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Non-Bank Financial Institutions in the Extended Banking System: A Functional Taxonomy

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ABSTRACT

In recent years, Non-Bank Financial Institutions (NBFIs) have overtaken banks as key actors in various financial activities. However, NBFIs encompass a wide range of institutions with diverse business models, making it essential to clarify their roles in the financial system. While post-Keynesian research highlights that NBFIs are integrated into the banking system — rather than functioning as a separate alternative — existing approaches often oversimplify their diversity or rely on overly detailed descriptions. This paper addresses the gap by proposing a simple, theoretically grounded taxonomy of NBFI activities based on post-Keynesian and Minskyan insights. It classifies NBFIs' activities into three categories: (1) non-leveraged lending, where NBFIs passively accept bank-created deposits and use them to purchase financial assets, potentially expanding credit without increasing the money supply; (2) leveraged lending, where NBFIs borrow from financial institutions to extend credit, potentially increasing both credit and deposits; and (3) banks' funding transformation, where NBFIs restructure banks' liabilities through instruments like repos or securitization. Drawing on recent US data, including the From-Whom-to-Whom dataset, the paper provides support for the framework, showing how NBFIs increasingly operate alongside and within the banking system. This perspective helps clarify their macro-financial implications and informs ongoing debates around regulation and systemic risk.

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1. Introduction

In recent years, Non-Bank Financial Institutions (NBFIs) have surpassed banks as key players in various financial activities. Since the Global Financial Crisis, they have grown rapidly and now manage over $238 trillion in assets, accounting for half of the total global financial assets (Financial Stability Board 2024). Recent research shows that NBFIs are integrated within the banking system rather than operating as a separate alternative. However, NBFIs encompass a wide range of institutions with diverse business models, making it essential to understand their specific roles in the financial system. Efforts to incorporate them into monetary theory often either oversimplify their diversity

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or rely on overly detailed accounts, limiting broader theoretical insight. This paper addresses this gap by proposing a simple taxonomy of NBFI activities grounded in post-Keynesian theoretical insights.

The nexus between banks and NBFIs is attracting increasing attention from both market participants and regulators. Between 2015 and 2023, bank lending to NBFIs grew at an average annual rate of 15 per cent, significantly expanding their share in bank portfolios. In the United States (US) alone, loans to NBFIs now exceed $1 trillion, with nearly $770 billion in undrawn credit lines (S&P 2025). This growing interconnection has come under scrutiny following the collapses of Archegos Capital Management and Greensill Capital, which highlighted how NBFIs can transmit financial stress to the banking system.[1]

Although post-Keynesian literature has examined NBFIs and shadow banking's role in financialization (Sawyer 2013; Botta, Caverzasi, and Tori 2015; Caverzasi, Botta, and Capelli 2019), Michell (2024, p. 182) argues that 'the degree to which "bank" and "non-bank" financial intermediation are integrated is underemphasised'. Following Sissoko (2024a) and building on earlier post-Keynesian work, Michell sees NBFIs as part of an 'extended banking system' operating alongside traditional banks. This aligns with Caverzasi, Botta, and Capelli (2019) and Canelli, Fontana, and Realfonzo (2025), who show how NBFIs support banks in establishing new channels for credit provision, either directly or indirectly.

However, not all NBFIs play the same role. Recent studies range from broad generalizations of their dependence on banks to detailed classifications that make it harder to identify common patterns. To address this, the paper proposes a taxonomy of NBFI activities into three categories, based on the institutional structures that shape their typical operations. This framework helps assess their causal roles in financial markets and their broader macroeconomic implications.

Besides drawing on post-Keynesian theories of endogenous money, this paper builds on three key Minskyan insights: (1) institutional structures shape economic behaviour and what is accepted as money, influencing liability structures and portfolio management; (2) initiative shapes causal chains, as financial structures determine who initiates transactions and how they are constrained; and (3) the financial institutions' structures are not neutral, as they affect asset prices, credit conditions, and macroeconomic outcomes. These insights allow the paper to distinguish NBFIs by their liability structures and their relationship to money creation, circulation, and destruction. Liability structures shape institutional behaviour by distributing initiative across financial transactions, creating causal chains that can generate macroeconomic fragility. Based on this, the paper classifies NBFI activities into three types: (1) non-leveraged lending, where NBFIs accept bank-created deposits at the initiative of shareholders and use them to acquire non-bank liabilities, potentially expanding credit without increasing the money supply; (2) leveraged lending, where NBFIs borrow from financial institutions to extend credit or buy financial assets, which increases total credit and, when the borrowing originates from banks, also expands the money supply; and (3) banks' funding transformation, where

[1]The collapse of Archegos Capital Management in 2021 led to over $10 billion in losses across multiple banks. It exposed significant weaknesses in how banks manage counterparty credit risks associated with investment funds, which are far larger today than at the failure of the leveraged hedge fund Long-Term Capital Management (Barr 2024).

NBFIs exchange deposits for other bank liabilities, temporarily or contingently reducing the money supply.

The paper provides empirical support for the extended banking system perspective by analysing recent data on bank–NBFI interconnections in the US. Using the From-Whom-to-Whom dataset, it shows that leveraged NBFIs rely heavily on bank credit, while NBFIs involved in banks' funding transformation hold most of their private assets in the form of bank liabilities. In contrast, non-leveraged NBFIs have limited non-equity exposure to banks. Overall, the results confirm that banks remain central to the credit system, even as credit provision and liquidity transformation increasingly occur through NBFIs. To complement this, the paper also explores how recent financial innovations, such as private credit and synthetic risk transfers, transform risks without removing them from the banking system. Finally, an analysis of holding structures shows that many NBFIs operate as affiliates within bank holding companies, reinforcing the institutional integration and functional interdependence between banks and NBFIs.

The rest of the paper is organized as follows: Section Two presents a brief review of the post-Keynesian literature on the role of NBFIs. Section Three introduces the theoretical framework and NBFIs' activities taxonomy, exploring their main characteristics and implications. Section Four introduces empirical evidence from US financial accounts, recent market trends, and alternative sources supporting this framework. Finally, Section Five concludes.

2. The 'Extended Banking System' in the Post-Keynesian Literature

In post-Keynesian literature, the central role of commercial banks stems from their ability to issue deposits that are accepted as a means of payment and settlement. These deposits are created when banks grant credit, based on the initiative of creditworthy borrowers. This process of purchasing power creation enables autonomous expenditures by other sectors, driving economic activity and growth (Cesaratto 2017). Within this tradition, the monetary circuit framework distinguishes between 'initial' and 'final' finance. Initial finance occurs when banks lend to firms, opening the monetary circuit by allowing them to pay the wage bill. Firms recover these deposits when workers consume, enabling loan repayment. However, if workers save, not all loans are repaid. Firms may then issue other liabilities to capture workers' deposits and repay the loans — this is final finance, which closes the monetary circuit (Canelli, Fontana, and Realfonzo 2025).

Building on this, the traditional literature distinguishes commercial banks and NBFIs. Banks create deposits when they lend, while NBFIs are associated with final finance, reallocating already-created deposits to allow non-financial firms to repay bank loans (Michell 2024).

In recent years, in response to structural changes in financial markets and the process of financialization, post-Keynesian literature has integrated NBFIs into more complex monetary circuits (Botta, Caverzasi, and Tori 2015; Caverzasi, Botta, and Capelli 2018; 2019; Michell 2017; Sawyer 2013).[2] The recent Critical Macro-Finance (CMF) literature,

[2]NBFIs' role in final finance has been also analysed through balance sheets (Michell 2017; Lavoie 2019; Bouguelli 2020) and stock-flow consistent modelling frameworks (Nikolaidi 2015; Sawyer and Veronese Passarella 2017; Botta,

related to the post-Keynesian tradition, has further analysed these changes, focusing on the hierarchical balance sheet relationships between institutions and their search for new ways of monetizing credit (Dutta et al. 2020; Gabor 2020). While there is some debate on how to theorize NBFIs in the post-Keynesian theory — particularly whether their liabilities constitute a form of money, though lower in the hierarchy of money (Bouguelli 2018; Nersisyan and Dantas 2017; 2018) — most authors agree that, given their subordinate position, NBFIs rely on the banking system. In this sense, Bouguelli (2018, p. 653) emphasizes that the sharp distinction between banks and NBFIs highlights both their reliance and their 'symbiotic relationship' (See also Bonizzi and Kaltenbrunner (2020)). Similarly, 'the view of the traditional and shadow banks as two parallel and alternative systems is ultimately incorrect and potentially misleading' (Caverzasi, Botta, and Capelli 2019, p. 1030). This symbiotic perspective also appears in Farhi and Prates (2011), Botta, Caverzasi, and Tori (2015), and Sawyer (2020), among others.

Although many post-Keynesian authors point to this symbiotic relationship, Michell (2024, p. 182) argues that 'the degree to which "bank" and "non-bank" financial intermediation are integrated is underemphasised', except for recent contributions by Sissoko (2024a) and Michell (2024) himself. They highlight that NBFIs are part of an 'extended banking system' that not only opens new channels for money creation, circulation, and destruction but also operates in a complementary way alongside banks.

Sissoko (2024a, p. 2) emphasizes the social conventions enabling bank deposits to circulate as a means of payment. '[B]ecause they are not directly supported by the social norm, any non-bank liabilities that function as near-money assets must derive their monetary characteristics from their relationship to the banking system'. Building on this, the author indicates that money market funds (MMFs), securitization, and so-called market-based money market lending remain reliant on banks, either by investing in bank liabilities or being backed by guarantees.[3] Thus, they are not alternatives to the banking system but vehicles to allow the public to hold different bank liabilities, and the banks to reduce regulatory costs.

Building on this, Michell (2024) argues that NBFI balance sheets should be viewed as extensions of those of banks — part of an extended banking system that allows banks to economize on liquid assets and restructure liabilities. This architecture supports the creation of near-money instruments with varying returns and liquidity. For the author, this is neither 'initial' nor 'final' finance; rather, NBFIs are vehicles banks use to structure their liabilities.[4]

While both Sissoko (2024a) and Michell (2024) briefly discuss how investment bank lending relies on wholesale funding, which is ultimately backed by banks. However, they focus on mainly on how NBFIs shape banks' funding structures. In contrast, Canelli, Fontana, and Realfonzo (2025) emphasize how the NBFI architecture enables banks to extend credit to new borrowers by transferring part of the credit risk — not only through securitization, but also by lending to NBFIs that, in turn, lend to final borrowers.

Caverzasi, and Tori 2020; Lavoie 2022). Other authors have explored how NBFIs can ease credit conditions by issuing liquid liabilities (Kregel 2017; Nersisyan and Dantas 2017).

[3]Sissoko (2024a) notes that while the first two activities contingently reduce deposits, money-market lending relies on banks' contingent liabilities without reducing the existing stock of deposits. This point is further discussed in Section 3.2.

[4]This is central to endogenous money theory, where banks and financial institutions innovate to maintain profitability under changing regulatory and monetary policy (Chick 1992; Dymski 1989; Lavoie 1987; Minsky 1957).

To do this, the authors use the Financial Stability Board's (FSB) functional classification to introduce five types of NBFI activities into the monetary circuit framework.

The understanding of the NBFI-bank nexus as symbiotic is shared across different perspectives. Acharya, Cetorelli, and Tuckman (2024) distinguish between the parallel, substitution, and transformation views of NBFI activities. The first sees these as parallel to banks — only operating in capital markets, echoing the initial and final finance distinction. The second sees NBFIs as substitutes or competitors, benefiting from lighter regulation (Buchak et al. 2024). The third, and the authors' view, sees NBFIs not as alternatives but as intertwined with banks, evolving to reduce regulatory costs while benefiting from banks' special role. Acting like special-purpose vehicles (SPVs), they transform rather than remove risks from bank balance sheets. Their growth, supported by bank funding, reflects a transformation of banks' role, not a retreat. This view aligns with the 'extended banking system' perspective.

3. Financial Institutions' Structures and Activity-Based Taxonomy

This section introduces the analytical framework of the paper. Section 3.1 identifies three theoretical insights linking institutional structures, initiative in financial transactions, and the non-neutrality of financial institutions. These provide the conceptual foundation for the taxonomy of NBFI activities developed in Section 3.2, which examines how non-leveraged lending, leveraged lending, and banks' funding transformation affect money, credit, and financial stability.

3.1. A Minskyan Perspective: Institutional Structures, Initiative, and Non-Neutrality of the Financial Structures

This section presents three theoretical insights from the post-Keynesian and Minskyan traditions on which the proposed taxonomy builds:

1. Institutional structures shape economic behaviour and what is accepted as money: Recent authors have emphasized Minsky's view of the modern capitalist economy as a Keynesian 'monetary economy of production,' organized through a network of interconnected balance sheets and corresponding cash flows across economic units (Bonizzi and Kaltenbrunner 2019). This balance sheet perspective implies, as Bonizzi and Kaltenbrunner (2021, p. 48) argue, that 'every asset acquisition decision is always taken in conjunction with a particular liability structure'. These liability structures differ across actors and evolve, shaped by institutional arrangements and historical context.

In this line, Minsky (1986, p. 249) argues that the distinctions between financial institutions — their liability structures and the extent to which their liabilities are accepted as money — are 'more reflective of the legal environment and institutional history than of the economic function' they perform.[5] Nevertheless, he emphasizes that 'as banking is

[5]The paper does not examine the origins of the institutional structure but how financial institutions operate within it. Following Minsky (1989, p. 23), '[w]e don't endeavour to explain how or where this structure arose: genesis is not

presently organized, there is one set of banks — the commercial banks — that remain of special importance because of their aggregate size and because their liabilities constitute a large part of the money supply' (Minsky 1986, p. 250). As a result, 'banks whose liabilities are money are unlike money lenders whose financing activities are restricted to the contents of their strongbox' (Minsky 1986, p. 251). This perspective motivates classifying NBFI activities by the institutionally determined composition of their liabilities and by their interaction with the banking system.

2. Initiative shapes causal chains: As Neilson (2019, p. 84) notes, initiative plays a key role in Minsky's understanding of financial institutions and macroeconomic dynamics.[6] It refers to 'the capacity to set events in motion, to begin a series of events whose full course may not be known' Some financial institutions offer services that require readiness to act not at their own discretion, but only 'when their customers wish to do so' (Neilson 2019, p. 83).[7] This is central in post-Keynesian theory, where borrowers have the initiative, making credit — and thus money creation — demand-driven. Of course, this does not imply that banks are neutral in the economic process. Banks set credit standards that can not only raise the cost of credit but also restrict access to it. Post-Keynesians emphasize that credit is driven by creditworthy demand, where 'creditworthiness' is shaped by banks' assessments of an uncertain future (Rochon 2006).

The funding structures of different types of financial institutions distribute initiative among actors, shaping the causality of monetary flows. Each structure is associated with instruments that involve distinct cash-flow patterns, such as dated payments, demand deposits, or contingent liabilities (Minsky 1986). These, in turn, shape the composition and dynamics of their lending. Accordingly, this paper examines how commitments to liability and equity holders influence NBFIs' lending behaviour and their implications for financial stability.

3. The financial institutions' structure is not neutral: As Minsky (1989, p. 49) argues, 'the significance of the financial structure — i.e., the impact of the particular set of financial institutions and financial relations that exist upon the behaviour of the economy' is central to understanding macroeconomic developments. '[U]nderstanding the behaviour and evolution of financial practices and structures' is essential, since 'precise propositions about the behaviour of the economy are conditional upon institutions and usages, particularly the monetary institutions' (Minsky 1989, p. 49). In this context, 'the portfolio preferences of banking and financial institutions determine capitalization rates for different types of capital assets and financing terms for various types of investments' (Minsky 1986, p. 255). This emphasizes that

our problem. The evolution of the structure of financial interrelation and the interactions among units in an economy with a complex financial structure is our concern'.

[6]For instance, '[financial institutions] stand ready to furnish cash to two sets of clients: their borrowers and their depositors' (Minsky 1982b, p. 30). Authors from the post-Keynesian and money view traditions have also emphasized the role of clients' initiative in shaping the behaviour of dealers and market makers (Cardim De Carvalho 2016; Davidson 1994; Mehrling et al. 2013).

[7]These institutions can try to influence their customers by adjusting prices or interest rates, but the trade happens at the customer's initiative (see Godley and Lavoie (2006b) for an application for banks).

financial institutions' influence extends beyond asset prices: they shape credit conditions and, through them, economic activity and growth.[8] Hence, this insight motivates focusing on how their activities affect not only asset prices but also credit to final borrowers, key to macroeconomic conditions.[9]

These Minskyan insights resonate with what Haddad and Muir (2025) call the 'Market Macrostructure': a recent development in mainstream economics examining how financial market structures — defined by institutional features and key participants — affect asset prices and their dynamics.[10] While this Macrostructure has long been central to the post-Keynesian and Minskyan tradition — addressing not only asset prices but broader macroeconomic effects — formal post-Keynesian models with heterogeneous financial institutions have largely focused on expectation heterogeneity rather than institutional characteristics (Cafferata, Dávila-Fernández, and Sordi 2021; Caldentey, Rojas, and Nalin 2022; Lavoie and Daigle 2011). However, simple models where demand responds to asset prices and credit conditions — such as those involving consumption out of financial wealth, consumer credit, or investment sensitive to financing terms — are well-suited to examine how heterogeneity among NBFIs and banks, as structured in this paper's taxonomy, shapes macroeconomic dynamics.[11]

3.2. A Taxonomy for NBFI Activities

This section develops a functional classification of the three main types of NBFI activities, each representing a distinct mechanism through which they interact with banks and affect money and credit flows.[12] While these categories are simplifications and many institutions engage in more than one, institutional structures and business models often lead NBFIs to specialize in a particular role. The three categories are: (1) non-leveraged lending, which occurs when NBFIs passively receive deposits and lend them to other non-banks; (2) leveraged lending, which refers to activities where NBFIs issue debt instruments to extend credit or purchase financial assets, either at their own initiative or that of borrowers; and (3) banks' funding transformation, which involves NBFI activities that alter the composition of banks' liabilities without increasing credit to final

[8]Even from a long-term perspective, Hein and Woodgate (2021, p. 390) emphasize that 'autonomous demand growth [is possible if units] have wealth they can draw on and/or access to credit' (see also Serrano, Summa, and Freitas (2023)).

[9]Empirical evidence support the role of financial institutions' heterogeneity as relevant for credit conditions. Fleckenstein et al. (2025) find that NBFI lending to be more cyclical than bank lending. Forbes, Friedrich, and Reinhardt (2023) show that reliance on NBFI funding increases stress for banks and firms, while Aldasoro, Doerr, and Zhou (2023) find that NBFIs cut syndicated lending more sharply than banks during crises.

[10]Differing from traditional intermediary asset pricing research, the Market Macrostructure literature categorizes agents by institutional roles and activities rather than beliefs, risk preferences, or demographics.

[11]In simple terms, output Y, composed by consumption C and investment I depends on output itself, the market value of financial wealth W (which depends on asset prices), and given the policy rate i_{CB}, the lending spread or mark-up ε, that can depend on financial wealth though different channels (Godley and Lavoie 2006a; Lavoie and Reissl 2019):

$$Y = \mathsf{C} + \mathsf{I} = \underbrace{\omega Y + \varphi W}_{C} + \underbrace{\nu Y - \gamma(i_{CB} + \varepsilon(W))}_{I}.$$

[12]As Canelli, Fontana, and Realfonzo (2025) note, classifying NBFIs by their activities moves beyond the banks-versus-NBFIs dualism, recognising that institutions may perform multiple roles. The authors observe that NBFIs have also been classified by their lighter regulation, main instruments, or functions. See also Claessens (2024) for alternative approaches.

borrowers.[13] Crucially, this taxonomy focuses on what the Financial Stability Board (2023) calls financial leverage, which implies borrowing through loans, bonds, repos, and similar instruments to increase the exposure to assets.[14] The following subsections link these activities to NBFIs' financial structures, shaping causal chains and fragilities in the financial system.

3.2.1. Non-Leveraged Lending: Redemption and Causality

Non-leveraged lending occurs when NBFIs passively receive deposits and lend them to other non-banks. Illustrating changes in balance sheets, Figure 1(a) shows that, under the initiative of money holders, non-leveraged NBFIs first receive bank deposits and then invest in the liabilities of final borrowers (Cardim De Carvalho and Kregel 2010).

NBFIs engaged in non-leveraged lending typically rely on two liability structures: contingent claims (such as insurance and pension policies) and redeemable shares (common in investment funds), engaging in relatively little or no borrowing.[15] Both structures share a key characteristic: their issuance depends on client initiative. Crucially, shareholders in investment funds can redeem their investments, although funds may restrict this through withdrawal policies or investor commitments (Schuermann and Wyman 2025).

Non-leveraged institutions differ from banks because they must hold deposits before lending. In banks, lending begins with borrower initiative, creating money in the process, whereas non-leveraged lenders can only expand their portfolios when clients invest in their shares. Since both portfolio growth and contraction depend on client initiative, total credit supply reflects liability holders' decisions.[16] Given their constraints or reluctance to issue new liabilities, these institutions mainly invest in marketable securities that can be sold quickly if needed. Their market-based lending approach is thus driven by their liability structure, itself shaped by the institutional characteristics of the businesses in which they operate.

This type of lending has two main implications for financial stability. First, if non-leveraged lending enables borrowers to expand expenditure, the reallocated deposits may be reinvested in NBFI shares, increasing liquidity but also financial layering

[13] A similar categorization can be found in Davidson (1978, p. 156):

> These non-bank financial intermediaries can affect the level of aggregate demand by removing the medium of exchange from either the bear hoards of abstaining households or by borrowing newly created money from commercial banks, and then making these funds available to economic units who want to accept offer contracts for new goods and services in excess of their current incomes.

[14] As the Financial Stability Board (2023) notes, NBFIs can increase asset exposure through synthetic leverage using derivatives. Since this does not provide upfront funding for borrowers' expenditure, in the paper, it is treated only as a vulnerability affecting NBFIs' own credit supply.

[15] As mentioned before, NBFIs can participate in all three activities. Institutions like pension funds may also take leveraged positions via repos or derivatives (Sissoko 2019). However, according to the Financial Stability Board (2023), driven by regulatory constraints or rating agency views, insurers and pension funds use little financial leverage (2–8 per cent and 1 per cent of assets, respectively).

[16] In the post-Keynesian literature, this type of lending is formalized as a function of a given level of financial wealth distributed between assets with different expected returns. For instance Lavoie and Reissl (2019) model the interest rate spread ε paid by firms borrowing though commercial paper from NBFIs (intermediating households' decisions), as function of the credit demand CP^D, wealth W, the elasticity of this allocation the spread λ, and other exogenous parameters related to portfolio choice and monetary policy:

$$\varepsilon = CP^D/\lambda \cdot W_H + z.$$

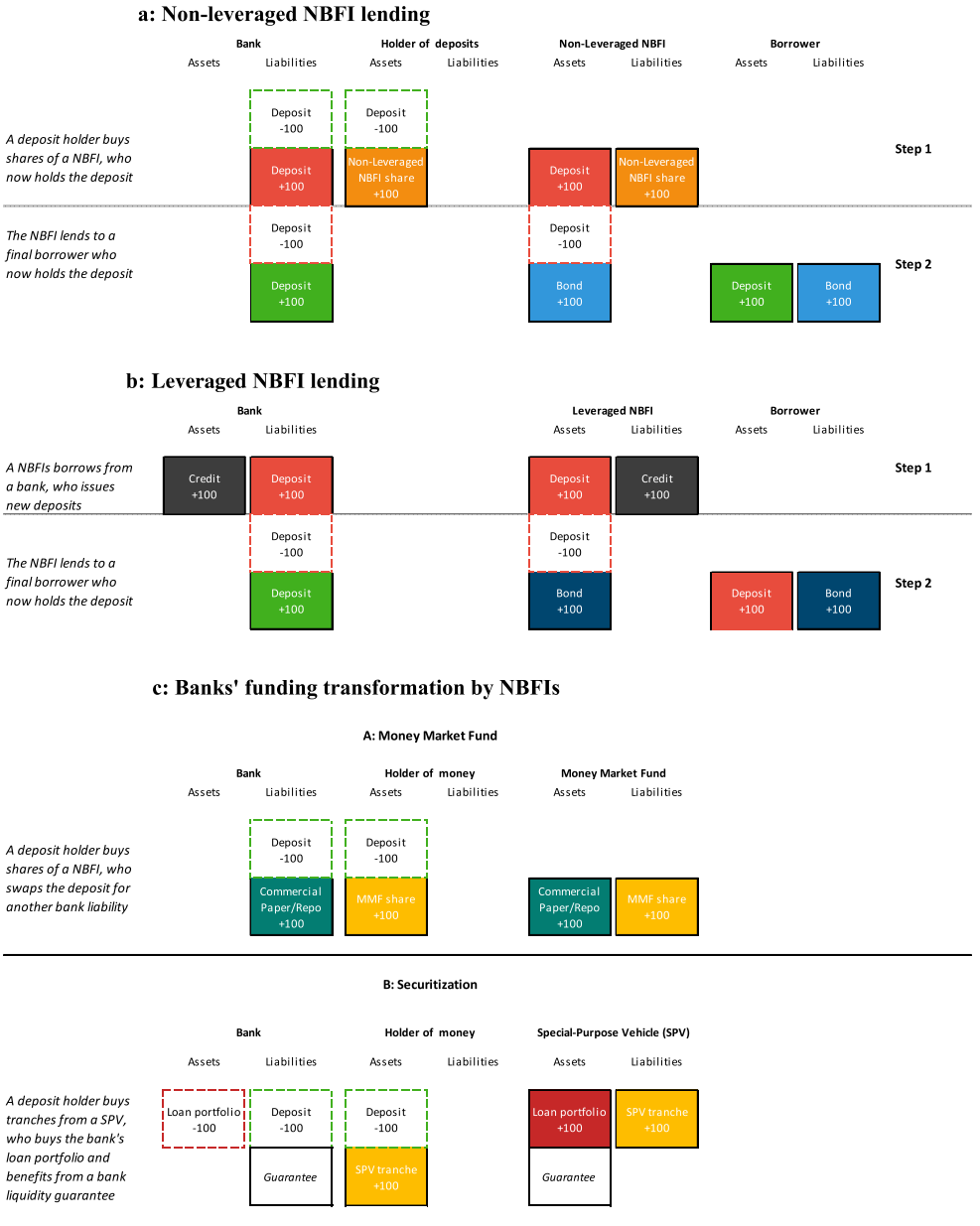

Figure 1. (a) Non-leveraged NBFI lending (b) leveraged NBFI lending (c) Banks' funding transformation by NBFIs. Source: Own elaboration.

Note: Each panel illustrates one of the three NBFI activities described in the taxonomy, showing changes in balance-sheet positions aggregated at the sector level. Dotted lines indicate reductions in the corresponding positions. In Panels 1a and 1b, it is assumed that NBFIs participate in primary markets. If they instead purchase bonds in secondary markets, there would be a seller with higher deposits and fewer bond holdings, rather than a borrower with higher deposits and a new liability.

(Bellofiore 2013).[17] Such layering creates chains of interdependent debts and 'a cumulative need for liquidity that can far exceed the needs of any one party' (Kashyap 2020,

[17]They buy a 'relatively illiquid debt contract issued by the firm, giving it access, therefore, to means of payment, and issues itself a new, more liquid, liability to be sold to individual lenders' (Cardim De Carvalho 2016, p. 301).

p. 8).[18] Second, as non-leveraged NBFIs offer no loss protection, shareholders are directly exposed to asset price declines (Sissoko 2019).[19] Large redemptions may force asset sales, depress prices, and trigger runs, as early exits minimize losses and prompt fire-sales even when prices are expected to recover (Sissoko 2019). These dynamics highlight the redemption pressures on NBFIs engaged in non-leveraged lending, whose liability-driven behaviour makes them highly sensitive to shifts in investor sentiment and asset prices. In periods of competition or stress, they may seek to boost profits or raise funds through borrowing, though institutional constraints often limit or forbid such leverage.[20]

3.2.2. Leveraged Lending: Asset Prices and Credit Risk Transformation

Leveraged lending refers to activities where NBFIs borrow to extend credit or purchase financial assets. The initiative may lie with NBFI managers (to buy assets) or with borrowers (seeking credit). Their borrowing can come either from banks, in which case new deposits are issued, or from other entities that hold deposits in advance. Figure 1(b) illustrates the first case, showing NBFIs obtaining credit from banks to then lend to other borrowers.[21] Historically associated with hedge funds and investment banks borrowing to speculate on financial assets, leveraged lending today also includes private credit funds and loan originators that borrow from banks to issue or purchase loans.

When leveraged lending is financed by bank credit to creditworthy NBFIs, money creation equals the amount received by the final borrower (Canelli, Fontana, and Realfonzo 2025). By lending to NBFIs instead of final borrowers, banks reduce direct credit exposure and capital requirements but shift risk through credit risk transformation, as NBFIs issue liabilities with different risk profiles from their assets. This reshapes, rather than removes, systemic risk. The central role of banks in money creation, together with their lower and more stable funding costs, means that leveraged NBFIs tend to maintain stable relationships with banks.[22] Importantly, even when NBFIs borrow from non-bank lenders, banks still provide funding-liquidity insurance through credit lines

[18]The process of financial layering as a driver of credit booms and increasing fragility is key in the work of Minsky (1976; 1982a; 1986). As the proximity between payments and receipts increases, total payment obligations rise, making uninterrupted inflows essential. A single unit's failure to meet its commitments can therefore undermine others' ability to do so, heightening the risk of market disruption.

[19]In turn, 'bank owners bear the credit risk of bank loans, and the banking system bears liquidity risk by making it possible for temporary declines in asset values to lie hidden on the balance sheets of banks that receive central bank support until the under-valuations disappear' (Sissoko, 2019, p. 320).

[20]Some NBFIs engaged mostly in non-leveraged lending are allowed to take on leverage through derivatives or repo operations. However, uncertainty about the long-term value of their assets confines them to short-term, collateralised borrowing (Sissoko 2019). While rarely used, some mutual funds have credit lines with banks. Bank-affiliated dealers also act as key authorized participants in ETF share creation and redemption (Henry 2025).

[21]In this way, 'non-bank financial intermediaries are able to obtain additional bank credit which would not be made directly available to entrepreneurs through bank loans' (Davidson 1978, p. 183). As Nersisyan and Dantas (2017, p. 656) note, NBFIs 'take positions in assets and only borrow bank deposits when faced with a negative clearing balance' in markets that allow such settlement practices. However, since this netting applies mainly to lending to final borrowers, it is not central to the paper's focus.

[22]NBFIs face higher funding costs than banks, even after controlling for size and other characteristics; their lowest borrowing rates match banks' highest uninsured debt rates, reflecting the greater perceived safety of bank liabilities despite higher leverage (Jiang, 2023). Stable credit relationships with banks mitigate this disadvantage: NBFIs with such ties lend more to firms and, during periods of turmoil, are less prone to sell assets, displaying less cyclical lending behaviour (Krainer, Vaghefi, and Wang 2024). Banks also often lend to NBFIs competing with them in downstream markets, integrating pricing and margins along the credit chain (Jiang, 2023).

(Acharya, Cetorelli, and Tuckman 2024; Sissoko 2024a).[23] These contingent liabilities become critical during periods of stress, sustaining NBFIs' capacity to extend credit.[24] As discussed below, bank contingent liabilities also support the liabilities, rather than the credit, of NBFIs involved in banks' funding transformation.[25]

Leveraged lending is often paired with securitization. In the previous example, banks were lending to NBFIs instead of directly to final borrowers, thereby creating new loans. When commercial banks provide new financing to investment banks that purchase securitized loans previously issued by those same banks, they can lower their capital and liquidity requirements by replacing on-balance-sheet loans with claims on NBFIs (Botta, Caverzasi, and Tori 2024).[26]

Depending on the instruments used, leveraged lending can amplify the link between asset prices and funding conditions. When asset values fall, NBFIs' capital and leverage deteriorate, tightening credit lines and triggering margin calls and fire sales that further depress prices, creating 'liquidity spirals' (Brunnermeier and Pedersen 2009; Dow 1987). Procyclical leverage, where borrowing rises with asset prices and contracts with losses (Adrian and Shin 2014; Aramonte, Schrimpf, and Shin 2022; Minsky 1986), and collateralized borrowing that exposes NBFIs to common assets (Gabor and Vestergaard 2016; Sissoko 2019), transmit losses across institutions and can also weaken banks' balance sheets. As creditworthiness declines, banks may restrict lending to leveraged NBFIs, disrupting credit flows to final borrowers.

3.2.3. Banks' Funding Transformation: The Liability Side of Market-Based Banking

Banks' funding transformation refers to NBFIs' activities that alter the composition of banks' liabilities without directly expanding credit to final borrowers. These operations replace deposits with short-term or market-based instruments issued to, or through, NBFIs, thereby linking banks' funding costs and liquidity management more closely to financial markets. These new bank liabilities may appear either on or off-balance sheet, sometimes affecting also the banks' asset side. While at the individual bank level these operations may generate reserve inflows between banks (similar to receiving deposits from another bank), at the system level, they still reduce the stock of deposits and increase other bank liabilities.

MMFs exemplify this process. They collect deposits from investors seeking money-like assets and invest them in banks' commercial paper or repo liabilities, altering the composition of banks' funding (Sissoko 2024a). Figure 1(c) (Panel A) illustrates this: the MMF issues shares, receives deposits, and exchanges them for banks' short-term

[23]For instance, these credit lines allows advance payments from NBFI servicers (responsible for administrating the cashflows of the underlaying assets in Asset-Backed Securities (ABS)), as well as Collateralized loan obligations and Real Estate Investment Trusts originator to post initial and variation margins for their position on derivatives. NBFI servicers and ABS related entities also benefit from banks' sponsoring for their commercial paper issuance.

[24]More strongly, Nersisyan and Dantas (2017) describe banks as de facto 'lenders of last resort' to NBFIs.

[25]Sissoko (2024a) argues when markets expect commercial banks to the liabilities of their affiliated investment banks, or other leveraged NBFIs, this increase the moneyness of these liabilities. However, this is not the focus of this section. Other perspectives on this topic include Gabor and Vestergaard (2016), Botta, Caverzasi, and Tori (2024) and Kappes (2025), who emphasise the role of repos within post-Keynesian monetary theory. Murau, Goghie, and Giordano (2025) discuss the implications of repos depending on the type of counterparty.

[26]A similar dynamic occurs when NBFIs originate loans using bank credit lines and securitise them: the initial lending expands the money supply, but once the loans are sold, the expansion is reversed, reducing both the asset and liability sides of the banking system. This provides flexibility for NBFIs to continue lending even when demand for their securitised loans is weak.

Table 1. Taxonomy of NBFIs' activities.

Type of NBFI activity	Effect on money	Initiative	Type of institutions typically involved	Related risks
Non-leveraged lending	Intermediation with no creation/ destruction	Shareholders	• Fixed income and mixed funds • Pension and insurance companies	• Redemption risk and market prices
Leveraged lending	Intermediated creation through banks	Own or borrowers	• Hedge funds • Broker-dealers • Leveraged funds • Mortgage Real Estate Investment	• Layering and credit risk transformation • Market prices and procyclical leverage, and Margin calls
Banks' funding transformation	Intermediated and contingent destruction	Shareholders or banks (securitization)	• MMFs • SPV	• Bank-financial market connection • Complex layering and credit risk transformation

Source: Own elaboration.

liabilities. At the system level, these operations swap deposits for alternative liabilities, with different regulatory implications. This shift does not alter banks' central role in money and credit creation but deepens the connection between banks' funding costs and financial markets (Godley and Lavoie 2006a; Kelly 2024a; Sissoko 2022).[27]

A second form of funding transformation occurs through securitization, illustrated in Figure 1(c) (Panel B).[28] Here, an SPV purchases bank loans in exchange for deposits previously collected from investors, reducing both sides of banks' balance sheets but usually creating contingent liabilities (Botta, Caverzasi, and Tori 2015; Sissoko 2015).[29] When the SPV issues securities, these are typically protected by bank guarantees, which implies that 'securitisation is another means by which the liability structure of banks is altered, reducing deposits and increasing off-balance-sheet contingent bank liabilities' (Sissoko 2024a, p. 17).[30] In this process, banks transfer credit risk to investors while retaining contingent exposure, creating credit-risk transformation intertwined with layers of claims between banks, SPVs, and investors that heighten systemic fragility (Botta, Caverzasi, and Tori 2020; Caverzasi, Botta, and Capelli 2019; Lavoie 2012; Minsky 1987; Nikolaidi 2015).

Table 1 summarizes the taxonomy of NBFI activities, detailing their effects on money, the distribution of initiative in transactions, the typical NBFIs involved, and the associated risks. There are other well-known common risks common to all NBFIs, such as the

[27]This can be formalised following Godley and Lavoie (2006a), where the spread μ between the banks' funding rate i_B^f and policy rate i_{cb} depend on the gap between banks' targeted LR^T and observed liquidity ratios R_t, $i_B^f = i_{cb} + \mu(LR^T - LR_t)$. LR_t reflects households' choice between banks and public liabilities $LR_t = f(\lambda W_h)$, among other things. Importantly, higher funding rates translate into higher lending rates. Thus, the framework can be extended to include MMF portfolio behaviour.

[28]As Botta, Caverzasi, and Tori (2024, p. 17) explain, selling these assets destroys deposits — 'money exits the circuit, but the original matching assets are still "around" in the economy'.

[29]As Sissoko (2015) notes, securitisation differs from other bank funding activities: while swapping deposits for commercial paper destroys money with a promise to recreate it later, securitisation can destroy money as in loan repayment, except the payer is not the original borrower. However, as mentioned before, banks often retain contingent liabilities. As one reviewer noted, for the SPV to be treated as a separate entity from the originator bank, the contingent guarantee might have to come from a different bank. But this does not change the dynamic at the banking system level.

[30]Sissoko (2025) describes how during the 2000s, structured investment vehicles and collateralized debt obligations used commercial paper and asset-backed commercial paper to fund banks supported by off-balance-sheet liquidity puts from banks.

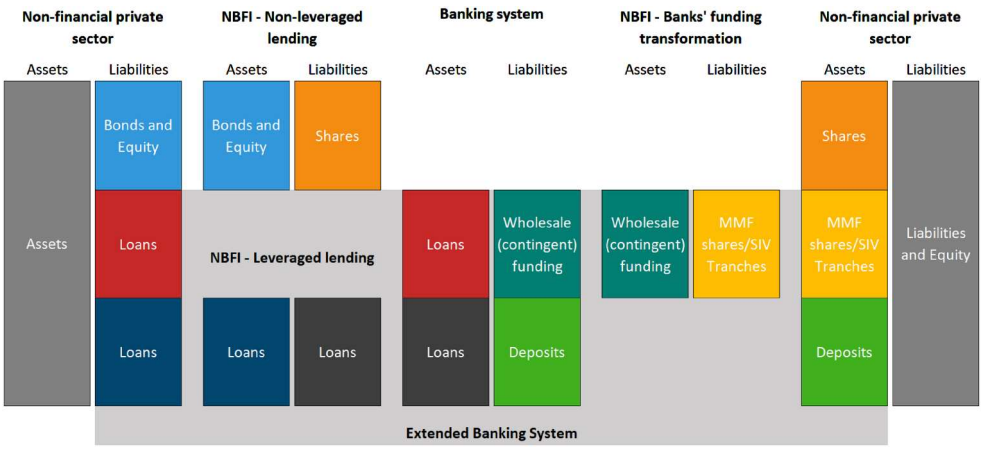

Figure 2. Banks, NBFIs' activities, and the extended banking system. Source: Own elaboration.

lack of access to the central bank's discount window. While central banks may act as dealers of last resort (Mehrling 2010), buying assets and stabilizing asset prices, might not be enough to reduce liability outflows or improve the creditworthiness of leveraged NBFIs and borrowers in general.

The taxonomy and the extended banking system perspective suggest the monetary circuit remains valid, though underlying credit relationships are now less observable. The triangular relationship between banks, borrowers, and depositors still holds, but is now mediated by additional institutions on both sides. Figure 2 illustrates how banks and the three categories of NBFIs are connected through a simplified set of sectoral balance sheets. The banking system not only issues deposits but also exchanges them for wholesale or contingent liabilities held by NBFIs engaged in banks' funding transformation, which in turn issue liabilities held by the non-financial sector. Leveraged NBFIs borrow newly created deposits from banks to extend credit to the non-financial sector, which then holds these deposits. Non-leveraged NBFIs lend by collecting deposits from the non-financial sector and reallocating them within it, providing final finance.

Together, these channels show how NBFIs mediate both lending and funding flows between banks and the broader economy. Of course, this is a simplification, and NBFIs engage in multiple activities and interact with each other. Such combinations create longer intermediation chains and can increase the velocity of money. From this perspective, market-based finance is not simply a divide between banks and NBFIs. It is about how chains of financial relationships — linking money creation and destruction by banks with intermediation and circulation by NBFIs — are structured, distributing risk exposures across institutions.

4. Extended Banking System: Evidence from the United States

This section presents recent empirical evidence on the NBFI–bank nexus in the US and reviews existing research to support both the extended banking system perspective and the credit relationships outlined in the proposed taxonomy. The evidence includes sector-level bilateral data, recent market trends, and findings from studies on holding structures.

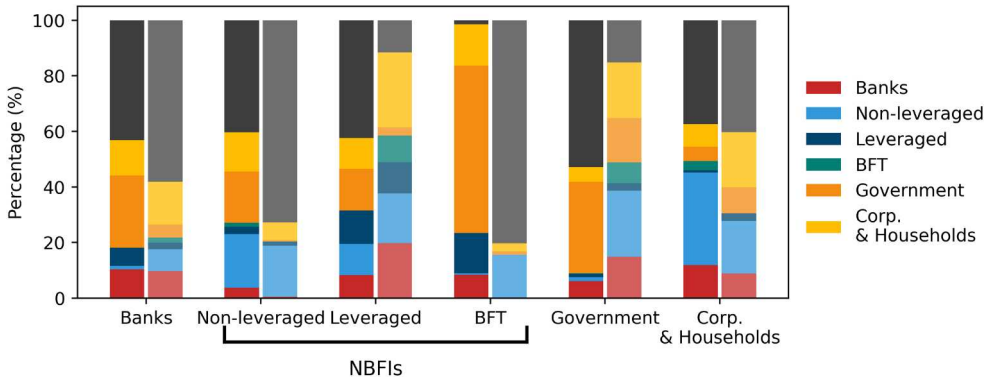

Figure 3. Asset and liabilities: Share by counterparty over total (Q4-2024). Source: Own elaboration based on US FWTW data.

Note: BFT refers to 3.2.3. Banks' funding transformation.

4.1. From-Whom-to-Whom

This section uses a dataset introduced in 2023 on issuer-to-holder positions of US economic sectors to demonstrate NBFI-bank interdependence. The From-Whom-to-Whom (FWTW) dataset, part of the Enhanced Financial Accounts, details US financial assets and liabilities by sector and instrument, highlighting sectoral funding linkages. Acharya, Cetorelli, and Tuckman (2024) analyse these relationships using matrices, where sectors are both issuers (liabilities) and holders (assets), presenting asset-liability interconnections as shares of each sector's liabilities and assets. Figure 3 replicates this analysis using balance sheets and the proposed taxonomy.[31]

Each figure displays two columns per sector: assets on the left and liabilities (including equity) on the right. Each column indicates the share of each counterparty in total positions. Figure 3 reports shares relative to total portfolios, while Figure 4 excludes positions within the same sector, with the Government, and with the Rest of the World, as well as holdings in Corporate Equity and Foreign Direct Investment Equity. As explained in Section 4.3, it also reclassifies broker-dealers as banks. Because bilateral positions with the Rest of the World do not distinguish between foreign sectors in the FWTW data, Figure 5 complements this by using the BIS International Locational Banking Statistics (BIS-LBS) to estimate aggregated bilateral positions between US banks and foreign NBFIs, and between US NBFIs and foreign banks. Due to limited granularity in the BIS-LBS, all NBFIs are grouped into a single sector.

[31]This aggregation of NBFIs aligns with the theoretical framework outlined in Section Four and is structured as follows: (1) Banks include: Holding Companies, Banks in US-Affiliated Areas, US-Chartered Banks, Foreign Banking Offices in the US, and Credit Unions. (2) Non-Leveraged NBFIs: Mutual Funds, Property/Casualty Insurance, Life Insurance, Pensions, Closed-End Funds, and Exchange-Traded Funds. (3) Leveraged NBFIs: Finance Companies, Mortgage Real Estate Investment Trusts, and Broker/Dealers, Other Financial Businesses, Broker-Dealers (except for Figure 7b where are classified as Banks) and Issuers of Asset-Backed Securities. (4) BFT includes: MMFs as the sole observable group primarily involved in this activity give the FWTW data. (5) Corp. & Households: Nonfinancial Corporate Businesses, Nonfinancial Noncorporate Businesses, and Households (which, unfortunately, include hedge funds). (6) Government: Federal Government, State and Local Government, Government-Sponsored Enterprises and Agencies, and the Monetary Authority. Finally, (7) Rest of the World.

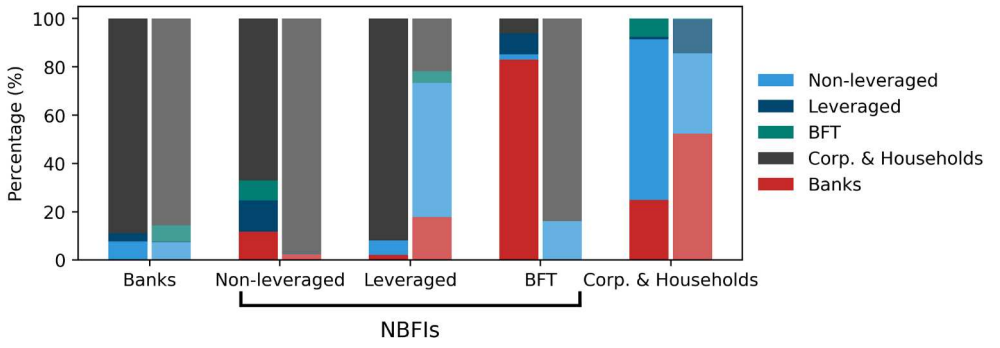

Figure 4. Asset and liabilities share by counterparty over selected sectors (Q4-2024), with broker-dealers as banks, and excluding corporate equity and intra-sector positions. Source: Own elaboration based on US FWTW data.

Note: BFT refers to 3.2.3. Banks' funding transformation.

The banking sector's main counterparties — on both the asset and liability sides — are the domestic non-financial private sector, the public sector (including the Federal Reserve), and the rest of the world (which includes foreign NBFIs). At the aggregate level, NBFIs represent an important share of both banks' funding sources and lending exposures. Using the proposed taxonomy, Figure 3 shows that the largest NBFI counterparties on the banks' liability side are non-leveraged NBFIs, mainly investing in banks' non-redeemable equity instruments. For the corporate and household sectors, banks and non-leveraged institutions remain the dominant counterparties on both sides of their balance sheets. However, when corporate equity investments are excluded, banks appear as the main source of funding for these sectors.

Non-leveraged NBFIs are primarily funded by corporates and households, confirming their role in providing final finance. Their main asset counterparties are also corporates and households, followed by exposures to banks, leveraged NBFIs, and MMFs. Since their holdings include instruments beyond liquid deposits — such as long-term bank bonds — they also contribute to reshaping banks' liability structures.

As shown in Section Three, leveraged NBFIs depend more on bank financing than other financial entities. Their main funding source is non-leveraged NBFIs, reflecting strong interconnections and deeper financial layering. Figure 4 excludes intra-sector, government, and rest-of-the-world positions, as well as corporate and FDI equity, and reclassifies broker-dealers as banks. Once equity positions are excluded, banks and non-leveraged NBFIs become roughly equally important funding providers for leveraged NBFIs. Consistent with Sissoko (2024a) and Michell (2024), most of MMFs' domestic private holdings consist of bank liabilities. MMFs provide little to no funding to non-leveraged NBFIs and only a limited share to leveraged NBFIs; their domestic private funding comes mainly from the corporates and households and non-leveraged NBFIs.

Figure 5 shows that cross-border bank–NBFI linkages are substantial in the United States, in line with previous evidence (Aldasoro and Doerr 2023; Aldasoro, Huang, and Kemp 2020). Including foreign counterparties increases both US banks' and NBFIs' exposures, with NBFIs holding more foreign bank assets and US banks receiving more funding from foreign NBFIs.

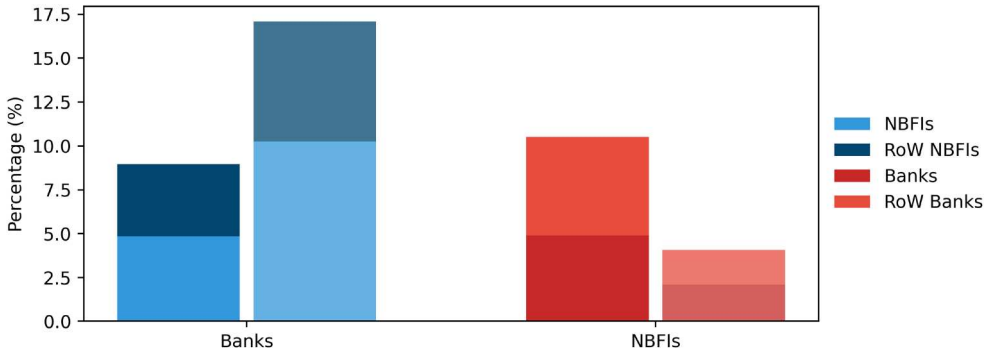

Figure 5. Asset and liabilities share by counterparty over total (Q4-2024). Source: Own elaboration based on US FWTW data and BIS-LBS data.

Transaction-level data further supports the role of banks in funding leveraged NBFIs. Jiang (2023) finds that NBFI lenders in the mortgage market are funded by the same banks they compete with, showing banks' central role in the upstream market for non-bank mortgage lenders. In that study, banks provided around 70 per cent of the total warehouse credit lines to NBFIs, also active in mortgage lending. Similarly, Kim, Plosser, and Santos (2018) show that after regulatory tightening on leveraged lending, activity shifted from large banks to NBFIs, who expanded lending by relying on bank funding. Call report data also confirms this exposure. Using recent FDIC disclosures, S&P (2025) estimates that bank exposures to NBFIs are concentrated in final credit providers. Mortgage credit intermediaries, private equity funds, and business credit intermediaries each account for 23 per cent of this exposure, while consumer credit intermediaries represent 10 per cent. For some large banks, the exposure to NBFIs is significant. Goldman Sachs reports an exposure of 35.5 per cent, followed by Morgan Stanley at 20.7 per cent, Wells Fargo & Co. at 17.3 per cent, and Citigroup at 15 per cent (S&P 2025). This is in line with evidence indicating that nearly 90 per cent of the bank loans to NBFIs are extended by the largest banks (DiSalvo 2024).

Figure 6 shows aggregate leverage and the share of bank counterparties in the domestic liabilities of all 12 NBFI sectors, with colours indicating their main activities based on the proposed taxonomy. As expected, the taxonomy reflects observed leverage patterns.

Also consistent with the framework, NBFIs with higher leverage tend to rely more on banks for funding. This aligns with the role of banks in credit creation and their flexibility in providing credit. However, this exposure underestimates the reliance of leveraged NBFIs on banks. The FWTW data do not include unused credit lines and other off-balance-sheet positions; however, this exposure is a major source of NBFIs' funding from banks during periods of stress. According to DiSalvo (2024), 81 per cent of the funds committed to NBFIs by banks are credit lines. Similarly, combining different datasets with transaction-level data, Xu (2025) finds that 96 per cent of banks' funding to NBFIs occurs through credit lines. This type of credit relationship is growing faster than term loans. The utilization rate of these lines is below 40 per cent of the funds available. This implies that NBFIs not only rely on banks as a source of financing but also as a source of contingent funding liquidity insurance, available to be used if needed.

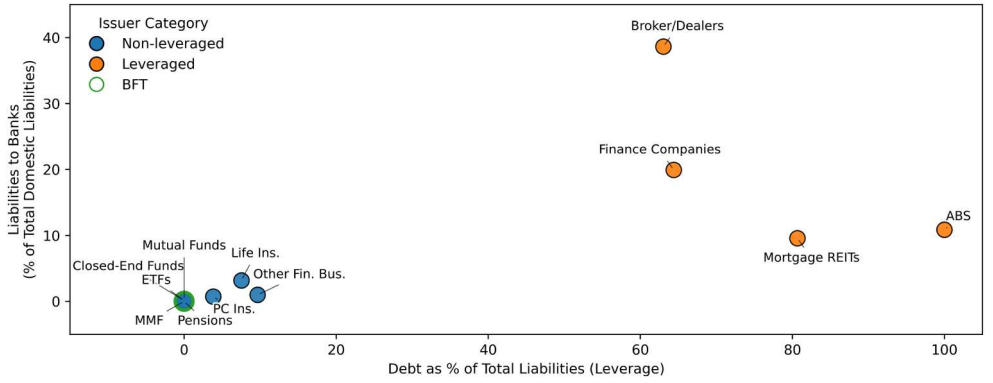

Figure 6. Leverage and share of Banks in total liabilities for NBFIs sectors (Q4-2024). Source: Own elaboration based on US FWTW data.

4.2. Market Trends

An important implication of the extended banking system perspective is that the expansion of the NBFI architecture and the related financial innovations are partly driven by banks themselves. Acharya, Cetorelli, and Tuckman (2024) highlight the benefits that NBFIs provide to banks, comparing them to SPVs used to lower regulatory costs.

In this line, S&P (2025) notes that by lending to NBFIs rather than directly to final borrowers, banks can lower the risk weight of their exposures from 100 per cent to 20 per cent.[32] Supporting this, Krainer, Vaghefi, and Wang (2024) find that bank lending to NBFIs increases following negative shocks to banks' capital. Sissoko (2024b) shows that the leveraged buyout boom of the 1980s was largely bank-driven and identifies similar dynamics in collateralized loan obligations and private credit, where bank funding remains central. The latter has drawn growing attention from market participants and supervisors due to its rapid expansion in recent years (Aramonte and Avalos 2021; Avalos, Doerr, and Pinter 2025; BlackRock 2024; Moody's 2025).[33]

Kelly (2024b) argues that private credit firms, once seen as non-leveraged lenders, are evolving toward more leveraged structures, introducing redemption risks.[34] These firms increasingly borrow from banks, drawing on banks' money-creation capacity while allowing them to lower capital requirements, both through lower risk weights and by absorbing part of borrowers' credit risk with their own capital (Schuermann and Wyman 2025). Thus, banks may seem less active in risky corporate lending, yet they continue to fund the NBFIs that have taken their place. Similar tendencies can be observed in other financial activities: hedge funds and proprietary trading firms have taken over former bank roles, while banks increasingly lend to them via trading divisions (Levine

[32]S&P (2025) notes that banks mainly lend to NBFIs through collateralised facilities such as subscription lines and warehouse financing. Lending to private equity, and private credit funds has grown sharply, bridging the gap between investments and capital contributions. Undrawn commitments serve as collateral, allowing banks to enforce capital calls or, in some cases, claim fund assets. Less commonly, banks provide net asset value facilities backed by fund portfolios rather than capital commitments.

[33]Private credit funds provide loans mainly to privately held companies, for commercial real estate projects or asset-backed lending.

[34]Similarly, the International Monetary Fund (2019) indicates that the private credit system is deeply layered with hidden leverage across investors, funds, and borrowers, with opaque structures like SPV and collateralized fund obligations.

2024a). Large US banks are closely and increasingly linked to hedge funds through prime brokerage, providing leverage, financing, and trading services (Ulland 2025).

These dynamics also connect to the role of NBFIs in the evolving forms of bank securitization, not fully captured in FWTW data. Cetorelli and Peristiani (2012) show that from 1990 to 2008, banks accounted for about half of all non-agency asset-backed security issuance.[35] Although volumes remain below pre-crisis peaks, securitization remains a key tool for banks to restructure assets and liabilities. Recently, synthetic risk transfers (SRTs) have become an important innovation: through credit-linked notes, banks can offload credit risk from loan portfolios, with private credit funds emerging as major buyers in Europe (International Monetary Fund 2024).[36] Levine (2024a) adds that hedge funds and private equity firms often finance SRT investments through repos or NAV loans, using the same SRT securities as collateral.[37] While this shifts risk outside banks' balance sheets, it re-creates exposure through bank lending to leveraged NBFIs, some of which is absorbed by investors holding equity in these funds. Despite differences from pre-crisis practices, these interconnections continue to pose systemic risks, attracting increasing scrutiny from supervisors (Basel Committee on Banking Supervision 2025).

4.3. Holding Structure

The rise of NBFIs relative to banks looks different when considering how these two can be affiliated parts of the same holding, something that FWTW data does not capture. The extended banking system interpretation of the NBFI-bank nexus implies that these institutions collaborate. Legally, it is unclear if NBFIs are just part of a vertical chain or are included within Bank Holding Company (BHC) balance sheets, which would distort perceptions of accounting aggregation. From a business standpoint, if regulatory costs do not increase, a BHC would prefer to operate with affiliated NBFIs to benefit from vertical integration, combining diverse activities within a common organizational structure. From a macroeconomic perspective, determining whether affiliated NBFIs should be studied as a distinct type of credit provider from banks depends on the assumption that the bank arm of the BHC will always provide credit to the affiliated NBFI. This is the interpretation of Cetorelli and Prazad (2024, p. 6), who state that 'subsidiaries may still be operating with the expectation that their affiliates will provide liquidity support during stress periods. We refer to these possible intracompany commitments as implicit lines of credit'.

Based on this hypothesis, the authors analyse a dataset on BHCs' organizational structures, finding that since the 1980s, BHCs have increasingly incorporated diverse NBFI subsidiaries, which now constitute at least 20 per cent of aggregate BHC assets. Cetorelli and Prazad (2024) find that internal lending within BHCs is substantial, occurring

[35]They held over 90 per cent of the trustee business, dominated underwriting with a 70 per cent share by 2007, and expanded servicing from under 10 per cent in the early 1990s to 60 per cent by 2008, driven by the rise of CMBS, MBS, and CDOs, where banks control the underlying information

[36]As Levine (2024c) highlights, while large banks like JPMorgan may negotiate SRTs as informed counterparties, regional banks often rely on hedge funds or major banks to introduce and structure these deals. After issuing their own SRTs, big banks are now offering them to smaller lenders for a fee, with plans to trade them as the market expands.

[37]Major banks like Nomura, Morgan Stanley, and Santander have become active lenders in this space, prompting concerns that leveraged SRT exposure ultimately keeps risk within the banking system.

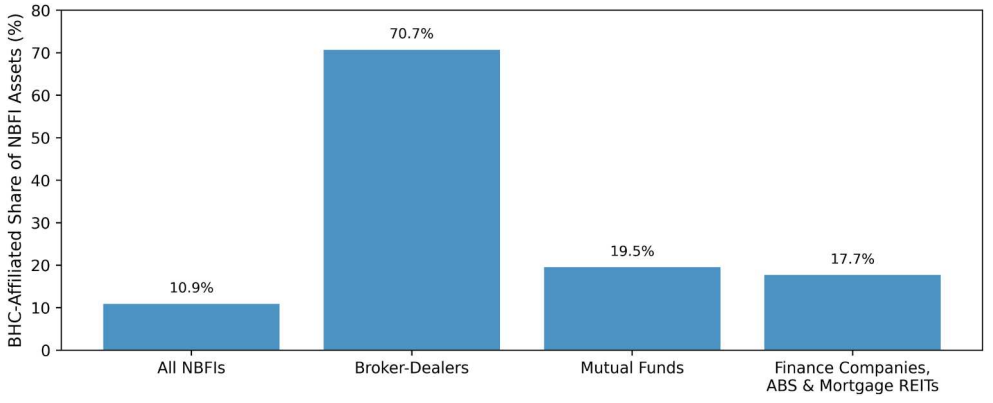

Figure 7. Assets of BHC-Affiliated NBFIs' share of each aggregate corresponding NBFI industry (2020-Q1). Source: Cetorelli and Prazad (2024) based on FR Y9-LP, FR Y9-C, and US Financial Accounts.

directly between the bank and NBFIs' subsidiaries rather than through the holding company itself. This supports the extended banking system perspective, where the reliance of NBFIs on banks is explained by how banks create credit and deposits, rather than by some other organizational advantage.

While post-Global Financial Crisis regulation has reduced some benefits of this integration — by raising liquidity requirements and limiting intragroup linkages — the share of BHC-affiliated NBFIs within the total US NBFI industry remains high by 2020. Figure 7 shows that different types of NBFIs maintain significant levels of affiliation. In the broker-dealer sector, this share exceeds 70 per cent, meaning most US broker-dealer assets belong to BHC-affiliated firms. This supports their inclusion as part of the Bank category in Figure 4, being, despite the regulatory constraints, strongly integrated with banks. Moreover, recent market trends highlight the role of legal integration, with large banks looking to incorporate or expand their private credit and asset management arms (Levine 2024b).

5. Conclusions

The growing role of NBFIs is a defining feature of financialization and reflects what Minsky (1996, p. 363) described as 'Money Manager Capitalism' — a stage marked by the influence of institutional investors over financial markets and corporate behaviour, alongside institutional and regulatory change (Dafermos, Gabor, and Michell 2023; Liang and Whalen 2022). This paper has argued that NBFIs are not separate from, but integral to, the banking system, supporting the 'extended banking system' view. These institutions rely not only on banks because of their special role but also function as bank-driven financial innovations that minimize regulatory costs.

Minsky recognized that banks, as profit-seeking institutions, respond to evolving environments through innovation and specialization. He envisioned a system in which banking functions span a spectrum — from universal banks to highly specialized entities — realizing the full range of asset, liability, and fee-based services (Minsky 1986, p. 249).

However, he also warned that such complexity requires compartmentalization to manage systemic risks (Minsky 1992, p. 26). However, the current bank–NBFI nexus evolves oppositely: NBFIs now act as bank extensions on both lending and funding sides, relying on bank balance sheets and contingent support while remaining interconnected via securitization. This reinforces the need to monitor contingent exposures as system-wide liquidity backstops and assess liability-mix shifts as channels of stress transmission within the bank–market nexus.

This systemic dependence was already evident to Minsky fifty years ago, when he observed that 'giant banks are in effect lenders of last resort to (…) non-bank financial institutions' (Minsky 1975, pp. 1–2). As Schuermann and Wyman (2025, p. 6) note, 'the larger and more complex the NBFI ecosystem, the more important become the banks — and the more we are ultimately dependent on them — in a crisis'. While Acharya, Cetorelli, and Tuckman (2024) emphasize that NBFIs have already received public support indirectly through banks in both 2008 and 2020, some regulators argue that central banks must step in directly to support NBFIs in times of stress (Bailey 2024). The recent rise in leveraged lending challenges even the role of the central bank as a dealer of last resort, as stabilizing asset prices alone may no longer be sufficient to support systemically exposed institutions like private credit funds.

In this context, recognizing the differentiated roles of NBFIs — and their integration within the extended banking system — through a simple but theoretically informed framework is essential for understanding contemporary financial dynamics and for designing effective macro-financial regulation.

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