



Institute for European Studies Saint-Louis
Advanced Master in EU Interdisciplinary Studies

MASTER DISSERTATION

Shadow banking and the banking system: Assessing contagion channels and systemic risk implications

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Academic year 2025-2026

Abstract

This dissertation examines whether interactions between the shadow banking system and the traditional banking sector can generate contagion from shadow banking entities to traditional banks and contribute to systemic financial risk. By analysing financial intermediation regulation and shadow banking from theoretical, historical and practical perspectives, the dissertation shows how risks can be transferred, transformed, and re-embedded across the banking and the non-banking sector. The analysis finds that vulnerabilities in the non-bank sector can reverberate back to banks, as illustrated by recent episodes of financial stress, suggesting that financial stability depends on a comprehensive understanding of the bank and non-bank system rather than a sector-specific regulatory approach.

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INTRODUCTION

Almost 20 years after the great financial crisis, the 2025 Global Financial Stability report of the IMF¹ warns of “shifting ground beneath the calm” and notably describes the growing role of “non-banking financial intermediaries” in the global financial system, and their greater interconnections with the banking sector. The share of total global financial assets held by non-banks amounts to 51% as from 2024, and the sector grew at double the pace of the banking sector during the year².

The sustained growth of the non-banking financial system in the decades following the financial crisis, formerly known as “shadow banking”, could appear paradoxical after a global crisis in which shadow banking was portrayed as a central source of the instabilities, and when thinking of the consequences the crisis had on the real economy in many jurisdictions. Concerns about future developments are underscored by reports emanating from the IMF or the FSB, pointing to persistent or reconfigured vulnerabilities in the non-bank sector, including high leverage or a lack of transparency of the sector that could propagate instability, and calling for policy actions³.

On the other hand, financial regulation and more specifically bank regulation have experienced a major overhaul and change of paradigm since the crisis. Major shadow banking actors, such as Blackrock⁴, the largest asset manager in the world, argue that their industry has been reformed, that they are more resilient and that imposing bank-like regulations on them would be unnecessary or counterproductive, given that only certain parts of the shadow banking system pose systemic risks.

At the same time, while regulatory reforms have significantly strengthened the resilience of the banking sector, they have not eliminated the interactions between banks and non-bank financial intermediaries, in terms of funding relationships or risk transfers. These interactions could present channels through which risks can circulate across the two systems.

In this context, the primary objective of this dissertation will be to evaluate if interactions between the growing shadow banking system and the banking system could cause contagion from shadow banking entities to traditional banks and spur systemic risk.

To address this question, chapter 1 will first explore the definitional struggles surrounding the shadow banking system, by reviewing the iterative “cat-and-mouse” dynamics behind the interconnections between banking and shadow banking by focusing on regulatory arbitrage, an activity through which activities are reconfigured to avoid a certain regulatory

¹ International Monetary Fund. (2025). Global Financial Stability report. Shifting Ground beneath the Calm. <https://www.imf.org/-/media/files/publications/gfsr/2025/october/english/text.pdf>

² Financial Stability Board. (2025). Global Monitoring Report on Nonbank Financial Intermediation. <https://www.fsb.org/uploads/P161225.pdf>

³ See e.g. https://www.fsb.org/publications/?policy_area%5B%5D=78

⁴ Novick, B. (2019). Remarks at the OeNB Macprudential Policy Conference “Agnostic on non-banks?”. <https://www.blackrock.com/corporate/literature/publication/barbara-novick-remarks-oenb-macprudential-policy-conference-050919.pdf>

perimeter. Moreover, it also addresses when and why vulnerabilities build up in the financial system, to escalate in a crisis, drawing on financial and regulatory cycles theories. To provide a practical anchor to the reviewed concepts, the chapter ends by outlining the case of pre-2007 asset-backed commercial paper market.

In the second chapter, we will dive into the shadow banking's system components and its inseparable ties with the banking sector. The chapter begins by explaining and contrasting the "entity-based" versus "activity-based" perspectives on shadow banking, and then continues to highlight the difficulty in drawing a clear distinction between the two sectors, as their operations form a continuum of financial intermediation. Different situations of interconnection are described, where banks and non-banks engage in competition or cooperation. We also take the time to provide a historical perspective on financial regulation in the European Union since the crisis, highlighting the significant reforms achieved in the banking space that create new regulatory asymmetries and space for regulatory arbitrage, encouraging risks to migrate to the less regulated corners of the financial system.

Chapter 3 takes the perspective of a bank managing its balance sheet, to highlight the different channels or mechanisms of interconnections between the banking and non-banking sector. After explaining how banks go about managing their capital requirements equation to obtain "capital relief", different mechanisms of interactions are reviewed such as the consolidation of banks and non-banks in one group, securitisation, risk transfers, repurchase agreements or direct bank lending to shadow banks. By exploring these interactions, chapter 3 contributes to evidencing how vulnerabilities can be communicated between the two sectors and pose financial stability concerns.

1 SHADOW BANKING AS A CONTESTED DEFINITIONAL STRUGGLE

The term “shadow banking” is an ambiguous word, known also under various expressions such as “non-banking financial intermediation” or “market-based banking”⁵, and invites several interpretations regarding the activities or services it encompasses. Read literally, the expression can be understood as referring to the “shadows of banks”, namely activities that are connected to the banking system but remain hidden by it. The Financial Stability Board (2012) describes shadow banking as “credit intermediation involving entities and activities outside the regular banking system”. Poszar et al (2010) use a somewhat more technical description by referring to activities acting on the transformation of credit, maturity and liquidity⁶, that do not have access to public sources of liquidity or insurance⁷.

Before diving deeper inside shadow banking, it is worth pausing to reflect on why defining its activities is inherently tricky. Any attempt at delineating its contours, compared to the traditional banking system, is a snapshot at a moment in time, becoming outdated as soon as the sector shifts. Shadow banking boundaries are constantly shifted in response to an interplay of forces, that alternatively push them in one direction or retract them from another.

This chapter proceeds in three steps.

The first section explores the principal drivers and constraints shaping the evolution of financial intermediation, with particular attention to regulatory arbitrage and regulatory capture. To that end, the section will analyse the dynamics and interconnections between the regulators and regulated entities, and how these interactions generate a displacement of financial intermediation activities outside of the regulated banking sector.

The second section enhances our understanding on the dynamics and interconnections between the banking sector and the shadow banking sector by using a temporal perspective, through mobilising financial and regulatory cycles theories. This section will shed light on when and why the build-up of risks becomes systemic, as it appears in cycles.

The final section offers a practical expression of the interplay between the structural and temporal factors of shadow banking growth, through a case study of the evolution of the asset-backed commercial papers market prior to the 2007 great financial crisis. This section operationalises the theoretical foundations, by narrating a historical example in which regulatory arbitrage can be observed in practice, alongside regulatory and financial cycles.

⁵ “Market-based banking”, as theorised by Hardie & Howarth (2013) takes a broad view of the shadow banking system by also including market-based activities performed by banks, and non-banking financial intermediation is the standard term used by authorities, e.g. the Financial Stability Board, when reporting on its activities.

⁶ Credit transformation means that the quality of debt is enhanced (i.e., its rank in priority of claims in the insolvency hierarchy). Maturity transformation involves taking short term maturity liabilities to fund the long-term assets, and liquidity transformation refers to the use of liquid instruments to fund illiquid ones (Pozsar et al., 2010).

⁷ Public liquidity sources refer to having access to central bank’s operations, while insurance refers to protections such as e.g. deposit insurance.

1.1 Regulator and regulated: a cat and mouse game

The relationship between the regulator and the regulated is one of the drivers pushing the shadow banking sector in one direction or the other. We introduce here the analogy of a cat and mouse game: whilst the regulator (the cat) possesses the authority, strength and enforcement advantage, the regulated institutions (the mouse) demonstrate ingenuity, speed and an ability to hide in places beyond the regulator's reach or awareness. Unlike the traditional cat-and-mouse game, however, the process does not conclude when the cat catches the mouse, rather it often transitions into a phase akin to negotiation, reflecting adjustments and dialogue between both parties.

The playing field of the mouse comes with a set of rules but is also full of avenues and resources that allow to reconfigure the game. The regulated institutions are thus institutionally embedded actors who consider their external context, they should however also be understood as agents within this setting, actively steering business innovation and strategy (Hardie et al., 2013). We will first analyse the reasons underpinning the very existence of banking regulation, before turning to the emergence of regulatory arbitrage as a strategic response by regulated institutions, and finally analyse the mechanisms through which regulatory capture arises.

1.1.1 Regulation & the emergence of arbitrage

Let us first take a step back and analyse why the cat is there to chase the mouse in the first place. A bank creates money through using the funds that have been deposited in their institution by depositors and lending it to people or companies that need financing - this is called credit intermediation (Gobat, 2017). Banks are entrusted with the public power of money creation through their deposit taking and lending activities. These activities are enabled and protected by high barriers to entry, as banks are required to hold licences or a charter to operate in a jurisdiction. Moreover, banks are enhanced by public backstops in the form of guarantees or liquidity support, notably deposit insurance or access to central bank operations for confidence and resilience purposes (Knight & Mitchell, 2019).

The need for prudential requirements arises because banks do not internalise all the potential costs stemming from the riskiness of their activities⁸, called “externalities” (Singer, 2007). As Plantin (2015) puts it, banks are regulated and subjected to prudential requirements because their privately optimal funding structure does not internalise the entire social costs of their failure – for instance, banks prefer to hold more debt when compared to equity (“optimise their leverage”), than the ratio that would be socially optimal. Banks pursue the strategy of optimising their debt-to-equity ratio because that would allow them to be more profitable in good times through increased leverage, though this configuration restrains their capacity to absorb losses when they materialise, since equity (or, “the money under the mattress” as Singer (2007) frames it) is precisely the resource that allows to absorb such

⁸ Do note that the business model of banks is based on an acceptance to assume risks (e.g. the risk of default of the borrower), thereby channelling funds and enabling the economy to grow. These risks are priced in their offering, as a borrower with a lower credit repayment probability would pay a higher interest rate (Singer, 2007).

losses. Given their public relevance, banks' failures have impacts far beyond their perimeter, they cause "spillovers", and can thereby affect economies, communities, and other financial institutions through contagion (Singer, 2007).

The regulator's position is characterised by the task to set prudential requirements in order to maintain the required or defined levels of financial stability, but the regulator is not and cannot be oblivious to the need for banks, as private companies, to be competitive and profitable. Prudential requirements are therefore theoretically calibrated at a level reflecting the regulators ideal trade-off, to find the right balance between financial stability and competitiveness (Singer, 2007).

This level and ideal trade-off, however, does not necessarily correspond to that of the regulated institutions, which might pursue opportunities to generate financing with higher leverage. This is referred to as "regulatory arbitrage" and designates the deliberate configuration of activities by the regulated to direct resources where they are most profitable (Kane 1988, Bell & Hindmoor 2014, Plantin 2015, Lee et al. 2024, Acharya et al. 2024). Banks thereby make use of transactions and constructions to evade the "banking" scope, such as "securitisation", where instead of keeping loans on their balance sheet (and thereby needing to account for them in their capital requirements), loans are pooled and packaged as securities to be sold to investors (Hanson et al., 2011)⁹.

The agency of banks in this context must be evaluated within their broader economic setting. Shareholder expectations, particularly from institutional investors, drive demand for short-term performance and scrutiny of revenue and market share indicators (Bell & Hindmoor, 2015). This means that if targeted competitiveness cannot be generated through traditional business activities (such as deposit and loan maturity transformation), it might be sought through alternative means¹⁰.

We can take an illustrative example with the BNP Paribas Group, and its fourth-quarter 2025 results¹¹. As of 31 December 2025, the "Corporate & Institutional Banking - CIB" division held assets across three business segments: Global Banking (EUR 191 billion), Global Markets (EUR 1,035 billion) and Securities Services (EUR 54 billion). This implies that activities classified under Global Markets in the CIB division (encompassing investment, hedging, financing services) amount to 81% of the CIB balance sheet, and 37% when looking at the total group balance sheet¹². We can conclude that the balance sheet is far from centred

⁹ Note that securitisation can also be done in a way as to retain the assets on the originator's balance sheet ("non-derecognised securitisation operation"). <https://data.ecb.europa.eu/methodology/what-securitisation>. Retrieved on 24/04/2026.

¹⁰ Ironically, the FSB report on Shadow Banking (2011) indicates that authorities could monitor performance indicators (RoE, RoA) to identify excessive earnings and understand which banks likely engaged in excessive regulatory arbitrage.

¹¹ BNP Paribas (2025). Press release: Fourth Quarter and Full Year 2025 Results. [Results and publications | Investors & Shareholders | BNP Paribas Bank](#). Retrieved on 18/04/2026.

¹² Which additionally comprises retail banking, insurance & wealth management services, that also contain market-based banking activities.

on deposit-loan intermediation and is instead dominated by market-based activities – which is not neutral from a regulatory arbitrage or profitability perspective.

Global frameworks such as Basel I reshaped this risk-transfer-activity, as the minimum capital requirement applied to banks' balance sheets on the basis of risk-weighted exposure led them to reconfigure the risks associated with their asset-side endeavours, notably through derivative products such as credit default swaps, which are akin to insurance against the credit risk of an exposure, or collateralised debt obligations, which transfer the first-loss tranches out (Pozsar 2008, Baud & Chiapello 2014). Basel II provided banks the possibility to use their own models to assess the credit risk of counterparties (i.e. internal ratings based method), or use the credit ratings provided by accredited agencies, which resulted in an overall reduction in regulatory capital through a reduction of the quantum of risk exposure of banks' assets ("risk weighted assets") (Baud & Chiapello, 2014)¹³. Basel III, with its stricter capital requirements, reshuffles the needed equity to assets ratio and thereby further incentivises finding business solutions evading and thus optimising the bank's balance sheet perimeter (Thiemann 2018, Arnold & Aliaj 2026).

The agency of banks to engage in regulatory arbitrage should therefore be understood through the concept of a three-party business transaction, in which the two-way relationship between buyer and seller is influenced by the regulator (Fleischer, 2010). Regulation is not a one-way street in which the regulator defines rules and the seller merely complies, rather the agency of banks is expressed through a managerial approach to compliance, whereby the legal understanding of an identical economic transaction is adapted, transformed, or engineered so as to change its classification and minimise the regulatory costs imposed (Thiemann, 2018). The regulator's reaction is restrained or delayed by the fact that he has no actual seat at the negotiating table and is unable to change the rules of the game mid-way (Fleischer, 2010). This results in the applicable legal framework continually being subject to interpretation, which the regulated institutions actively seek to pull to their advantage.

This sub-section explained how a managerial approach to regulatory compliance results in regulatory arbitrage, that is a deliberate choice to reconfigure or redirect activities in order to evade a certain legal framework. In the next sections, layers of complexity will be added upon the relationship between regulator and regulated, by explaining underlying possible drivers and situating the regulator and regulated in their broader context.

1.1.2 Regulatory capture

So, how can loopholes come about if the regulator defines its own ideal balance between stability and competitiveness? This is a seemingly simple question that will always invite a contextual and multifaceted response, as establishing direct and sole causality is difficult, even in hindsight. The next sub-sections will aim to add elements of response, by first examining the mechanisms underpinning regulatory capture in this section, drawing on

¹³ More details on risk-weighted assets and the internal models method will be provided in chapter 3.

Thiemann's (2018) comparative analysis on the regulatory responses to shadow banking before the great financial crisis.

Regulatory capture can be characterised by a situation in which the regulator favours the interests of the regulated above public interest. Baker (2011) identifies four interrelated mechanisms of regulatory capture: lobbying, the degree of political salience, revolving doors and cognitive capture.

- The low degree of political salience of financial regulation during financial booms results in low societal pressure, allowing banks' interests to venture largely unopposed (Baker, 2011). The inherent complexity of financial policy results in an influence asymmetry between private/public interests and offers thus room for lobbyism, as it amplifies the influence of private stakeholders over public opinion, and allows to introduce provisions or engage in discussions with authorities outside of the realm of public scrutiny (Igan & Lambert, 2019).
- Lobbying serves as a means for banks' agency to act collectively within an interest group utilising expertise, networks, and public relations skills to influence the opinion of legislators, regulators or the general public (Igan & Lambert, 2019)¹⁴.
- The expression "revolving doors" implies a movement between regulator and regulated, with individuals transitioning from one side to the other, resulting in the development of a common belief system across the private and public sector (Baker, 2011)¹⁵.
- Cognitive capture occurs when the regulator adopts the intellectual vision, problem definition or analyses of the regulated, leading them to unconsciously favouring private interests above public interest (Thiemann, 2018)¹⁶.

This sub-section highlights how regulatory outcomes are not solely determined by the regulator's pursuit of its ideal trade-off between competitiveness and stability, but also by the influence and views of the regulated, helping to understand how vulnerabilities could persist in the financial system and continue to pose risks.

¹⁴ Lobbying occurred on multiple fronts in the period leading up to the 2007 financial crisis, notably through the interest group Institute of International Finance (IIF), which played a significant role in the negotiation of the Basel II standards. The IIF exerted a strong consultative influence throughout the drafting, revision, and finalisation of Basel II, a framework allowing banks represented by the IIF to self-assess their capital requirements on the basis of internal risk management models (Tsingou, 2007). Basel II, defined by a philosophy of self-regulation, did require banks to include off-balance-sheet risks on their own accounts, but banks could use their own internal risk models to determine the capital requirements needed for those assets, which resulted in larger balance sheets (i.e., increased leverage) (Tooze, 2018).

¹⁵ See for example the case of Jose Manuel Campa, transitioning from a high-profile job at Santander, one of the biggest European banks, to the European Banking Authority, in charge of defining standards for those banks (<https://www.finance-watch.org/blog/still-going-round-in-circles-the-revolving-door-between-banks-and-their-regulators/>).

¹⁶ An example here can be introduced in the unconditional adoption of efficient market theories by authorities in the 20th century, i.e. the hypotheses that markets always self-equilibrate, that rational agents enforce market discipline and thus guide bank management to sound decisions, resulting in light touch prudential regulation (Baker, 2011).

1.1.3 The multi-level nature of banking regulation

To develop a more complete understanding of regulatory capture and the potential of regulatory arbitrage, we will situate the regulator within a broader context in this sub-section, and move beyond treating the regulator merely as a passive object of capture. The regulator is limited by structural constraints¹⁷, such as the geographical and socio-economic context, or the fragmented nature of governance and decision-making in banking regulation. Therefore, when we are referring to the “regulator”, this can actually be understood as referring to several distinct actors. We will further elaborate this point in the paragraphs below.

First of all, the restless geographical expansion and accumulation combined to the unravelling of international capital controls from the 1970s onwards led to banks operating internationally (Christophers, 2013), resulting in evolving relationships with national regulators, whose ability to propose comprehensive regulatory solutions is undermined as they cannot address all aspects of the banks’ cross-border business. For example, in the EU pre-2013, the regulatory architecture enabled banks to operate across EU borders, while remaining subject only to home country regulations, authorisation and supervisory responsibilities – thereby creating room for arbitrage based on the perceived leniency of member states (Giani, 2010)¹⁸.

These cross-border aspects thus provide banks with opportunities for geographical regulatory arbitrage, as the three-party relationship of buyer-seller-regulator invites a cross-border authority to the table.

For instance, Spain imposed capital requirements on off-balance sheet shadow banking activities in the 2000s’, which meant that Spanish banks had limited exposure to special purpose vehicles, as the market was not profitable enough. Santander was the only institution with such involvement – but its exposure was solely attributable to its UK-based subsidiary, evading the scrutiny of its regulator (Acharya & Schnabl, 2010).

Transnational rules or minimum standards are seen as a solution to curb such effects and establish global minimum standards (Thiemann, 2018). But what if the global standards do not specifically regulate a permissive regulatory framework ? We remain with a national regulator, that could in theory address financial stability concerns they detect. But the balance of power is tilted, the national regulator faces internal and external pressure to avoid undermining a competitive and lucrative national sector (Singer, 2007) and lacks definitive

¹⁷ Thiemann (2018) rejects the narrative that all regulators had been “captured” prior to the ’07 crisis, thereby explaining the absence of regulation of shadow banking activities. He distinguishes between different situations: instances in which regulators were initially blind to emerging activities, cases where they gradually acquired knowledge but lacked a full understanding of the implications, and situations in which regulators effectively looked the other way due to structural constraints. Thiemann also underlines that rejecting any dialogue between regulators and regulated actors may be equally problematic, as it ultimately amounts to an endorsement of self-regulation within the sector due to an information asymmetry between both sides.

¹⁸ Albeit there were already forums, where the home country supervisor (“consolidating supervisor”) exchanged with the supervisory authorities of the other countries of establishment of the cross-border group (supervisory colleges) and Memoranda of Understanding were established among the authorities, following the Lamfalussy process (Giani, 2010).

tools in a globalised world to protect the national sector from foreign pressures such as takeovers (Thiemann, 2018).

In this context, the national regulator's ability and willingness to enforce controls on banks' risk-taking is limited, a problem that becomes even more pronounced within the current EU context, given regulations are set at the transnational level, and national regulators are bound by harmonisation. Consequently, not only do banks compete, but also regulators (Thiemann, 2018), and their mutual dependence exacerbates the potential for regulatory capture at each level of the regulatory governance chain (Baker, 2010).

This subsection has highlighted the structural constraints influencing the actions of regulators, notably the multi-level and cross-border nature of banking and financial regulation. By situating the regulator within this broader governance framework, it shows how fragmented authority and competitive pressures between jurisdictions can limit or hold back the effectiveness of regulatory intervention.

1.2 Regulatory cycles: booms & busts

Having explored the structural factors impacting the dynamics between banking and shadow banking, this section now turns to the temporal dimension of regulatory and financial cycles' theories. Thereby, the section helps to understand when and why risks become systemic, from a financial markets' perspective but also through cycles of regulatory developments.

Minsky (1977, 1992) distinguishes with his "Financial Instability Hypothesis" between hedge, speculative, and ponzi financing. A "hedge" financial unit expects the cash flows generated from the financed operations to cover the obligations, i.e. the returns will cover the investment including interests. "Speculative" financial units can meet the interest payments, but not the principal. A need to refinance thus arises upon maturity. Finally, a "ponzi" financial unit cannot even cover the interest payment, as they exceed the current net earnings of the financed operations. Interest payments can only be met by engaging in further debt or finding other financing sources.

During periods of economic prosperity, the composition of financial units tends to migrate along this spectrum of hedge, speculative and ponzi financing. What begins as predominantly hedge finance gradually evolves into speculative and ponzi positions. For Minsky, this is a result of the inherent dynamics of capitalist economies, where bets are placed on what the expected future looks like. In good times, the financial agents feel validated in their bets, and move along the spectrum due to profit-driven demand and supply. As more agents observe the success, they join and a "mania" develops, the financial units shift into overtrading fuelled by increasingly irrational agents. When the main share of financial units has become speculative or of ponzi type, this endogenous spiral has made the system vulnerable to financial crises. As Kindleberger et. al. put it, *"good economic times reward firms that adopt fragile financial structures; their growth leads to aggregate financial instability."*

An exogenous shock to the macroeconomic system, such as a war or even an unexpected change in monetary policy will induce a reversal in virtuous factors that will then affect the equilibrium (Kindleberger et.al., 2023). Units engaged in speculative finance may then find themselves pushed into ponzi type refinancing, triggering fire sales and revisions of asset valuations.

Minsky's theories regain prominence when booms turn to busts. We aim to expand upon Minsky's theories by examining not just the outcomes (i.e. a fragile financial system) but also investigating the pathways that led there. Specifically, we want to explore the contextual or external frameworks that influence periods of economic booms and busts. To that end, we will turn to Dagher (2018), to introduce political economy aspects into the discussion on financial cycles, and more specifically the interplay with regulatory forces. Dagher's analysis of financial crises episodes¹⁹ highlights that financial regulation generally emerges in a procyclical way.

Periods of economic booms and growth are correlated with increasing lenient regulation, which intensifies these booms. Dagher (2018) highlights that typically the deregulation occurs quite rapidly, over less than five years, marked by a shift towards more informal or principle-based regulatory approaches and subsequently reduced supervisory oversight, sometimes implemented by new institutional bodies. Moreover, the political and public opinions during these periods tend to prioritise economic growth over financial conservatism, resulting in policies that promote expansion in specific sectors (i.e. the areas where bubbles may eventually develop) or adhering to prevailing macroeconomic beliefs, such as favouring light-touch regulation. In sum, political interventionism to encourage certain sectors combined with laissez-faire beliefs contracting the place of regulation and supervision will feed off each other to create the boom.

The crash generally induces a change in political leadership on a mandate of stronger regulation, especially if fiscal costs have been important. The confidence in the financial system drops, triggering an increased interest of the public into the mechanics of the bust and creating a platform for more hands-on approaches to their regulation. A contributing factor to re-regulation may also be that political priorities become increasingly influenced by public demand for action rather than by sectoral interests and lobbying (Dagher, 2018).

A combined reading of Minsky and Dagher shows that financial booms and busts, regulatory cycles and dynamics in financing structures create a temporal pattern that traces the path for a cyclical cat-and-mouse game between regulators and the regulated. Financial booms grow from weak rules, policy stimuli and the upward cycle towards speculative financing during stability. Financial crises then emerge from a mix of laissez-faire regulatory attitudes and increasing risk-taking in a system weakening from the inside. Once a shock exposes these vulnerabilities, the regulation and institutional frameworks that support it are reviewed.

¹⁹ The analysed crisis is based on Kindleberger et.al.s' (2023) top 10 list, featuring the South Sea bubble, the financial crisis of 1825, the great depression, the Japanese crisis in the 1990s, the Swedish banking crisis, the Korean crisis in the 1990s, the dotcom bust, the Irish financial crisis in 2008, the US great recession and the Spanish housing bubble 2000-2007.

This section aided our understanding of the temporal factors that contribute to the creation of vulnerabilities within the financial system, as well as their amplification through interactions with regulatory cycles. These are important patterns that help comprehending how vulnerabilities can build-up in the financial system during periods of stability, ultimately leading to systemic fragilities. We cannot help but trace a parallel with contemporary developments, where geopolitical pressures have resulted in increasing deregulation talks and action for financial supervision and regulation²⁰, providing an indication at which phase of the financial and regulatory cycle we might be, if the theories hold up the test of times.

1.3 The cat and mouse game in casu: the ABCP market

The foundational theories regarding the game between the regulator and the regulated, through regulatory arbitrage and regulatory capture, as well as the temporal dynamics of regulatory and financial cycles, can now be briefly integrated by looking at a case in point, involving the asset-backed commercial paper (ABCP) market.

Asset-backed commercial paper is a type of transaction that allowed banks to manage their capital requirements by removing certain assets from their balance sheet and is therefore part of the shadow banking world (Acharya & Schnabl, 2010). For that goal, special purpose vehicles (SPVs)²¹ were set up as independent entities from the banks, purchasing the assets of the bank and securitizing them to issue short term commercial papers, backed by the assets' cash flows.

What was in it for the banks? Access to low-cost funding and enhanced capital management. What was in it for the investors? Quasi risk-free investments. Indeed, in practice the credit risk remained with the bank since the investments were of such short-term (+/- 40 days), that if the credit quality deteriorated, investors would simply not engage in future issuances, so the bank would need to intervene and refinance to keep the structure in going concern (Acharya & Schnabl 2010, Duffie 2019).

The outstanding volume of securities arbitrage conduits illustrates the financial and regulatory cycles theories in practice.

²⁰ See for instance a recent article on active regulatory loosening activities in the US and UK, and mounting pressures on the EU to do the same: [Deregulation hands top US and UK banks \\$1.3tn](#)

²¹ Thiemann (2018) distinguishes between securities arbitrage conduits and structured investment vehicles (SIVs), whereby the main difference lies in the purpose of the vehicle (active asset management and investment behaviour for the SIV, while the securities arbitrage conduit serves to arbitrarily offload the balance sheet) and the liquidity support (i.e. explicit bank liquidity guarantees for the conduit, which can be present as well for the SIV but more conditional) (Acharya & Schnabl, 2010).

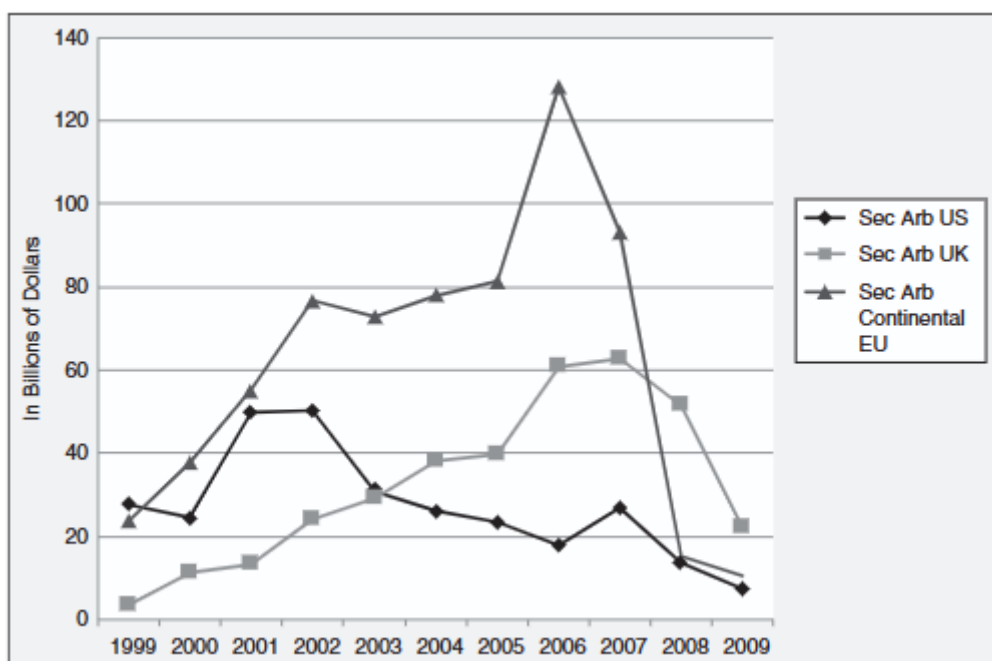


Figure 1: Volume of securities arbitrage conduits sponsored by US, UK & Continental Europe banks, replicated from Thiemann (2018), who sourced the data from Moody's Program Index.

It is interesting to read the graph above with following information in mind: The conduits allowed banks to enhance their return on equity (RoE), because using them meant a reduction in regulatory capital and enhanced leverage. But the profitability of the banks could only be enhanced through these operations *provided no capital charges significant enough to kill the trade* was imposed.

For capital charges to be avoided, the SPV needed to be seen as a separate entity that could not be consolidated as a subsidiary of the bank. This was engineered by legal advisors through avoiding any indication of control of the bank on the SPV - though control of the assets needed to be retained. Authorities could also have imposed capital charges on the liquidity lines. A third possibility to impose charges would have been for the SPVs to have been considered as credit or financial institutions under national law, as if they are, they must be supervised (Thiemann, 2018).

Now let's examine the ABCP regulatory and financial cycle at play. At the beginning of the century, the ABCP market is profitable and growing, as market participants engage in it, fuelled by the resilience of ABCP during the late 1990s capital markets turbulences (Thiemann, 2018). While the US regulator expresses some discomfort about growing off-balance sheet financing, a framework introduced in 2001 installs lenient rules for bank's ABCP conduits, leading to sustained growth until 2002 (Thiemann, 2018).

The agency of banks in taking advantage of regulatory contexts can then be observed by comparing the US and EU volumes.

From a US perspective, the profitability of securities arbitrage conduits compared to other sorts of conduits finally comes to a halt following the Enron scandal, that sparks regulatory uncertainty regarding on/off balance sheet accounting, and the Fed imposes a 10% credit

conversion factor on liquidity lines, leading US banks to investigate other avenues – we can see divestments as from the end of 2002 (Thiemann, 2018).

In Europe, the situation is more heterogenous but overall, most European banks did not face similar capital charges. Thiemann (2018) points out that the “home-country regulation” rule discouraged intervention, as enforcing stricter rules than the international Basel framework meant that foreign firms operating within ones’ jurisdiction would be advantaged on these trades compared to the domestic banks, while also highlighting that certain countries such as France, Spain or Portugal did restrain the profitability of the ABCP market through more stringent accounting rules – while German and Dutch regulators did not do so on grounds of domestic banks competitiveness²². From 2005 to 2007, the graph shows a mania develop, fuelled by European banks. From 2007 onwards, the market noticeably entered the bust phase of the financial cycle, i.e. the 2007 great financial crisis, the reversal of investor expectations leads them to withdraw from ABCP issuances and the volume noticeably plummets.

The ABCP conduit example helps us situate regulatory and financial cycles theories in history, by observing the difference in volumes depending on regulation enacted in the different geographical locations, showing that for Europe, the conduits stayed advantageous until the financial crisis and therefore encountered significant success, while events in the USA made the structure less profitable, and as such volumes were more limited. Once the general bust in the market happens in 2007, the outstanding volume of securities arbitrage conduits decreases significantly.

1.4 Conclusion

This chapter began addressing the research question, i.e. if interactions between the growing shadow banking system and the banking system could cause contagion from shadow banking entities to traditional banks and spur systemic risk, by first examining the drivers shaping the relationship between regulated banks and the shadow banking system.

The first section showed how interactions between the regulator and regulated banks give rise to regulatory arbitrage. Through a cat-and-mouse dynamic, banks actively reconfigure their activities to optimise profitability and often move risks past their regulated perimeter. This process is reinforced by mechanisms like regulatory capture or the multi-level governance constraints of the regulator, and explains how interconnections between banks and non-bank continue to emerge through the displacement of risks.

The second section shows how this process is reinforced by a temporal dimension, where we saw through analysing the works of Minsky and Dagher that periods of stability correlate with a gradual increase of risk-taking and regulatory leniency, contributing to the build-up of vulnerabilities.

²² The French regulator, using both legal measures and stricter recommendations, compelled banks to consolidate their conduits, resulting in an almost non-existent market. In contrast, similar enforcement actions were not implemented in the Netherlands and Germany.

The final section gave a historical example of regulatory arbitrage and the dynamics of financial and regulatory cycles, through the case of ABCP conduits. The case of ABCP then illustrates all these concepts: we can observe the agency of banks, but also the (non-)actions of regulators which may have favoured the interests of the regulated sector above those of the public. Moreover, once a trade is profitable and prolific, closing it requires certainty as no regulator wants to crush a domestic market while the other mice still play. The ABCP market clearly underwent a procyclical regulatory and financial cycle: limited regulation and heightened activity led to the build-up of vulnerabilities, setting the stage for the eventual crash.

This chapter has clarified the drivers and forces shaping how activities and their underlying risks are allocated between shadow banking and traditional banking. The next chapter will delve into the shadow banking system, examining its activities, entities and mechanisms that underpin its interaction with the banking sector.

2 DISSECTING THE SHADOW BANKING SYSTEM

We will now open the black box of shadow banking in order to classify and explore its activities in greater detail. This chapter will allow us to identify the specific mechanisms, actors and transactions of the shadow banking system, and how these interact with the banking system.

To do this, we will first draw on the work of Pozsar et al. (2010) to outline the structure of some of the transactions involved (“shadow credit intermediation”), to then address the broader shadow banking system, as a mutually enabling and complementary system to the traditional banking system. Thereby, we aim to provide more clarity as to what reasonably may be considered a “definition”, or at least an outline of shadow banking, while remaining mindful of the system’s fleeting and adaptive characteristics as discussed in Chapter 1. Attempting to define the system nonetheless serves the purpose to provide the necessary analytical foundation for examining the bank’s exposures to the shadow banking system in Chapter 3.

The first sub-section concentrates on a distinction of the “entity-based” definition of shadow banking and compares it to an “activity-based” view. Within this framework, the shadow credit intermediation activity is examined to highlight differences to traditional intermediation.

The second sub-section then develops a broader analysis of the interconnections between banking and shadow banking, conceptualising them as two ends of the financial intermediation continuum where different kinds of interactions take place between the two, such as competition, cooperation or even intragroup coordination.

The last sub-section provides an overview on the historical evolution of the regulation of the financial sector since the great financial crisis and highlights debates and discussions surrounding regulating the shadow banking sector.

2.1 Conceptualising shadow banking: the activity-based and entity-based view

When approaching how to conceptualise, define or quantify the shadow banking sector, there are mainly two approaches that have been taken in the past and that co-exist (Claessens & Ratnovski, 2014).

The first approach takes an activity-based perspective, where a functional view is taken on the activities performed to classify them as shadow banking. Here, shadow banking will be categorised as a set of activities that are well-known to traditional banking, i.e. credit, maturity and liquidity transformation, but these activities will take place through market-based mechanisms.

To clarify the approach, we will take the example of shadow credit intermediation. Shadow credit intermediation is best defined by what it is not. Unlike classical banking credit intermediation, where a bank serves as intermediary between funds and borrowers *in a single entity*, the shadow credit intermediation process involves several entities.

Take for instance structured finance: After the initial loan origination, loans are transferred to another entity, where securities are issued against the assets (asset-backed securities - ABS). We take here the example of loans, but other asset classes are also leveraged in the shadow banking system (e.g. leases or receivables) (Gorton, 2010). The ABS might be packaged even further into other structured products (collateralized debt obligations - CDOs), and the initial loans have in the meantime become a tradable financial instrument. The more the underlying assets are of bad quality, the longer this intermediation chain could become (Pozsar et al, 2010).

However, the traditional flux happening on banks' balance sheet, that is borrowing short (through deposits or short-term borrowing) and lending long (to retail or corporate customers), is still relevant to shadow credit intermediation, albeit the involved parties differ and the leveraged structures are market-based. The lending occurs through the warehousing and trading of the assets, that have longer term maturities, and the funding occurs through the issuance of short-term instruments that segregated into tranches of various seniorities²³ (Pozsar, 2008), which ultimately means that some of the issued instruments have better risk profiles than the underlying assets (Bakk-Simon et al., 2012). The viability of the structure relies on the cash flows from the pool of assets (Gorton, 2010).

Risks arising from maturity and liquidity transformation have gradually been attenuated on banks' balance sheets, through a combination of institutional and regulatory mechanisms, such as for instance reducing incentives to deposit runs through deposit insurance, diversifying liquidity sources through access to interbank markets or central bank liquidity facilities or by imposing higher capital requirements designed to absorb expected and unexpected losses (Gorton, 2010). The risks linked to the intermediation, and more specifically "run" risks²⁴, do not disappear in the shadow banking system but since non-banks do not have access to public backstops, like central bank liquidity facilities, guarantees are provided by the private sector to underpin the shadow credit intermediation structure (Pozsar et al., 2010).

In contrast, the entity-based view defines shadow banking as all intermediation activities that are not conducted by banks.

This approximatively corresponds to the approach taken by the Financial Stability Board (FSB) to quantify the sector and its importance. The FSB quantitatively proxies the shadow banking sector as the sum of the activities of "non-bank financial intermediaries" (NBFIs)²⁵

²³ "Seniorities" refers to the priority of repayment in case of insolvency, following the rule that the most junior tranches absorb losses the first, or are repaid the last, while more senior tranches are better protected from the losses.

²⁴ A run happens when there is a sudden and massive withdrawal of funds – during the financial crisis in 2007, many pictures emerged of people lining outside their bank agencies to withdraw their deposits. See Gorton (2010) for a description of how panic occurred in the repo market, through increases in haircuts applied to collateral underlying the repos, forcing borrowers to post additional collateral to maintain the same level of funding, or Duffie (2019) for insights on runs in OTC derivative markets through the option to terminate contracts upon the counterparty's insolvency.

²⁵ The NBFI can take over any part of the shadow credit intermediation process described above (e.g. loan origination, managing SPVs, securitisation and issuances of financial products backed by the assets, provide funding and investments).

(FSB, 2025), i.e. insurance companies, funds, asset managers and the likes, excluding regular banks and central banks. The FSB further refined this definition through developing a “narrow measure”, i.e. diminishing the scope to intermediaries²⁶ among the NBFI to only those that are involved in credit intermediation activities that could give rise to risks similar as in the banking sector.

But what about hedging activities, where for example banks use derivatives²⁷ to transfer credit risks that have arisen from their loan origination? Can these be considered shadow banking? The derivatives contracts remain on the banks’ balance sheet, and fall thus within the banks’ regulatory perimeter. So those activities would only be captured by the FSB’s NBFI measure, if the counterparty engaging with the banks on the derivative transaction is covered by the NBFI entity-based definition.

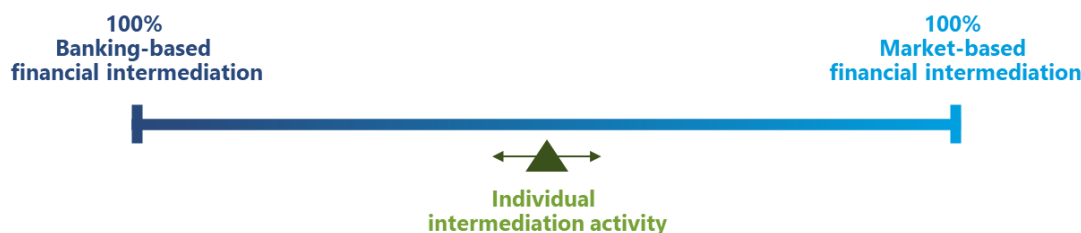
This example illustrates the tension between activity-based versus entity-based definition of shadow banking. For example, Mehrling et al. (2013) adopt a purely transaction-based definition for shadow banking, by describing it as financial intermediation conducted through the purchase and sale of securities. Hence, this could also refer to a transaction occurring solely within the banking sector, where two banks engage as borrower and seller. A broad activity-based definition therefore captures all market-based finance intermediation activities, may they be conducted by banks or any other types of companies. An entity-based view however focuses on what kind of entity performs the transaction, excluding those conducted by banks from the shadow banking system.

2.2 A continuum ranging from traditional banking to shadow banking

Building on the definitional ambiguities outlined in the previous section and chapter, this section argues that the activity-based and entity-based definitions are not mutually exclusive, that the activity-based view can be further dissected and that “traditional banking”, and “shadow banking” are best understood as complementary rather than parallel systems (Acharya et al., 2026, Acharya et al., 2024). Their combined systems can be conceptualised as a continuum, ranging from activities fully matching traditional banking financial intermediation to activities fully matching market-based financial intermediation, with individual intermediation activities positioned along this continuum.

²⁶ The narrow measure further excludes insurance companies, pension funds or other financial entities to concentrate only on funds, non-bank lenders or structured finance vehicles.

²⁷ Derivatives are linked to the shadow banking world in that they also carry out risk transfers outside the banking perimeter: for example, a Credit Default Swap (CDS) allows to protect oneself against the risk of default of a counterparty (e.g. the borrower), thus allowing to optimise capital requirements.



An intermediation activity that could be characterised as 100% bank-based financial intermediation is an activity where the bank intermediates the funding obtained from deposits to provide loans to their clients, being companies, institutions or households – and where the assets (i.e. the loans) are not traded or further packaged to that end (Adrian & Shin 2010, Grasselli 2022).

An intermediation activity that would be characterised as 100% non-banking financial intermediation would not at all require a bank’s intervention. An investment fund lending directly to corporate firms for example, i.e. private credit, where the private credit fund buys into the corporate’s firm issuance constructed on a bilateral basis (Lalafaryan, 2024).



The point is that between the two ends of the continuum, there are all other types of financial intermediation activities that are hybrid by nature and cannot categorically be assigned to either end without being dissected in a transaction-by-transaction manner.

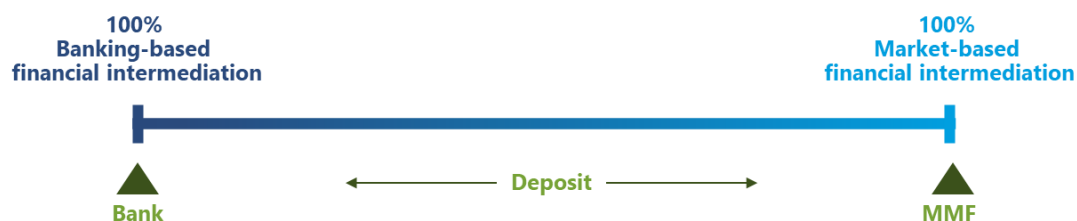
We will further exemplify this continuum by exploring three aspects of traditional and market-based financial intermediation interactions, where we will first illustrate how banks and non-banks can find themselves in competition (*competitors*), secondly where banks and non-banks cooperate by engaging into contractual relationships (*counterparties*) and finally we will address a case where a bank and non-bank belong to the same corporate group (*intragroup coordination*).

Competitors

The first aspect pertains to a situation where banks and non-banks compete for market shares in the relational aspects of credits intermediation (Cetorelli et al. 2025, Acharya et al. 2024). When seeking funding, corporates could choose between private credit providers or

traditional banks – where the conditions, features and price tag of each option will influence the final decision.

Similarly, on the savings side, when looking to deposit money that needs to remain available, money market funds (MMF)²⁸ can provide deposit-like instruments, alongside those of traditional banks (Cetorelli et al., 2025).



Counterparties & cooperation

The second aspect in the continuum relates to situations that are rather akin to cooperation than competition. From a bank's perspective, balance sheet optimisation, or capital relief strategies increasingly rely on market-based banking instruments, and these solutions can be supported or provided by non-banks, such as involvement in securitisation structures or taking over risks from the banking sector. But banks also provide advantages to NBFIs, such as loans or credit lines that supply liquidity (Acharya et al., 2024). In this setting, non-banks and banks do not compete for market share but rather engage in cooperation to reach mutual benefits.

Consider a bank originating large corporate loans. To optimise its capital requirements and for risk management purposes, the bank decides to transfer the credit risk through a credit default swap, a derivative contract where e.g. a hedge fund or an insurance company will be its counterparty, and take the credit risk away from the bank against a fee. This allows the bank to optimise its capital and risks while maintaining its lending activity. Dissecting the transactions in two separate items (the loan origination first, and the derivative contract second) allows to clarify how these different elements map on the continuum, without neglecting to understand that they are inherently linked – the traditional banking-based financial intermediation is supported by market-based elements.



²⁸ That is, a type of fund that invest in short term debt, where the cash can be withdrawn at any time.

Intragroup coordination

A last aspect to be mentioned pertains to the multi-faceted side of banking group structures, regrouping many legal entities under one roof, being traditional banks but also non-banks. In the EU landscape for instance, the 5 largest banking groups all have organisational structures where credit institutions mingle with non-banks²⁹. The significance of the bank–non-bank activities continuum lies in the inclusion of the non-banking entities within group structures, which permits intragroup funding transfers between group entities, cross-selling, competitive prices and serves as an “internal capital markets” solution, that is more advantageous than the external capital markets solutions (Albuquerque et al. 2026, Cuijpers & Vlahu 2026).

Coordinating activities inside a banking group is a way of engaging in regulatory arbitrage, as higher capital requirements in one entity result in a reallocation of activities to another entity inside the group. It is typically the nonbank entity that increases lending relative to the parent bank or banking subsidiary through this reallocation of activities (Albuquerque et al., 2026).

The diversification of banking groups thus enables both cooperation and competition between banking and non-banking entities in the same group. With the difference that the outcomes of arbitrage ultimately benefit to the same owners, and are thus steered centrally.

Why have banking groups evolved into such sophisticated and diversified structures? The perceived necessity has created urgency. Following the great financial crisis, commercial banks have been prohibited from taking gambles in financial markets for their own profit (“proprietary trading”) and are restricted to trading activities on behalf of clients (“market maker”)³⁰ (Ghosh & Lee, 2022). These rules intended to rebalance the system in favour of financial stability and reduce excessive trading on the banks’ balance sheets (National Bank of Belgium 2013, Hardie & Macartney 2016). These limitations imply that trading activities and taking advantage of markets’ opportunities are no longer intended to take place on the balance sheet of commercial banks, creating the need to relocate such activities to trading entities within the same group.

For an illustrative example, the BNPP group provides insights on their intra-group capabilities through investor presentations³¹ on the asset management division, by advocating their “integrated model” as a differentiator: the presentation states that BNPP Group and Cardif (the insurance arm) are used as “anchor investors” (i.e. they commit capital

²⁹ [BNP Paribas group](#) has a banking entity in several countries, as well as specialised business entities e.g. for leasing (Arval), fintech (Floa), or asset management and real estate entities. The same can be said for [Crédit Agricole group](#), [Santander](#), [Société Générale](#), and [Groupe BPCE](#).

³⁰ The EU financial reforms did not dismantle the “universal banks structure”, in which commercial and investment banks can be grouped under one roof, which means that commercial, deposit taking banks may still engage in investment banking but need to have ethical walls between the two activities, as the Capital Requirements Regulation makes a difference between the banking book and trading book (positions held with trading intent). The separation between banking & trading book has regulatory implications as trading book positions are subject to higher risk weights.

³¹ [Deep Dive Asset Management](#), <https://invest.bnpparibas/en/document/deep-dive-asset-management>, Retrieved on 21/04/2026.

before new issuances³²), that the distribution of issued products is then scaled through the Group's Wealth Management division (i.e. sold to a large client base), that BNPP Asset management benefits from its access to the group's funding channels (i.e. intragroup transfers of funding such as deposits) and its asset origination capabilities (i.e. origination of loans or other assets that can then be securitised). While it is not always explicitly mentioned, this "integrated model" involves several legal entities within the group, being the banking entities (as originator of assets and funding means), the non-banking entities such as the insurance or asset management arm (as investors or distributors).

The use of diversified group structures thus enables banks to stay at the forefront of market-based banking. These organisational arrangements allow them to enhance efficiency and profitability at a group level, but they also create interconnections and dependencies. Whereas outsourcing or transacting with non-bank counterparties might redistribute risks across the financial system, relocating activities onto group affiliates instead keeps the risks inside a same group.

2.3 Banking regulation, shadow banking regulation and reform debates

As we have seen in the previous chapter, the banking sector is subject to levels of capital requirements to contain negative externalities or spillovers from their risk-taking activities that do not completely internalise the social costs (Plantin, 2015). After the great financial crisis, and the recognition that these externalities were not contained by the prevalent framework (Hellwig 2010, Tooze 2018, Duffie 2019), banking regulation was overhauled and reinforced. At the same time, equivalent reforms were not undertaken in the shadow banking system, hinting at increased regulatory arbitrage to come (Plantin 2015, Adrian & Ashcraft 2012).

To clarify the regulatory path that has been taken since then, we will now take a historical perspective and retrace regulatory developments in the financial intermediation space since the great financial crisis.

The Larosière report of 2009 will kick off a series of reforms, notably the creation of four agencies. The European Banking Authority, the European Securities and Markets Authority and the European Insurance and Occupational Pensions Authority will be created to inter alia work on the harmonisation of the rules applicable to individual financial institutions. The European Systemic Risk Board (ESRB) is created for the purposes of macro-prudential oversight. In that sense, the ESRB covers the whole spectrum of financial entities, from banks to non-banks. However, the ESRB only monitors and issues warnings or recommendations – it does not have a binding power on its member institutions to take regulatory action³³ (Vestergaard & Quorning, 2022). Those agencies are created to

³² This is a common market practice that helps support market confidence. The anchor investors help provide certainty to other, prospective investors on pricing and stability and mitigates information asymmetry (Singhal et al., 2025).

³³ Regulation (EU) No 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union Macro-Prudential Oversight of the Financial System and Establishing a European Systemic Risk Board. https://www.esrb.europa.eu/shared/pdf/101216_ESRB_establishment.en.pdf?20c8cadce98d21eb005aad871b87fa6f.

coordinate the measures of European countries, but were not yet an attempt to integrate completely regulatory and supervisory powers (Tooze, 2018).

In 2011, the Alternative Investment Fund Managers Directive (AIFMD) is adopted in a shift away from the Anglo-Saxon beliefs of letting the markets regulate themselves (Quaglia, 2011). The directive introduces a harmonised regulatory framework for managers of alternative investment funds, such as hedge funds or private equity funds. Rather than regulating financial intermediation activities, the directive focused on the supervision of entities, i.e. alternative investment fund managers, and lays down sectoral prudential and other requirements, such as an authorisation regime³⁴.

In 2012, the European Market Infrastructure Regulation (EMIR)³⁵ is adopted to regulate derivatives markets, notably by defining reporting obligations, central clearing obligations³⁶, or risk mitigation techniques for over-the-counter derivatives. This regulation thereby also reinforced the role of banks as intermediaries in derivatives markets, as non-banks generally do not have access to central clearing counterparties and thus need to access them through banks to make use of the centrally cleared derivatives market (CCP Global, 2025).

In 2013, the capital requirements directive³⁷ (CRD) and regulation³⁸ (CRR) are adopted to implement the Basel III framework in the European Union. The prudential requirements for banks are redefined, as capital buffers are increased and liquidity requirements are added (Howarth & Quaglia, 2013).

In 2014, a significant change will be come about through enacting the banking union, where banking supervision and resolution are harmonised³⁹ and central authorities are defined as competent authorities for the largest EU banks, i.e. the ECB⁴⁰ for banking supervision and

³⁴ Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and Amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010.

³⁵ REGULATION (EU) No 648/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on OTC derivatives, central counterparties and trade repositories. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02012R0648-20250117>

³⁶ A central counterparty interposes itself in the derivative transaction, by fungating as the counterparty for the buyer, and the counterparty for the seller, thereby reducing counterparty default risk.

³⁷ Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC

³⁸ Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012

³⁹ Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms and amending Council Directive 82/891/EEC, and Directives 2001/24/EC, 2002/47/EC, 2004/25/EC, 2005/56/EC, 2007/36/EC, 2011/35/EU, 2012/30/EU and 2013/36/EU, and Regulations (EU) No 1093/2010 and (EU) No 648/2012, of the European Parliament and of the Council

⁴⁰ Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions

the Single Resolution Board (SRB)⁴¹ for banking resolution – those frameworks will be referred to as the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM). A harmonisation of rules is also introduced for deposit guarantee schemes but without enacting a centralised EU-level authority, so deposit guarantee schemes remain nationally managed (Bassani, 2026).

On the banking structure reform side, the picture is more nuanced. In 2012, the Liikanen report was published by the European Commission, that had commissioned a group of experts to evaluate the needs for structural regulatory reform of EU banks and financial stability (Liikanen et. al., 2012). The report narrates the shift from traditional to market-based banking of European banks, and the rising interconnections between bank & non-banks – recommending reducing these interconnections, including through a structural and legal separation of trading activities and commercial banking activities to limit contagion from one to the other. At the same time, the Liikanen report mostly envisioned non-bank regulation through their spillover effects to the banking sector, noting that the funds industry is already subject to many requirements, and recommending that if activities are pushed out of the banking sector, they should remain “subject to appropriate prudential oversight”, thus without calling for similar treatment than if those activities had stayed in the banking perimeter (Liikanen et. al., 2012).

In 2014, the European Commission tabled a proposal to prohibit proprietary trading for banks and to segregate certain trading activities from the banking institution (Bompotis, 2025). The Council reading of the text resulted in a much lighter version of the proposal, under the influence of France and Germany. Hardie & Macartney (2016) examine their arguments by showing that these EU member states felt that any reforms to the prevalent universal banking structures, grouping retail and investment banking, would undermine the competitiveness of EU universal banks against US investment banks. In the EU parliament, the Commission proposal did not pass the first vote, as centre left parties voted against a tabled reform perceived as too lenient. In 2017, the Commission finally retracted its proposal with no outcome of the legislative process in sight (Oppolzer, 2019). This means that in the current framework, trading and commercial banking activities may take place under the same legal entity, which makes it more challenging for their supervisor to differentiate market-making and proprietary trading activities from treasury management (Oppolzer, 2019).

Some other regulatory pieces were also adopted in the subsequent years, aiming to target specific activities or sectors. MiFID II⁴² and MiFIR⁴³ expanded the regulatory framework governing market-based financial activities, in order to enhance reporting obligations,

⁴¹ Regulation (EU) No 806/2014 of the European Parliament and of the Council of 15 July 2014 establishing uniform rules and a uniform procedure for the resolution of credit institutions and certain investment firms in the framework of a Single Resolution Mechanism and a Single Resolution Fund and amending Regulation (EU) No 1093/2010

⁴² Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

⁴³ Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012

regulate trading venues and market structures, and impose requirements on investment firms. The Securities Financing Transactions Regulation (SFTR)⁴⁴ and the Securitisation Regulation⁴⁵ addressed important segments of market-based financial intermediation. SFTR introduced reporting and transparency requirements for securities financing transactions such as repurchase agreements (repos) and securities lending, while the Securitisation Regulation established rules on due diligence, transparency, and mandatory risk retention for securitisation activities, on top of laying down a simpler securitisation type that came with certain advantages (simple, transparent, standardised securitisation). The Money Market Fund Regulation (MMFR)⁴⁶ targeted risks associated with short-term funding markets, such as the possibilities of sudden withdrawals, through introducing new liquidity ratios, asset eligibility and diversification rules, and transparency standards.

As we can see, it is certainly wrong to affirm that non-banking financial intermediaries are not regulated at all. However, the approach is different.

For banks, and as we will examine in greater detail in the next section, the regulatory approach starts with micro-prudential measures that inspect the specific risks to which each individual banking entity is exposed to determine the individualized amount of capital and liquidity that needs to be held to account for those risks. On top of that, resolution requirements oblige banks to prepare for their potential insolvency or crisis situation, including requiring additional capital or subordinated debt for enhancing their loss absorbency capacity. Then, there is also the macro-prudential aspect, where national macro-prudential authorities determine additional capital buffers to be held, aimed at addressing system-wide risks. These frameworks have thus as a consequence that the capital and liquidity structures of banks are closely monitored, with supervisory processes conducted on a continuous basis throughout the year (Bassani, 2026).

For non-banks, the approach differs in structure and scope. There is no comprehensive micro-prudential framework assessing individual exposures and defining capital and liquidity requirements, as regulation is organised around sectoral or activities-focused segments (Busch & Van Rijn 2018, Vestergaard & Quorning 2022, Acharya et al. 2024, Moloney 2024) The specific regulatory pieces such as AIFMD or MMFR do not aim to ensure loss-absorbency capacity at the levels observed in banking regulation. Non-banks are also not subject to a similar macro-prudential or resolution frameworks (Albuquerque et al. 2026, Acharya et al. 2024). In addition, the supervision of non-banks is more sparse and fragmented, as in the European union the supervisory duties remain national, with ESMA taking a coordination role (Busch & Van Rijn, 2018).

⁴⁴ Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012

⁴⁵ Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012

⁴⁶ Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds

There are several arguments or reasons advanced for the different regulatory approach to non-banks, and we will first review some of the arguments proposed, before turning to explaining why they are not entirely satisfactory.

To start, the term “non-banks” actually designates a number of diverse types of entities or business models, such as funds, asset managers, family offices, central counterparties or insurance companies. It is often underlined that a one size fits all approach would not account for their diversity and current level of regulatory treatment⁴⁷. A second voiced argument pertains to the fleeting definition of the non-bank sector we outlined in chapter 2: regulating more strictly certain non-banks such as money market funds would drive the investments away to another, less-regulated type of non-banks and miss its purpose (Schindler, 2026). A third argument is that banks are heavily regulated in order to protect depositors, but non-banks argue that the same necessity does not arise for them: The shareholders and creditors are informed investors, and if the non-bank fails, it may go to liquidation proceedings, its shareholders and investors bear the losses and no public support is granted (Acharya et al., 2024). To add to that, shadow banking underwent a positive reframing after the financial crisis, identifying the sector as an essential source of credit for SME’s and the growth of the economy (Vestergaard & Quorning, 2022).

Strict adherence to these beliefs squares difficulty with following considerations.

First, and as we have seen in the previous chapter, banks and non-banks are heavily interrelated as they engage as counterparties or cooperate within the same group. If a non-bank fails this has an impact on its counterparty, the bank, which should thus be adequately capitalised to bear the consequences. There are potential financial stability implications, that are reinforced by the fast growth of the non-bank sector and its interconnections with the banking sector (Rubio 2025, Cetorelli et al. 2024). These spillovers were also put on display back in 2007 (Cetorelli et al., 2024): When the mortgage loan asset performance began to deteriorate, the architecture of shadow banking unravelled, risks that had been treated as external to the banks’ perimeter were forced back onto their balance sheets, yet the capitalisation of banks was insufficient to cope with these exposures and the situation ultimately resulted in a widespread banking crisis including bail outs (Danielsson 2008, Hellwig 2010, Tooze 2018, Duffie 2019).

Second, public authorities have in practice already intervened to support resilience in non-bank financial intermediation, such as public liquidity facilities in 2007 (Adrian & Ashcraft, 2012), the Covid crisis in 2020, where many central banks including the ECB stepped in to sustain market liquidity (Financial Stability Board, 2020), or the gilt market turmoil in the UK in 2022 when the Bank of England intervened investing into the market to stabilise it (Acharya et al. 2024).

⁴⁷ See for instance a keynote speech by Commissioner McGuinness (2024): *“So while systemic risks often cut across all NBFIs sectors, the differences between sectors need to be reflected in our policy response. And here we are not looking for a one-size-fits-all solution or to mirror the macroprudential framework for banks. I want to be very clear on that.”*

Third, the underlying activities remain functionally the same, meaning that the risks associated with these activities in the banking space persist too, yet are not subject to the same level of scrutiny or rules (Gorton et al., 2010, Cetorelli et al. 2025, S&P Global 2026).

The case of the collapse of Archegos is a recent example, having caused a hit of \$5,5 billion to Credit Suisse alone (Cooper, 2023). Archegos, operating as a family office and therefore mostly outside the radar of regulatory authorities, effectively behaved just as a hedge fund, borrowing from banks to build positions in capital markets – although not in a very diversified manner (Benny-Morrison & Natarajan, 2024)⁴⁸. When the value of its concentrated positions deteriorated, Archegos faced margin calls⁴⁹ it was unable to meet and led to its default (Cooper 2023, Benny-Morrison & Natarajan 2024). These activities could not have been undertaken by Credit Suisse or the other banks in their own name, but by providing leverage to Archegos, the bank was nonetheless exposed to the same risks.

Meanwhile, international bodies or standard setters are increasingly calling for reviewing policy actions related to shadow banking. The FSB issued several reports in recent years on policy measures related to leverage of non-banks, liquidity preparedness or enhancing their resilience⁵⁰. The ESRB (2026) highlights data gaps that constrain its ability to assess systemic risks arising from bank & non-banks interconnections and calls for legislative changes. And the Group of Thirty (2026) highlights the growth of non-banks, their increasing occurrences of stress and calls for comprehensive answers to reduce the procyclical potential of non-banks and financial stability risks.

2.4 Conclusion

This chapter began addressing the research question, i.e. if interactions between the growing shadow banking system and the banking system could cause contagion from shadow banking entities to traditional banks and spur systemic risk, by opening the “black box” of the shadow banking system and examining its internal structure, actors, regulatory context and activities.

The first section presented how activities in the shadow banking sector are structured, including the characteristics underlying shadow credit intermediation, such as the use of tradeable securities and the reliance on financial markets, or the number and diversity of entities involved in the intermediation process. It thereby introduced the “entity based” view, by breaking down the FSB definition of non-bank financial intermediaries and describing the types of actors involved in the system

The second section then moved beyond this classification to challenge the apparent opposition between banking and shadow banking. The section highlighted that the dense

⁴⁸ A study commissioned by the US Congress (2023) notes that Archegos largely made use of derivatives (total return swaps) to be exposed to certain stocks without owning them, adding to the opaqueness of their investment position.

⁴⁹ A margin call is basically a demand to a counterparty to post additional collateral in order to get the same level of lending/investment position.

⁵⁰ https://www.fsb.org/publications/policy-documents/?policy_area%5B%5D=78. Retrieved on 25/05/2026.

interlinkages between banking and non-banking entities blur the boundaries between the two systems, and that financial activities stemming from banks and non-banks sector should best be understood as a continuum. By leveraging an activities-based view, we then dissected individual activities to identify which components fall within the banking versus the non-banking realm. Along this continuum, banks and non-banks engage in different kinds of relationships, as they may compete for market share, act as counterparties to one another or coordinate activities within the same group.

The third section showed that while non-banks are subject to various regulatory measures, their treatment differs from that of banks in scope, structure and approach. This results in a more fragmented and lenient regulatory framework, that provides space for regulatory arbitrage activities. Several reasons or arguments underpin this difference in approach, but the sustained growth and rising interconnections compelled international standard setters and bodies to call for policy changes.

This chapter allowed us to realise how the banking sector has progressively adapted its business model in response to regulatory and market evolutions. And more importantly, the chapter also allows us to understand the extent of the dense interlinkages between banking and shadow banking entities, fuelled by the growth of the latter, which enable and contribute to the growing integration of market-based finance into banks' activities and, in turn, to the rise of systemic interdependencies within the two systems.

3 ASSESSING INTERACTIONS WITH SHADOW BANKING FROM A BANK’S PERSPECTIVE

After having analysed the structural drivers and internal dynamics of the shadow banking system, this chapter now turns to how interactions between banks and non-bank financial intermediaries present themselves on a banks’ balance sheets. This is our final step in outlining how interactions between actors from the shadow banking system and the banking system could cause contagion and generate systemic risks, as it allows us to move to a practical perspective of how bank and non-bank interactions occur from a bank’s balance sheet perspective.

The Liikanen report will be leveraged as a structuring reference point for this analysis. The report identified a set of market-based banking activities and interactions with non-banks, that upon recommendation of the authors should have at least partly been separated from traditional deposit-taking banks to limit contagion risks. As we have seen in the previous chapter, these recommendations were not implemented at EU level. We will therefore review the activities that were highlighted as posing systemic concerns, and analyse their regulatory treatment and developments from a banks’ balance sheet perspective. This approach will allow us to assess how mutual exposures between banks and non-banks have continued to evolve, and how they might continue to allow risks to circulate between banks and non-banks.

The first section provides an introduction on capital requirements management, highlighting how within the current EU framework, the Single Supervisory Mechanism, banks can engage in forms of regulatory arbitrage to influence their capital requirements. This theoretical foundation is necessary to provide the basis to understand how the exposures examined in this chapter can be leveraged from a bank’s perspective, particularly in terms of their impact on profitability, capital optimisation, and risk allocation.

The second section then turns to how interactions between banks and non-bank financial intermediaries materialise in practice. Drawing on the exposures identified in the Liikanen Report, the analysis begins by examining issues of consolidation and the use of specialised entities, before turning to securitisation within the current EU framework. It then explores the role of market-based finance and risk transfer mechanisms, such as derivatives and repos, and finally highlights the importance of loans and commitments to non-banks as an additional channel of interconnection.

3.1 A primer on capital requirements

This chapter provides a succinct guide to how a bank can make use of the shadow banking system to optimise their business. To understand how banks can actively manage their balance sheets so as to reduce capital requirements, i.e. activities that fall in the scope of the “capital management” activities of banks, a brief and simplified explanation on the calculation of capital requirements will be useful.

Capital requirements refer to the amount of own funds instruments that need to be held by the credit institution to be compliant with the Capital Requirements Regulation (CRR)⁵¹. There are several regulatory thresholds that banks must comply with, most of which are calculated as a percentage of the total risk exposure amount (TREA), except for the leverage ratio^{52 53}.

The TREA is a calculated aggregate, that reflects the riskiness of the different on- and off-balance sheet exposure, where risk weights are associated to individual exposures, meaning that an asset perceived as having a low risk can carry a risk weight of 0% (such as exposures to the ECB) and therefore not contribute at all to the TREA quantum, while a higher risk exposure could be associated with a large risk weight of 1250% (for example an unrated securitisation exposure) and thus contribute disproportionately towards the TREA quantum.

We will take the total capital requirement ratio as an example:

$$\text{Total capital ratio: } \frac{\text{Total capital}}{\text{Total risk exposure amount (TREA)}} > 8\%$$

To reach the 8% requirement, the banks need to calculate their total capital (the numerator) and their TREA (denominator). To optimise this equation, there are many different ways present in the CRR to act on either the numerator, or the denominator.

In practice, institutions can either use the standardised approach to calculate their TREA, or a method developed based on internal models, named the internal ratings-based method (IRB). The IRB method is much more complex, as for the different categories of assets, the different risk parameters need to be calculated by the institution itself (Pérez Montes et al., 2018). But quite consistently, the use of the IRB approach by banks results in a lower TREA density, i.e. a lower total aggregate risk weight than when using the standardised approach (Pérez Montes et al., 2018) – which already constitutes a first mechanism for banks to act on their capital requirements.

3.2 Mechanisms of interaction between banks and non-banks

We will now turn to the practical mechanism through which banks and non-banks interact, and we will highlight how these interactions are actively shaped by banks incentives to optimise their balance sheets within current regulatory constraints.

⁵¹ Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012

⁵² Article 92 CRR.

⁵³ The leverage ratio was introduced in the Basel III framework, to serve as a backstop to the calculation of capital requirements based on risk-weighted exposures (Pérez Montes et al., 2018). In the CRR, it is set at 3%, and calculated through dividing the Tier 1 capital of the institution by its total exposure measure (i.e. exposures that are non risk-weighted) (Article 429 CRR).

We will begin with reviewing the concept of “consolidation”, mainly from a prudential requirements perspective but also drawing the comparison to accounting consolidation. This will help us for the next sub-section, which will review the mechanism of securitisation, that turns common assets into tradeable securities. Then, we will review two mechanisms of the market-based banking remit, first repos that serve short-term funding needs of investors, and then derivatives, that are financial contracts linked to underlying assets. To finish, we will briefly review the lending activities of banks to non-banks.

3.2.1 Consolidation & the use of specialised entities

The first mechanism we will focus on consists of using external entities to the bank’s perimeter to transfer risks. The use of external, specialised entities is a core component of the mechanisms enabling bank-based shadow banking. Special purpose vehicles (SPV), structured investment vehicles (SIV) or conduits are all names designating separate legal entities, that enable the transformation of assets into tradeable securities and have been created for that purpose. These vehicles issue debt, to invest in the long-term assets that have been created through the securitisation process (which is our focus of the next section). The key is here that the vehicle is not subject to the same regulatory requirements than the credit institution that transferred its assets, under certain conditions.

Why would investors trust such vehicle, and engage in their debt issuances? Rating agencies played a central role in sustaining investor confidence in the 2007 crisis, as documented by Acharya & Schnabl (2010). The agencies rated the securitised assets, thereby providing an institutional stamp on the perceived risks of each tranche, but also issued rating reports about the vehicles themselves. The high rating, and thus induced confidence, of these vehicles relied on the presence a “sponsor” providing guarantees or liquidity lines – and these sponsors were predominantly major banking groups (Acharya & Schnabl, 2010). When market conditions deteriorated and the ’07 crisis ensued, the use of such vehicles fell sharply as confidence eroded and investors stopped rolling over the short-term funding. As a result, the sponsoring banks were forced to assume the risks linked to assets that were considered off balance - but ultimately the banks did not have the necessary buffers to absorb these risks at scale, which led to the government bail outs, for example Citibank that had more than \$ 80 bn exposures to off-balance sheet vehicles (Thiemann, 2018).

The topic of consolidation is also interesting to look at. “Consolidation” means that the parent company and its subsidiaries balance sheets are aggregated, as if it were a single institution, in order to apply certain requirements to this “consolidated basis”⁵⁴. This is at least the definition from a prudential perspective, which looks inter alia at the capital requirements to be met on a consolidated basis.

If the separate entity were to be consolidated with the parent company banking group, the transfer of risks to that entity would be inefficient from a capital management perspective,

⁵⁴ Article 4, (47) (48) CRR.

as then the capital requirement calculation of the group would still take the transferred assets and their risks into account.

However, when looking further at the undertakings subject to prudential consolidation, it appears that it contains “credit institutions” and “financial institutions” (Articles 4 and 23 CRR). That said, if a vehicle has been constructed as a “Securitisation Special Purpose Entity”, i.e. for the sole purpose of carrying out securitisations⁵⁵, it does not need to be consolidated on a prudential basis⁵⁶.

This regulatory design choice could be understood as a middle ground – if securitisation and the transfer of assets and risks to special entities continues to be allowed for banks in the framework to allow for diversification, then it should be possible to do so. Consolidating these entities within the scope of prudential requirements calculation would have effectively eliminated any possible appeal for this mechanism. The supervisor effectively continues to monitor the special entity through the reporting of the banking group⁵⁷, but the banks does not need to hold capital charges for the transferred assets to the same extent anymore. Does this imply that the risks effectively left the banking group’s balance sheet and won’t come back to haunt them, in contrast to what happened during the financial crisis? This cannot be asserted with full confidence, especially when the vehicle is fully owned by the bank, and is referred to as “step in risk”⁵⁸, i.e. the sponsor or originator provides support beyond the contractual arrangements.

From an accounting perspective, the consolidation picture is a bit different. The biggest banks need to comply with the global IFRS standard and there, the principle of control⁵⁹ is important to assess the consolidated basis. A bank that controls the SPV will need to combine it on its consolidated *accounting* balance sheet. So when BNPP Group talks about their two SPVs, Bass Master Issuer SA and Esmée Master Issuer SA⁶⁰, and considers these to be fully consolidated on their balance sheet, this description needs to be read in light of the above and understood as probably referring to *accounting* consolidation and not *prudential* consolidation – this matters from a capital requirements perspective, as the prudential treatment of securitisation transactions determines the regulatory capital outcome, but the securitised assets and underlying risks will be considered to have left the bank’s scope, even if the SPV is fully owned by the Group.

⁵⁵ Article 4(66) CRR and Article 2(2) Regulation (EU) 2017/2402.

⁵⁶ As confirmed by the EBA: [Response to consultation on RTS on methods of prudential consolidation | European Banking Authority](https://www.eba.europa.eu/media/1000000/attachment/ef401000/ef401000.pdf). Retrieved on 09/05/2026.

⁵⁷ Article 449 CRR.

⁵⁸ See e.g. the BCBS guidelines on the identification and management of step-in risk. <https://www.bis.org/bcbs/publ/d423.pdf>. Retrieved on 29/05/2026.

⁵⁹ Which is defined as having power over the investee, being exposed to rights or variable returns from its involvement with the investee and the ability to use its power over the investee to affect the amount of returns. [IFRS 10 – 2021 Issued IFRS Standards \(Part A\)](https://www.ifsrstandards.org/standards/IFRS-10-2021).

⁶⁰ <https://www.bnpparibasfortis.be/rsc/documents/investors/pillar-3-disclosure-2025.pdf>. Retrieved on 27/04/2026.

3.2.2 Securitisation

A closely related topic to the use of special purpose entities is the mechanism of securitisation. Banks can optimise their asset-side positions, such as their many loans and advances, by managing the associated risk weight for the capital requirements calculation with securitisation techniques.

The Draghi report of 2025 is only one of the latest public calls to revive the EU securitisation market, on top of market participants critiques of a too conservative framework (European Banking Federation, 2021), as since the crisis, the securitisation market has never taken up speed again compared to the US. There are several considerations at play that explain the change in dynamic in securitisation, and move the conversation beyond the need to relax the requirements to revamp the securitisation market (Coelho et al., 2025). In the EU, there is notably the covered bonds market, that follows the same financial structure of a security issuance backed by a pool of assets, but the investors are better protected as they have a dual claim against the issuer but also on the collateral (i.e. the assets) – this financing technique has thus been preferred in many cases. Moreover, the synthetic securitisation market has actually been quite dynamic in recent years (Arampatzi et al., 2025). And comparing the EU market to the US, disregards the important role of the “Government sponsored enterprises” that are very active in the mortgage-backed securities market on a public mandate (Tooze, 2018).

These calls for action have now been followed up by a European Commission proposal⁶¹, , and the Council adopted its position in December 2025⁶². The Financial Stability Institute of the Bank for International Settlements calls for caution on divergences to international frameworks, to avoid a race to the bottom (Coelho et al., 2025) – which would not be a first, as joint efforts of the EU & UK had already managed to water down the BCBS global standards in securitisation back in 2015, and again in 2018 (Quaglia, 2021). The public discourse is thus split between calls for increased securitisation, to free up lending capacity and finance the European economy and transition needs, while on the other side there are calls advocating for caution regarding financial stability implications and especially data limitations in assessing these implications (ESRB, 2026).

Securitisation can be considered a bridge between traditional banking and market-based banking, as it transforms the traditional banking assets (e.g. loans) into tradeable securities, tranching by credit quality, following a “originate-to-distribute” model – i.e. the bank originates the loan, but does not retain it until maturity (Coelho et al., 2025). Securitisation has earned a villain reputation through its role during the 2007 financial crisis, as an amplification vehicle to fuel credit growth in the US for the “supprime mortgages” – many parts of the securitisation chain came together to create the perfect storm, for instance a

⁶¹ https://finance.ec.europa.eu/publications/commission-proposes-measures-revive-eu-securitisation-framework_en. Retrieved on 27/04/2026.

⁶² <https://www.consilium.europa.eu/en/press/press-releases/2025/12/19/savings-and-investment-union-council-agrees-position-on-revitalising-the-eu-s-securitisation-market/>. Retrieved on 27/04/2026.

decline in lending standards, opaque constructions where assets were securitised and re-securitised many times, and too favourable credit ratings (Coelho et al., 2025).

There are two types of securitisations: traditional or synthetic securitisation. With traditional securitisation, the assets are transferred to a separate structure (i.e. the SPV) and the cash flows are used to service the issuances of securities. The investors are funds, asset managers and insurance companies (Gonzalez & Morar Triandafil, 2023).

With synthetic securitisations, only the credit risk is transferred, the assets actually remain on the balance sheet of the originator (Coelho et al., 2025). The transfer consists only of the transfer of all or part of the credit risk related to a pool of assets, where different tranches reflect different degrees of credit risk. It is in practice a blend of securitisation techniques (the pooling and tranching of the assets) and credit derivatives (which we cover in the next section) (Osberghaus & Schepens, 2026). Synthetic securitisation permits greater capital relief than solely using credit derivatives (e.g. credit default swaps) through selectively removing the riskiest tranches from the bank's balance sheet (Gonzalez & Morar Triandafil, 2023).

There are preferential capital treatments for both types of securitisations under various conditions. For traditional securitisation, if the conditions of the CRR are met⁶³, the loans no longer count in the TREA quantum as they have left the balance sheet perimeter. For synthetic securitisation, the balance sheet total stays similar, but the risk is moved to another party, and if the conditions of the CRR are met⁶⁴, the risk weight of the loans will be swapped with a newly calculated, lower risk weight based on the protection provided⁶⁵. Banks will use these techniques to manage assets that have high associated risk weights, such as corporate or SME's loans. In practice, it is mostly the synthetic securitisation types of transaction that have increasingly been used in the EU, more than doubling in size from 2018-2022, while traditional securitisation stagnated (Gonzalez & Morar Triandafil, 2023).

There are several financial stability implications to the use of securitisation. First, and as noted above, banks will transfer the asset or risks with higher risk weights, which will result in a lower capitalisation of the bank. Through this freed-up capital, additional loans can be provided or risks can be taken. Moreover, banks will reduce their monitoring of the loans they have transferred, as they don't have much interest or skin in the game anymore to make sure that these loans stay performing (Osberghaus & Schepens, 2026). Moreover, Osberghaus & Schepens (2026) show that banks are 57-66% more likely to sell synthetic risk transfers to non-banks to which they also lend during that period, and that on average

⁶³ Article 244 CRR.

⁶⁴ Article 245 CRR.

⁶⁵ To underline the arbitrage between both types of securitisation with a practical example, and coming back to our BNPP Group example, the Pillar 3 disclosure report of 2025 informs us that for capital management purposes, the group will opt for synthetic securitisation mechanisms, while if the transaction is driven by a need for cash, the traditional type will be chosen. <https://www.bnpparibasfortis.be/rsc/documents/investors/pillar-3-disclosure-2025.pdf>. Retrieved on 27/04/2026.

26% of the funding by non-banks of synthetic risk transfers comes from bank loans, highlighting the interconnectedness and circular chain of banks and non-banks exposures.

3.2.3 Market-based finance & risk transfers

This section will focus on two examples of market-based finance, that is repos and derivatives, to practically illustrate how these instruments function as funding or risk transfer mechanisms, even though market-based finance extends beyond these two tools.

Repos & reverse repos

Repurchase agreements, or repos are a major source of short-term funding in financial markets: The buyer (lender) buys a security, such as a government bond, from the seller (borrower), with the promise to sell it back at the end of the agreed period for a certain price (often very short term, such as daily), and the security serves as collateral for the trade in case the borrower defaults (Gorton et al., 2010). The term “reverse repo” simply refers to the same transaction, but from the perspective of the party having excess cash and lending it. Hardie & Howarth (2013) coin the product as a “savings account for institutional investors”, as the party having excess cash can deposit it at its counterparty, and gets collateral in return on top of interest. Ideally, the arrangements roll over once the agreement comes to term.

From a bank’s perspective, the repo agreement will be on the liability side, as a borrowing secured by collateral containing an obligation to buy back the security at the end of the period, while the obtained cash is recorded on the asset side. The reverse repo however will feature on the asset side of banks, as the lent cash will be obtained back (cash receivable). In practice, EU banks can thus obtain funding from non-banks through repos, and provide funding to non-banks via reverse repos⁶⁶.

Repos are part of the “securities financing transaction” group, and for banks the regulatory aspects are twofold. First of all, in 2015 the EU adopted the “Securities Financing Transactions Regulation” (SFTR)⁶⁷ to enhance transparency and oblige all market participants to report their transactions to ESMA. Secondly, the CRR determines the risk weighting applicable to the exposure. But since the exposure is collateralised, the risk weight will in practice be lower as only the net exposure enters into account to calculate the risk-weighted assets⁶⁸. Since collateral protects the transaction, only the residual net exposure will be considered (cash – value of the collateral after haircuts). In conclusion, the capital charges on repo markets will be limited.

⁶⁶ https://www.ecb.europa.eu/press/financial-stability-publications/fsr/special/html/ecb.fsrart202305_02~1ff06bc324.en.html. Retrieved on 27/04/2026.

⁶⁷ REGULATION (EU) 2015/2365 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R2365>

⁶⁸ Article 192 and following CRR.

Repo markets have basically become a cash lifeline of banks, as shown in the following example.

Following the Covid-19 epidemic in 2020, a flight to safety of investors (i.e. high demand for safe assets such as government bonds) was quickly followed by a “dash for cash”, where government bonds were not considered safe enough anymore and actively exchanged for cash. In the UK market, non-banks became net demanders of cash through gilt repos (i.e. UK government bonds repos) simultaneously to abruptly withdrawing lending provided through repos, and selling the gilts (Czech et al., 2021)⁶⁹. This means that there were more investors looking to sell the UK government bonds than those willing to buy them, which lowered the price of gilts and increased the premiums asked on repo borrowing. The demand for intermediation by non-banks rose significantly but without being met by the markets. This resulted in systemic risks to financial stability through a spiralling effect of the situation and amplification among the interconnected non-banks, but also through spilling over into the banking system (Czech et al., 2021), which also relies on repos for funding and government bonds as collateral for their funding needs.

The Bank of England thus felt compelled to intervene, and committed to a gilt purchase programme and activated a repo facility for banks to be used. The UK “dash for cash” episode thus highlights that the role of authorities is not withdrawn from calming market participants in stress episodes when confronted with the risk that the NBFIs’ vulnerabilities would spillover in the banking system and present financial stability risks (Czech et al., 2021).

Derivatives

As mentioned in chapter 2, derivatives are financial contracts used to transfer risk, or to gain exposure to the underlying asset. For instance, an interest rate derivative provides protection against interest rate fluctuations (Tooze, 2018), which the bank could be exposed to. Take for example a bank that enters into a corporate lending transaction at a fixed rate. The bank can enter into an interest-rate swap, so that if interest rates rise, its loss exposure is offset by the swap. If the interest rate declines, then the swap generates losses but which are offset by the initial exposure.

Derivatives also received bad press during the 2007 crisis, as the level of interconnections between banks and non-banks was huge through these mutual exposures, and given they were traded over the counter (i.e. not on a regulated market), authorities were blind to them (Tooze, 2018).

The regulatory requirements regarding the treatment of derivatives on EU banks’ balance sheet are also twofold. First, the CRR foresees that derivatives can provide credit risk mitigation (credit derivatives) or market risk mitigation (e.g. interest rate derivatives). This risk mitigation will reduce the risk weight associated to the initial exposures, but will entail

⁶⁹ Given the short-term horizon of repos, to withdraw from the market means simply to not roll them over to the next day. This happened to Bear Stearns in 2008, where on March 13th the directors were told that USD 14 billion repos would not be renewed the next day (Tooze, 2018).

the emergence of counterparty credit risk also incorporated in the TREA calculation⁷⁰. Secondly, EMIR provide incentives to centrally clear derivatives, meaning that a central counterparty acts as a counterparty to each side of the transaction, thereby taking default risk on itself. Centrally cleared derivatives have a reduced counterparty credit risk weight for the capital requirements calculation⁷¹.

Derivatives also play a role in the interconnections between banks and non-banks. When digging further within the special purpose vehicle of BNPP that we mentioned in the section about consolidation, Bass Master Issuer SA⁷², we learn that BNPP Fortis, the Belgian subsidiary of the group, serves as arranger, dealer, seller, pool servicer, interest swap counterparty, account bank, domiciliary agent and reference agent for the structure. The SPV thus allows BNPP Group to offload assets and credit risk from its balance sheet through securitisation, but in turn the Belgian subsidiary remains exposed as a derivative counterparty to the SPV through an interest rate swap and thus absorbs the interest rate risk of the structure. This example illustrates more broadly how interconnections between banks and non-banks are introduced through different channels, and even when risks appear to have been externalised from the banking sector, they might have been reintroduced through another channel.

3.2.4 Loans & commitments to non-banks

Unease has been growing around the exposures of the banking sector to non-banks, under the form of short-term loans or credit lines⁷³ – and this also relates back to the illustrative example of Archegos in the previous chapter. As we have mentioned, banks cannot invest on their own account in financial markets, to gain exposure to a position with a view of making benefits as this would qualify as proprietary trading. However, banks can lend the necessary money to funds, or other non-banks, which in turn build leveraged positions in financial markets, through the bank that acts as broker. These entities can also rest on contingent liquidity lines provided by the bank in case of stress on the markets (Acharya et al., 2024).

Another interlinkage is the growth of private credit⁷⁴. Private credit refers to lending activities carried out by non-banks, such as funds. A pertinent illustration is the Blackstone Private Credit Fund (BCRED), one of the largest private credit providers, with over \$50

⁷⁰ Recitals 81-87 CRR

⁷¹ Article 306 CRR.

⁷² Bass base prospectus (2021). [https://www.bnpparibasfortis.be/rsc/documents/investors/bass-2021-base-prospectus-\(final\)-signed.pdf](https://www.bnpparibasfortis.be/rsc/documents/investors/bass-2021-base-prospectus-(final)-signed.pdf). Retrieved on 09/05/2026.

⁷³ See e.g. [The leverage layer cake behind HSBC's private credit losses](#): “Private credit funds have stepped in to finance mid-market companies and less creditworthy borrowers as post-2008 capital rules made the business unappealing for banks. But as banks have pulled back from lending directly to these borrowers, they have piled in to another kind of lending: to private credit groups.”

⁷⁴ While private credit and private equity funds are huge in the USA (€ 5 trillion and €1.2 trillion respectively in Q2 2024), the EU-based private credit and equity funds were much more modest (€628 billion and €106 billion respectively in Q2 2024). However, their growth numbers roam around 10 % annually since 2010 (ECB, 2025).

billion in assets. When looking at the funding of Blackstone Private Credit Fund, we can notice that almost half of the balance sheet total is funded through committed credit lines from credit institutions (Acharya et al., 2024). More risky lending activities have thus left the regulated banking scope, but to become an indirect exposure through regulated banks lending to non-banks, that in turn lend that money to the less creditworthy borrowers.

These exposures are categorised as loans or advances (credit risk exposures) on the balance sheets of banks, and will have a risk weight assigned by the CRR depending on the counterparty⁷⁵ and associated credit risk mitigation⁷⁶.

Exposures such as lending or similar mechanisms from banks to non-banks illustrate the blurred boundaries and the continuum of banking intermediation and non-banking intermediation as described in chapter 2. While non-bank activities appear to take place outside the banking perimeter, they remain dependent or closely tied to the banking sector through loan exposures or similar.

3.3 Conclusion

This chapter helped providing answers to the research question, i.e. if interactions between the growing shadow banking system and the banking system could cause contagion from shadow banking entities to traditional banks and spur systemic risk, through taking the viewpoint of a banks' balance sheet, and assessing the different channels of interconnections to non-banks.

For that, the first section explained how capital requirements are calculated, and what different ways of managing the capital requirements arise for banks, to achieve “capital relief” or a more profitable regulatory measurement of the risks present on their balance sheet.

The second section then reviewed different interactions between banks and non-banks, that had been highlighted by the Liikanen report as posing systemic risks. These interactions, such as the scope of consolidation, the use of securitisation, market-based finance and credit risk mitigation as well as lending activities to non-banks have undergone a regulatory process since the financial crisis. Consistent with the conclusion of the previous chapter, we can here observe from a practical angle the transformation of banks, that have not lost ground but changed their activities and business models to remain relevant in a market-based finance era. Banks and non-banks are mutually dependent financial actors: Banks can engage in regulatory arbitrage and lower their capital costs through cooperating with non-banks, and thereby maintain their footprint in activities that have been made more difficult for them in their regulatory context, such as investments or lending to subprime borrowers. Non-banks benefit from extensive funding support by banks, through lending activities or mechanisms such as repos.

⁷⁵ Article 112, 153 CRR.

⁷⁶ Article 192 CRR and following

Viewing banks' balance sheet by examining the activities that the Liikanen report suggested to ring-fence underscores the importance of the post financial crisis regulatory decisions. Had the reform suggested by the report been implemented, banks would have prohibited from engaging in all of these activities that constitute their business as usual, profoundly impacting how banks go about their business from traditional banking to market-based finance. Keeping shadow banking interactions within the banking perimeter has thus not prevented the non-bank sector from expanding significantly – it might have rather facilitated it. Thus, the interconnections highlighted by the Liikanen Report have, if anything, only grown more significant over time

This chapter also allowed us to realise that despite the regulatory reforms, there are still scenarios in which non-banks vulnerabilities can affect the banking sector, exemplified by recent episodes such as the Archegos case or the Covid-19 dash for cash that have prompted the intervention of inter alia the ECB or the Bank of England. More fundamentally, the review of the different mechanisms of interconnections has shown us the density of interactions and the mutual dependencies of the two sectors whereby risks originating in one sector can be transmitted or amplified across to the other sector.

CONCLUSION

This dissertation aimed to determine whether interactions between the shadow banking system and the traditional banking system can create contagion from shadow banks to traditional banks, and spur systemic financial risk.

The first chapter highlighted the blurred lines of defining shadow banking, as the dynamics between the regulator and the regulated, following a cat-and-mouse game, shift and move the banking and shadow banking sector in response to different drivers. Regulatory arbitrage, or the active redefinition of economic activities to evade a certain regulatory scope, is one such set of drivers. The financial and regulatory cycles theories gave us the foundation to understand how vulnerabilities can build up in a boom-like fashion, before a bust changes the paradigm. The more than proportional growth of the shadow banking sector as described in the introduction could turn out to be a case in point, given regulatory arbitrage pushing certain activities formerly inside the banking sector towards the shadow banking sector, deregulatory pressures, and the spectrum of financial items inside the shadow banking system shifting from hedge to speculative or Ponzi financing.

The second chapter helped us to conceptualise the shadow banking system, staying mindful of its fleeting characteristics in chapter 1. Approaching the financial intermediation system as a continuum, where activities can often not be assigned clearly to traditional or shadow banking unless dissected, allowed us to outline the ties between the two systems, where banks and non-banks interact in different ways. Banks have evolved to actively embed the shadow banking system, or market-based banking, in their business models through inter alia modelling their group structures around both types of entities. The financial crisis has brought a change in paradigm in financial regulation, just as predicted by regulatory cycles theories. But asymmetries remain between a banking sector, that is closely supervised and where the risk-taking activities entail capital charges, and the shadow banking sector which has been regulated in less invasive and more heterogeneous ways.

The third chapter took a bank-centric view, illustrating the different shadow banking channels that banks may use to shift their assets and risks, or provide and obtain funding, thereby acting on their capital requirements. The different channels of interaction, such as securitisation, repos, derivatives or loans to non-banks prove to be intertwined, making their assessment complex. Indeed, a bank can at the same time offload their asset risks to a non-bank, but in turn be exposed to that same non-bank through derivatives or step-in risk, as was highlighted through the BNP example.

The three chapters come together in the following way. Banks redefine their business models and shift activities through interacting with non-banks in response to stricter rules. The results of that regulatory arbitrage are twofold: First, banks can hold less capital as the exposures they have created towards non-banks are considered less risky than their initial exposure. And second; through these regulatory arbitrage activities, some activities are shifted to non-banks. But non-banks are not regulated or supervised in the same manner than banks, which means that the activity that left the banking scope can now be carried out in a riskier way. If those risks and vulnerabilities accumulate in good times, as Minsky predicted,

then a reversal in the parameters of the stability, such as asset price revisions or changes in interest rates, might turn the shadow financial intermediation activities to a bust. But banks are heavily exposed to non-banks, as they have merely outsourced certain activities to non-banks but retained business relationships with them to keep a part in these trades. The growth of the shadow banking sector implies its growing importance for the financial system's resilience as a whole, and historical episodes have already shown that non-banking stress can threaten the banking sector stability through interactions such as securitisation, repos, derivatives or loans to non-banks. The patterns of contagion have thus persisted along the years, even if their structure or appearance has changed.

Ultimately, this dissertation concludes that shadow banks can indeed generate contagion to traditional banks and spur systemic risk. Such risks have not been eliminated by the post-crisis financial system reforms, as the deep interactions between banks and non-banks have continued their way since. The stability of the financial system thus depends not only on the stability of banks, but also on the ability of non-banks to manage their risks and maintain their activities and interactions with banks even in stress episodes. Any attempt at safeguarding financial stability therefore requires a holistic regulatory approach, taking into account the whole bank and non-bank continuum and the shifting activities and risks along this continuum.

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