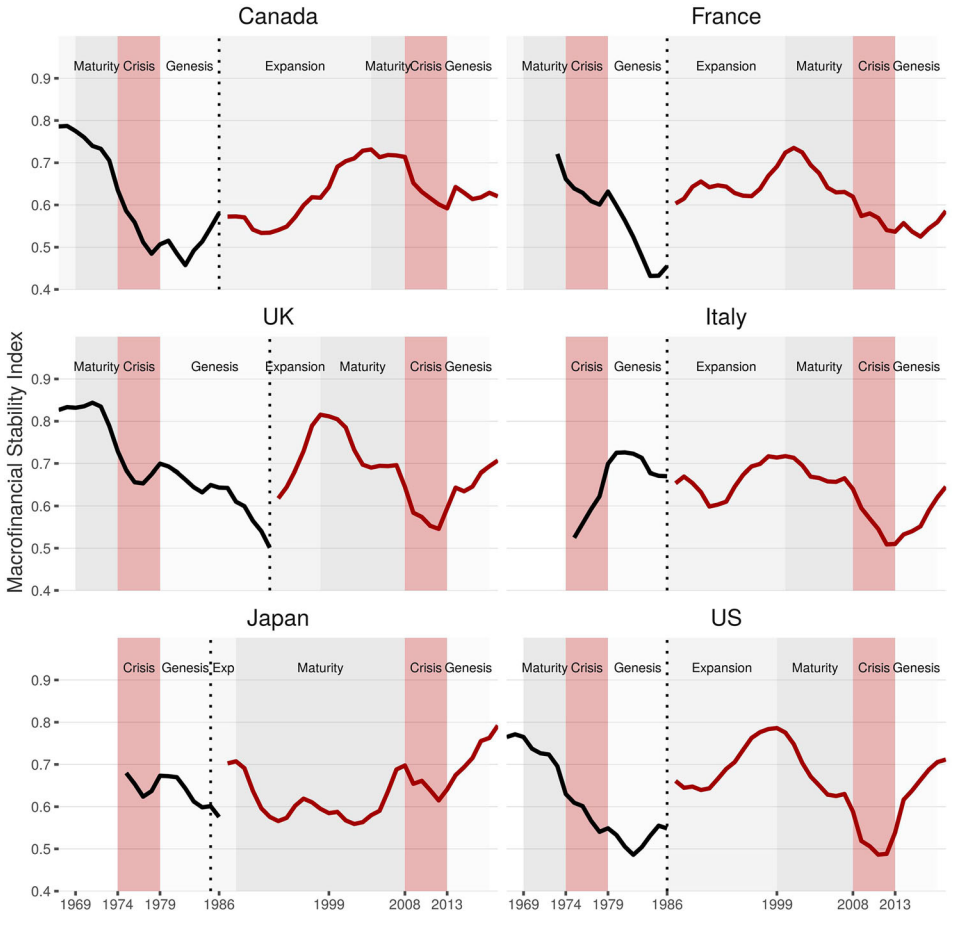

Figure A2. Macrofinancial Stability Index (MSI) and supercycles, G7 countries (except for Germany), various starting years until 2019, supercycle-specific maximum, minimum and median values.
*Note: The figure depicts the 5-year moving average of the MSI. The data sources are reported in Table A*1.