Department of Economics and Finance - Course in Economics and Business

Chair of Money and Banking

SHADOW BANKING AND NON-MONETARY FINANCIAL INSTITUTIONS
GLOBAL RISKS AND PERSPECTIVES

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INTRODUCTION

Shadow banks refer to financial intermediaries that conduct credit intermediation and related banking-like activities outside the traditional and heavily regulated banking system. They are not licensed as commercial banks and do not have access to central bank liquidity or deposit insurance. However, they perform functions similar to banks such as lending, maturity transformation, liquidity transformation, and leverage, all of which will be discussed throughout the thesis. In the evolving structure of global finance, shadow banking and non-monetary financial institutions (NMFIs) have emerged as powerful forces operating outside the traditional regulatory perimeter of central banks and commercial banking systems. While often misunderstood or overlooked, these entities, which include hedge funds, private equity firms, money market funds, and various non-bank lenders, play a critical role in credit intermediation, liquidity creation, and financial innovation. Their flexibility, risk appetite, and capacity for high-yield investments have made them integral to the functioning of modern financial markets. Collectively referred to as the non-bank financial intermediation (NBFI) or Non-Monetary Financial Institution (NMFI) sector by international standard-setting bodies such as the Financial Stability Board (FSB), these institutions include a variegated array of actors, including money market funds (MMFs), hedge funds, private equity firms, structured investment vehicles (SIVs), finance companies, insurance firms, pension funds, and fintech platforms and decentralized finance (DeFi) entities. Shadow banking entities engage in credit intermediation, maturity transformation, and liquidity provision that operate outside the direct purview of traditional banking regulation and cannot call upon the central bank as lender of last resort. The growth of the shadow banking sector has been explained in the literature by the expansion of money-like claims outside the traditional depository system *(Adrian, T. and Ashcraft, A. 2012).*

The analysis that will follow is particularly relevant given that the shadow banking sector, according to recent FSB estimates, accounts for approximately half of global financial assets. Despite its exponential growth over the last few decades and the significant role it plays today it is still a relatively misunderstood phenomenon. It operates through mechanisms that are often opaque, lightly regulated, and it is intricately linked with the traditional and formal

commercial banking system. Key features of shadow banking include regulatory arbitrage, procyclicality, interconnectedness, liquidity mismatches, and leverage. However, their rise has also introduced new dimensions of risk. The 2008 global financial crisis served as a pivotal moment in exemplifying this, revealing how deeply shadow banking activities were entangled with systemic vulnerabilities and intertwined with the financial sector, despite their apparent distance from regulated institutions. Since then, the sector has grown both in size and complexity, raising questions about its impact on global financial stability, market transparency, and the regulatory effectiveness of previously implemented policies, with questions on how policies may evolve over time in order to effectively address changes in the entire financial sector. As a matter of fact, in an era marked by increased financial complexity, climate-related risks and digital transformation, understanding the duality of shadow banking, both as a source of innovation and as an epicentre of systemic risk, is necessary to shaping a robust, inclusive, and forward-looking global financial policy architecture.

The aim of this thesis is analysing the non-monetary financial sector and its institutions with a particular focus on shadow banks in both Europe and the United States, with an analysis of risks, benefits and perspectives, as well as attempting to give an insight into what the future may look like for the shadow banking sector. However, it must be remarked that clearly defining the shadow banking phenomenon and sector has proved challenging because the concept aims to capture a wide array of institutions and activities that are consistently evolving and changing in response to regulatory change and financial innovation, and whose definition varies across jurisdictions, as well as in response to changes in consumer and investor demand. Summarising a complete set of characteristics which can apply to past, current and future shadow banking functions is exceedingly difficult, on top of the fact that drawing clear boundaries between shadow banking and other aspects of finance remains challenging. Therefore, the thesis will primarily focus on economic functions commonly recognised as shadow banking activities among international policy institutions and the entities that make up the sector. Additionally, the thesis will map the global landscape of shadow banking and NMFIs, delineating their roles, growth trajectories, and structural features across advanced and emerging economies. To conclude I will try to give an insight into what the future could hold for the shadow banking sector and a comprehensive recap of the role of NMFIs in financial crises. In particular I emphasise that although prevailing

commentary on shadow banking has highlighted the systemic risk brought about by the sector, together with the other risks mentioned by economic literature and this very thesis, my work seeks to offer a balanced view of the phenomenon, also underlining its positive impact on overall markets and sustainable finance. When analysing the future of shadow banking the thesis will attempt to give a broad prediction of possible market trends and growth rates that might characterise the sector as well as trying to give an insight into how authorities might adapt rules and regulations in order to address increasingly ample, technological and complex markets and in order to prevent future crises in case of other major economic downturns down the road.

CHAPTER 1: INTRODUCTION TO SHADOW BANKING

1.1 Background on shadow banks, their functions and their rise

The notion of shadow banks first emerged in 2007 in the midst of one the worst financial crises of all time when economist Paul McCulley first mentioned the term. Specifically, shadow bank is an umbrella term which describes non -monetary and non-bank financial institutions outside of the heavily regulated banking system that perform the core service of credit intermediation (they take money from savers and lend it to borrowers). The key pillars of credit intermediation performed by shadow banks are maturity transformation, liquidity transformation, leverage and credit risk transfer. Maturity transformation consists of obtaining short-term funds to invest in longer-term assets. Furthermore, liquidity transformation refers to a financial concept similar to maturity transformation which however entails using cash-like liabilities to buy harder-to-sell assets such as loans. Leverage is a technique centred around employing techniques such as borrowing money to buy fixed assets to magnify the potential gains (or losses) on an investment, while credit risk transfer involves taking the risk of a borrower's default and transferring it from the originator of the loan to another party. Under this definition, shadow banks include hedge funds, broker-dealers, money market mutual funds and several other entities. For example

broker-dealers fund their assets through repurchase agreements while entities such as money market mutual funds pool investors' funds to purchase commercial paper, collateralised debt obligation, mortgage-backed securities or repos. Thus, financial entities sell commercial paper and use the proceeds to extend credit and loans to households. Shadow banks often acted as special purpose vehicles (SPV) prior to the 2007-2008 financial crisis, a function which greatly declined in importance in the aftermath of the financial turmoil. As a matter of fact following the banking reforms targeting securitisation, SPVS almost disappeared.

It is however worthwhile mentioning that there is not yet a uniform and commonly agreed-upon definition of shadow banking, and there are ongoing discussions as to whether the concept is applicable to certain entities such as credit hedge funds and exchange-traded funds. However, the use of the term usually makes reference to market-funded collateral intermediation activities, where an entity or a chain of specialised institutions issue deposit-like instruments to fund credit extension to the financial and non-financial sector.

The financial crisis provided an ideal pretext for the rapid emergence of shadow banks. As a matter of fact, both credit disintermediation, referring to the low interest rate environment and enhanced banking sector regulation in the aftermath of the global and devastating financial crisis of 2007-2008 have contributed to the expansion of the non-bank financial sector worldwide. The switch to market-based funding and an intense search for important returns, the so-called search for yield, amid historically low risk-free rates has resulted in a significant growth of the investment fund sector, which accounts for an estimated 60% of total global shadow banking assets. Economic literature, *(Pozsar Z. 2008)*, identifies the capital requirements introduced by the Basel Committee on Banking Supervision (Basel I) as the main catalyst for the initial growth in securitisation-based credit intermediation, as individuals sought less regulated and scrutinised investment paths. Moreover, the process of securitisation carried out by shadow banks can prove to be highly valuable; as a matter of fact, it allows traditional banks to conserve capital (transform illiquid assets into cash and use cash to make more loans) and realize economies of scale from their expertise in loan origination and monitoring that are not

possible when required to retain loans on balance sheet. Additionally, securitization involving real credit risk transfer is an efficient way to pool and share risks considering that the loan originator can limit concentrations to certain borrowers, loan types and geographies on its balance sheet by transferring these loans to diverse investors. The shadow banking system is therefore predominantly a set of financial innovations that emerged due to regulatory changes, as well as an increased demand for money-like liabilities or safe investments that could offer above-market yields without the stringent regulation of ordinary financial institutions. Shadow banking can therefore be regarded as a natural development in the financial system has evolved due to the underlying regulatory regime and fundamental changes in the economy *(Gorton, G. and Metrick, A. 2010)*

The growth of shadow banks can also be explained by an increasingly high demand for collateral services, which can be observed across the majority of jurisdictions and which has skyrocketed after the financial crisis: collateral is needed to back several trading and hedging activities, as well as various market-making and settlement procedures. Additionally, sources of demand for collateral intermediation include the fact that in times of elevated counterparty risk secured funding becomes more attractive and that the financial system is starting to rather frequently use collateral to manage counterparty risk and as a substitute for trust *(Pozsar, Z. and Singh, M. 2011).* Furthermore, the increasingly globally-integrated financial system uses collateral to manage counterparty risk and as a substitute for trust. Lastly, regulatory measures such as those imposing the greater use of collateral in derivatives transactions, require more transactions to be secured and underpinned by collateral.

Another driving factor in the expansion of the shadow bank sector is the emergence of large, centrally managed institutional cash pools *(Pozsar, Z., and Singh, M. 2011).* These are cash balances held by large corporations and asset managers; this has created demand for safe and liquid investments that can serve as viable alternatives to demand deposits and publicly-guaranteed debt. Corporate treasuries and asset management firms look for investments that provide principal safety and liquidity. Corporations do so to ensure that their cash balances are accessible whilst earning a modest return, while asset managers

seek short-term investments for multiple reasons: investing in short-term securities can help an asset manager deal with inflows and outflows, new funds that are not ready to be invested long-term can be placed temporarily in short-term placements, while redemption requests can more easily be accommodated if a portion of the capital is invested in soon-maturing securities. Alternatively, an asset manager can try to earn a return from timing the market using short term securities, or the investment could be part of a synthetic investment strategy, which refers to gaining a desired risk exposure indirectly through the use of derivatives, futures and swaps rather than investing directly in an asset.

The growth of the shadow banking sector can be traced, according to financial experts and literature, to the expansion of money-like claims outside the traditional and regulated depository system. The emergence of sizable institutional cash pools looking to avoid unsecured exposures to banks generated demand for the secured, short-term and liquid instruments that shadow banks offer. This, alongside the heavily regulated nature of the traditional banking sector, often perceived to be excessively restrictive by a significant number of investors, has led to the consistent growth of shadow banking. As a matter of fact, the increasingly constrained nature of banking regulation, which can predominantly be traced to the Basel Agreements and their progressively higher levels of control over banking activities, has created a "boundary problem" given that a prominent portion of banking activities have shifted from the regulated to the less regulated parts of the financial system. Growth of the shadow banking sector has also been visible by the expansion of entities that operate outside the regular banking system but perform bank-like economic functions. It can thus be argued that shadow banks represent a natural and inevitable evolution of the financial system. American literature states that the shadow banking sector can furthermore be subdivided into three branches: the government-sponsored shadow banking sub-system, the "internal" shadow banking sub-system and the "external" shadow banking sub-system.

In the United States, government-sponsored shadow banking is mainly carried out by the two leading government sponsored enterprises (GSEs): Fannie Mae and Freddie Mac. Both GSEs are purchasers of mortgage loans and the securities used as collateral to back them up which then are packaged into mortgage-backed securities. GSEs buy loans (only

conforming loans are allowed to be purchased) from approved mortgage sellers and securitizes them; they then sell the resultant mortgage-backed security to investors in the secondary mortgage market, along with a guarantee that the stated principal and interest payments will be timely passed through to the investor. Like commercial banks, the GSEs fund their loan and securities portfolios with maturity mismatches (when short term liabilities on a balance sheet exceed short term assets.) However, the key difference is that GSEs are not funded using customers' deposits, but through capital markets proceeds, where they issue short and long-term agency debt securities. These agency debt securities are bought by money market investors and real money investors such as investment funds. GSEs use techniques such as credit risk transfer and maturity transformation to carry out their activities.

The "internal" shadow banking sector and its development over the last 30 years have mirrored the activities of the government sponsored enterprises. This occurred due to the shift in banking activities characteristics, in which the largest banks transitioned from low return on-equity (RoE) utilities that originate loans and hold and fund them until maturity with deposits, to high RoE entities that originate loans in order to warehouse and later securitize and distribute them, or retain securitized loans through off-balance sheet asset management vehicles. After this transformation, the nature of banking has changed from a credit-risk intensive, deposit-funded, spread-based process, to a less credit-risk intensive, but more market-risk intensive, wholesale funded, fee-based process.

Similar to the "internal" shadow banking sub-system, the "external" shadow banking, a distinction proposed by American economic literature, *(Pozsar, Z., Adrian, T., Ashcraft, A., and Boesky, H, 2012),* subsystem is a global network of balance sheets, with the origination, warehousing and securitization of loans conducted mainly from the United States and the funding and maturity transformation of structured credit assets conducted from America, but also from Europe and offshore financial centres. However, unlike the "internal" sub-system, the "external" sub-system is less of a product of regulatory arbitrage, and more a product of vertical integration and gains from specialization. The "external" shadow banking sub-system is defined by the credit intermediation process of diversified brokers and dealers, the credit intermediation process of independent, non-

bank specialist intermediaries and the credit provided by private credit risk repositories. It is however worthwhile mentioning that the disagreement regarding the definition and scope of shadow banking led to significantly different estimates of its size. As figure 1 emphasises, not all shadow bank entities exhibit equal exposures to risk, equal levels of leveraging or degree of maturity/liquidity transformation. For example, structured finance vehicles exhibit low leverage and low maturity transformation, whereas credit hedge funds have high degrees of leverage and heavily engage in maturity transformation. As a result of these differences, as previously mentioned a uniform definition of the shadow banking sector does not exist and is jurisdiction specific.

Figure 1: Shadow Banks Have Diverse Exposures to Credit, Liquidity and Leverage Risks

1.2 Analysis of the primary activities of shadow banks and other related functions

Outside of the primary activity of credit intermediation carried out through maturity and maturity and liquidity transformation shadow banking activities revolve around two other financial operations: credit risk transfer transactions and leverage activities.

Maturity transformation

Maturity transformation is the process by which financial institutions, especially commercial and shadow banks, borrow short-term and lend long-term. This function is central to modern banking and credit intermediation. Maturity transformation can be broken down into two distinct categories, short term and long term. With Short-term liabilities banks accept deposits that can typically be withdrawn on demand (like checking accounts) or after a short time (such as 1 year certificate of deposits). Instead, with long-term assets banks use these funds to make long-term loans such as mortgages (with maturities of 15–30 years), business loans, or infrastructure financing. The difference in maturity between what banks owe (short-term) and what they earn (long-term) is where maturity transformation happens. This mismatch between the maturities of assets and liabilities represents a key function of financial intermediation, given that it allows long-term investment opportunities to be funded by short-term saving. Maturity transformation is beneficial to the economy for a wide variety of reasons: Firstly, it supports economic growth by turning short-term deposits into long-term loans, banks provide funding for major investments like home mortgages, the expansion of business and capital stock and infrastructure projects. These long-term loans are key drivers of a country's aggregate demand and economic activity and development. Additionally, it provides liquidity to savers; savers generally seek liquidity (they want access to their money at any time). Maturity transformation lets banks offer that, even though the funds may be loaned out for years. Individuals can withdraw their savings while someone else uses their funds in a long-term loan. Moreover, it facilitates an efficient allocation of capital considering that banks act as intermediaries between short-term savers and long-term borrowers. This enables a pooling of funds (Banks aggregate small deposits into large loans) and the matching of needs (short-term savers find safety and access, while long-term borrowers get the capital they wouldn't otherwise be able to access). Maturity transformation also generates bank profitability given that it allows banks to earn a spread between the low interest they pay on short-term deposits and the higher interest they earn on long-term loans. This spread is a major source of bank income. On top of all these elements, it enables monetary policy transmission. Central banks influence short-term interest rates. These rates affect the cost of bank deposits and, in turn, the cost of long-term loans. Without maturity transformation, this mechanism wouldn't be as effective in controlling

inflation, investment and consumption. Liquidity transformation is akin to maturity transformation with the primary difference being that the former involves converting less liquid assets into more liquid liabilities. Its main focus is making assets more readily available for immediate use, and as such more "liquid". Maturity and liquidity transformation are arguably the primary functions of shadow banks and usually the most widely discussed and analysed activities of the latter. However, these institutions are not solely limited to such practices; as a matter of fact, they also engage in credit risk transfer activities and often resort to high levels of leverage, both of which will now be discussed starting with CRT transactions.

Credit risk transfer involves taking the risk of a borrower's default and transferring it from the originator of the loan to another party. More specifically, CRT transactions are structures that involve the transfer of credit risk of all or a tranche of a portfolio of financial assets. The protection buyer will typically own the portfolio of assets (and the underlying assets continue to be legally owned by the originator) which may be corporate loans, mortgages, or other assets. The protection seller may be a bank, an insurance or reinsurance company, a trust, or other capital markets investors seeking to take on credit risk. The proceeds of the underlying assets are unlikely to be used to directly fund the return to the investors; instead, the originator pays some kind of fee or coupon for the credit protection. However, the investor has exposure to the underlying assets because they compensate the originator in case of losses. The main reason a financial entity enters into CRT transactions is to reduce the amount of regulatory capital that it has to hold against its underlying loans under the current Basel III capital rules. There may be other drivers, such as managing concentrations of risk to certain sectors or borrowers but the primary reason remains the former. Possible structures of CRT transactions include cash securitization, corporate debt, synthetic trust structures and bilateral credit protection *(Structured Finance Association, 2020)*.

Cash securitisation involves an originating bank transferring a pool of assets to a funding vehicle. The funding vehicle issues asset-backed securities to investors that represent varying levels of risk in the underlying financial assets of the funding vehicle. The owner may retain servicing rights, may purchase certain tranches of securities from the funding vehicle, or may retain certain economic risks and rewards from the assets. These

transactions can be structured in a variety of ways, but a key feature is that the protection buyer isolates its portfolio of financial assets in a special purpose issuer.

Through corporate debt, a protection buyer (the issuer) issues a credit linked note (CLN) directly to the investor for cash. The Issuer's obligation to pay principal and/or interest on the CLN is linked to the performance of a reference portfolio (meaning that events which result in credit losses in the reference portfolio will reduce the amounts payable to investors), effectively resulting in credit protection payments to the issuer. The principal on the CLN is not protected from the bankruptcy of the protection buyer.

In synthetic trust structures the protection buyer enters into a credit protection agreement via a credit derivative such as a credit default swap or financial guarantee provided by a trust or another special purpose vehicle. Under the terms of the agreement, the trust is obligated to reimburse the protection buyer for credit losses on a specified portfolio of assets (the reference portfolio). The reference portfolio refers to the portfolio of assets covered by the credit derivative or financial guarantee. It can be composed of loans, mortgages or other financial assets. The trust will fund its obligation by issuing credit-linked notes to capital markets investors. The trust's obligation to pay principal and/or interest on the CLN is linked to the performance of a reference portfolio. The trust is bankruptcy remote and thus the investor is protected from a possible bankruptcy of the protection buyer. The ability of different institutions to participate in these kinds of transactions depends on both the relevant capital regulations as well other regulatory, accounting, and tax constraints. For instance, insurance companies can be the protection buyer through the use of insurance-linked notes.

Regarding bilateral credit protection, the protection buyer enters into an insurance contract or credit derivative (*D'Aguiar, L., and Lima, F. 2009*) to buy protection on the reference portfolio or a tranche of it. The seller of the credit protection could post collateral to secure its obligation. Insurance contracts may involve a collateral account to effectively credit enhance the insurer, but the capital structure of the insurance entity, including its reserves, generally provides security for the insured.

The third pivotal aspect of shadow banking that will be analysed is its use of leveraged investments *(Doyle, N., Hermans, L., Molitor, P., and Weistroffer, C. 2016).* Leverage consists in employing techniques such as borrowing money to buy fixed assets to magnify the potential gains on an investment. Leverage inherently presents risks, which varies according to the nature of the assets and their volatility. The leverage aspect of investment funds presents a peculiar paradox: as a matter of fact, when compared to the traditional banking sector where assets are often more than 10-30 times the size of equity, leverage in the investment fund sector is relatively low with total assets much less than twice the amount of equity. However, this does not truly reflect the riskiness associated with such practices: leverage ratios can understate the true riskiness as synthetic (whereby "synthetic" refers to the fact that leverage for investment funds is created through derivatives exposures or through repo and securities lending transactions) exposures are not necessarily reflected in balance sheets, and equity is generally a less stable source of funding. Therefore, a paramount difference with respect to the traditional banking sector is that investment fund shares may not be a stable source of funding, for example if investors can withdraw their equity at short notice. These net outflows will lead to an increase in the leverage ratios if funds rely on credit lines or use securities lending to meet redemption requests. In order to revert back the original pre-outflow leverage ratios, investment funds have to sell assets. Therefore, for any given amount of net outflows a leveraged fund has to sell more assets than an unleveraged fund. Thus, despite the lower size, leverage in investment funds is more unstable than in the traditional banking sector. The shadow banks sector's ability to over-leverage its institutions can also make the financial markets more vulnerable. As a direct result, borrowing and leverage practices are heavily regulated *(Doyle, N., Hermans, L., Molitor, P., and Weistroffer, C. 2016)*: in the EU, investment fund leverage is regulated by the Undertakings for Collective Investments in Transferable Securities (UCITS) and a directive from the aforementioned entity states that funds have to comply with limits on balance sheet leverage, and borrowing should not exceed 10% of assets on a temporary basis. For more complex and risky forms of investments the value at risk measurement should be used. A UCITS directive imposes direct restrictions on the use of balance sheet and synthetic leverage, while the Alternative Investment Fund Managers Directive (AIFMD) does not place any

hard limits but requires the asset manager to apply *"reasonable"* leverage limits to the funds it manages.

The greater the levels of leverage, whether it is synthetic or not, the more likely it is to amplify shocks and impose externalities on the wider financial system. High levels of exposure increase the possibility of adverse liquidity spiral as well as possibly triggering liquidity mismatches and may give false illusions of stability (as a matter of fact, empirical evidence shows that more leveraged hedge funds and investment funds have a higher probability of distress than carefully regulated money market funds). Another prominent issue is linked to the difficulties in effectively measuring leverage given that data on synthetic leverage and exposures are relatively lacking and no European statistic considering them has been introduced and that supervision and regulation of investment funds and shadow banks remain a de facto activity of national authorities and legislations.

Having examined in detail the background behind the rise of the shadow banking sector, its functions and the primary activities it engages in, it is now important to attempt to gauge the current state of the shadow banking sector and estimate its size today, which, as will be discussed, is not a straightforward and easy feat.

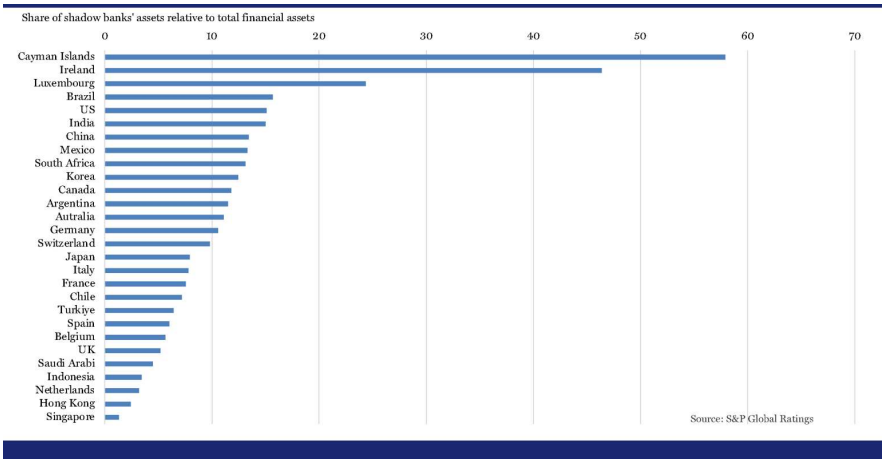
1.3 Current state of the shadow banking sector

Shadow banking (and the non-monetary financial institution sector as a whole) has experienced an exponential growth in the 21st century; as a matter of fact, by 2019, it was estimated to constitute an industry where the total asset value exceeds $100 trillion, and more than 80% of all loans to corporations are provided by shadow banking entities and by 2022 this sector, accounted for nearly half of the world's financial assets. In major European jurisdictions shadow banks and their assets account for under 10% of financial assets (with exceptions such as Luxembourg and Ireland which exhibit higher percentages), whereas in North America we can observe a more prominent financial diversification with shadow banks representing over 10% of financial assets (it may be also remarked that the most prominent shadow banker in the world is currently the

American BlackRock). Currently, the shadow banking sector is primarily dominated by investment funds especially in developed and advanced economies (followed by fincos, broker-dealers and securitisation vehicles) and with an estimated size of $1.3 trillion globally, private credit is growing quickly, mostly in the United States. Figures 2 and 3 offer a graphical representation of these facts: on one hand, figure 2 emphasises that the NBFI sector has significantly grown in size and systemic importance since the 2000's. The shadow banking sector and the sector encompassing other NBFIS have both steadily grown almost every year since 2006, both in size and in market value, reaching hundreds of trillions of worth. The size of the NBFI sector relative to total global financial assets experienced a sharp decline in the years preceding the great financial crisis and in 2008, only to experience a strong and highly noticeable increase in almost every year after 2008 with some ups and downs in a few years. On the other hand, figure 3 shows that in numerous jurisdictions shadow banks represent an important percentage of total financial assets. The trend interests widely different countries, ranging from the largest economy in the world (the United States), to rapidly developing countries that have experienced tremendous growth over the last few decades (India, China and Brazil,) to strong first world economies (Germany and Canada) and to small countries (Ireland, Luxembourg and the Cayman Islands.) In numerous jurisdictions around 10% of the total financial assets are made up of shadow banking entities.

Figure 2: The NBFI Sector Has Grown in Size and Systemic Importance in the Past Decade

Figure 3: Shadow Banks Represent Around 10% of Total Financial Assets in Most Jurisdictions



In Europe, in order to determine the size of the shadow banking sector in 2015, the FSB (financial stability board)[1] for the first time applied a new approach to measuring the size of the shadow banking sector, centred around the mapping of entities to five economic functions linked to shadow banking activities. The economic functions considered by the FSB are five and include EF1 (referring to the management of collective investment vehicles with features that make them susceptible to runs, e.g. fixed income mutual funds;) EF2 (standing for loan provisions that are dependent on short-term funding, e.g. finance companies;) EF3 (indicating the intermediation of market activities that is dependent on short-term funding or on secured funding of client assets, e.g. broker-dealers) EF4 (reflecting the notion of facilitation of credit creation, e.g. monoline credit insurers, mortgage insurers) and EF5 (defining securitisation-based credit intermediation). It may be remarked here that there exists a significant heterogeneity between investment funds, such that classification of the latter may become imprecise. The FSB considers investment funds as part of the shadow banking sector if the funds

[1] *The Financial Stability Board (FSB) is an international organization established to monitor and make recommendations about the global financial system in order to promote financial stability. It was created in 2009 by the G20 in response to the global financial crisis, succeeding the Financial Stability Forum (FSF).*

display "*features that make them susceptible to runs*" which is a relatively generic definition which ignores differences among funds: some types of funds tend to be more prone to run risk than others due to their funding structure as well as the types of assets they invest in *(Doyle, N., Hermans, L., Molitor, P., and Weistroffer, C. 2016.)* This is not captured by such a broad categorisation.

In the USA in an attempt to gauge the size of the American shadow banking sector the Federal Reserve uses two measures of the shadow banking system, net and gross, both computed from its "Flow of Funds" data from its balance sheet.

The gross measure sums all liabilities recorded in the flow of funds that relate to securitization activity: mortgage-backed securities (MBS), asset backed securities (ABS) and other balance sheet items such as government sponsored enterprises liabilities (GSE), as well as all short-term money market transactions that are not backed by deposit insurance like repos, commercial paper, and other money market mutual funds (MMMF) liabilities.

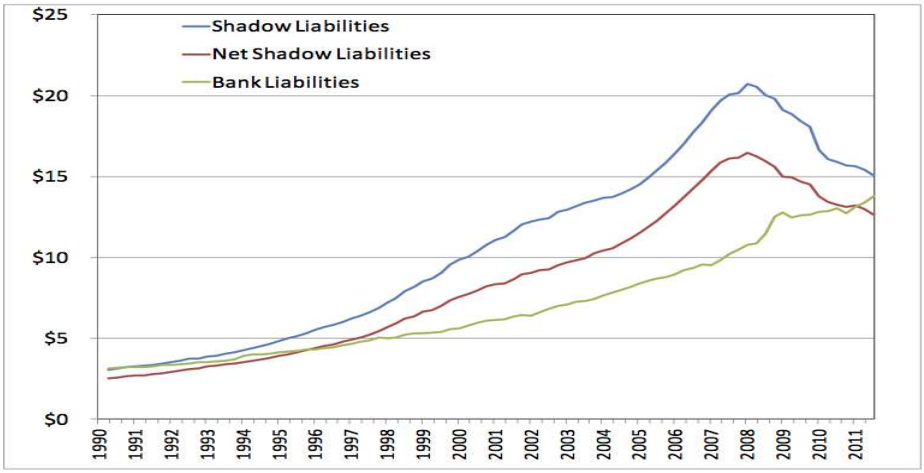
The net measure attempts to eliminate the double-counting. This measurement approach presents several drawbacks: measures of the shadow banking system are imperfect because, first of all, the flow of funds does not cover the transactions of all shadow banking entities. Second, the data is not providing a measure of the net supply of credit of shadow banks to the real economy. In fact, the gross number is summing up all shadow banking liabilities, irrespective of double counting.

The gross number should not be interpreted as a proxy for the net supply of credit by shadow banks, but rather as the gross total of securities relating to shadow banking activities.

Lastly, many of the securitized assets are held on the balance sheets of traditional depository and insurance institutions, or supported off their balance sheets through backup liquidity and credit derivative or reinsurance contracts.

The holding of shadow liabilities by institutions inside the safety net makes it difficult to draw clear boundaries and lines between the traditional and shadow credit intermediation, prompting to classify the latter at the instrument and not institution level.

Figure 4: Shadow Bank Liabilities vs Traditional Bank Liabilities, $ trillion.



Source: Flow of Funds Accounts of the United States as of 2011:Q3 (FRB) and FRBNY.

Figure 4 draws a comparison between shadow banking liabilities and the liabilities of traditional commercial banks. At its peak before the global financial crisis, the U.S. shadow banking system (including repo markets, money market mutual funds, and asset-backed commercial paper) matched or exceeded the liabilities of the traditional banking system. Immediately post crisis, regulatory reforms such as Basel III reduced the relative growth of shadow banking.

Traditional bank liabilities grew more slowly, but shadow banking liabilities became more fragmented and less transparent. Commercial bank liabilities and shadow banks liabilities present several differences, including the fact that shadow bank liabilities are often short-term and unprotected (with no deposit insurance), making them more vulnerable to runs and liquidity crises, while commercial bank liabilities are more stable, regulated, and backed by central banks, which helps ensure systemic resilience.

Shadow banks' liabilities are also extremely volatile, being highly sensitive to information and market conditions and being prone to runs. Instead, commercial banks' liabilities are significantly less sensitive due to deposit insurance and regulation, supported by central bank backstops and insurances and are highly transparent due to strict reporting requirements.

CHAPTER 2: ROLE OF SHADOW BANKS IN FINANCIAL CRISES

2.1 How shadow banks contribute to the amplification of financial crises (a deep dive into shadow banking risks and vulnerability of the investment funds sector).

Problems arose during the global financial crisis when many companies in the banking industry, especially mortgage lending companies, had become severely overextended through their lending practices and when investors developed reservations on what longer-term assets managed by shadow banks were really worth and many decided to withdraw their funds rapidly and simultaneously. To repay these investors, shadow banks had to sell assets. These panicky “fire sales” generally reduced the value of those assets, forcing other shadow banking entities, as well as some established commercial banks with similar assets to reduce the value of those assets on their financial statements and books to account for the now lower market price, further fuelling uncertainty about their health. At the peak of the crisis, so many investors withdrew or would not reinvest their funds that many financial institutions (both BFIS and NBFIS) ran into serious hardship.

This difficulty culminated in sharp declines of bank profits, reduced credit availability, skyrocketing overnight deposit rates and the collapse of Lehman Brothers. Various authors and economists have argued that the current financial crisis was triggered in August 2007 by a wholesale banking panic in the shadow banking system and that the sudden illiquidity of markets for collateralised securities was also explainable by the widespread panic existing at the time.

All banking systems are inherently vulnerable to “panics” (which are rational or irrational shocks that make deposits “informationally-sensitive”, and therefore suspicious, ultimately leading to most or all depositors withdrawing simultaneously, and so forcing banks to disrupt the long-term lending activities. The financial definition of panic is different from its common use). Panics are synonymous with systemic risks which propagate throughout the entire financial system and cause widespread insolvency. A financial panic is an event where informationally-insensitive debt becomes informationally-sensitive. Informationally insensitive debt implies that investors don't need to actively seek private information about the underlying assets or the borrower

because they trust the underlying value and the institution's ability to repay it. A financial panic occurs when a shock or event triggers a shift where private information about the debt suddenly becomes valuable and profitable to investors. The change from informationally insensitive debt to informationally sensitive debt is therefore a switch given that it becomes profitable to produce private information about debt. That is, some agents are willing to spend resources to learn private information to speculate on the value of these securities. This was not profitable prior to the panic. This leads to a situation in which every market participant needs to suddenly produce information to trade. However, market participants are not prepared to cope with the sudden information requirements for understanding, valuing, and trading securities that are suddenly informationally-sensitive. This led to haircuts (discounts on collateral value) increasing rapidly, further reducing liquidity, causing them to become illiquid in certain cases. An example of panic was the increase in repo haircuts in the build-up and during the financial crisis, which is comparable to a withdrawal from the issuing bank. In the crisis, withdrawals in the form of increased repo haircuts caused deleveraging, spreading the subprime crisis to other asset classes. *(Gorton, G. and Metrick, A. 2010)*.

As with all banking activities, shadow banks are exposed to Credit risk and liquidity risk; credit risk refers to the risk that the borrower fails to comply with its obligations to service debt or loses its credit standing. On the other hand, liquidity risk is an umbrella term which covers all risks that are associated with a bank finding itself unable to meet its commitments on time, or only being able to do so by recourse to emergency borrowing. Additionally, shadow banking inherently presents a higher degree of risk when compared to regulated commercial banking due to a variety of factors: key risks to the stability of the financial system result from imperfect liquidity transformation, limited information around shadow banking activity and the procyclical provision of liquidity to financial markets. While solvency concerns are greatly mitigated by a high share of equity in the fund sector, the redeemable nature of equity introduces leverage-like risks as its sudden withdrawal can affect the liquidity position of funds. This is further amplified by a lack of transparency (as the complex and opaque nature of the shadow banking system can lead to unexpected risk accumulations) and readily available information: ability of authorities to measure and observe sector wide risks remain limited and the use of

leverage created by derivatives positions, as well as in securities lending and financing transactions, is difficult to monitor, (which further adds to possible risks given that current data limitations prevent the general public and policymakers from drawing firmer conclusions regarding systemic risks). The pivotal reason for this higher level of risk is that shadow banks provide credit loans in a similar way to commercial banks, but without the same regulatory oversight which commercial banks have to comply with and without being able to exploit the lender of last resort function of the central bank (which implies a reduced access to liquidity compared to traditional banks. Therefore, should contagion occur, central banks could still intervene in financial markets and raise funds but the safe option of central bank loans isn't viable. This can induce systemic risk and a higher risk of defaults, as well as opportunistic risk taking; due to lighter regulation, shadow banks may engage in riskier lending practices, such as subprime mortgage securitization (subprime mortgages are mortgages to borrowers who have weakened credit histories). All these considerations can be summarised under the umbrella term tail risk, which refers to the risk of low probability events occurring at both ends of the normal distribution curve (more than 3 standard deviations from the mean). These are the aforementioned unpredictable large-scale effects that are likely to greatly disrupt the financial sector. Shadow banking also relies on complex intermediation chains and networks; product innovation generates financial instruments that involve multiple layers of rules, provisions and clauses, making it hard to get a thorough understanding of all underlying risks. Additionally, there is often a concrete risk of tail risk being mispriced: shadow banks may pile up exposures to extreme risks, perhaps by investing in securitisation tranches that seemingly pay a high risk-adjusted return, due to a poor measurement of the actual underlying vulnerabilities. Such a behaviour may be encouraged by exceedingly optimistic investors who tend to dismiss worst case scenarios: as a result, riskier investments are undertaken as risk neglecting agents believe their expected return to be higher than it actually is.

The main drawback associated with shadow banking is however the amplification of procyclicality, that is, a broader amplitude of fluctuations of economic variables (linked with excessive leverage). More specifically, procyclicality refers to the phenomenon where economic variables move in the same direction as the overall business cycle, rising

during expansions and falling during contractions. It reflects how individual behaviours or institutional mechanisms can amplify fluctuations in output, employment, and investment, thus reinforcing the cyclical nature of the economy. The notion of procyclicality is closely related to that of the multiplier: when behaviour is procyclical, it increases the magnitude of the multiplier, thus amplifying both economic expansions and recessions[2]. Just like for banks, shadow banks' assets are often funded with a large portion of short-term debt. This means that even small changes in the value of assets may wipe out equity and lead to insolvency. Furthermore, leverage tends to increase in market booms, as asset prices rise and their volatility stays low, leading to greater vulnerability to future losses. This kind of procyclical behaviour is aggravated by secured lending since haircuts may suddenly increase as markets grow volatile, constraining the amount of funds that can be obtained out of a shadow bank's asset. Thus, shadow banking activities may well amplify financial cycles, and therefore increase the procyclicality of the financial system. They do so by accelerating the credit supply and supporting asset price increases when market confidence is on the rise, while undertaking deleveraging and lowering asset prices when there is a loss of confidence in the markets. This goes hand in hand with the high degrees of interconnectedness which exist in the banking sector: the shadow banking sector is highly interconnected with commercial banks, which are in turn deeply intertwined, and represent an important source of credit for euro area non-financial corporations (NFCS). Additionally, commercial banks are heavily involved in securitisation and often own broker-dealer subsidiaries *(Cetorelli, N. and Peristiani, S ,2012)*. Therefore, difficulties in the sector can rapidly propagate to the banking sector and the real economy. Long chains, typically needed to convert low quality risky loans into savings, can lead to a high number of entities being affected by stress further along the chain. If risk exposures are allowed to accumulate and proliferate over time without the knowledge of market participants, their eventual disclosure, which may only occur in times of systemic stress, can lead to panic and market turmoil (*FSB, 2011).* The NBFIS

[2] *For example, during an expansion rising income leads to higher consumer spending, increased investments by firms who build up their capital stock, a rise in employment and further increases in income and demand. Procyclical fiscal or credit policies (e.g., tax cuts or easy credit during booms) can magnify this process, leading to overheating or asset bubbles. On the other hand, in a Recession falling income leads to reduced consumption, lower business revenues and levels of investments, layoffs and lower employment and ultimately a deeper decline in aggregate demand. If firms and households cut back spending simultaneously, and banks tighten credit (a procyclical response), the negative multiplier effect can accelerate the downturn*.

system's lack of transparency and its sophisticated investment structures can also encourage misconduct and opportunistic behaviour. Moreover, even though financial linkages between shadow banks and commercial banks may appear deceptively tenuous, there's more than what meets the eye: banks' balance-sheet exposures to shadow banks initially appear limited, given that they represented only 1.8 percent of total bank assets at the end of 2022. Similarly, funding from shadow banks accounted for only 2 percent of banks' total assets in 2022, according to the FSB. There are essentially 2 reasons which account for the seemingly limited, but strong nonetheless, connection between the sectors: firstly, global aggregates hide potential concentrations of risk exposures at certain banks and second, linkages can take less easily observable forms, such as exposures to derivatives. Thus, considering that banks and shadow banks are more closely intertwined than originally thought, the latter also experience a higher level of exposure.

Focusing more specifically on investment funds, over the past decade, such a sector has become increasingly central to the EU financial system, mainly through increased involvement in credit intermediation and capital markets. The potential for this sector to amplify any market-wide shock has thus consequently increased as a result. Risks for the stability of the financial system result from rising liquidity transformation in the presence of redeemable shares, growing exposures to credit and interest rate risk and remaining opacity of the sector. The growing role of investment funds in euro area capital markets leaves them exposed to abrupt adjustments in asset prices. It also implies that a sell-off by funds, whether triggered by a run or a change in investment policy, has the potential to cause and intensify major asset price swings. Besides major price swings, another pivotal aspect of shadow banking risk is represented by the relatively high chance of sudden bank runs: bank runs in the shadow bank sectors are noticeably different from commercial banks runs given that they are more akin to a fire sale where the shadow entity needs to sell assets in order to make up for lost funding. While bank depositors fear that a commercial bank will not have enough cash to accommodate upcoming redemption requests, shadow bank investors expect that assets can only be sold off at increasingly lower prices and therefore seek to withdraw their funding before other investors follow suit. Capital market investors of large size can withdraw their funding in case of a loss of confidence, triggered either by systemic events of large scale or a perceived weakness of

the shadow banking sector. Banks and shadow banks both need to continually roll over their funding in order to finance their long-term loan holdings and accommodate redemption requests. Banks are able to roll over their deposits by maintaining a good quality loan portfolio and limiting the risks they take on. Securitisation programmes' ability to renew their short-term funding depends on the quality of the securities they issue and the underlying loans they hold. A perceived deterioration of the asset holdings can lead to investors refusing to provide additional financing. In the case of collateral intermediation, the quality of the underlying collateral and the shadow institution's creditworthiness will greatly affect their ability to obtain funding. Creditworthiness is an essential aspect of shadow banking given that low credit scores and bad reputation can severely hamper the ability of an investment fund to attract investors. Furthermore, unlike traditional market-based finance, where debt securities are mostly long-term, shadow banks rely heavily on "runnable" (where runnable in the context of financing refers to types of funding that can be easily withdrawn or redeemed, often due to short-term maturities or the lack of a long-term commitment) forms of financing, including wholesale funding and securities financing transactions. This leaves them vulnerable to significant refinancing risks which may materialise suddenly in periods of market dislocation. Such risks may be poorly monitored by supervisory authorities if financial innovation and the use of complex intermediation chains makes them harder to identify.

Investment funds have also been proven to play an important role in liquidity spirals (self-reinforcing cycles in which falling asset prices and shrinking market liquidity exacerbate each other). Liquidity spirals can occur without financial leverage if intermediaries are constrained in their funding and equity holders call their claims[3]. A spiral may be initiated by a spike in margin requirements or haircuts during times of higher market volatility, which is exactly when general funding conditions deteriorate and liquidity is most difficult to source. Asset managers could be forced to enter repurchase agreements, swap or sell assets to meet margin calls which could lead to forced sales, asset price declines and, subsequently, further margin calls, therefore fuelling the negative spiral.

[3] *See Brunnermeier, M and Pedersen, L (2008).*

Investors are only willing to supply credit to shadow banks if transactions are collateralised (usually over collateralised and short term) and if the investment vehicle is rated as creditworthy. The creditworthiness of shadow banks came under heavy scrutiny during the financial crisis due to a significant drawback that shadow banks may present. In fact, mispricing of risk is another key facet of shadow banking risks: this was especially relevant during the financial crisis when several brokers, special purpose vehicles and securitisation programmes severely underestimated the true potential level of risk associated with their activities. As a matter of fact, certain securitisation programmes' operations revolved around the business of converting relatively unknown, opaque, risky loans into assets that could back AAA-rated securities through a long intermediation chain that aimed to ultimately dilute the underlying risk. The resulting liabilities may have appeared riskless and similar to deposits, but the associated risk was actually mispriced. Furthermore, a considerable number of brokers at the time failed to fully acknowledge and consider the large-scale externalities that manifest themselves when funding is withdrawn and positions need to be liquidated or assets need to be sold rapidly in a depressed market. The mispricing of risks thus allows the conversion of risky loans and complex security structures into highly rated securities and seemingly creditworthy, giving a false sense of sureness to investors. After the financial crisis, regulation around these practices, which appeared safe and liquid at the time, tightened and investors became more cautious: nowadays a securitisation vehicle will usually have third-party guarantees in place to enhance the credit quality of their assets, and collateral transactions utilise securities that are considered fairly liquid, with their positions being monitored daily through marking-to-market and margin call procedures.

Further risks associated with shadow banks include litigation costs; these exist given that non-bank financial institutions operate within a complex and rapidly evolving regulatory environment. Regardless of whether asset managers and other credit intermediaries legitimately pose a concrete systemic risk to the financial system, such institutions will face serious litigation risks as the debate over increased oversight of non-bank lending rages on. Significant litigation risks include, first of all, redemption disputes: non-bank financial institutions are at significant risk for litigation dealing with fund redemption, specifically in disputes involving early redemption, redemption fees, and a wide range of other contractual obligations imposed upon both investors and asset managers. Further

examples of litigation costs include suitability, investment objective, and disclosure disputes, which are relevant given that in an industry built on strategic diversity and innovation, asset management corporations are subject to considerable litigation risk involving fund valuation, investment objectives, disclosure and transparency practices, fiduciary obligations and other matters that often fall into regulatory gray areas. Lastly, securities lending and collateral disputes exist as non-bank credit intermediaries use a range of tools and strategies to collateralize lending, responsibly meet margin requirements, and maximize the returns of their portfolios. Disputes involving collateral eligibility and valuation, delays or failure to meet margin requirements, securities lending, repurchase agreements, and other complex transactions will remain an area of high risk for asset managers.

2.2 How can shadow banks contribute to the mitigation of financial crises

During the crisis years, shadow banks, most notably investment funds, have acted as an important buffer for economies as bank credit to the private sector contracted. During times of low confidence in banks and between banks (resulting in low interbank loans volumes) shadow banks provided a source of funding as bank credit contracted and interest rates rose. Additionally shadow banks provide a reduced dependency on traditional banks as sources of credit as well as providing meaningful sources of alternative finance in several countries, for instance by offering solutions to fund long-term assets with matching liabilities. They can also improve the efficiency and depth of a financial system by holding assets with maturity structures and credit characteristics that may be unappealing to traditional commercial banks. Weaker lending growth and willingness to enter into debts has resulted in a decline in securitisation activity and thus a contraction in financial vehicle corporations since 2011. This decline in lending has been more than counterbalanced by the increase in debt securities holdings by investment funds. Additionally shadow banks offer facilitated credit extension and enhanced financial efficiency (their specialized expertise in specific functions enables them to channel resources toward specific needs more efficiently). Moreover, their variety of investments smooths out risks as well as offering tailored services and products to meet

increasingly complex financial needs, as well as promoting and fostering competition within the financial sector with consequent improvements in the overall efficiency of operations: this includes rendering products more cost-effective, quicker, and more widely and easily accessible. Lastly, another benefit is related to regulatory arbitrage and flexibility. Their ability to innovate and work outside strict banking regulations can help them respond more flexibly to financial shocks. For example, shadow banks can provide bridge financing when traditional banks are reluctant to do so. Additionally, there exist benefits of shadow banking carried out by funds, such as investment funds, money market funds and hedge funds. Lending provided by asset managers is an important aspect of efficient capital markets, as the additional credit provision can be crucial to borrowers, especially when commercial banks are distressed.

This especially benefits smaller and less capitalized companies that are poorly served by the official banking system.

On the other hand, hedge funds, private equity funds, and other funds will often loan money to higher risk businesses, such as emerging start-up companies. The decision to lend is usually made after some due diligence, but with greater flexibility than what is provided by conventional lenders.

An additional benefit of hedge fund loans is that access to funds is usually quick. Funds also have advantages over banks from a financial stability point of view. The business model for traditional banks entails capturing a spread in interest rates between the money banks receive and the money banks lend.

Therefore, banks are predominantly financed with short-term borrowing, while providing long-term credit to borrowers, as interest rates are typically lower in the short term (known as yield spread).

However, when short-term interest rates are rising fast, banks' profits may be diminished and could rapidly disappear, forcing banks to either curtail funding or raise borrowing costs. On the other hand, most investment funds issue shares to investors to get capital.

As long as investors do not redeem equity shares from the funds overnight in large numbers there are fewer concerns over adequate funding over a short period of time, as equity funding does not have a fixed timeline.

2.3 Shadow banking's key role during the savings glut

The U.S. economy has recently experienced two, seemingly unrelated, phenomena: a large increase in post-retirement life expectancy and a major expansion in securitization and shadow banking activities. It is however arguable *(Ordoñez, G. and Piguillem, F. 2019)* that they are closely intertwined and related: Individuals rely on financial intermediaries to save for post-retirement consumption and when the expectation is to live longer, they rely more heavily on intermediaries that use securitization, with riskier but higher returns. The observable trend is that of a demographic transition characterized by a longer life span: In just four decades, life expectancy of the American population conditional on retirement, increased drastically from 77 years to approximately 83 years. Even though life expectancy has been increasing for a century, this time frame was particularly unique given that it was driven by people aging as opposed to previous decades in which it was driven by a dramatic fall in child mortality. Living longer after retirement leads to an increase in the demand for savings, which opens the doors for new and more efficient tools and institutions to supply savings, such as securitization and shadow banking.

The main takeaways are that shadow banking turned out to be instrumental in accommodating higher savings needs (brought about by the increasingly high life expectancy worldwide and the subsequent increased demand for retirement savings and pensions). Despite the prominent role of shadow banks in the great recession it is arguable that they did more good than harm for this very reason.
According to Ben Bernanke (*Bernanke, B. S. 2005)* it was this savings glut, domestic but also applicable on a global scale, that led to the credit boom which was a key driver in ending the great recession. However, it has to be noted that more savings do not necessarily imply more credit. If the number of savers (or the savings per saver) rises without a corresponding and adequate increase in investment opportunities, returns could fall enough to maintain total savings and credit unchanged. Thus, the onset of new financial instruments can be helpful in facilitating savings but also in stimulating credit.

Figure 5: Pensions and credit in the United States, 1970-2015

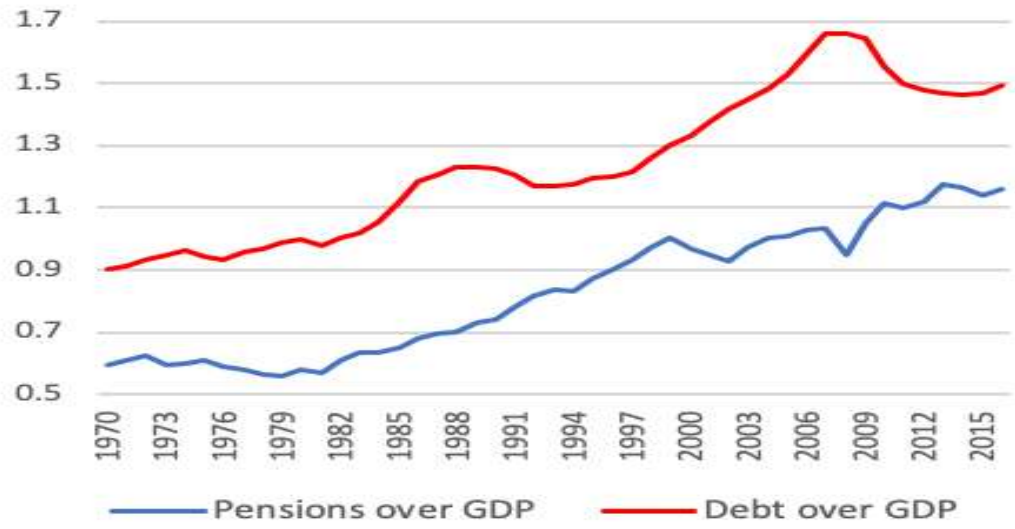


Figure 5 underscores the fact that the enormous increase in credit over GDP in the US, from 0.6 to 1.1 since the 1970s, accurately reflects the magnitude of the increase of pensions over GDP, which in turn is correlated with the unprecedented increase in life expectancy conditional on retirement (from 77 years to around 83 years) that the United States experienced in said three decades.

Figure 6: shadow banking was instrumental in accommodating the steep increase in pensions

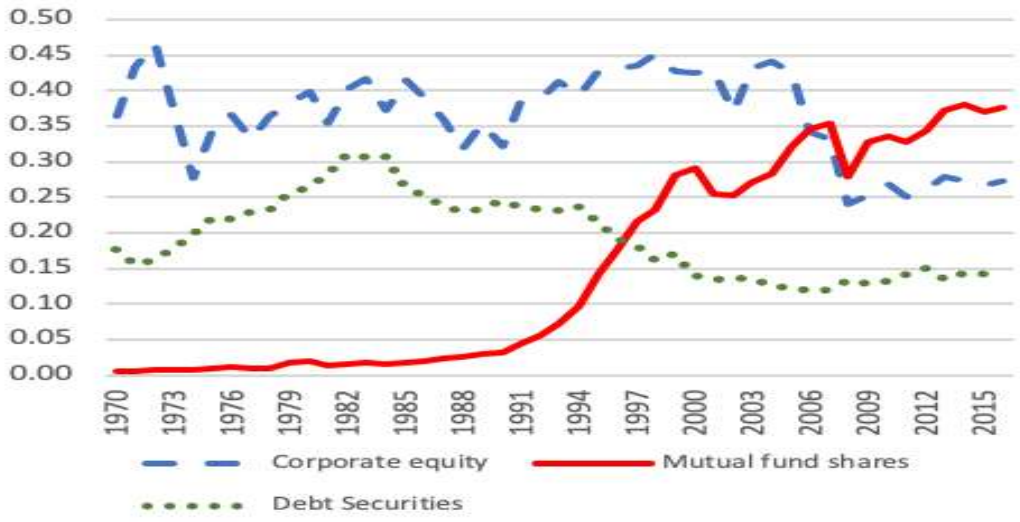


Figure 6 demonstrates that shadow banking was instrumental in accommodating the large increase in pensions. While in the 1970s pension funds held 55% of their portfolios directly in corporate equity and debt securities, by the 2000s this figure declined to 40%, and it was more than compensated for by a considerable increase of mutual fund shares (from 0% to 35%). As most of these funds also invested in equity and debt this can be interpreted as an indirect holding of similar financial instruments.

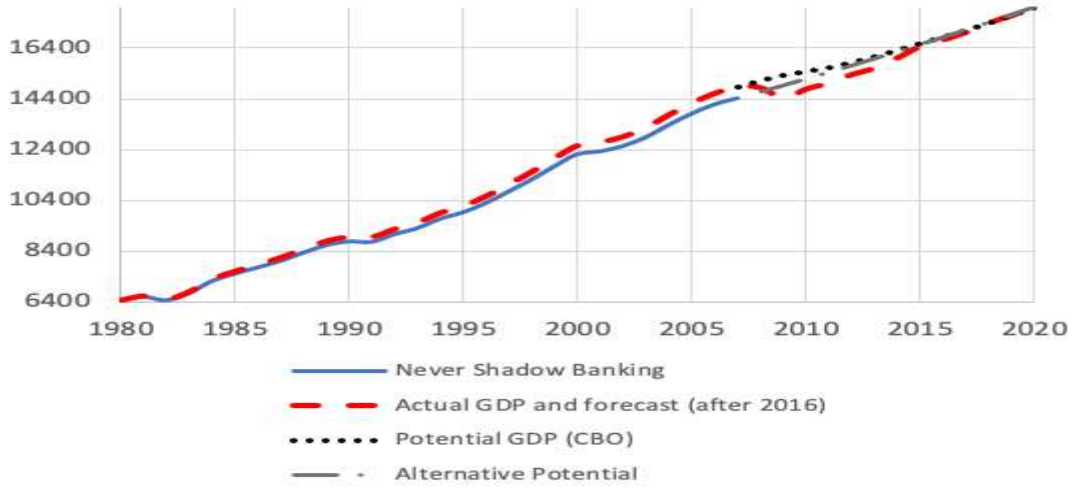
Bernanke's global saving glut (GSG) hypothesis posited that increased capital inflows to the United States from GSG countries were an important reason that U.S. longer-term interest rates from 2003 to 2007 were lower than expected. Shadow banks operate in order to substantially decrease the financial sector's liquidity cost (examples of liquidity costs include the opportunity cost of holding funds or the opportunity cost of investing in low yield securities). Evidence backs up the claim that liquidity costs have declined. As a matter of fact, Intermediation cost, measured by the spread between lending and deposit rates, declined from a stable level of 4% in 1980 to around 3% before the recent Global Crisis. By constructing a measure of liquidity costs, analysts are able to show that the decline in intermediation costs can be explained almost completely by a decline in liquidity costs, a finding consistent with those of other authors, who show that operation costs have been actually constant for around a century. Savers have two viable options in terms of intermediaries: traditional banks and shadow banks. Their difference is that shadow banks operate mostly through securitisation, which entails lower liquidity costs and can offer higher returns and yield for deposits. However, depositing in shadow banks is also more expensive because of searching costs, asymmetric information and fragility costs involved in their more opaque operations and lower regulatory constraints. For a given returns differential, as the life expectancy increases, so does the present value of the gains to 'depositing' in shadow banks – a higher life expectancy triggers a desire for higher yields that can be fulfilled by shadow banks. The prospering and growth of shadow banking is then basically an endogenous supply response to the higher demand for safe assets. Quantitative analysis and empirical evidence showed that on one hand, without shadow banking, the change in life expectancy would not have been able to account for any increase in household debt over GDP, but just a steep decline in the risk-free rate and

that on the other hand, without demographic changes, steady state output would have grown by only half the amount it did.

2.4 Further empirical evidence of the beneficial effects of shadow banks

Studies based around the construction a hypothetical economy in which shadow banking never existed (and therefore there cannot be a factor in an eventual crisis) and a comparison of its GDP evolution with actual GDP in the US, in which shadow banking did exist have demonstrated that, from 1980 to 2007, the existence of shadow banking generated additional production equivalent to 60% of 2007 GDP. This number can be contextualised when compared to the cost of the Great Recession, of an approximate accumulated magnitude of 14% of 2007 GDP. Thus, even in the extreme case of blaming the crisis and its cost entirely on shadow banking activities, the economy still benefited by gaining the equivalent of half of 2007 GDP from shadow banking operations. This represents concrete evidence of the positive impact of financial innovations and evolutions in the context of deep structural changes experienced by the US and economies worldwide. Overall, authors argue that the benefits prior to the crisis were an order of magnitude larger than the cost of the crisis.

Figure 7: Hypothetical economy without shadow banking vs economies with shadow banking with GDP forecasts



The graph in figure 7 mirrors the hypothesis and the data expressed by economic literature *(Piguillem, F. and Ordoñez, G, 2018)* and by Bernanke. It clearly demonstrates that shadow banking growth goes hand in hand with actual and potential GDP growth. This is due to a higher demand for both investments and savings. The presence of shadow banks also allows for a higher potential GDP due to the increased possibility of investments and the ability to channel resources more efficiently due to the possibility of offering tailored services and serving credit in underserved regions. Recent regulatory efforts have targeted restricting or eliminating securitisation in order to avoid future crises. By finding that the net gains of shadow banking may have indeed dominated the costs of the recent crisis, findings highlight the importance of thinking about financial innovation in the context of structural changes in an economy, otherwise we risk asphyxiating new financial products that may be fragile but provide benefits while in operation.

Commercial banks are subject to heavy regulation and scrutiny that restrict their investments. Chief amongst these guidelines are the Basel agreements; this regulatory framework has undergone significant changes over the last few decades in order to adjust for the increasingly complex nature of the financial system. The first set of rules introduced was the Basel I framework (1988), which called for banks to maintain a minimum ratio of capital to risk-weighted assets (RWAS) of 8% by the end of 1992. This was followed by Basel II (1999 – 2008), which refined Basel I's way of calculating the minimum ratio of capital to RWAs, dividing bank assets into tiers according to liquidity and risk level, with Tier 1 capital being the highest quality. Under Basel II, banks still had to maintain a reserve of 8%, but at least half of that now had to be Tier 1 capital. Next came Basel III (2010 – 2022) which introduced several changes among which the implementation of an increased the Tier 1 capital requirement from 4% to 6%, while also requiring that banks maintain additional buffers, raising the total capital requirement to as much as 13%. As of 2022, a Basel IV framework has gone into effect, with the objective of strengthening the international banking system by standardizing rules from country to country, including those relating to risk.

When banks are concerned for their reputation they could self-regulate and invest more efficiently. Hence, a shadow banking that arises to avoid regulation has the potential to

improve welfare. Reputation concerns depend on future economic prospects and may suddenly disappear, generating a collapse of shadow banking and a return to traditional banking, with a decline in welfare. A combination of traditional regulation and cross reputation subsidization may enhance shadow banking and make it more sustainable, thus allowing a financial system to benefit from shadow banking activity with a higher degree of safety.

Reputation concerns are at the heart of both the growth and the fragility of shadow banking. Shadow banking thrives as long as investors believe that capital requirements are not critical to guarantee the quality of banks' assets, since reputation concerns self-discipline banks' behaviour.

When bad news about the future economic landscape or returns on investments arises, reputation concerns collapse because reputation becomes less valuable, and investors stop believing in the self-discipline of banks, relocating their funds to a less efficient, but safer, traditional banking.

Thus when considering the paramount role that the creditworthiness and public perception of a shadow bank play in determining the degree to which investors are willing to supply funds, it is in the shadow banks' best interest to safeguard a positive reputation, which allows regulators to step in and impose limits and barriers to investments and risk taking.

There are two ways to prevent excessive risk-taking (in terms of leverage used, amounts borrowed, etc.). One is government regulation in the form of requirements to invest the bank capital in safe assets.

The other is self-discipline sustained and upheld by reputation concerns. If the government cannot identify the type of risky asset, then capital requirements are useful in preventing banks from investing in inferior risky assets, but costly in preventing banks from investing in superior risky assets.

Reputation concerns provide a more efficient disciplining device, preventing banks from investing in inferior risky assets without preventing them from investing in superior risky assets.

2.5 Role of shadow banks in sustainable growth

With the increasing awareness of environmental issues and the prominence of sustainable growth, studies on the impact of the banking sector, and specifically the impact of the non-monetary financial institutions, on green growth and development have emerged.
As a matter of fact, the notion of "rapid economic growth at any cost," sustained and followed for almost two centuries following the industrial revolution, has been steadily losing popularity due to its continuously escalating environmental costs.
Experimental data is still not overly abundant and research and literature are still in their embryonal stage but some authors have already started exploring the causality and links between sustainable growth and shadow banking.
The lack of information is also driven by the ambiguity of the definition of shadow banks and consequent contrasting opinions on what falls into the category. Studies provide contrasting results: one study conducted and discussed below *(Isayev, M., and Gokmenoglu, K. 2024.)* highlights a positive effect of shadow banking on sustainable growth whereas others reveal no apparent correlation between the reallocation of assets from the traditional banking sector to the shadow banking one and sustainable development.
Findings sourced from panel and quantile approaches and taken from 26 countries (covering Europe, Asia, Latin America, North America and Oceania) during a period spanning from 2010 to 2021 reveal that shadow banking, alongside traditional banking, tends to dampen the negative impacts of renewable energy consumption on economic growth, particularly in countries with medium and high levels of economic development. Negative effects of renewable energy consumption stem from the initially high transition costs of switching to such energy sources from fossil fuels.
Panel data causality tests confirm bidirectional causality between economic growth and renewable energy consumption, economic growth and shadow banking, and renewable energy consumption and shadow banking.
Both observations listed above highlight the need for alternative sources of funding and alternative funding mechanisms (obviously subject to some degree of regulation which is currently still lacking but being progressively addressed).

The results indicate a positive and significant association between shadow banking and economic growth across all methodologies employed (quantile regression and pooled OLS).

Moreover, the positive impact of shadow banking slightly decreases in magnitude by moving from lower to higher quantiles of economic development.

That is, shadow banking has a more noticeable effect on economic growth in countries exhibiting lower economic development levels, therefore potentially suggesting a potential avenue for emerging economies to leverage non-traditional financial services to spur economic growth, especially in areas where conventional banking is underdeveloped or difficult to access, especially referred to developing countries.

This aligns with the aforementioned notion that shadow banking can and should complement, or sometimes outright substitute, traditional commercial banks should they present gaps in the supply of financial operations. In conclusion, the study gives several insights on the role of shadow banking in sustainable growth.

Firstly, it is paramount for policymakers to balance the investment in renewable energy to mitigate short-term negative impacts on economic growth, represented by implementation and switching costs, while optimising and maximizing long-term benefits. This could involve phased or scaled investments and leveraging public-private partnerships to efficiently distribute financial risks.

Additionally, implementing subsidies or tax incentives can reduce the initial financial burden of renewable energy projects, enhancing their short-term viability.

In addition, their findings emphasise the importance of robust regulatory frameworks and oversight to manage the financial stability risks linked with shadow banking.

Regulations should encourage high levels of transparency and promote risk management practices and ensure that shadow banking operations align with traditional banking standards to prevent regulatory arbitrage and excessive risk taking.

Furthermore, encouraging shadow banking institutions to support renewable energy projects through tailored financial products and services can foster sustainable practices and contribute to long-term economic growth.

Finally, strengthening the capacity of traditional banks to finance renewable energy initiatives is essential.

This may involve revising lending criteria and risk assessments to accommodate the unique aspects of renewable energy projects better.

Moreover, shadow banking entities are becoming more involved in green bonds, private green lending, sustainable finance, and impact investing (defined as the deployment of funds into investments that generate a measurable and beneficial social or environmental impact alongside a financial return on investment) with non-bank lenders possibly expected to play a large role in funding climate transition, especially in underserved sectors. It must be stressed that while this presents a major opportunity for climate friendly finance, it also demands better transparency, measurement standards, and regulatory oversight to ensure real impact and mitigate the well documented risks.

Shadow banks are increasingly more involved in green finance for several reasons: firstly, a rising demand for ESG-aligned assets; institutional investors and stakeholders are pushing for portfolios that meet Environmental, Social, and Governance (ESG) criteria. Shadow banks, often in a more agile fashion than traditional banks, are meeting this demand by allocating capital to green and sustainable assets.

Second, their involvement in ESG can be explained by return potential and diversification considering that green bonds and ESG assets can offer competitive returns with lower default rates.

These investments also provide long-duration, stable cash flows, attractive for various classes of investors such insurers, pension funds, and long-term asset managers.

Lastly, it is down to regulatory pressure and reputation, given that even though shadow banks are less regulated, the shift toward sustainability disclosure frameworks (like TCFD, EU SFDR, or ISSB standards) affects them.

Participation in sustainable finance helps shadow banks align with global standards and improve reputation, which is paramount considering that their ability to raise funds, attract investors and carry out investments is primarily dictated by reputation and creditworthiness.

Overall, it can be stated that by increasing liquidity and providing specialized financial services (like structured finance), shadow banks can enhance market efficiency, allowing for more effective allocation of capital toward sustainable projects.

Shadow banks diversify the financial system by providing alternative sources of capital.

This can foster more resilient economic growth and encourage sustainability-focused investment strategies not bound by traditional regulatory or profit-maximization models.

CHAPTER 3: WHAT DOES THE FUTURE HOLD FOR SHADOW BANKS?

3.1 Projected future trends of the shadow banking sector

The shadow banking market is projected to reach US$134.5 billion by 2030, growing at a compound annual growth rate (CAGR) of 5.9% from 2024 to 2030, according to a 2025 report from GlobeNewswire.

Although outside of the scope of this thesis, the report also forecasts the Chinese shadow banking sector to grow at an impressive 9.5% CAGR and to reach $28.8 billion by 2030 and the lending platforms to grow at 5.6% CAGR over the analysis period, further emphasising that shadow banking's high paced growth is and will remain a global phenomenon with a drastic impact on every country and continent.

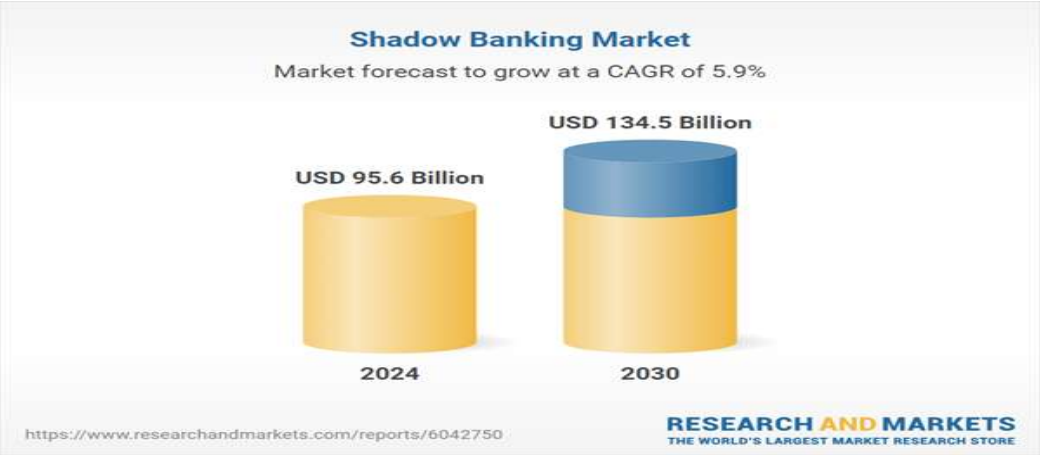
This growth is driven by factors like the expansion of FinTech platforms and peer-to-peer lending.

However, the sector also presents risks due to its loose regulations and potential for systemic instability, requiring careful consideration by regulators and policymakers.

Figure 8 illustrates how the shadow banking market is expected to look like by 2030, giving a visual representation of the extent of the growth that the sector is predicted to experience, going from a market value of 95.6 billion dollars to an even more staggering value of 134.5 billion dollars in just 5 more years.

A key point that is once again unscored by the figure is that shadow banking is no longer a phenomenon which just interests the western world but has rapidly become a global trend which affects emerging economies as well.

Figure 8: forecasts of the shadow banking market growth by 2030



Technological advancements, most notably the significant expansion and progress of the fintech sector, have revolutionized the sector, enabling innovative lending and investment models that attract both borrowers and investors.

The proliferation of fintech platforms has democratized financial services, allowing a larger portion of the population to access credit and investment opportunities, further propelling market growth.

The low-interest-rate environment has made shadow banking an appealing investment alternative, as it offers higher yields compared to traditional fixed-income products. As a result, NBFCs have experienced explosive growth, especially in emerging markets. They fill the credit gap left by banks and have become crucial in financing small businesses, real estate, and infrastructure.

As a matter of fact, China, India, and parts of Africa have seen NBFCs and shadow banks fill the lending vacuum, with microfinance institutions and digital lenders scaling up and expanding rapidly, fuelling credit growth in several underserved regions.

The growing sophistication of investors is another key driver of growth in the Shadow Banking Market; the latter are becoming increasingly aware of the risks and rewards associated with shadow banking products. This has led to a demand for more sophisticated and transparent shadow banking products. Shadow banks are responding to this demand by developing new products and services that meet the needs of sophisticated investors. The growing sophistication of investors is expected to continue to drive growth in the shadow banking market over the forecast period.

Key trends of shadow banking in 2025, expected to carry on in the future, are firstly an expected rise of private credit and direct lending institutional investors, including pension funds and sovereign wealth funds, which would pour money into private credit markets. Direct lending, where non-bank lenders provide customized loans to businesses, is replacing traditional syndicated bank loans.
Additionally, securitization and structured credit expansion are expected; despite its role in the 2008 financial crisis, securitization is back. Shadow banks are pooling loans into tradable securities, fuelling liquidity but also reintroducing opacity into the financial system. Finally, digital lending and AI in credit risk assessment fintech-driven lenders are using AI and alternative data sources to evaluate creditworthiness. This has expanded access to capital, but it also raises questions about data privacy and financial inclusion risks. Furthermore, besides these trends shadow banking will always exhibit the risks detailed throughout the thesis.

Summing up, the future of shadow banking will likely be characterized by a continued evolution of the sector, with a greater emphasis on regulation and oversight to manage the risks it presents. While the sector undoubtedly offers benefits in the form of increased access to credit and alternative funding sources, it also poses significant challenges that must be addressed to ensure the stability of the financial system.
The key to the future of shadow banking lies in finding a balance between innovation and risk management, with regulators and policymakers playing a pivotal role in shaping its development. In particular, the future of regulatory and policy responses likely lies in elements such as increased regulation (with governments and regulators being increasingly focused on regulating shadow banking to mitigate systemic risks and protect the financial system) macroprudential measures (through initiatives such as more stringent or specific capital requirements and liquidity regulations being implemented to ensure the stability of the shadow banking sector,) improved oversight (with regulators working to improve their oversight of shadow banks, including enhanced monitoring of their activities and risk exposures) and international cooperation (given that increased collaboration between traditional banks and shadow banking entities, along with improved information sharing, could help manage risks and promote stability.

3.2 Possible future European macroprudential framework to tackle risks and issues related to shadow banking

With shadow banking growing at such an exponential rate and with it becoming a core component of global finance, policymakers are tightening their oversight of shadow banks due to the rise in risks and regulatory pressures associated with sectoral expansions. Most notably there exist concerns about over-leveraging, systemic contagion risks and consumer protection, given the opaqueness of the environment in which shadow banks operate (with particular attention now being placed on data protection of customers making use of new fintech items); new rules include higher capital requirements, stress tests, and reporting mandates for NBFCs and other shadow banking entities. In fact, after the global financial crisis, policy-makers have embarked on significant and often fruitful efforts to increase supervisory effectiveness and awareness on the structure and vulnerabilities of the shadow banking system.

New regulations have been promoted, aimed at shielding traditional banks from the risks generated by shadow banks, while addressing entities and activities where those risks had been rapidly proliferating. In particular, a 2021 paper by the policy department for economic, scientific and quality of life policies at the request of the committee on Economic and Monetary Affairs (*Resti, A., Onado, M., Quagliariello, M., and Molyneux, P., 2021)* attempts to shine a light on the future of macroprudential regulation on shadow banking, emphasising that rules be unambiguous and apply to all institutions performing similar functions.

A key takeaway is that regulatory policy should reduce the risk of sudden deleveraging, it should regulate banks to address shadow banks and draw clearer boundaries and lines given that shadow banks operate and thrive in ambiguity. For example, countercyclical buffers introduced after the financial crisis should be extended to non-bank institutions to prevent substitution effects. Capital buffers on banks should be mirrored by similar buffers on cash collateral, haircuts and margins for non-bank entities. Borrower-based constraints (for example in terms of loan to value ratios and debt to income ratios) should also be enforced on all forms of leveraged finance when there is evidence of cyclical

overheating. Additionally, macroprudential regulations address situations where institutions and market participants behave in ways that are rational for individual investors, but do not take into account the negative externalities associated with system-wide reactions, causing sharp deleveraging and market disruption. Securities-financing transactions and derivatives are glaring examples of such behaviour, as market forces tend to lower haircut or margin requirements during financial expansions, and suddenly revert to higher values as market conditions change. To address this type of situation, regulators should impose minimum haircuts and margins (as mandated by the Basel agreements) as well as introducing additional supervisory stress tests. Commentators also stress the need, often neglected, for the simplification of regulatory policies. Structural limitations on large banks would certainly represent a bold approach to financial regulation, especially as more and more time elapses since the global financial crisis. Regulation has traditionally preferred to take a different route, providing incentives for financial institutions to evolve towards desirable models, without imposing straight restrictions. This has led to complex rules, where new, detailed provisions were introduced every time new market practices needed to be addressed. On the other hand, simple restrictions that apply across all forms of financial intermediation seem to have basically been left out of the recent policy debate. There is much to gain, however, from simple rules that apply across the board. By channelling innovations into uncomplicated, safe frameworks, they make them a more reliable source of financing for EU enterprises and citizens. Accordingly, complexity and interconnectedness that are predominantly motivated by regulatory and tax arbitrage should be removed by achieving a more level playing field among Member States. Transactions with non-European entities offering looser regulatory or fiscal regimes should be further discouraged by increasing their cost for EU domiciled financial institutions. Once this sort of superstructure has been eradicated, it will be easier to identify, control and protect the mechanisms through which non-bank intermediation can be used to mobilise resources and provide investors with fair alternatives providing additional asset classes and risk and return combinations.

The debate on macroprudential regulation has often argued and highlighted a dichotomy between vitality and stability, speed and safety, growth and solidity (*Resti, A., Onado, M., Quagliariello, M., and Molyneux, P. 2021)*: The key notion is that policies aimed at increasing financial resilience and ability to withstand shocks raise the cost of financial

intermediation, weakening its potential to support the real economy. This is a misleading perspective however, as vitality and stability are actually two faces of the same coin. The recent emergency due to the Covid-19 pandemic provides a suitable example, as it was characterised by a false dichotomy between those striving to keep economic activity going and those in favour of tight lockdown measures. However, delays in implementing social distancing and premature attempts to reopen businesses led to increased contagions with significant social costs and ultimately caused considerable damage to the very economies that they aimed to restart. For shadow banking to deliver greater economic benefits via new sources of credit and better risk-sharing practices, policy makers must first ensure that it adopts business models that are not characterised by inconsistencies, conflicts of interest and moral hazard, and therefore can remain viable in the long term.

It is however important to underline the fact that even though many ambitious regulations have been approved, the sense of security they induce might be false. Real life evidence backs this claim up given that, while rule makers and industry participants have designed and implemented a large number of fine-grained reforms, it is still rather unclear whether the new rules may be fully effective in the event of a major financial turmoil. The first weeks of the Covid-19 emergency have provided a warning of how volatile and vulnerable market equilibria may still be over a decade after the great financial crisis. Rules and regulation proposed may be effective in dealing with mild crises or relatively strong shocks to the system but the jury is still out on whether they're adequate to tackle major global downturns.

Finally, going back to the previously mentioned Basel agreements, it is still unclear whether the Basel IV framework is the final set of rules for banks or whether a new and revised agreement may be implemented in the future as the financial system inevitably grows in size and complexity. The main change introduced by Basel IV is the implementation of an output floor requiring that risk weighted assets calculated using internal models must not be lower than 72.5% of those calculated using the standardized approach. This limits the benefit banks can gain from using their own internal models to calculate RWAS, ensuring they don't report excessively low capital requirements. Further adjustments include amendments to the leverage ratio framework, improved comparability of capital ratios across banks and revised risk calculations method. Any

form of future regulation that might be imposed on shadow banks could well mirror these changes imposed on commercial banks.

CONCLUSIONS

The global financial system has undergone a radical transformation in recent decades, marked by the rapid expansion of shadow banking and the growing influence of non-monetary financial institutions. While these entities have contributed significantly to financial innovation, credit intermediation, and market efficiency, they have also introduced complex and under-regulated risks that may threaten global financial stability.

This thesis has examined the structural features, functions, and evolution of shadow banking and NMFIs, delving into both their positive contributions and systemic vulnerabilities. Shadow banking activities, which are mostly conducted outside traditional regulatory frameworks, are particularly susceptible to liquidity mismatches, excessive leverage, and opacity, which are all factors that can amplify financial shocks and contagions. Similarly, NMFIS, while crucial for mobilizing long-term capital and managing risk, may contribute to procyclical behaviour (and to the amplification of procyclical trends) and suffer from governance and oversight deficiencies. The global financial crisis of 2008 has underscored the interconnectedness between traditional banking, shadow banking, and NMFIs.

The consequences and the aftermath of the crisis have prompted a wave of regulatory reforms aimed at enhancing transparency, reducing systemic risk, and extending oversight to the non-bank financial sector. As a matter of fact, a key driver of the financial crisis was a run on repo markets, similar to a traditional bank run. The lack of transparency and regulation in shadow banking contributed to a collapse in trust, triggering systemic risk.

Nonetheless, regulatory fragmentation, inconsistent implementation, and the constant evolution of financial instruments continue to pose challenges. From a global perspective, the risks posed by these institutions are not confined within national borders, necessitating

enhanced international cooperation, data-sharing mechanisms, and harmonized regulatory standards. At the same time, policymakers must strike a delicate balance between fostering financial innovation and ensuring macroeconomic and financial stability. Shadow banking can overall be considered as one of the most recent evolutions in financial intermediation, part of a natural development where changing market conditions and changing demand lead to the development and onset of innovative products and services. Technology has allowed non-bank institutions to compete with banks in providing financial services, often managing to do so more efficiently and at a lower cost. The shadow banking institutions which were elaborated in this thesis already make an important contribution to the European, American and many other financial systems, and future regulations should focus on making the system more resilient and transparent in order to fully reap its benefits, rather than abolishing it. The effect of shadow banking on financial stability is ambiguous and depends on the exogenously imposed upper limit on insured deposits: as a matter of fact, it has been shown that if the upper limit on insured deposits is high, then the presence of a shadow banking sector is detrimental to financial stability given that shadow banking creates systemic instability that would not be present if all deposits were held in the commercial banking sector. On the other hand, if the upper limit on insured deposits is low, then the presence of a shadow banking sector is beneficial from a financial stability standpoint as shadow banks absorb uninsured and uninsurable deposits from the commercial banking sector, therefore shielding commercial banks from probable bank runs. Shadow banking growth must go hand in hand with regular and continuous updates in regulations and policies, which must apply to all institutions encompassed by the umbrella term.

Literature has however underlined that the evolution of the financial sector as a whole has increased its resilience and improved its capabilities to withstand shocks and downturns associated with shadow banks among other factors. In particular, Nicolas Charnay, Managing Director & Sector Lead for European FIs, and Mehdi El Mrabet, Associate Director, Financial Services Ratings, S&P Global Ratings 2024 stated that, according to them, *"although we are mindful of the contagion risks that shadow banks pose to traditional banks, we don't see them as a major negative-rating driver for traditional banks but rather as a source of risk. We believe banks have increased their financial resilience to shocks, including those potentially stemming from shadow banks."*

It is therefore almost certain that the future of shadow banking will be hybrid, combining traditional finance structures with innovative, tech-driven models, while facing closer scrutiny from national and global regulators. The balance between innovation and systemic risk will define how this sector evolves and future trends. Ultimately, research and economic academic literature emphasise the need for balanced regulatory oversight that preserves financial innovation while mitigating systemic risk. It advocates for greater transparency, data collection, and international coordination to address cross country spillovers and strengthen the resilience of the non-bank financial sector in an increasingly interconnected and digitalised financial ecosystem. It is however undeniable that shadow banking presents numerous beneficial aspects, such as increased credit availability given that shadow banks provide additional sources of credit beyond traditional banks. They expand lending to households and businesses, especially those underserved by traditional institutions such as small businesses, subprime borrowers and underserved regions as a whole. Further benefits of shadow banking are financial innovation given that the sector actively fosters developments in securitization, structured finance, and risk management tools. It has also introduced more flexible and tailored financial products, such as asset-backed securities and peer-to-peer lending platforms, on top of continuous development of fintech in contributions to increasingly sustainable finance (through investment in green bonds, ESG assets and playing a role in facilitating the transition towards a greater adoption of renewable energy sources) and a more efficient provision of diversified and tailored services at a lower overhead cost. In terms of macroprudential regulation devised to enhance financial stability, experts advocate for the development of macroprudential tools tailored to the shadow banking sector. This includes introducing measures that address liquidity mismatches, leverage, and the systemic importance of certain non-bank financial institutions.

In terms of policy recommendations, the key takeaway is that economic literature encourages a coordinated approach involving cooperation between both national and international regulatory bodies to monitor and manage risks in the shadow banking system, as well as encouraging the uniform application of policies to all entities which fit the description of shadow banks in the jurisdiction to avoid regulatory gaps and inconsistencies. Measures such as enhanced data collection, improved risk assessment methodologies, and the extension of certain regulatory standards to non-bank entities are

among the proposed strategies. The main objectives behind future or revised regulation should be drawing clearer lines between the traditional banking sector and the shadow banking one in order to reduce the ambiguity and opaqueness which have always define shadow banks, reducing the complexity of policies in order to ensure an easier implementation and application of norms (even if it requires bold decisions) and regulating commercial banks to address shadow banks.

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