# Hedge Funds, Non-Bank Leverage and Macroprudential Policy in Emerging Markets: Lessons from Advanced Economies

Gustavo Henrique Rodrigues Pessoa *

Posted Date: 28 November 2025

doi: 10.20944/preprints202511.2181.v1

Keywords: hedge funds; non bank financial intermediaries; leverage; systemic risk; macroprudential policy; emerging markets; financial stability; cross border spillovers

 doi:10.20944/preprints202511.2181.v1



*Article*

# Hedge Funds, Non-Bank Leverage and Macroprudential Policy in Emerging Markets: Lessons from Advanced Economies

**Gustavo Henrique Rodrigues Pessoa**

Fundação Getulio Vargas, Brazil; gustavo.pessoa@fgv.edu.br

**Abstract**

Hedge funds and other non-bank financial intermediaries have become central players in global capital markets, yet their leverage and liquidity risks remain imperfectly captured by macroprudential frameworks that were designed primarily for banks. Episodes such as the March 2020 turmoil in US Treasury markets, the collapse of Archegos Capital and recent stress in gilt markets have highlighted how leveraged non-bank positions can generate systemic shocks that propagate across borders, including to emerging markets. This article develops a conceptual analysis of the channels through which hedge fund and non-bank leverage interacts with macroprudential policy, focusing on lessons from the United States, the European Union and the United Kingdom and their relevance for emerging market economies. Drawing on official reports and the academic literature, it examines how macroprudential tightening and regulatory fragmentation in advanced economies can encourage risk migration to non-banks and spillovers to emerging market asset prices, funding conditions and exchange rates. The article then discusses policy options for emerging markets, including the design of macroprudential toolkits, the monitoring of cross-border non-bank exposures and the coordination with advanced-economy regulators and central banks. It concludes by outlining an agenda for integrating non-bank and cross-border dimensions more systematically into macroprudential policy in emerging markets.

**Keywords:** hedge funds; non-bank financial intermediaries; leverage; systemic risk; macroprudential policy; emerging markets; financial stability; cross-border spillovers

## 1. Introduction

Over the past two decades, hedge funds and other non-bank financial intermediaries have moved from the margins of the financial system to its core. Leveraged trading strategies, complex derivatives positions and active involvement in sovereign bond, foreign exchange and equity markets have made these institutions key providers of liquidity and risk-bearing capacity. At the same time, their activities have created new channels through which leverage, funding stress and market dysfunction can propagate across institutions and borders. While global regulatory reforms after the 2007–2008 financial crisis substantially strengthened the resilience of banks, the post-crisis period has shown that systemic risk is increasingly generated and transmitted through non-bank balance sheets and their interactions with core funding and collateral markets.

Several high-profile episodes have crystallised these concerns. The turmoil in US Treasury markets in March 2020 revealed how highly leveraged "basis trades" by hedge funds, financed through short-term repo and derivatives, could amplify a sudden dash for cash and undermine the functioning of the world's benchmark risk-free asset market. The collapse of Archegos Capital Management, a family office that had accumulated large synthetic equity exposures via total return swaps with multiple prime brokers, demonstrated how concentrated non-bank leverage can lead to sizeable losses for globally active banks, despite operating outside standard hedge fund reporting regimes. More recently, stress in UK gilt markets associated with leveraged liability-driven

 doi:10.20944/preprints202511.2181.v1



investment (LDI) strategies employed by pension funds illustrated how margin calls and collateral dynamics in the non-bank sector can trigger destabilising feedback loops in sovereign bond markets, prompting central bank intervention.

These events have prompted a re-evaluation of the role of hedge funds and other non-bank financial intermediaries in systemic risk. They underscore that non-bank leverage is not a peripheral phenomenon, but an integral feature of modern market-based finance. Importantly, the risks generated in core advanced-economy markets can spill over to emerging markets through changes in global risk appetite, portfolio rebalancing, margin and funding conditions, and exchange rate movements. Emerging markets are often highly sensitive to shifts in global financial conditions driven by the behaviour of leveraged non-bank investors, even when domestic exposures to hedge funds appear limited on a narrow balance-sheet view.

In parallel, macroprudential policy has become a central pillar of the post-crisis regulatory architecture. Many jurisdictions, including numerous emerging markets, have adopted macroprudential frameworks intended to mitigate systemic risk by constraining the build-up of leverage and maturity mismatches in the financial system. The bulk of macroprudential toolkits, however, has been designed with banks and, to a lesser extent, traditional credit intermediaries in mind. Countercyclical capital buffers, sectoral capital requirements, loan-to-value and debt-to-income limits, reserve requirements and liquidity tools have all been developed primarily for regulated deposit-taking institutions. By contrast, macroprudential instruments directly targeting hedge funds and other non-bank financial intermediaries remain underdeveloped and uneven across jurisdictions.

This asymmetry raises a pressing question: to what extent can macroprudential frameworks that are centred on banks address the systemic risks associated with hedge fund and non-bank leverage? If tighter regulation of bank balance sheets encourages the migration of risk to less regulated non-bank entities, authorities may face a growing share of systemic vulnerabilities outside the core perimeter of their traditional tools. Moreover, given the global footprint of large hedge funds and non-bank intermediaries, actions taken in one jurisdiction can have unintended consequences for others, particularly for emerging markets that are recipients of cross-border portfolio flows and are often price takers in global financial markets.

Emerging markets face a distinctive configuration of challenges in this context. On the one hand, many have strengthened their macroprudential frameworks since the global financial crisis, using tools such as reserve requirements, dynamic provisioning, foreign currency-related measures and sectoral capital buffers to tame credit cycles and enhance bank resilience. On the other hand, their financial systems are increasingly integrated into global capital markets, with domestic asset prices, funding conditions and exchange rates influenced by the behaviour of international investors, including hedge funds and other non-bank institutions based in advanced economies. Episodes of global risk-off, sudden stops and flight to safety can therefore transmit the consequences of non-bank deleveraging in core markets to emerging economies, regardless of the strength of domestic bank regulation.

The interaction between non-bank leverage and macroprudential policy is thus both domestic and cross-border. Domestically, there is a risk that macroprudential tightening on banks encourages greater use of non-bank channels, including investment funds, securities dealers and shadow credit structures. Cross-border, there is the possibility that regulatory reforms in advanced economies change the incentives and constraints of global non-bank intermediaries in ways that alter the volume, composition and volatility of capital flows to emerging markets. From the perspective of emerging-market authorities, understanding these channels is essential for designing macroprudential frameworks that are robust to external shocks and to the evolving structure of global finance.

Despite growing recognition of these issues, the analytical and policy debate remains fragmented. There is a rich literature on macroprudential policy design and effectiveness, but much of it focuses on banks and domestic credit cycles. There is also an expanding body of work on non-

 doi:10.20944/preprints202511.2181.v1



bank financial intermediation and systemic risk, including studies documenting the role of hedge funds and other leveraged players in recent stress episodes. However, these strands have not been fully integrated into a systematic analysis of what the rise of non-bank leverage implies for macroprudential policy in emerging markets. In particular, there is limited work that combines insights from advanced-economy experience with hedge funds and non-bank leverage, on the one hand, with the specific vulnerabilities and policy constraints of emerging markets, on the other.

This article seeks to fill part of that gap by developing a conceptual analysis of hedge funds, non-bank leverage and macroprudential policy from an emerging-market perspective. It does so by drawing on lessons from advanced economies—especially the United States, the European Union and the United Kingdom—where the interaction between non-bank leverage and financial stability has been thrown into sharp relief by recent crises. The central premise is that these episodes offer valuable insights for emerging markets, not because their institutional structures are identical, but because they reveal general mechanisms through which non-bank leverage can generate systemic risk and interact with macroprudential frameworks that are still predominantly bank-centric.

The article pursues three main objectives. First, it synthesises existing evidence on how hedge fund and non-bank leverage has contributed to systemic risk in advanced economies, focusing on the channels highlighted by official post-mortems and academic analyses of recent stress episodes. Second, it examines the ways in which macroprudential policy, particularly when directed primarily at banks, can influence the distribution of risks between banks and non-banks and across borders. Third, it draws out the implications for emerging markets, outlining key vulnerabilities and policy options for integrating non-bank and cross-border dimensions more systematically into macroprudential frameworks.

Methodologically, the article adopts a qualitative, conceptual approach grounded in the synthesis of regulatory reports, policy documents and academic research rather than in new empirical estimation. It is therefore best read as a structured interpretation of existing evidence rather than as a statistical assessment of tool effectiveness. This approach is well suited to the current stage of the debate, where data limitations and the complexity of non-bank intermediation make it difficult to estimate robust quantitative effects, but where the accumulation of descriptive and case-based evidence provides a rich base for conceptual analysis.

The remainder of the article is organised as follows. Section 2 reviews the evolution of hedge funds and non-bank financial intermediation as sources of systemic risk, with particular emphasis on recent stress episodes in advanced economies. Section 3 discusses macroprudential policy design, the primarily bank-focused nature of existing toolkits and the mechanisms through which risk can migrate to non-banks and across borders. Section 4 develops lessons from advanced economies for emerging markets, highlighting specific transmission channels and divergences in institutional capacity. Section 5 explores policy implications and options for emerging-market macroprudential authorities seeking to account for non-bank leverage and cross-border spillovers. Section 6 concludes with reflections on the research and policy agenda required to build macroprudential frameworks that are better aligned with the realities of a financial system in which non-bank intermediaries, including hedge funds, play an increasingly central role.

## 2. Background: Hedge Funds, Non-Bank Leverage and Systemic Risk

Non-bank financial intermediation has long been recognised as an important feature of modern financial systems, but its macroprudential significance became fully apparent only in the wake of the global financial crisis. Before 2007–2008, hedge funds, money market funds, structured investment vehicles and other non-bank entities were often perceived as absorbing risks away from the banking system, providing liquidity and enhancing market completeness. The crisis revealed that many of these entities were in fact tightly interconnected with banks through funding, guarantees and derivatives exposures, and that their distress could feed back into the core of the system. Post-crisis reforms thus sought to monitor and, to some extent, regulate non-bank intermediation, but the emphasis of macroprudential policy remained on banks.

 doi:10.20944/preprints202511.2181.v1



Hedge funds are a particularly salient component of this landscape. Although they are highly heterogeneous in strategies and structures, a large segment of the industry engages in leveraged trading in liquid markets—such as government bonds, credit, foreign exchange and equities—using margin, repo and derivatives to scale positions. Their leverage is typically secured by high-quality collateral and is contracted bilaterally with prime brokers and dealers. This funding model enables rapid expansion and contraction of balance sheets in response to perceived opportunities and risks, making hedge funds important marginal players in price discovery and liquidity provision, but also potential amplifiers of market stress.

Non-bank leverage interacts with market structure in several ways. First, hedge funds and other leveraged entities often occupy key positions in basis trades and arbitrage strategies that link cash and derivatives markets. These strategies are profitable in normal times when spreads are narrow and funding is cheap, but can become highly vulnerable when volatility spikes, margins rise and liquidity evaporates. Second, because non-bank leverage is frequently financed through short-term wholesale funding and collateralised borrowing, the terms of funding—haircuts, margins, eligible collateral—can change rapidly, forcing abrupt adjustments in positions. Third, the opacity of non-bank leverage, especially when concentrated in bespoke derivatives and bilateral repos, makes it difficult for authorities and even counterparties to obtain a comprehensive view of aggregate exposures and potential fire-sale dynamics.

The March 2020 turmoil in US Treasury markets is illustrative. In the early phase of the COVID-19 shock, investors sought cash and safety, but the world's benchmark government bond market experienced severe dislocations. Yields rose unexpectedly, bid–ask spreads widened and market depth evaporated, prompting large-scale central bank intervention. Post-crisis analyses by central banks and international bodies pointed to the role of leveraged hedge funds in basis trades that exploited small price differences between cash Treasuries and futures. These trades were typically financed through repo, with positions hedged in futures markets. When volatility increased and margins were raised, hedge funds faced margin calls and mark-to-market losses, prompting them to unwind positions at scale. The resulting sales of cash Treasuries and adjustments in futures amplified the stress and contributed to the breakdown of market functioning.

The Archegos episode, although involving a family office rather than a conventional hedge fund, highlighted another mechanism: highly concentrated, synthetic leverage built through total return swaps with multiple prime brokers. Archegos accumulated large exposures to a handful of equities without triggering public disclosure thresholds, because the positions were held via derivatives rather than direct share ownership. Each prime broker saw only its own slice of the exposure and largely relied on internal risk models and margin frameworks to manage the relationship. When underlying share prices fell and Archegos failed to meet margin calls, prime brokers rushed to liquidate positions, causing sharp price declines and sizeable losses for several global banks. The episode underscored the systemic implications of opaque, bilateral non-bank leverage and the limitations of existing reporting regimes.

Stress in UK gilt markets associated with liability-driven investment strategies provides yet another variation. In that case, the principal leveraged actors were pension funds employing derivatives to hedge interest rate risk while holding long-dated gilts. When yields rose sharply, margin calls forced funds to sell gilts into a falling market, amplifying price moves and prompting the Bank of England to intervene temporarily. Although LDI funds differ from hedge funds in legal form and investor base, the episode shares key features with hedge fund-driven stress: leverage via derivatives, sensitivity to margin and collateral dynamics, and feedback loops between non-banks and core sovereign bond markets.

A common thread across these episodes is that non-bank leverage has become integral to the functioning of core markets such as government bonds and interest rate derivatives. When stress arises, deleveraging and margin calls in the non-bank sector can rapidly undermine market liquidity and price formation, forcing central banks to act as market-makers of last resort. From a macroprudential perspective, this challenges pre-crisis assumptions that non-bank entities,

 doi:10.20944/preprints202511.2181.v1



particularly those without access to deposit insurance or central bank backstops, are inherently less systemically important than banks. The need for repeated, large-scale interventions in core markets suggests that systemic relevance now extends beyond traditional institutions to the broader ecosystem of leveraged intermediaries and their funding arrangements.

Regulatory and supervisory responses to these developments have included improved data collection, higher standards for central clearing and margining, and increased attention to non-bank financial intermediation in financial stability reports. Authorities have introduced reporting frameworks for hedge funds and other private funds, strengthened oversight of derivatives markets and explored the use of stress tests that include non-bank entities. International standard setters have developed recommendations on margin practices, liquidity management and leverage in investment funds. However, translating these initiatives into a coherent macroprudential regime for non-bank leverage has proved challenging.

Several constraints are evident. Non-bank intermediaries operate across legal forms and regulatory boundaries, including asset managers, hedge funds, family offices, pension funds and insurers. Jurisdictions differ in their legal mandates and institutional structures for regulating these entities, and coordination across securities, derivatives and banking regulators remains complex. Moreover, the cross-border nature of non-bank intermediation makes unilateral action more difficult, as activity can migrate to jurisdictions perceived as more permissive. In many countries, the political salience of non-bank regulation is relatively low compared with banking reforms, and the potential impact on market liquidity and competitiveness generates resistance to stringent measures.

These challenges are especially pronounced for emerging markets. While the most dramatic stress episodes discussed above occurred in advanced economies, the repercussions were felt globally. Emerging markets experienced capital outflows, exchange rate depreciations, widening spreads and volatility in domestic bond and equity markets as global investors, including hedge funds and other non-banks, rebalanced portfolios and met margin and liquidity demands. At the same time, emerging-market authorities typically have less information about the positions and leverage of offshore non-bank investors in their domestic markets and more limited influence over the regulatory frameworks that govern them.

In summary, the evolution of hedge funds and non-bank financial intermediation as sources of systemic risk poses a double challenge for macroprudential policy. Within advanced economies, it calls for a reconsideration of bank-centric frameworks in light of the growing role of non-bank leverage. Globally, it raises the question of how emerging markets can design macroprudential regimes that are robust to shocks originating in the non-bank sectors of other jurisdictions. The next section turns to macroprudential policy design and the mechanisms through which risk can migrate from banks to non-banks and across borders, setting the stage for a discussion of lessons for emerging-market authorities.

## 3. Materials and Methods: Macroprudential Policy and the Migration of Risk to Non-Bank Intermediaries

Macroprudential policy emerged from the global financial crisis as a framework for identifying and mitigating systemic risks that build up over time, with an emphasis on the common exposures, feedback loops and externalities that individual institutions may overlook. The operationalisation of this framework has, however, focused predominantly on banks and closely related credit intermediaries. Capital and liquidity requirements, borrower-based tools and a range of targeted measures have been used to influence the leverage and risk-taking of regulated banks, while non-bank sectors have, in most jurisdictions, been addressed more indirectly. This asymmetry has important implications for the distribution of risks between banks and non-banks and for the cross-border transmission of financial shocks.

This section outlines the main elements of macroprudential toolkits, discusses how they can create incentives for risk migration to non-bank entities and highlights cross-border channels through which non-bank leverage in advanced economies can affect emerging markets. The analysis is

 doi:10.20944/preprints202511.2181.v1



conceptual and synthesises existing evidence from international organisations and academic research rather than proposing new empirical estimates.

### *3.1. Bank-Centric Macroprudential Toolkits*

Post-crisis macroprudential frameworks are built around a set of tools that primarily target banks' balance sheets and lending practices. These include, among others, countercyclical capital buffers designed to build resilience during credit booms; sectoral capital requirements that increase loss-absorbing capacity for exposures to specific asset classes such as real estate; liquidity coverage and net stable funding ratios aimed at reducing funding fragility; and borrower-based instruments such as loan-to-value and debt-to-income limits that constrain household leverage.

In many emerging markets, macroprudential toolkits also encompass reserve requirements, dynamic provisioning, foreign currency-related measures and limits on certain types of credit or exposures. These tools are often deployed with an eye to managing capital flow volatility and currency mismatches as well as domestic credit cycles. Empirical studies suggest that such measures can dampen credit booms and improve bank resilience, especially when implemented early and consistently.

By construction, however, most of these instruments act on regulated banks and, in some cases, on other deposit-taking institutions. Their direct reach into the non-bank ecosystem—hedge funds, investment funds, finance companies, broker–dealers, pension funds and insurers—is limited. Non-bank entities may be indirectly affected through their relationships with banks as providers of funding, derivatives and other services, but they are not typically subject to the same set of macroprudential constraints. This structural feature reflects both legal mandates and the historical focus of prudential regulation on deposit-taking institutions.

### *3.2. Incentives for Risk Migration to Non-Banks*

When macroprudential policies tighten constraints on bank balance sheets and lending, they can alter the relative attractiveness of different channels of intermediation. In some settings, this may lead to a desirable overall reduction in system-wide leverage and risk-taking. In others, it may encourage a reconfiguration of intermediation chains in ways that leave aggregate risk largely unchanged but relocate it to less regulated or less transparent segments.

Several mechanisms have been identified in the literature and in policy debates. First, tighter capital or liquidity requirements on banks can lead them to reduce activities that are intensive in balance sheet usage, such as market-making in securities or structured lending, and to offload these activities to non-bank entities. For example, investment funds and hedge funds may expand their roles in credit provision, securitisation and market-making as banks retrench. Second, borrower-based tools may drive certain types of credit demand toward non-bank lenders that are not constrained by the same rules, particularly in housing and consumer finance. Third, restrictions on banks' proprietary trading and derivatives positions can encourage greater use of derivatives and leverage in the asset management and hedge fund sectors.

From a purely domestic perspective, risk migration of this kind may leave the banking sector more robust while increasing the relative importance of non-banks. If non-bank entities are lightly regulated, rely on short-term wholesale funding or engage in opaque leverage, the system as a whole may remain vulnerable to shocks even as banks satisfy stricter prudential standards. The problem becomes more complex in an open-economy setting, where non-bank entities domiciled abroad can provide credit and intermediation services to domestic borrowers and investors, potentially outside the reach of local regulators.

The relationship between macroprudential policy and non-bank leverage is therefore not unidirectional. On the one hand, bank-focused macroprudential tools can reduce the likelihood that banks themselves become sources of systemic instability and can indirectly restrain non-bank leverage by tightening the terms under which banks provide funding and services to non-banks. On the other hand, if not accompanied by complementary measures targeting non-bank sectors, bank-

 doi:10.20944/preprints202511.2181.v1



focused tools can push parts of the intermediation chain into institutional and jurisdictional spaces where oversight is weaker. The net effect depends on the design and calibration of tools, the structure of the financial system and the opportunities available for regulatory arbitrage.

### *3.3. Cross-Border Dimensions and Emerging Markets*

Risk migration to non-banks is not confined within national borders. Large hedge funds and other non-bank financial intermediaries operate globally, raising funds and investing across advanced and emerging markets. Their leverage decisions are influenced by conditions in their home jurisdictions—such as the stance of monetary policy, funding conditions and the regulatory environment—but the consequences of their actions are felt widely.

Emerging markets are particularly exposed to these dynamics for several reasons. First, they are frequent destinations for cross-border portfolio flows seeking higher yields in sovereign bonds, corporate debt, equities and currencies. When global non-bank investors adjust their leverage or risk appetite in response to changes in advanced-economy conditions or regulatory measures, capital flows to emerging markets can surge or reverse abruptly, affecting asset prices, exchange rates and domestic funding conditions. Second, emerging-market authorities typically have limited visibility into the balance sheets and leverage of offshore non-bank investors, relying on partial data from securities holdings, survey-based information and occasional regulatory disclosures. Third, emerging markets' own macroprudential toolkits, while often sophisticated for banks, may be less developed for non-bank sectors and cross-border exposures, making it difficult to respond effectively to externally driven shocks.

Changes in advanced-economy regulation can have unintended spillover effects. For example, tighter capital and liquidity regulation on global banks may lead them to reduce balance sheet capacity for market-making in emerging-market securities, increasing reliance on non-bank investors for liquidity and price discovery. Similarly, higher margin and collateral requirements in derivatives markets can alter the behaviour of leveraged investors, affecting hedging and speculative positions in emerging-market currencies and bonds. In some cases, reforms intended to curb risk in core markets may encourage greater use of offshore or lightly regulated structures, complicating oversight further.

From an emerging-market macroprudential perspective, these cross-border channels mean that domestic stability cannot be fully ensured by focusing on banks alone. Authorities may need to develop monitoring frameworks that track non-bank investor behaviour and leverage in domestic markets, including through cooperation with foreign regulators and international organisations. They may also need to consider the interaction between capital flow management measures, exchange rate regimes and macroprudential tools when responding to shocks that originate in the non-bank sectors of advanced economies.

In light of these considerations, the design of macroprudential policy in emerging markets must take into account both the possibility of domestic risk migration from banks to non-banks and the impact of global non-bank leverage on domestic financial conditions. The next section examines lessons from advanced economies' recent experience with hedge funds and non-bank leverage and explores how those lessons can inform the development of macroprudential frameworks that are more robust to non-bank and cross-border dimensions in emerging markets.

## 4. Lessons from Advanced Economies for Emerging Markets

The recent experience of advanced economies with hedge funds and non-bank leverage provides a set of concrete mechanisms through which non-bank activities can affect financial stability, even in systems with strengthened bank regulation. For emerging markets, these episodes are informative not because institutional settings are identical, but because they illuminate generic channels of fragility and policy blind spots that can manifest under different structural conditions. This section distils three clusters of lessons: the importance of data and transparency on non-bank leverage; the

 doi:10.20944/preprints202511.2181.v1



interaction between non-bank leverage and core market functioning; and the limitations of bank-centric macroprudential approaches in the presence of global non-bank players.

### *4.1. Data Gaps, Opacity and the Limits of Monitoring*

A first lesson from advanced economies is that data collection frameworks for non-bank entities, while significantly improved since the global financial crisis, still leave important blind spots. In the United States, Form PF and other reporting tools have increased regulators' visibility over hedge fund activities, yet the Archegos case showed that certain structures—such as family offices and synthetic exposures via derivatives—can fall outside regular reporting regimes. In Europe, AIFMD and related reporting frameworks have generated considerable data on alternative investment funds, but authorities still struggle with the aggregation and interpretation of complex position information, particularly when it comes to derivatives and cross-border exposures.

For emerging markets, these experiences highlight the danger of assuming that limited domestic presence of hedge funds or private funds implies limited exposure to non-bank leverage. Even when most leveraged non-bank activity is offshore, domestic markets can be affected through holdings of local-currency bonds, equities, credit instruments or synthetic exposures written on domestic assets. Without adequate data on which non-bank investors hold what positions in domestic markets, and how these positions are financed and hedged, authorities may be blindsided by sudden adjustments in non-bank balance sheets triggered by global shocks.

While emerging markets often lack the resources to replicate advanced reporting frameworks, the key lesson is the need to prioritise certain types of information: holdings of domestic assets by major non-bank investors; the role of local intermediaries (such as banks and brokers) as prime brokers, collateral providers or counterparties; and the use of derivatives that create synthetic exposures to domestic risks. Strengthening the coverage and granularity of securities holdings statistics, enhancing trade and position reporting in domestic derivatives markets, and participating in cross-border data initiatives can improve the ability of emerging-market authorities to monitor non-bank leverage that is relevant for their stability.

### *4.2. Non-Bank Leverage and Core Market Functioning*

A second lesson concerns the tight coupling between non-bank leverage and the functioning of core markets. In advanced economies, leveraged hedge funds have become central participants in government bond and interest rate derivatives markets. The March 2020 and LDI episodes showed that when leveraged non-bank strategies unwind abruptly, the resulting fire sales and margin spirals can destabilise even the most liquid markets, forcing central banks to intervene.

Emerging markets, although operating on a smaller scale, face analogous vulnerabilities. Domestic government bond markets, particularly in local currency, are often central to fiscal financing and monetary policy transmission, yet their liquidity is increasingly influenced by global and domestic non-bank investors. When global funds reduce exposure to emerging-market bonds in response to tightening financial conditions or rising volatility, yields can spike and market liquidity can evaporate, with direct implications for sovereign financing costs, banks' balance sheets and the broader macroeconomy.

The advanced-economy experience suggests that non-bank participation in core markets is double-edged: it can improve liquidity and market depth in normal times, but can also amplify stress when leveraged positions are unwound. For emerging markets, this implies that policy frameworks should explicitly consider the composition and behaviour of investor bases in government bond and foreign exchange markets, including the role of leveraged non-bank investors. Possible responses include the development of robust domestic market-making capacity, careful management of non-resident holdings and margining practices, and contingency planning for episodes when central banks may need to support market functioning.

 doi:10.20944/preprints202511.2181.v1



### 4.3. Constraints of Bank-Centric Macroprudential Approaches

Advanced-economy experience also illustrates that strengthening bank balance sheets and deploying bank-focused macroprudential tools, while necessary, is not sufficient to contain systemic risk when non-bank leverage is significant. Bank capital and liquidity reforms have made core institutions more resilient, as evidenced by their relative stability during the March 2020 turmoil. However, the need for repeated central bank interventions in response to non-bank deleveraging underscores the limits of a framework that treats banks as the sole or primary locus of systemic risk.

For emerging markets, which have invested considerable effort in building bank-centric macroprudential frameworks, the risk is that a similar blind spot emerges. Tightening capital and liquidity rules for banks can reduce the likelihood of banking crises, but may also encourage greater intermediation via offshore or domestic non-bank channels. At the same time, macroprudential authorities may lack mandates or tools to act directly on these entities, especially when they are domiciled abroad.

The lesson from advanced economies is that macroprudential policy needs to incorporate non-bank dimensions more explicitly. This does not imply replicating all aspects of advanced-economy regulation, but it does mean recognising that bank-centred tools can have spillover effects on non-bank leverage and that systemic risk assessments should extend beyond the banking system. For emerging markets, this may involve expanding the scope of macroprudential analysis to include investment funds and securities dealers, developing basic leverage and liquidity metrics for domestic non-banks, and integrating these considerations into stress-testing exercises.

### 4.4. Institutional Architecture and the Role of Central Banks

Experience in the United States, the European Union and the United Kingdom also highlights the importance of institutional architecture in shaping responses to non-bank risk. In all three jurisdictions, central banks have played an increasingly prominent role in diagnosing vulnerabilities in non-bank financial intermediation and calling for policy action. Yet the ability to translate diagnoses into binding measures has varied, depending on the division of responsibilities between central banks, securities regulators, prudential authorities and finance ministries.

For emerging markets, these cases suggest that giving central banks a clear mandate for financial stability, including over non-bank-related risks, can be valuable, provided that coordination with other regulators is effective. Central banks often have the analytical capacity and macroeconomic perspective needed to assess the system-wide implications of non-bank leverage and cross-border spillovers. However, they may lack direct powers over non-bank entities and may need to rely on recommendations to securities regulators and ministries to effect change.

A lesson from advanced economies is that institutional fragmentation and unclear mandates can slow down the response to emerging vulnerabilities. Emerging markets designing or reforming macroprudential frameworks may therefore wish to clarify which institutions are responsible for monitoring non-bank risks, how they cooperate and how decisions about macroprudential interventions are made. In systems where central banks already have strong roles in bank supervision and macroprudential policy, extending their remit to cover non-bank-related systemic risk—at least at the level of analysis and recommendation—may improve coherence.

### 4.5. Political Economy and the Limits of Technocratic Solutions

Finally, advanced-economy experience underscores that the governance of non-bank leverage is not purely a technical problem. Efforts to impose stricter constraints on hedge funds, investment funds or other non-bank entities often encounter resistance from powerful industry interests and concerns about market liquidity and competitiveness. In practice, this has led to a pattern in which ambitious proposals are softened or delayed, and authorities rely on a combination of incremental reforms and central bank backstops rather than on robust ex ante constraints.

 doi:10.20944/preprints202511.2181.v1



Emerging markets, though different in political structure and industry influence, are not immune to similar dynamics. Domestic financial lobbies, concerns about attracting foreign investment and the perceived need to deepen capital markets can all limit policymakers' appetite for intrusive regulation of non-bank intermediaries. The lesson is that macroprudential strategies for non-bank leverage must consider political feasibility and may need to proceed in stages, building coalitions in support of measures that enhance transparency, strengthen data collection and clarify responsibilities before attempting more stringent interventions.

Taken together, these lessons suggest that emerging markets cannot simply import advanced-economy regulatory templates, but must adapt them to their own structural and institutional contexts. The next section builds on this discussion to outline specific implications for the design of macroprudential policy in emerging markets, with a focus on how authorities can incorporate non-bank and cross-border dimensions into their frameworks while navigating domestic constraints.

## 5. Policy Implications for Emerging Markets

The preceding analysis suggests that emerging markets confront a twofold challenge. Domestically, they must ensure that macroprudential frameworks do not leave large pockets of leverage and liquidity risk in non-bank sectors unaddressed. Globally, they must cope with shocks that originate in the non-bank financial systems of advanced economies and transmit through capital flows, asset prices and exchange rates. This section outlines implications for the design of macroprudential policies in emerging markets along three dimensions: strengthening domestic surveillance and tools for non-bank risks; managing cross-border exposures and spillovers; and integrating macroprudential policy with broader policy frameworks.

### *5.1. Strengthening Domestic Surveillance and Tools for Non-Bank Risks*

A first priority for emerging markets is to expand the scope of systemic risk surveillance beyond banks. Even when domestic hedge fund industries are small, there are typically other non-bank entities—such as investment funds, securities dealers, finance companies and pension funds—that can use leverage, rely on short-term funding or hold concentrated exposures to key asset classes. The experience of advanced economies suggests that these features can become systemically relevant when they interact with market-wide shocks and margin and collateral dynamics.

In practice, enhancing surveillance does not require replicating the full reporting architectures of large advanced economies, but it does call for a systematic mapping of domestic non-bank sectors. Authorities can begin by identifying which types of non-bank entities are most likely to contribute to systemic risk, based on size, leverage, interconnectedness with banks and exposure to core markets such as government bonds and foreign exchange. For these entities, developing basic indicators of leverage, liquidity and maturity transformation is an important step.

Where legal mandates allow, emerging-market regulators may also consider introducing simple constraints on non-bank leverage and liquidity risk. For example, margining and collateral practices in domestic derivatives and securities financing markets can be reviewed to ensure that they do not encourage excessive procyclical leverage. Investment funds could be subject to limits on borrowing and synthetic leverage and to expectations regarding liquidity management tools. Such measures must be tailored to local market development: overly restrictive rules risk stifling nascent capital markets, but a complete absence of constraints may leave the system exposed to non-bank amplification of shocks.

Central banks and macroprudential authorities can play a coordinating role in this process. Even when they are not the primary supervisors of non-bank entities, they can integrate non-bank indicators into financial stability assessments, promote data sharing among regulators and help identify cross-sector linkages that are not apparent from a purely sectoral perspective. Over time, incorporating non-bank entities into scenario-based stress tests—starting with qualitative or stylised exercises and gradually progressing to more formal models—can improve understanding of how shocks might propagate through domestic financial systems.

 doi:10.20944/preprints202511.2181.v1



*5.2. Managing Cross-Border Exposures and Spillovers*

The cross-border dimension of non-bank leverage requires emerging markets to pay close attention to the behaviour of foreign investors in domestic markets, particularly those that may be using leverage or complex strategies. While detailed information on offshore hedge funds and their funding structures may not be available, authorities can monitor the composition, concentration and behaviour of foreign holdings in domestic government bond, corporate bond and equity markets. Sudden changes in foreign positioning, especially by large institutions and funds, can provide early warning signals of potential volatility and funding pressures.

Capital flow management measures and macroprudential tools relating to foreign currency exposures can complement surveillance. For instance, limits on foreign currency mismatches in banks and corporates, and prudential requirements that discourage excessive reliance on short-term external funding, can reduce the transmission of external non-bank deleveraging to domestic balance sheets. In some cases, prudential limits on banks' exposures to non-resident counterparties or to certain types of cross-border securities can be justified on systemic risk grounds.

Cooperation with foreign regulators and international organisations is also important. Participation in global and regional forums, and bilateral dialogues with authorities in major financial centres, can improve access to information about global non-bank trends and cross-border exposures. Data-sharing arrangements, where feasible, can help emerging-market authorities understand which foreign institutions are active in their markets and how those positions might respond to stress. In addition, emerging markets can contribute to international standard-setting discussions on non-bank financial intermediation, ensuring that the perspectives and vulnerabilities of smaller, open economies are taken into account.

In extreme circumstances, emerging markets may need to rely on central bank swap lines or other forms of official liquidity support to manage the domestic consequences of global non-bank deleveraging. While such arrangements are typically limited and contingent, recent crises have shown that they can play a stabilising role. Recognising the potential need for such support should inform both domestic reserve management and engagement with the international financial architecture.

*5.3. Integrating Macroprudential Policy with Monetary, Fiscal and Structural Policies*

Non-bank-related systemic risks in emerging markets cannot be managed by macroprudential policy alone. They are intertwined with monetary policy, fiscal policy and structural reforms that shape the development of financial markets and the broader economy. Effective macroprudential strategies must therefore be designed in conjunction with these other policy domains.

On the monetary policy side, the interaction with macroprudential tools is particularly important in the context of global financial cycles. Tightening domestic interest rates in response to inflation or external shocks may simultaneously strengthen bank balance sheets and attract capital inflows from leveraged non-bank investors seeking higher yields, potentially increasing vulnerability to future reversals. Conversely, easing monetary policy may support domestic activity but induce carry trade behaviour that exposes domestic markets to sudden stops. Macroprudential tools can help moderate these dynamics by leaning against excessive credit growth, foreign currency borrowing or maturity mismatches, but their calibration must consider the overall stance of monetary policy and the state of global financial conditions.

Fiscal policy shapes systemic risk through its impact on sovereign creditworthiness, fiscal buffers and the structure of government debt. Highly indebted sovereigns with large refinancing needs are more vulnerable to non-bank-driven volatility in government bond markets, as shifts in investor sentiment can quickly translate into higher yields and funding stress. Building credible fiscal frameworks, diversifying the investor base, managing interest rate and rollover risks and developing domestic institutional investor capacity can all reduce the sensitivity of sovereign financing conditions to external non-bank shocks. Macroprudential authorities should therefore coordinate

 doi:10.20944/preprints202511.2181.v1



with fiscal authorities when assessing vulnerabilities in sovereign debt markets and designing responses.

Structural policies affecting financial market development also matter. Deep, well-regulated domestic capital markets can provide alternative sources of funding and risk-sharing that reduce reliance on volatile cross-border flows from leveraged non-banks. At the same time, rapid market development without adequate regulatory and supervisory capacity can create new channels for systemic risk. Gradual and sequenced liberalisation, accompanied by investments in regulatory institutions and infrastructure, can mitigate such risks. Policies that improve transparency, strengthen corporate governance and enhance the quality of financial reporting can further support the resilience of domestic markets.

Finally, in many emerging markets, energy transition and climate policies are becoming increasingly relevant for financial stability. Non-bank investors are active in financing energy and infrastructure projects, and transition risks linked to energy prices, carbon policies and climate shocks can affect asset valuations and creditworthiness. As discussed in other work, integrating transition and climate dimensions into macroprudential assessments can help authorities anticipate how non-bank leverage in climate-sensitive sectors might propagate through the financial system. In this sense, the challenges posed by hedge funds and non-bank leverage intersect with broader structural transformations in the global economy.

Taken together, these implications suggest that emerging markets should view non-bank leverage and cross-border spillovers as integral components of their macroprudential agendas, rather than as peripheral issues. The final section summarises the main arguments and outlines priorities for research and policy development aimed at building macroprudential frameworks that are better aligned with a financial system in which non-bank intermediaries, including hedge funds, play increasingly prominent roles.

## 6. Conclusions

This article has examined the growing role of hedge funds and other non-bank financial intermediaries in systemic risk, and the implications of this evolution for macroprudential policy in emerging markets. It has argued that post-crisis reforms, while successful in strengthening bank balance sheets and expanding bank-centric macroprudential toolkits, have left important vulnerabilities in non-bank sectors that are increasingly central to market-based finance. Episodes such as the March 2020 turmoil in US Treasury markets, the Archegos collapse and the UK gilt–LDI stress illustrate how leveraged non-bank positions, funded through short-term wholesale markets and derivatives, can destabilise core markets and prompt large-scale central bank interventions.

For emerging markets, these developments are not distant curiosities but sources of concrete vulnerability. Global hedge funds and other non-bank intermediaries are key participants in cross-border portfolio flows into emerging-market bonds, equities and currencies. When non-bank deleveraging occurs in response to shocks or regulatory changes in advanced economies, the resulting shifts in risk appetite, margin and funding conditions can trigger sharp movements in asset prices and exchange rates in emerging markets, even when domestic exposures to non-banks appear limited. At the same time, domestic non-bank sectors in emerging markets, including investment and pension funds, may themselves employ leverage or hold concentrated positions in sovereign and corporate bonds, adding local layers of fragility.

The analysis suggests that macroprudential policy in emerging markets must adapt to these realities. Bank-focused tools remain essential for managing credit cycles and strengthening the core of the financial system, but they are not sufficient to address systemic risks that originate in, or are transmitted through, non-bank intermediaries. Emerging markets need to extend the scope of systemic risk surveillance to non-bank entities, develop basic metrics and, where appropriate, constraints on leverage and liquidity risk in these sectors, and integrate non-bank considerations into stress tests and financial stability assessments. They must also pay close attention to cross-border dimensions, monitoring the behaviour of foreign non-bank investors in domestic markets, managing

 doi:10.20944/preprints202511.2181.v1



currency and maturity mismatches, and engaging in international coordination on non-bank financial intermediation.

A further implication is that macroprudential policy cannot be conceived in isolation from monetary, fiscal and structural policies. Non-bank-related vulnerabilities are shaped by the interaction of global financial cycles with domestic policy regimes, by the credibility of fiscal frameworks and sovereign debt management, and by the trajectory of financial market development and energy and climate transitions. Central banks and macroprudential authorities need to work closely with fiscal authorities, securities regulators and other agencies to design coherent strategies that account for these linkages. In this context, emerging markets may benefit from giving central banks a clear mandate for financial stability that encompasses non-bank-related risks, while ensuring effective cooperation with other regulators.

Finally, the article has underscored the importance of political economy constraints. Efforts to strengthen oversight of non-bank leverage often confront resistance from industry interests and concerns about market liquidity and competitiveness. Emerging markets, which are eager to deepen capital markets and attract investment, may be especially wary of measures perceived as restrictive. Realistic macroprudential strategies will thus need to proceed incrementally, prioritising transparency, data improvements and clear allocation of responsibilities as foundations for more ambitious interventions.

Future research can build on this conceptual analysis by developing empirical measures of non-bank leverage relevant for emerging markets, quantifying the impact of non-bank-driven shocks on domestic financial conditions, and experimenting with stress-testing frameworks that explicitly incorporate non-bank and cross-border channels. As the structure of global finance continues to evolve, with non-bank intermediaries playing an ever more prominent role, emerging markets will need macroprudential frameworks that are capable of seeing beyond the banking sector and of managing the risks associated with a financial system in which leverage and liquidity transformation are increasingly conducted outside traditional institutions.

**Author Contributions:** Conceptualization, Gustavo Henrique Rodrigues Pessoa; methodology, Gustavo Henrique Rodrigues Pessoa; formal analysis, Gustavo Henrique Rodrigues Pessoa; investigation, Gustavo Henrique Rodrigues Pessoa; writing—original draft preparation, Gustavo Henrique Rodrigues Pessoa; writing—review and editing, Gustavo Henrique Rodrigues Pessoa. The author has read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** No new data were created or analyzed in this study. Data sharing is not applicable to this article.

**Conflicts of Interest:** The author declares no conflict of interest.:

## References

1. Aramonte, S.; Avalos, F.; Schrimpf, A. 2021. Non-bank financial intermediaries and the 2020 US Treasury market turmoil. *BIS Bulletin*, No. 36. Bank for International Settlements, Basel.
2. Aramonte, S.; Huang, W.; Schrimpf, A. 2022. Non-bank financial intermediaries and financial stability. *BIS Quarterly Review*, September, 63–78. Bank for International Settlements, Basel.
3. Battiston, S.; Mandel, A.; Monasterolo, I.; Schütze, F.; Visentin, G. 2017. A climate stress-test of the financial system. *Nature Climate Change*, 7, 283–288.
4. Carney, M. 2015. Breaking the Tragedy of the Horizon—Climate Change and Financial Stability. Speech at Lloyd's of London, 29 September 2015. Bank of England, London.

 doi:10.20944/preprints202511.2181.v1




5. Claessens, S.; Ratnovski, L. 2014. What is shadow banking? In *Shadow Banking within and across National Borders*; Claessens, S., Evanoff, D., Kaufman, G., Laeven, L., Eds.; World Scientific: Singapore; pp. 3–20.
6. Claessens, S.; Köhler, M.; Nakazono, Y. 2018. Financial intermediation and monetary policy transmission in emerging market economies. *BIS Papers*, No. 90, 35–70. Bank for International Settlements, Basel.
7. Committee on the Global Financial System (CGFS). 2018. *Repo Market Functioning*. CGFS Papers, No. 59. Bank for International Settlements, Basel.
8. Financial Stability Board (FSB). 2017. *Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities*. FSB, Basel.
9. Financial Stability Board (FSB). 2020. *Holistic Review of the March Market Turmoil*. FSB, Basel.
10. Financial Stability Board (FSB). 2022. *Global Monitoring Report on Non-Bank Financial Intermediation 2022*. FSB, Basel.
11. International Monetary Fund (IMF). 2013. *Key Aspects of Macroprudential Policy*. IMF Policy Paper. IMF, Washington, DC.
12. International Monetary Fund (IMF). 2014. *Staff Guidance Note on Macroprudential Policy*. IMF Policy Paper. IMF, Washington, DC.
13. International Monetary Fund (IMF). 2022. *Global Financial Stability Report: Shockwaves from the War in Ukraine Test the Financial System's Resilience*. IMF, Washington, DC.
14. Kashyap, A.K.; Tsomocos, D.P.; Vardoulakis, A.P. 2020. How does macroprudential regulation change bank credit supply? *Annual Review of Financial Economics*, 12, 1–24.
15. Lim, C.; Columba, F.; Costa, A.; Kongsamut, P.; Otani, A.; Saiyid, M.; Wezel, T.; Wu, X. 2011. *Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences*. IMF Working Paper, WP/11/238. IMF, Washington, DC.
16. Pozsar, Z.; Adrian, T.; Ashcraft, A.; Boesky, H. 2010. *Shadow Banking*. Federal Reserve Bank of New York Staff Report, No. 458. New York.
17. Schnabel, I. 2021. Non-bank Financial Intermediation and Financial Stability. Speech at the Financial Stability Conference – 20 years after the financial crisis: Lessons learned for the macroprudential policy framework, 11 November 2021. European Central Bank, Frankfurt am Main.
18. Turner, A. 2010. *What Do Banks Do? Why Do Credit Booms and Busts Occur and What Can Public Policy Do about It?* In *The Future of Finance: The LSE Report*; Turner, A. et al., Eds.; London School of Economics and Political Science: London; pp. 5–86.
19. Vinals, J.; Fiechter, J.; Narain, A.; Elliott, J.; Tower, I.; Bologna, P.; Hsu, M. 2010. *The Making of Good Supervision: Learning to Say "No"*. IMF Staff Position Note, SPN/10/08. IMF, Washington, DC.