UNIVERSITY of GREENWICH
FOUNDATION FOR EUROPEAN PROGRESSIVE STUDIES
FONDATION EUROPÉENNE D'ÉTUDES PROGRESSISTES
GPERC

Greenwich papers in political economy

THE ENDOGENEITY OF MONEY AND THE SECURITIZING SYSTEM. BEYOND SHADOW BANKING

Eugenio Caverzasi (Università Politecnica delle Marche)
Alberto Botta (University of Greenwich)
Clara Capelli (Cooperation and Development Network - IUSS Pavia)

Abstract

Financialization is not just a phenomenon regarding the exponential growth of the financial sector with respect to the real side of the economy. This paper aims shedding some light on the nature and the systemic impact of new elements in the financial realm and particularly on the so-called *shadow banking* through a macroeconomic perspective. Our analysis shows how financial evolutions have had an impact on the monetary system and on the whole economy at multiple levels. It involved the channel through which money enters the economic system, the rise of new financial institutions and activities, the implementation of monetary policies, and the relation between the real and the financial sector. What we are witnessing is not the rise of a shady version of something old whereas the surge of new forms of financial accumulation.

Year: 2018

No: GPERC#56

GREENWICH POLITICAL ECONOMY RESEARCH CENTRE (GPERC)

Keywords: Endogenous money, securitization, shadow banking, inequality, financial instability.

JEL Codes: E12, E42, E44, E51, G21.

Acknowledgments: We are grateful to Daniele Tori, Marco Passarella, Antoine Godin, Alessandro Caiani, Engelbert Stockhammer, and Louis-Philippe Rochon for very useful comments to previous versions of this work.

Corresponding authors: Eugenio Caverzasi, Department of Management, Polytechnic Marche University, Piazzale Martelli 8, 60121, Ancona (Italy), email: eu.caver@gmail.com.

1. Introduction

Financial and monetary systems have changed dramatically over the last decades and economics struggles to keep up with these changes and both theory and modelling are often unable to incorporate the evolutions of the financial institutions. This paper aims shedding some light on the nature and the systemic impact of new elements in the financial realm and particularly on the so-called *shadow banking*, with a special focus on the Unites States. It adopts a macroeconomic perspective inasmuch as it tries to clarify the characteristics of shadow banking and their economy-wide implications, which we believe are still relatively obscure, albeit increasingly important, for the evolution of the financial system and the economy as a whole.

The attention on shadow banking has significantly increased after the sub-prime crisis because of the role played by specific institutions (e.g. Brokers and Dealers and Money Market Mutual Funds) and practices (mortgage securitization, repo leading, and the production of "structured" financial products such as collateralised debt obligations). Important questions have been raised about the relation between commercial banks and other financial institutions, as well as about the effects of the development of such new financial entities on the dynamics of the economy as a whole.

Adrian and Shin (2010) show how the volume of assets held by the shadow banking system in 2007 was higher than that held by commercial banks. Their growth has been extremely rapid. While in the late 1970s shadow banks counted for about 10% of total credit, by 2007 this portion grew close to 50%. More recently, some other contributions have stressed the capacity of shadow banking institutions to modify the hierarchy of money and to create "shadow money" by issuing and underwriting repo contracts.

Gabor (2016) emphasises the intrinsic macroeconomic instability that inevitably ensues from the increasing creation of "shadow money". Eatwell et al. (2008) and Nikolaidi (2015) show how mortgage securitization may sharpen financial instability. Finally, Botta et al. (2016) show the variety of shadow banking-led growth regimes that can possibly emerge in the short run. Moreover, in line with Argitis and Pitelis (2001)[1], they show how shadow banking is functional to the creation of a rentier-friendly economy in which income is redistributed from working households to rentiers and income inequality increases even in the context in a booming economy.

Nevertheless, much still needs to be discussed. An insightful depiction of shadow banks, able to fully understand their macroeconomic rationale and their impact on the economy, cannot ignore a

realistic representation of the monetary system. Similarly, a consistent theory of money, and in particular one aiming at being grounded on a solid institutional analysis, must take into account and be able to interpret the evolution of the financial system. These fundamental pieces for a comprehensive theory of shadow banking are missing at large.

The present work aims at filling this gap. First, it tries to analyse the functioning of shadow banking in detail with the objective to define what kind of financial institutions and practises characterise it and differentiate it in principle from other types of banking. Second, it considers what kind of role shadow banking plays within the financial system, whether it is solely confined to financial intermediation or it contributes to credit creation, which is to be interpreted under endogenous money approach.

The ultimate aim of this paper is not to provide a "passive" description of shadow banking. It rather tries to capture the functional role played by shadow banking institutions and practices in the more general process of financialization.

Financialization is a very broad term. According to a well-known definition provided by Epstein (2005), financialization is "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies (Epstein, 2015:3)". Lapavitsas and Powell (2013) adopt a classical Marxist perspective, and describe financialization as "a structural transformation of advanced economies rooted in altered relations among non-financial corporations, banks and workers". More in detail, they stress how financialization shows itself through three major phenomena. First, "non-financial corporations have become financialized by acquiring capacity to engage independently in financial transactions in open markets; [second,] banks have re-directed their profit-making activities towards mediating in open markets as well as transacting with households; [third,] workers and others have become financialized by being drawn into the financial system to meet basic needs (Lapavitsas and Powell, 2013:375)".

There is a considerable body of literature on the so-called shareholder-value orientation and the financialization of non-financial corporations. Relatively less research efforts has been devoted to the analysis of the connections between the two remaining aspects of financialization as identified by Lapavitsas and Powell. This paper tries to demonstrate how shadow banking institutions - and the connected practices - have been functional to redirecting banks' business models towards open market operations (for instance, the production and sale of "structured" financial products) away

from standard credit creation for the needs of productive activities. At the same time, we also show how securitization constitute the leading financial innovation enabling banks to expand credit provision to households (rather than productive firms), and to make the financialization of middle and lower classes possible.

From a theoretical point of view, our analysis firstly builds upon the post-Keynesian (PK hereinafter) theory of endogenous money creation as the general framework to define similarities, differences and connections between traditional banks and shadow banks[2]. Secondly, it builds on a previous work by Botta et al. (2015), where the authors apply the Theory of the Monetary Circuit (Graziani, 2003) to analyse the main features of the U.S. financial system. The main finding of Botta et al. (2015) is the identification of two new circuits, one based on households' indebtedness, and one internal to the financial sector. The first circuit has a double role. On the one hand (or from banks' balance sheet side) it creates money for the real sector through loans (e.g. mortgages), while on the other it creates a credit asset for the financial sector. The credit is then *commodified* as it is sold and used to create financial products. The second circuit takes place within the financial sector as banks finance the activities of financial institutions. In this paper, we will directly take into account these features to deepen our understanding of shadow banking, and of its relations with real economy dynamics.

Our description of the evolutions occurred in the U.S. financial system since the beginning of the 1970s relies on the Flow of Funds (FoF) data provided by the Federal Reserve and on PK monetary theory. From the FoF, we obtain the aggregate balance sheets of sectors within the U.S. financial system. This allows us to obtain a systemic view and hence to understand how the different kinds of institutions involved in shadow banking differentiate and relate one another.

The paper is organized as follows. Section 2 discusses how vague the concept of shadow banking still is and presents a brief overview of PK monetary theory as a sound theoretical framework to analyse shadow banking. Section 3 focuses on the key transformations in the US financial system, presenting the characteristics of both new institutions and practices. In Section 4, we analyse the elements described in Section 3 through the lens of PK monetary theory, also drawing our main theoretical findings. Section 5 concludes.

2. Banking and Monetary theory

2.1. Shadow banking, a still very vague concept for economic literature

The literature on *shadow banking* is relatively recent and, as underlined by Classens et al. (2012), a univocal definition has yet to be reached. The different definitions in the literature can be broadly divided into two groups: (i) those focusing on the specific institutions involved, which therefore refer to *shadow banks*; and (ii) those focusing on a system made of a complex set of financial activities involving different kinds of financial institutions , which goes under the name of *shadow banking system*. As regards the first group, the creation of the term *shadow banks* is attributed to McCulley (2007), who denotes 'non-bank investment conduits, vehicles, and structures'. McCulley (2009) refers to those financial institutions which lend money escaping from standard regulation, "without backstopping from the Federal Reserve's discount lending window or access to FDIC deposit insurance" (*ibidem*:1). A similar perspective has been proposed by Poszar et al. (2013). The research on this topic allowed to understand how 'obscure' financial institutions are part of a complex financial system in which loans issued by commercial banks are converted into securities and in which collateralized debt (repurchase agreements, henceforth repos) and financial derivatives (Credit Default Swaps, henceforth CDS) were used as a form of guarantee other than official insurance and FED's discount window.

The literature is increasingly referring to '*Shadow Banking system'* rather than '*Shadow Banks',* focusing on the system and its specific functioning. This second group includes, for example by Adrian and Shin (2010) and Adrian and Ashcraft (2012) referring to a specific kind of financial intermediation, not directly enhanced by official guarantees. Gorton (2010) and Gorton and Metrick (2010) describe this structure as an alternative depository system based on collateral rather than public insurance.

In a later work, Gorton and Metrick (2012) refer to *'securitized banking',* since the practice of warehousing and packaging loans (in particular mortgages) to be sold as securities is at the core of this system. Noeth and Sengupta (2011) use the two definitions ('*shadow banking system*' and '*securitized banking'*) interchangeably in their attempt to highlight the *pros* of the securitization process. Classens et al. (2012) stress the complexity of this system and focus on two of the activities performed by the shadow baking system, namely securitization and collateral intermediation.

The abovementioned short list of contributions does not aim at providing a representative survey of the literature, it rather serves to prove how vague this concept still is for economic theory. As it

has been briefly illustrated, the category '*shadow banking system*' has been used in relation to a rather wide set of financial activities and financial entities[3] providing intermediation. Further complications arise due to the extremely mutable character of financial institutions involved in this system, as underlined by Adrian and Ashcraft (2012).

However, we believe that it is possible to identify two recurring elements that characterize most of the literature: (a) the central role of the securitization mechanism; (b) the view of securitization as credit intermediation that is alternative to the government-guaranteed intermediation implemented by traditional banks. Adrian and Ashcraft (2012:31) are exemplary in this sense, as they explicitly refer to *shadow credit intermediation*. While we agree on the relevance and consistence of point (a), we think that point (b) implies an erroneous depiction of banking and of the nature of new financial institutions, ultimately grounded on an inappropriate monetary theory.

2.2. The nature of commercial banks

The term shadow banking, as already said, implies that traditional banks and shadow banks are two parallel and alternative systems (see element *b* above). We consider this assumption to be theoretically incorrect and misleading for its policy implications. It is thus useful to analyse the role of banks in economic theory, relying on some simplifying classifications. The major dichotomy between monetary theories can be identified with respect to money supply. According to an exogenous-supply perspective, the quantity of money within an economic system is controlled by the monetary authorities. Conversely, the endogenous money perspective posits that the economic system endogenously creates money, both reserves and broad money, and the monetary authorities exogenously set the interest rate.

Each of these strands of literature relates to different theories and schools of thought. The distinction was very neat until few decades ago, when for instance Friedman's Monetarism and its weak form of quantity theoretic analysis[4] - that is to say that the supply of money is controlled by the monetary authorities and money-neutral in the long run - were criticized among the others by Kaldor (1970, 1985) on the basis of an endogenous money approach. The surge of the new Consensus made the distinction less clear. Money is still neutral in the long run, but now the policy instrument of monetary authorities is the interest rate, and the money supply follows.

Yet, this should not be confused with an endogenous money approach[5]. The focus here is on a

supply-driven credit rather than on money and very little or nothing is said about the banking and financial system or on reserves (Fontana 2011, Goodhart 2010)[6]. Moreover, what this literature seems to implicitly assume is banks acting as intermediary of funds (see Rochon 1999:249-251, Kumhof 2015). Even when the tenets of standard monetary theory are openly questioned as in Woodford (2010), an open embracement of endogenous money theory can hardly be found. On the contrary, banks are assimilated to other financial intermediaries and, just like them, they need a pre-existing stock of savings to supply funds to borrowers.

Starting from this consideration and with the aim to sharpen the focus of our analysis, overcoming the difficulties arising from the confusion that the New Consensus' monetary approach may create, we can refer to a further classification, this time regarding different theories of banking.

> The oldest *credit creation theory of banking*, maintains that each bank can individually create money 'out of nothing' through accounting operations, and does so when extending a loan. The *fractional reserve theory* states that only the banking system as a whole can collectively create money, while each individual bank is a mere financial intermediary, gathering deposits and lending these out. The *financial intermediation theory* considers banks as financial intermediaries both individually and collectively, rendering them indistinguishable from other non-bank financial institutions in their behaviour, especially concerning the deposit and lending businesses, being unable to create money individually or collectively (Werner 2015, pp.1-2, italic in the original text).

According to Kumhof (2015), Gurley and Shaw (1955, 1956) and later Tobin (1963) are to be blamed for having dismissed the distinction among banks and other kinds of financial intermediaries, thus heavily contributing in establishing the *financial intermediation theory* as the new leading paradigm in banking theory. In particular, Tobin argued that banks were lacking a 'widow's cruse' to create money. Balance sheet constraints - related to the willingness of the public to hold deposits to match increased loans - did not allow banks to create money *ad libitum*.

We hereby maintain that a lack of a clear distinction between the role of commercial banks and different financial intermediaries - stemming from a *non-credit creation theory of banking* - hampered the understanding of both the nature of different kinds of financial institutions and the systemic impacts of the rise of the so-called shadow banking. In order to overcome these limitations, in this paper we will adopt an approach based on the post-Keynesian (PK) monetary theory, which combines

a credit creation theory of banking with other elements –briefly illustrated here below – that offer a sound theoretical framework.

In a nutshell, PK monetary theory posits that the economic system endogenously creates money through commercial banks issuing credit on demand to creditworthy borrowers. Deposits are created by banks, through loans with no prior needs for funds nor reserves, as central banks accommodate banks' needs for reserves. In practice, loans create deposits, which in turns drive reserves. Reserves do not represent a binding limit for money creation as central banks issue, at a given interest rate, all the reserves needed by the banking system. The causality is therefore reversed with respect to standard *money multiplier* narrative.

In standard times[7], banks create money and high power money follows. What is considered a creditworthy borrower changes with the level of confidence of banks and is influenced by the state of the economy, by trends in the financial markets, and more generally by *animal spirits.* Banks, like anyone else in the economy, cope indeed with an uncertain future (Keynes 1936, Ch.12). The key policy instrument of monetary authorities is therefore the interest rate. Central banks set exogenously the base rate and all the short-term rates tend to follow. In fact, banks set the loan rate as a mark-up on the base rate[8]. The amount of borrowed reserves adapt to the needs of the system, while non-borrowed reserves are managed to meet the target interest rate. The long-term interest rates are determined by the portfolio choices of economic agents, which ultimately depend on their liquidity preferences.

A further relevant element of PK monetary theory is its link with production. Indeed, PKs put forward a credit-based system of money (Arestis, 1988) which is a cardinal element of their Monetary Theory of Production (Keynes, 1973). Money creation and firms' production come indeed together in the analysis of numerous PK authors, in particular those linked to the Circuitist tradition (e.g. Lavoie 1984, Rochon 1999, Parguez and Seccareccia 2000, Fontana 2000) but not only (e.g. Moore, 1988). Credit is considered essential, as it allows to bridge between the need for money to cover production costs and the revenue from sales. In turn, production allows for money to enter the economic system through wage payment and income generation. Money creation is therefore considered intimately linked to production. It allows to bridge between the need for money to cover production costs and the revenue from sales. In turn, production allows for money to enter the economic system through wage payment and income generation. "Money, in this view, is an output of the system, with the

endogenous response by the financial sector governed by the borrowing needs of firms, households, and the government" (Arestis and Eichner, 1988). This clarification on the different borrowing needs is particularly significant in light of recent trends in the credit market (also considering that, as shown by Botta et al. (2015) additional monetary circuits do take place out of the traditional non-financial firms sector. This by no means relegates production to a marginal role. In fact, production and its structure have still a central role in money creation and circulation processes.

This monetary theory clearly includes a *credit creation theory of banking*. Banks are indeed crucial in this theory. They enjoy a privileged relationship with central banks. A bank can create money that can be used by anyone in everyday transactions since banks accept each other's liabilities as a means of payment, exactly because this system is subtended by reserves, namely central bank money (Rochon and Rossi, 2013). Banks therefore, unlike other financial institutions can create money, because of their unique condition of midway between monetary authorities and the economic system. Deposits are therefore money and they can be used to clear any transactions as they are institutionalised liabilities of an institutionalised entity. Not everything liquid can be considered money. As underlined by Sardoni (2015), it is important to distinguish between what is 'money' and what is 'liquid'. The first is determined by the laws and conventions of society, whilst the second by the market. "[T]o define money as an asset with perfect liquidity is to argue in a circle. It is the other functions of money which are intrinsic; the liquidity property follows from them' (Hicks 1989: 42). The banking system holds therefore an extraordinary power since, *de facto*, it is the money supplier of the economic system, thus it is crucial in determining the path of the economy (Keynes 1973, xiv:222), deciding how much credit to issue and to whom. They can create a liability (deposits) and an asset (deposits) *ex-nihilo.* This power bears the responsibility for destabilization (Minsky 1986:279). When credit creation is miss-directed, for example inflating bubbles or financing unstable positions, it determines financial fragility. Banks, are indeed crucial for production, but they do finance other requests for credit as well, even for speculative motives.

3. Transformation in the U.S. financial system

The dramatic rise of the financial system with respect to the real side of the economy has been one of the characterizing features of the US economy since the 1980s. This phenomenon is often referred to with the term 'financialization' (Epstein 2005, Sawyer, 2014). What is often overlooked by the

literature is that the size of the financial system increased, about the latter also changes its composition dramatically as new financial entities, new assets, and new businesses entered the scene.

We will try to portray this metamorphosis through graphical analyses and descriptive statistics, based on the U.S. Flow of Funds. This dataset was conceived (Copeland, 1949) with the aim of applying a social accounting perspective to money flows. In this approach, the basic units are the sectors in which the whole economy is partitioned. Sectors are accounting entities distinguished according to their function in economy (Stone, 1947). Firms may be split into two sectors, either producing capital goods or consumption goods, but the same perspective is however hardly applied to the financial system. This is what we try to do in this section, identifying the function of different financial sectors within the U.S. financial system, in order to obtain a systemic view. Figure 1 shows the relative size of each of the sectors constituting the US financial system from 1975 to 2017[9].

[Figure 1]

The size of the traditional banking sector (i.e. Private Depository Institutions) has decreased from more than 40% to around 20% of the whole financial system, in terms of assets value. This dynamic has been mirrored by the growth of the investment funds, which became the largest sector in 2013, accounting for more than 30% of the whole financial system.

The other key feature is the emergence of three sectors which were either absent or marginal in the 1970s, namely Security Brokers and Dealers, Issuers of Asset Backed Securities, and Money Market Mutual Funds. These sectors jointly accounted for almost 20% of all the assets detained in the U.S. financial sector right before 2008. After the crisis, this aggregate share decreased to about 10%. Nonetheless, the role of these sectors is still central to the financial system. In the recent years, Repurchase agreements (repos) also emerged as a central asset.

3.1 Repos in the financial and in the monetary system

One of the key features of the shadow banking system is the widespread use of repos as a source of funds. According to Gorton and Metrick (2012) “Securitized banking is the business of packaging and reselling loans, with repo agreements as the main source of funds.” (ibidem:425). Repo is a peculiar

form of collateralized lending, where the possession of the collateral, usually a security, is passed to the borrower for the duration of the loan. The difference between the selling price and the repurchase price represents the interest rate, while the difference between the selling price and the value of the collateral is called *haircut.*

Repos are short-term instruments. They can be overnight (the usual case for tri-party repos) or have longer tenor, usually few days but also several months. Open repos are a special kind of repo agreements automatically renewing until the decision of at least one of the parties.

It is difficult to obtain a precise measure of all the repurchase agreements active in the markets. As noted by Baklanova et al. (2015) the U.S. Flow of Funds' tracking of repos have some drawbacks as it only includes Primary Dealers, and it also double counts repos between primary dealers. Someone's repo is someone else's reverse repo and since "dealer-level data do not include counterparty information" (*ibidem*: 49) it is not possible to distinguish them. Different studies (e.g. Baklanova *et. al* 2015, Gorton and Metrick 2012, Singh and Aitken 2010) estimate the size of the repo market to have picked prior to the sub-prime crisis at around 10 trillion dollars and to be decreased to around 5 trillion dollars.

The key characteristic that makes repos the most popular instrument for lending in the financial markets is arguably their bankruptcy exemption. For the entire duration of the agreements, the collateral is owned by the lender whom, if the borrower goes bankrupt, is left with the collateral. The value of the collateral exceeds that of the money borrowed unless falling in the meantime[10]. The assets used as collateral are rather standardized. They are usually safe (or perceived as such) securities. Different class of assets are use in different kinds of repos. For instance, government-backed assets are required to borrow reserves and the safer the asset the lower the haircut.

The resulting extreme confidence contributed in making repos an extremely liquid asset that, starting from the 80s, became extremely popular. In wealthy investors' view, repos are more remunerative and safer than banks deposits, as there exists a cap up to which standard deposits are covered by the Federal Deposit Insurance Corporation (FDIC). After the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010, the cap has been raised to 250,000$, while before it amounted to 100,000$. The main player in the repo market are by far the Brokers and Dealers, an important role as provider of deposits is played by clearing banks and money market mutual funds. Other kinds of funds have a marginal role in this activity. The importance of this instrument in the U.S.

financial system is testified by its use by the FED to implement its open market operations.

Repos are a very liquid short-term asset, perceived as safer and more remunerative than deposits by cash rich financial entities. It is not surprising that this instrument became so popular to largely substitute bank deposits as main liquid asset for financial institutions in the money market (mainly Money Market Mutual Funds and Brokers and Dealers). Nevertheless, just like for traditional deposit, trust is essential for this mechanism to run. Particularly in the general collateral finance (henceforth GCF) - a blind-brokered interdealer market, where the parts involved do not know each other's identities nor the specific collateral used in the transaction, the only information available is the class of the collateral being used: uncertainty on the value of the collateral interdicts the functioning of the system. Gorton and Metrick (2012) show how the general loss of confidence caused by the subprime crisis led to a severe rise of haircuts in repos, and a consequent loss of liquidity in the system, since there was no trust on the value of the collaterals. That is what they define as a *run on repos.*

[Figure 2]

3.2. Commercial Banks

Looking at Figure 2, Graph 2A shows all the assets held by depository institutions. Together with commercial (chartered) banks, which represent by far the largest component, the sector includes saving banks, cooperative banks, and lending institutions.

The key features are of the graph are: (i) the importance of mortgages, which represent the largest asset peaking right before the 2008 crisis in when they accounted for around 40% of total assets; (ii) the increased importance of Agency and Government Sponsored Enterprises (henceforth GSE) backed securities, that from the 70s to the mid 90s more than doubled their relative size; (iii) the fall in the relative size of *other loans*, which includes commercial and industrial loans; (iv) the increased importance of reserves after the 2008 crisis mirrored by the weakened role played by Treasury.

These data testify the multifaceted business of banks (Stigum, 2007:185) and show how banks increasingly focused their business on mortgages and mortgage-related securities, while significantly diminishing their activity of business credit provision.

3.3. Asset Backed Security Issuers

Asset Backed Security Issuers were not included in the U.S. Flow of Funds until 1981. It is important to bear in mind that the volatility in the first decade of Graph 2C is largely magnified by a scale effect, as in those years the balance sheets of the sector was significantly smaller than it is in present days (see Graph 2D). The main assets of this special purpose vehicles (henceforth SPV) are either mortgages or mortgage related assets (GSE securities), while the main sources of financing are either commercial papers or corporate bonds.

These are specialized financial institutions with a simple balance sheet structure. ABS issuers are indeed the main 'securitizing sector' and they lay between the supplier of the assets – banks, the issuer of the loan, which is the credit asset - and the non-banking financial system. As we will try to explain further in the next section, credit assets become a kind of financial commodity, which is the input in a production process leading to the production of financial assets that are sold either to other financial institutions or to households.

A further noteworthy characteristic of the figures is the disappearance of Agency and GSE-backed securities, by the ABS issuers' balance sheet, due to the Large-Scale Asset Purchase Programs launched by the FED in response to the crisis. The steep rise and the rapid fall in the relative size of the sector with respect to the GDP and its growth with respect of the whole financial system are shown in Graph 2D. This dynamic should not surprise once their specialization and their centrality in the securitization process are taken into account.

3.4. Money Market Mutual Funds

The second 'new financial sector' is Money Market Mutual Funds (henceforth MMMF). They emerged in the 1970s as a better option for cash rich investors with respect to standard bank deposits for three main reasons. First, unlike other funds, MMMF maintain the value of one dollar per share, this coupled with their high liquidity make them perceive as a valid substitution to credit money. Second, they are relatively more remunerative. As we said when describing repos, the FDIC covers deposits up to a certain limits.

This represents *per se* a competitive advantage as MMMF can offer a higher interest rate, since they do not need to pay insurance premiums to FDIC (Olson, 2012). Furthermore, as underlined by Gorton and Metrick (2010), depositary institutions' regulation (Regulation Q) imposed a cap to the

interest paid by standard depository institutions on deposits. Alongside nominal equivalence between one share and one Dollar bill and the higher returns, the third element making MMMF a better option for cash rich investors was the perceived high level of safety.

Unlike bank deposits, the (private) form of guarantees of MMMF always protects the shares, regardless of their amount. Due to their severe regulatory limits, as for example the possibility of investing only in highly rated assets, MMMF were generally supposed to be backed by the State. This was confirmed during the crisis, as they were bailed out by the government (Olson, 2012). In fact, MMMF are considered to enjoy an implicit public enhancement (Poszar et al. 2013:4). The combination of these three elements gives MMMF a competitive advantage on depository institutions: "As long as MMMFs have implicit, cost-free government backing, they will have a cost advantage over insured deposits" (Gorton and Metrick, 2010:270). Furthermore, given that MMMF are usually linked to banks, they can offer services (e.g. cheques) for which it is required to be part of the U.S. payment system.

Cash-rich investors have been therefore increasingly relying on MMMF to deposit their liquidity. It is well known that corporations have been sitting on a pile of cash (e.g. Bates et al. 2009), and as a consequence MMMF increased their relative size with respect to the GDP, as well as to the whole financial system (Figure 2F). The steep rise and fall in correspondence with the 2001 dot com crisis and with the 2008 sub-prime crisis can be puzzling in light of the abovementioned stricter regulations. This apparent dilemma can be easily solved by considering the assets side of the aggregate balance sheet of the sector as shown in Figure 2E.

The composition of their portfolio deeply changed from the 1970s to present days. This was composed almost exclusively by three assets, namely Treasury securities, deposits, and open market papers. The latter two, originally accounting for around the 70% of all assets, although diminished significantly, are still central in MMMF's portfolios. Deposits are necessary to back the high level of liquidity characterizing MMMF's shares, in a way like cash in traditional banks. Moreover, it is important to keep in mind that all other assets having high safe ratings are normally very liquid. Along with corporate bonds, the additional assets that emerged in the 80s as the core of MMMF's portfolios are either securities or repos. This shows how MMMF's core business is strictly related to securitization, as we will discuss later. Repos are the key form of credit between financial institutions and are used by MMMF as collateralized lending to provide liquidity to the financial sector (this

applies also to Mutual Funds, which in our graph are included in the Investment Funds sector).

All other assets are different types of securities backed by the public sector: municipal, GSE, and Treasury. All these assets are considered very safe and liquid, at least in normal time. However, this was not the case during the 2007-8 crisis. GSE backed securities were severely hit due to their high exposure in the Mortgage-related securities market (recall that in September 2008 Fannie Mae and Freddie Mac had to be nationalized to be saved). This in turn caused doubts on the abilities of MMMF's shares to remain pegged with the dollar, hence igniting a run on the shares, which in turn led MMMF to a fire sale of their assets. The Government had to step in to interrupt this dynamic and finally backed the MMMF (Temporary Guarantee Program for Money Market Funds, September 2008) and the implicit cost free government baking became explicit.

3.5. Brokers and Dealers

The third main sector emerged in the U.S. financial system is Broker and Dealers (or Investment Banks). As shown in Graph 2H, its weight has increased with respect to the whole financial sector and dramatically with respect to GDP, even if it did not recover completely after the crisis. This sector is at the heart of the U.S. financial system as it intermediates among its main components. The analysis of the aggregate balance sheet of Broker and Dealers (Graphs 2G and 2H) is not as straightforward as in the case of the other sectors. Repos are the key element on both the asset and liability side of the balance sheet and we already discussed how these data carry some drawbacks. The other components of Security Broker and Dealers' aggregate portfolio are not very informative. The 'total miscellaneous liability', not better specified in the Flow of Funds Dataset, represents up to 30% of all the assets held by the sector from the 1990s. We will rely on the existing literature for the sake of clarity and simplification.

In this sense, the contribution by Adrian and Shin (2010), who proposed the case of Lehman Brothers, is of great interest. This sector relies mainly on short-term financing (repos) to finance either short-term positions (often once again repos) or long-term assets, which are needed to produce financial instruments like derivatives and as counterpart for the repo activity. The asset `Debt Securities' includes securities by the Treasuries and by the Treasury and GSE, Commercial Paper, and Corporate Bonds. The centrality of the role of Investment Banks in the repo business, emerges even more clearly looking at Graph 2H, in which we plot the share of all the repos in the financial system

held by broker and dealers as an asset (dotted black line) and as a liability (dashed grey lines). This graph shows how dramatic the rise in the years preceding the crisis has been, and how investment banks were by far the major actor in this market.

Moreover, it is important to notice how the sector as a whole is a net borrower, with commercial banks representing the main provider of cash (on this, see also Copeland et al. 2012.), other important source of funds being MMMF and Mutual Funds. Poszar et al. (2013), referring to the concept of maturity transformation, underline how the balance sheet of investment banks is constituted by short-term liabilities, used to finance long-term assets. It is easy to grasp how this type of business was inherently bound to incur in liquidity mismatches. Repos, considered a trustworthy form of loan based on the collateralization of long-term (safe) asset, were an ideal solution to this misalliance and soon became the major source of funds for this system, gradually substituting bank loans (see Graph 2H). Moreover, as already explained repos are a safe form of short-term investment and are especially convenient for brokers and dealers. The safer the underlying assets, the lower the haircut and the interest rate.

This leaves room for arbitrage, especially for primary dealers that, due to their role in the monetary system, need to own safe assets. In practice, the investment banks owning safe assets have the opportunity to make profit in the repo market thanks to interest rate differentials. Through repo or security lending they can borrow money against a safer asset than the one collateralized by the entity they are lending to (see Adrian et al. 2013). This explains the limited role of liquidity 'deposits and currency' within investment banks, which is another noteworthy feature of their portfolio: repos, rather than deposits, were Brokers and Dealers' main liquid assets. The evidence confirms that investment banks are at the heart of the U.S. monetary system. On the one hand, they are the largest player in the repo market, both as intermediators (even central banks and commercial banks for reserves) and as parties in the agreements. On the other hand, "they originate new securities, and they *produce* derivatives" (Adrian and Shin, 2010:5, italic added).

3.6. Securitization. Alchemic finance?

Securitization is arguably the major novelty of the U.S. financial system in the last decades (Gorton and Metrick, 2012). In brief, it consists in banks transforming their credit assets into securities, which are then sold in the financial market. This practice allows the issuer to sell assets, thus raising money

for other uses, and adjust the balance sheet, substituting long-term asset for liquidity (Botta et al. 2016). This former element helps banks in circumventing restrictions imposed by regulation. Securities often undergo further transformations as they are used to 'produce' increasingly complex financial instruments.

An example of the securitization process involves the four sectors described above as follows. For the sake of clarity, we will refer to Table 1, which portrays an exemplificative four steps securitization process in a social accounting matrix. In each step (T1, T2, T3, and T4) entries with signs represent flows, the entries without a sign are not involved in that specific step, but help to keep track of the whole process[11]. The first step (T1) represents the standard process of endogenous money creation, which involves four entries and that perfectly represents the 'quadruple entry system' of the social accounting (Copeland 1949). Money in the form of deposits is created *ex nihilo* through loans, mortgages in our example. In the second step (T2), credit, mainly Mortgages (M), issued by banks are sold, in exchange of deposits, to SPV (ABS Security Issuers), which pool these credit assets into mortgage pool, which are then partitioned into tranches, usually senior, mezzanine, and junior, with increasing level of risk. The different tranches sold as ABS (MBS in the case of Mortgages) with different returns.

As explained earlier, Brokers and Dealers borrow through repos from commercial banks or MMMF. The latter in turn get finance issuing shares (T3). Finally (T4), Investment Banks, use ABS to produce increasingly complex financial instruments, derivatives such as Collateralized Debt Obligations, Squared CDO (or CDO^2). These are derivatives that, thanks to their structure (combining assets with very low risk correlation) and obscurity, were able to obtain very high ratings even when the underlying assets were highly risky, as in the infamous case of sub-prime mortgages. Securitization was the 'philosophical stone' in this process. Typical buyers can be either public or financial institutions such as MMMF, which finance their activity through shares. Thanks to credit transformation, a securitized asset is perceived as more secure than its underlying credits. Therefore, securitization allows the financial sector as a whole to pay on a lower interest than the one it receives. To simplify, money received by those households holding MMMF shares will be lower than the money paid by those whose mortgage has been transformed into a debt obligation.

Rating agencies are crucial in this dynamic (Coval et al. 2009)[12]. This process led banks to improve their leverage (hence making capital requirements easier to be met) since selling their assets, or

moving them into SPV's balance sheets, allow them to exchange long term risky assets (e.g. mortgages) for liquidity (Botta *et. al*, 2016). Through securitization, banks can increase their lending and potentially generate more fees, or simply reduce credit risk in their balance sheets and free up regulatory capital. As underlined by Cetorelli (2012), commercial banks became a key player of this phenomenon. The ECB identifies four different roles played by traditional banks in this dynamic: "(i) originating loans to be packaged into ABS; (ii) providing liquidity facilities to conduits; (iii) providing repo financing; (iv) issuing short-term paper for MMFs; (v) marketing their own MMFs to customers." (Bakk-Simon et al. 2012:8). The same holds true for the U.S. case. The securitization process can therefore be conceived as a production process of complex financial assets starting from the creation of credit and taking place in a system involving different financial sectors. Two further considerations are crucial to understand the importance of securitization. First, since the reinterpretation of the Glass-Steagall by the FED in 1996 (and even more after its repeal in 1999) financial holding were able to make all the steps of the process, this dramatically accelerated the dynamic and the production of securities (Botta *et al.* 2016) and most likely had major distortive effects on the credit system

[Table 1]

4. The securitizing system and financialization beyond shadow banking, a PK macroeconomic perspective.

In this section we will try to put together the several pieces of the puzzle shown in Section 3 and provide an overview of the functional role the securitizing system plays in the context of financialisation through the theoretical lens of PK monetary theory, with the aim to emphasize the importance of a credit creation theory of banking and better grasp the system-wide consequences of securitization.

Following Palley (2013), the process of financialization is intrinsically connected with what he labels the "neoliberal box". This is a combination of four economic policies (i.e. globalization, abandonment of full employment, small government and labor market flexibility) at the center of the neoliberal policy agenda guiding government action in the US (but also in other developed countries like the UK) since the end of the 1970s. On the one hand, financial sector's call for policies allowing financial markets and financial business to expand has led the financial sector itself to explicitly promote and

support the neoliberal agenda. On the other hand, the institutional changes and the new macroeconomic tends prompted by the neoliberal agenda have deeply contributed to shape the most recent evolution of financial system, the emergence of shadow banking among it.

From a macroeconomic point of view, a distinctive feature is the decoupling of labor compensation from productivity dynamics (see Palley, 2013:26) and the shrinking of the wage share on national income, which has shrunk whilst the capital share has increased[13]. Some advanced economies have reacted allowing for the establishment of a debt-led economic regime with an increasing part of consumption and investment expenditures being based on bank credit.

In line with the PK endogenous money theory, such a debt-led growth regime puts financial institutions, in particular commercial banks, at the center of the system, as their will to create new purchasing power *ex nihilo* in favor of other economic actors is the inevitable precondition for a debt-(or credit-)led growth regime to develop.

For example, money enters the system being created by banks *ex nihilo* along with the mortgage. Then, as shown in Botta et al. (2015), when a financial institution purchases the mortgage to 'produce' a new security, a corresponding amount of money returns to the banks and is thus drawn from the economic system, being immediately destroyed. This last transaction gives rise to a fundamental important consequence in terms of commercial banks' balance sheets. Commercial banks improve the robustness of their balance sheets, as a long-term asset (the mortgage) and a short-term liability, namely deposits of other financial institutions, are simultaneously destroyed. Alternatively, following Botta et al. (2016), when commercial banks substitute securitized mortgages with repos financing the purchases of those very same mortgages by other financial institutions, they can reduce their leverage, but maintain or even increase their own profitability, by substituting a long-term asset with a short-term, safer, one. A lower leverage - or improved capital requirements - eventually allows commercial banks to expand their business and accommodate the demand for new credit (mortgages in this case), which is the necessary condition for a debt-led growth regime.

As it has been said before, Tobin objected that commercial banks have in any case to comply with capital requirements that can restrain their capacity to stretch credit limitlessly. Nevertheless, the considerations above show that although securitization does not represent the widow's cruse, but undoubtedly loosens significantly bank's balance sheet constraints. Securitization can even trigger off a self-feeding process, which is what has happened after the repeal of the Glass-Steagall Act.

Considering banks just financial intermediaries, as most of the literature on shadow banking does, is therefore not only inappropriate, but also dangerous under a policy-making point of view, which cannot even be considered an acceptable simplifying assumption.

4.1. From credit creation to commodification and production of financial assets: the overgrowth of the financial sector

The macroeconomic role of securitization consists in allowing commercial banks to expand their business and to satisfy an increasing demand for credit in the context of a debt-led growth regime. However, this is not the only function absolved by securitization in the more general framework of a financialized economy. An additional aspect of financialization is the overgrowth of the financial industry with respect to the rest of the economy. One the one hand, the expansion of the financial sector can appear as a "the result of capital migrating to the financial sphere in search of higher profits (Lapavitsas and Powell, 2013, p.361)". Financial institutions produce complex financial products to satisfy the demand for safe but relatively remunerative financial assets coming from financialized non-financial firms and wealthy rentiers in the context of an increasingly unequal and slow-growing economy (see more on this below). On the other hand, financialization "cannot act simply as a refuge for capital abandoning the production (Lapavitsas and Powell, 2013:363)". It is also due to an autonomous evolution of the financial sector, in which "the financial system becomes an 'autonomous sphere' for capital accumulation with its own independent logic (Christopherson et al., 2013:353)"[14]. Securitization is at the heart of such a financial sector's independent dynamics giving rise to a much "more rapid circulation [of capital] relative to production (Lapavitsas and Powell, 2013, p.363)".

This complex system can be conceived as a three-step process: (i) credit creation, (ii) commodification of credit positions, and (iii) production of financial assets. While we already talked about the first step, the other two require some consideration. In this process, credit and money creation become the starting point of a complex system of securitization. In fact, commercial banks' loans, say mortgages, are subsequently pooled together based on their risk-level (e.g. prime, alt-A, mezzanine, and sub-prime), partitioned and assembled into securities, which are then transformed in the production of increasingly complex and allegedly safe financial instruments such as CDOs. We refer to this process as 'commodification of credit positions'. Lysandrou (2005) uses this definition

derived from Marx's view of capital as a commodity (Marx, 1981:468)[15]: `the comparison and pricing of entities against standards endorsed by all participants in a given market' (Lysandrou, 2005, p.774). Here we employ it in a slightly different manner broadening the meaning in line with standard definitions of commodity, *i.e.* "A Standardized good which is traded in bulk and whose units are interchangeable" (Black, 2003:66) and as common commodities credit positions become the input a (financial) production process (more on this in section 4.2). Banks loans play the role of financial commodities or raw materials: the standardized input for the production process of securities. Therefore into this system, the importance of banks' (securitized) loans is twofold, not only it leads to the creation of money, in the form of deposits, but also aims at satisfying the demand for standardized financial assets to be transformed into advanced forms of financial assets by investment banks.

The production of structured financial products by investment banks certainly aims at satisfying the appetite for safe but relatively remunerative financial assets by institutional investors. At the same time, it is functional to the *internal* expansion of the financial sector. Indeed, standardized securities are the cornerstone of repo contracts. Higher ranked securities gave access not only to cheaper liquidity through lower repo rate and haircuts, but also to more powerful money. Referring to a hierarchy of money, where reserves are at the top whilst other kinds of money follow (Bell, 2001; Mehrling, 2012), it is possible to identify a mirroring hierarchy of securities. Highest quality securities (i.e. Treasury Securities and (i) Treasury Securities; (ii) Direct U.S. Agency Obligations; (iii) Agency Mortgage Backed Securities) give access to FED's injection of reserves through primary dealers. Government-backed securities are also used in the GCF repo market, to exchange liquidity for low repo interest and haircut. Involving, on one side, different sectors of the financial system in the production of financial assets and, on the other side, different sectors from both the real and financial realm of the economy as purchaser of the asset, either for portfolio allocation or to be used as collateral in the repo activity. Other classes of safe assets have an important but smaller role in the money market. These assets, which include AAA-ranked securities such as MBS or covered bonds, gold, and equity (ICMA, 2013) are used in repo operations with higher repo rates and haircuts.

The steep rise in the use of repos described above determined a massive demand for collaterals[16] and consequently to a booming demand for commodified assets to be transformed into securities (as described in Table 1). One of the driving forces of the housing bubble was the demand for financial

commodities. A parallelism can be drawn between the boom in (real) commodities starting at the end of 1990s (Canuto, 2014; Erten and Ocampo, 2013) driven by the rapid industrialization process of huge developing countries like China and India, and the boom in financial commodity driven by the rise of securitizing system in financialized economies. Kaldor, considered that in order to be object of speculation, a good or asset must be, among other things, "fully standardised, or capable of full standardisation, "an article of general demand", "durable and "valuable in proportion to bulk" (Kaldor, 1939:1), these characteristics were acquired by mortgages through commodification. There is still an ongoing debate on the causes of the housing bubble leading to 2007-8 financial crisis. Whether it was due to the low level of interest rate - either triggered by the FED (Taylor, 2009) or by an international 'saving glut' (Bernanke et al., 2011) - or to dynamics in the housing markets - may this have occurred on the demand side (e.g. Irrational Exuberance, Shiller, 2015), or on the supply side (Kregel, 2009; Glaeser et al., 2008), or both (Dymski, 2009). These contributions tend to overlook the other side of banks' balance sheet. The blossoming importance of repos led to an increase in the demand (Gorton, 2010) of financial assets to be used as collateral. MBS, issued by GSE or by private institutions, became a key instrument in the financial markets and the demand for these assets played (and still plays) an important role in stimulating the issue of mortgages. The production of securitized asset is still very intense in the U.S., and has now moved its focus from mortgages to other kind of credit asset, such as consumer credit and student loans (Botta et al. 2016, Figure 2).

Through money endogeneity banks were able to accommodate the rising demand for financial commodities conceding overflowing mortgages. This ultimately led to a bubble. The sharp upswing of ABS (Graph 2D) and mortgages (Graphs 2B and 2D) can be interpreted in this sense. We clearly deal with a self-feeding dynamics since banks had a double role in determining the supply of the financial commodity and, at the same time, in financing its demand, funding the securitizing system through repos. Self-feeding dynamics very often go hand in hand with instability. The process we are describing does not make an exception.

In this context, instability arises from two reasons. First, securitization can be conceived as a macro-paradox[17], and fallacy of composition is the theoretical root of the sub-prime crisis. It is interesting that the system described above was considered safe, since through securitization risk was fragmented and spread. These small portions appeared to be innocuous, being diluted amid several other assets. Furthermore, banks, through securitization, could improve their leverage. However, this

led to an increase of the systemic risk. Commercial banks, issuing credit without bearing the risk, were less prudent. The identification of creditworthy borrowers became extremely loose. The fact that these processes fuelled and apparently endless (real estate) bubble contributed to make precautionary screening of borrower even weaker. However, unlike real commodities, financial commodities are someone's liabilities. When these practices became consuetudinary, the diffusion of (portions of) risky assets was so widespread that it was almost impossible to distinguish between safe and unsafe assets. This led to a complete loss of confidence in the system and to panic (Gorton and Metrick, 2012), something similar to what described by the Financial Instability Hypothesis (Minsky, 1975). The difference is that the risk-increasing phase here is not based only on 'animal spirits', whereas also on a conscious (and legal) manipulation of balance sheets. Unfortunately, what appeared as irrelevant (or even positive) at micro level became disruptive at the aggregate level. Second, the access to liquidity through repo financing is intrinsically unstable, as it heavily hinges upon the liquidity and valuation of underlying collaterals. Should the providers of liquidity fear about the real value of repo collaterals, repo rates and haircuts would suddenly increase, and available liquidity decrease. On the one hand, borrowers on repo markets might have to liquidate some of their positions in order to close repo contracts. On the other hand, money lenders themselves might be induced to sell the collateral in order to move to "proper money". However, both actions tend to exacerbate the downswing in collaterals' valuation even further. Once again, a highly unstable process likely develops leading to the collapse of the market. This is why, in the end, shadow banking mechanisms based on repo financing are highly pro-cyclical, and are affected by a "radical form of uncertainty (that) does not apply in the same way for other money claims (Gabor and Vestergaard, 2016:25)".

4.2. Reshaping the functions of financial institutions

Shadow banking and the securitizing system are often described by the literature as an alternative and complex channel of intermediation which conveys money from savers - either households (e.g. Adrian and Shin, 2010) or institutional investors (e.g. Noel, 2011) – to borrowers, usually households requiring a mortgage. We already stressed how this perspective is profoundly misleading in the case of traditional commercial banks. Beyond this, such a perspective also fails to grasp the true and new essence of other financial institutions in the securitizing system work. Shadow banking practices have

certainly redesigned the functions of several financial actors, legitimizing the quest for new theories about the changing role of new and old financial institutions. In this regards, it is intriguing the idea the diffusion of repo contracts does represent a new form of money issued by "shadow banks" (see Gabor and Vestergaard, 2016).

We think that in financialized economies investment banks may be better understood if conceived as *financial firms* rather than 'shadow banks' or financial intermediaries. For this reason, they may be better analyzed under the perspective of a monetary theory of production (Keynes, 1973a). Money enters to finance the production of securities. Financial firms' business consists in producing and trading financial assets, from the most liquid (deposits and repos) to longer term ones (securities). "Broker-dealers are at the heart of the market-based financial system, as they make markets for tradable assets, they originate new securities, and they *produce* derivatives" (Adrian and Shin, 2010:5, italic added). This activity has several features worth underlying. First, the time horizon of the 'production' activity is extremely short. In fact, the collection of liquidity through repos, the purchase of financial commodities, the production of derivatives, the sale of these financial products, and the repayment of the repo can all take place in a single day[18]. Second, they heavily depend on traditional banks, from which they receive finance and buy financial commodities. Banks grant daily credit to these institutions allowing for the 'financial circuit' (Botta et al. 2015) centred on the production of financial products, to take place. In the end, consistently with the traditional PK monetary theory, credit and production are still intimately connected. This perspective, allows to recover, at least partially, the relationship between money creation and production (of financial products) that Michell (2016) considers lost amid shadow banking.

Financial firms partially finance their activity by issuing repos. Do repo contracts may somehow conceived as a new form of money? Gabor and Vestergaard (2016) consider that repos have the property of being quite liquid assets that, in case of need (say the money borrower goes bankruptcy and does not close the repo contract by repurchasing the collateral), can be liquidated at par through the selling of the underlying collateral by the money provider. We disagree with this perspective. Repos are certainly very liquid short-term assets. Nevertheless, they are not perfect substitutes of deposits, as they cannot be used for final payment. On top of this, their liquidity strongly depends on the *perceived* degree of safety characterising the underlying collateral. It does not come from any special relation with the central banks, i.e. the ultimate provider of "top" money in the money

hierarchy, as it is for commercial banks' deposits. This is why, with the eruption of the global financial crisis, the market for repo contracts using MBS or CDOs as collateral suddenly dried up. Sure, high velocity in the repos system (Singh, 2011) - allowed by the standardization of asset, the organization of the tri-party repo system, and by practices like re-hypotecation - makes possible for a given amount of deposits to subtend to numerous financial operations. However, this amounts to increasing the velocity through which (true high hierarchy) liquidity circulates into the system, not to increasing the quantity of money *created* into the system (unless commercial banks do act as money lenders in repo contracts). In the end, we agree with Michell (2016:8) when he assesses that commercial banks are still needed for final mean of settlement. Both MMMF (see below) and B&D need banks money to finance their operation. In brief, banks create liquidity the other financial sectors pass it around. Repo contracts can qualify as collateralised assets safer than short-term asset-back commercial papers.

Among the financial institutions analyzed in this paper, MMMF is the closest to the definition of shadow banks as alternative depository institutions with no public forms of insurance. However, their difference with commercial banks goes much further than the underlying guarantees. They do not create liquidity. They rather 'obey' to the financial intermediation theory. They need a stock of savings in order to grant a loan. However, looking at their balance sheet's asset side, their lending activity differs substantially from standard banks. They transfer funds buying securities (mostly backed by the government) or commercial papers and through repos. Referring to Section 4.1, we could say that they do not create financial commodities. As the liability side of the balance sheet is concerned, albeit being highly liquid and having one to one face value with the dollar, these liabilities cannot be used for final payments and MMMF need to rely on banks deposits. Therefore, these institutions appear more as an extremely liquid version of investment funds than to a shady version of commercial banks. They may 'compete' with banks in providing a very liquid asset, but not in being the 'primary provider' of finance.

5. Conclusions and way forward

Financialization is not just a phenomenon regarding the exponential growth of the financial sector with respect to the real side of the economy: the classical dichotomy real vs. financial sector is probably unfit to assess the depth of the phenomenon. Financial evolutions have had an impact on

the monetary system at multiple levels. It involved the channel through which money enters the economic system, the rise of new financial institutions and activities, the implementation of monetary policies, and the relation between the real and the financial sector. Within the securitization process, the financing of the real side of the economy is instrumental to financial activity. Keynes' warning – "When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done" (Keynes, 1936, Ch.12:) – has never be more actual. What we are witnessing is not the rise of a shady version of something old.

We tried to analyze shadow banking under the perspective of PK monetary theory. We believe that term 'shadow banking' is misleading and should not be applied to the securitizing activity of the U.S. financial system. The application of this theory to the U.S. financial system allowed to reach numerous conclusions, as illustrated in Section 4. All these conclusions should be further investigated and tested through rigorous empirical analysis. Furthermore, this paper opens numerous possible lines of research among which, we believe, the impacts of the rise of financial companies is of main interest.

The rise of Financial Holding Companies (FHC), made possible by the repeal of Glass Steagall act in 1999, gave banks the possibility to actively engage in the securitization process. As suggested by Botta et al. (2016) this may have largely contributed to the destabilization of the system. The fall of the boundaries does not make less urgent the distinction of the different roles of different financial institutions. On the contrary, in order to be able to produce sensible and effective policy strategies, it is necessary to understand the dynamics in all its passages, in particular in light of the specific future of the banking sector as described by PK monetary theory.

References

Adrian, T. and Ashcraft, A.B. 2012. Shadow banking: A review of the literature. *Federal Reserve Bank of New York Staff Reports*, (580)

Adrian, T. and Ashcraft, A.B. 2010. The changing nature of financial intermediation and the financial crisis of 2007-09. *Federal Reserve Staff Report*. Federal Reserve Bank of New York, (439)

Adrian,T., Begalle, B. Copeland, A. and Martin, A. 2013. Repo and Securities Lending. *Federal Reserve Bank of New York Staff Reports*, no. 529, December 2011; revised February 2013

Arestis, P., Eichner, A.S. 1988. The Post-Keynesian and Institutionalist Theory of Money and Credit. *Journal of Economic Issues,* vol. 22, no. 4, 1003-1021

Bakk-Simon, K. Borgioli, S., Girón, C., Hempell, H., Maddaloni, A., Recine, F., Rosati, S. 2012. Shadow Banking in The Euro Area an Overview. *European Central Bank, Occasional Paper Series,* no 133/April 2012.

Baklanova, V, Copeland, A., McCaughrin, R. 2015. Reference Guide to U.S. Repo and Securities Lending Markets. *Federal Reserve Bank of New York Staff Reports,* Staff Report no. 740, September 2015

Basu, D. and Foley, D.K. 2013. Dynamics of output and employment in the US economy. *Cambridge Journal of Economics*, vol. 37, n. 5, 1077–1106

Bates, T.W., Kahle, K.M. and Stulz R.M. 2009. Why Do U.S. Firms Hold So Much More Cash than They Used To? *The Journal Of Finance*, vol. LXIV, no. 5, 1985-2021

Bell, S. 2001. The role of the state and the hierarchy of money. *Cambridge Journal of Economics,* vol. 25, no. 25, 149-163

Bellofiore, R. 2005. Monetary economics after Wicksell: alternative perspectives within the theory of monetary circuit. *The Monetary Theory of Production: Tradition and Perspectives,* Fontana, G. and Realfonzo, R. (eds), Palgrave MacMillan.

Bellofiore, R. 2016. "The Monetary Aspects of the Capitalist Process in the Marxi. A re-reading Investigation from the Point of View of the Theory of the Monetary Circuit". Presented at conferences. Url: https://www.mtholyoke.edu/courses/fmoseley/conference/BELLOFIORE1.pdf

Bernanke, B.S., Bertaut, C. DeMarco, L.P., and Kamin, S. 2011. International Capital Flows and the Returns to Safe Assets in the United States, 2003–2007, *Board. of Governors of the Federal Reserve System. International Finance Discussion Papers*, no. 1014

Black, J. 2003, *Oxford Dictionary of Economics*. Oxford University Press

Botta, A., Caverzasi, E., Tori, D. 2015. Financial-Read Side Interactions in an Extended Monetary Circuit with Shadow Banking: Loving or Dangeous Hugs?, *International Journal of Political Economy*, vol. 44, no. 3, 196-227

Botta, A., Caverzasi, E., Tori, D. 2016. The macroeconomics of shadow banking, *Greenwich Papers in Political Economy*

Canuto, O. 2014. The Commodity Super Cycle: Is This Time Different?, *Poverty Reduction and Economic Management (Prem.) Network. World Bank,* June 2014

Christophers. B., (2011). Making finance productive. *Economy and Society*, vol. 40, n. 1, 112-140

Claessens, S., Pozsar, Z, Ratnovski, L. and Singh, M. 2012. Shadow Banking: Economics and Policy, *IMF Staff Discussion Note*, SDN 12/12, December

Clews, R. Salmon, C., and Weeken, O. 2010. The Bank's money market framework, *Bank of England Quarterly Bulletin,* Q4

Copeland, M. A. 1949. Social Accounting for Money Flows. *American Accounting Association*, vol. 24, n. 3, 254-264

Copeland, A. Duffie, D., Martin, A. and McLaughlin, S. 2012. Key Mechanics of The U.S. Tri-Party Repo Market, *FRBNY Economic Policy Review*, November

Coval, J. Jurek, J. and Stafford, E. 2009. The Economics of Structured Finance, *Journal of Economic Perspectives,* vol. 23, n. 1, 3–25

Deleplace, G. and Nell, E.J., 1996. *Money in Motion – The Post Keynesian and Circulation Approaches*, MacMillan Press LTD, London

Dymski. G. 2010. Why the subprime crisis is different: a Minskyian approach, *Cambridge Journal of Economics*, vol. 34, no.2, 239–255.

Epstein, G. 2005, `Introduction: Financialization and the World Economy', In Epstein G. (ed.), *Financialization and the World Economy*, Edward Elgar, Northampton

Erten, B. and Ocampo, J.A. 2013. Super Cycles of Commodity Prices Since the Mid-Nineteenth Century, *World Development*, vol. 44, 14–30.

Financial Stability Board. 2013. *Strengthening Oversight and Regulation of Shadow Banking - Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities*, 29 August 2013.

Fontana, G. 2003. Post Keynesian Approaches to Endogenous Money: A time framework explanation,

Review of Political Economy, vol.15, n. 3, 291-314

Gabor, D. and Vestergaard, J. 2016. Towards a theory of shadow money. *Inet Research Paper.* April 2016 Url: https://www.ineteconomics.org/uploads/papers/Towards_Theory_Shadow_Money_GV_INET.pdf

Glaeser, E.L., Gyourko, J. and Saiz, A. 2008. Housing Supply and Housing Bubbles, *Journal of Urban Economics*, vol. 64, n.2, 198-217

Godley, W. and Lavoie, M. 2007. *Monetary Economics An Integrated Approach to Credit, Money, Income, Production and Wealth*. Palgrave MacMillan, New York

Goodfriend, M. 2007. How the World Achieved Consensus on Monetary Policy, *Journal of Economic Perspectives*, vol. 21, no. 4, 47-68

Gorton, G.B. 2010. *Slapped by the invisible hand. The panic of 2007*, Oxford University Press, New York

Gorton, G.B. and Metrick, A. 2010. Regulating the shadow banking system*, Brookings Papers on Economic Activity*, 261 – 312

Gorton, G.B. and Metrick, A. 2012. Securitized Banking and the Run on Repo, *Journal of Financial Economics,* vol. 104, no.3, 425–451

Gorton, G.B. 2016. The History and Economics of Safe Assets, *NBER Working Paper Series*. W.P. 22210, April. Url: http://www.nber.org/papers/w22210.pdf

Hewitson, G. 1995. Post-Keynesian Monetary Theory: Some Issues, *Journal of Economic Surveys*, vol. 9, no. 3, 285–310.

Hicks, J. 1974. *The Crisis in Keynesian Economics*, Basil Blackwell, Oxford

ICMA. 2013. Frequently Asked Questions on Repo. *International Capital Market Association (ICMA).* Downloaded the 25/01/2017. URL:///Users/GegeCaver/Downloads/Repo-FAQs-4-December-2015.pdf

Kaldor, N. 1970. *The new monetarism*. Lloyds Bank Review, no. 97, 1-18

Kaldor, N. 1985. *The scourge of monetarism*. Oxford University Press

Kaldor, N., 1939. Speculation and Economic Instability, *The Review of Economic Studies*, vol. 7, n.1, 1-27

Keynes, J.M. 1930. *A Treatise on Money*, Vol. 2, Macmillan, London

Keynes, J.M. 1936. *The General Theory of Employment, Interest and Money*, Macmillan, London

Keynes, J.M. 1973a [1937] A monetary theory of production, in Keynes, J.M. *The Collected Writings*

London, Macmillan, vol. XIII

Keynes, J.M. 1973b [1937] Alternative Theories of the rate of interest, in Keynes, J.M. *The Collected Writings* London, Macmillan, vol. XIV

Kregel, J. 2009. Minsky's Cushions of Safety, Systemic Risk and the Crisis in the U.S. Subprime Mortgage Market, *The Levy Economics Institute of Bard College Public Policy Brief*, no. 93

Lavoie, M. 1985. Credit And Money: Overdraft Economies, And Post-Keynesian Economics, *Money And Macro Policy,* Jarsulic, M. (ed.), Springer Science, New York

Lavoie, M. 1992. *Foundations of Post-Keynesian Economic Analysis*. Edward Elgar, Northampton

Lavoie, M. 1996. Horizontalism, Structuralism, Liquidity Preference and the Principle the Increasing Risk, *Scottish Journal of Political Economy*, vol. 43, no. 3, 275-300

Lavoie, M. 2006. Endogenous money: accommodationist, *A Handbook of Alternative Monetary Economics*, Arestis, P., Sawyer, M. (eds.), Edward Elgar, Northampton

Lavoie, M. 2010. Changes in Central Bank Procedures During the Subprime Crisis and Their Repercussions on Monetary Theory, *International Journal of Political Economy*, vol. 39, no. 3, 3–23

Lavoie, M. 2015. *Post Keynesian Economics - New Foundations*, Edward Elgar, Northampton

Lawson, T. 1994. A Realist Theory for Economics, *New Direction in Economics Methodology*, Roger E. Backhouse (ed.) Routledge, London

Lawson, T. 2005. The Nature of Heterodox Economics, *Cambridge Journal of Economics*, vol. 30, n. 4, 484-505

Lawson, T. 2016. Social positioning and the nature of money, *Cambridge Journal of Economics*, vol. 40, n.4, 961–996

Lysandrou, P. 2005. Globalisation as Commodification, *Cambridge Journal of Economics*, vol.29, n.5, 769-797

Marx, K. 1981. *Capital: Volume 3*, Penguin Books, London

McCulley, P. 2007. *Teton Reflections*, PIMCO Global Central Bank Focus

McCulley, P. 2009. The Shadow Banking System and Hyman Minsky's Economic Journey, *Global Central Focus*, Pimco

McLeay, M., Radia, A., and Thomas. R..2014. Money creation in the modern economy. *Bank of England Quarterly Bulletin*, Q1

Mehrling. P. 2012. The inherent hierarchy of money. *Social Fairness and Economics: Economic essays*

in the spirit of Duncan Foley, Taylor, L., Rezai, A., Michl, T. (eds.*),* Routledge, New York

Michell, J. 2016. Do shadow banks create money? 'Financialisation' and the monetary circuit, Post Keynesian Economics Study Group (PKSG), Working Papers PKWP1605

Minsky, H.P. 1975. *John Maynard Keynes*, Columbia University Press, New York

Moore, B.J. 1988. *Horizontalists and Verticalists: The Macroeconomics of Credit Money*, Cambridge University Press, Cambridge

B.J. Noeth and R. Sengupta, 2011. Is Shadow Banking Really Banking?, *The Regional Economist*, Federal Reserve Bank of St. Louis

Olso, P. 2012. Regulation's Role in Bank Changes, *FRBNY Economic Policy Review*, n. 13

Palley, T.I. 2013. Horizontalists, verticalists, and structuralists: the theory of endogenous money reassessed, *Review of Keynesian Economics*, vol. 1, n.4, 406-424

Parguez, A. and Seccareccia, M. 2000. The credit theory of money: the monetary theory approach, *What is Money?*, Smithin , J.(ed.), Routledge, London and New York

Pozsar, Z., Ashcraft, A., Adrian, T., and Boesky, H. 2013. Shadow banking, *FRBNY Economic Policy Review*

Robinson, J. 1956. *The Accumulation of Capital*, Macmillan, London

Rochon, L.P. 2001. Horizontalism: setting the record straight, *Credit, Interest Rates and the Open Economy,* Rochon, L.P., and Vernengo, M. (eds.), Edward Elgar, Northampton

Rochon, L.P., 1999 *Credit, Money and Production: An Alternative Post-Keynesian Approach*, Edward Elgar, Northampton

Rochon, L.P. and Rossi, S. 2013. Endogenous money: the evolutionary versus revolutionary views, *Review of Keynesian Economics*, vol.1, n. 2, 210–229

Rochon, L. P. 2013. On money and Endogenous money: Post Keynesian and Circulation approach, *Modern Theories of Money*, Rochon, L.P. and Rossi, S. (eds.), Edward Elgar, Northampton

Rule, G. 2015. Understanding the central bank balance sheet. *Bank of England. Centre for Central Banking Studies, Handbook*, no. 32.

Sawyer, S. 2003. Money Means of Payment or store of wealth?, *Modern Theories of Money*, Rochon, L.P. and Rossi, S. (eds.), Edward Elgar, Northampton

Sawyer, S. 2014. What Is Financialization?, *International Journal of Political Economy*, vol. 42, no. 4, 5–18.

Schumpeter, J.A. 2016. Bank Credit and the "Creation" of Deposits, *Accounting, Economics, and Law: A Convivium*, De Gruyter, vol. 6, no. 2, 151-159

Shiller, R.J. 2015. *Irrational Exuberance.* Princeton University Press, New Jersey

Sheard, P. 2013. Repeat after me: Banks cannot and do not "lend out" reserves, *Standard and Poor's, Economic Research*

Singh, M. 2011. Velocity of Pledged Collateral: Analysis and Implications. *IMF Working Papers,* WP/11/256

Singh, M. and Aitken, J. 2010. The (sizable) Role of Rehypothecation in the Shadow Banking System, *IMF Working Paper*, WP/10/172

Singh, M. and Stella, P. 2012. Money and Collateral, *IMF Working Papers,* WP/12/95

Stigum, M. 2007. *Stigum's Money Market*. Fourth Edition. Ill; McGraw Hill, New York

Stone, R. 1947. Measurement of National Income and the Construction of Social Accountss, *Studies and Reports on Statistical Methods,* no. 7

Taylor J.B. 2009. *Getting Off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis*, Hoover Press, Stanford

Wray, L.R. 1998. *Understanding Modern Money: The Key to Full Employment and Price Stability*, Edward Elgar, Northampton

Footnotes

[1] Argitis and Pitelis (2001) analyse how historically high interest rates as induced by restrictive anti-inflation monetary policies in the USA and the UK since late 1970s may have created a rentier-friendly environment by changing income distribution in favour of *financial* capital with respect to industrial capital and wage income.

[2] We want to stress that a deep understanding of this phenomenon is important not only for a purely cognitive point of view. Rather, it is a necessary condition to develop and inform effective regulatory policies for the financial market. In fact, the study of monetary policy and the behaviour of money cannot be analysed without referring to the current monetary institutions (Davidson, 1972). Specifically, PK monetary theory relies on an accurate analysis of the functioning of the monetary systems, since realism is a defining future of all PK economic paradigm.

[3] The definition used by the Financial Stability Board, encloses both the approaches "The 'shadow banking system' can broadly be described as 'credit intermediation involving entities and activities' (fully or partially) outside the regular banking system." (FSB, 2013:ii).

[4] For a thorough and weak form of quantity theoretical analysis departs as the latter considers money as being neutral only in the long, while both identify in the money supply the main instrument of monetary policy (see Fontana 2007).

[5] For a thorough analysis, see Rochon (1999).

[6] The lack of details on the matter leaves space for the application in their DSGE models of alternative monetary approach as in the (very rare) case of Kumhof (2015).

[7] In non-standard (i.e. Q.E.) times high power money is injected in the system by monetary authorities but without a creditworthy borrower and a bank willing to lend it does not translate into a higher money supply.

[8] The relation between interest rate and money supply has been the centre of a prolonged debate between PK scholars, the details of which are beyond the aim of this paper (see Moore 1988, Lavoie 1996, Rochon 2001, Fontana 2003, Palley 2013 among many others).

[9] For sake of simplicity in the graphs in this section we simplified the approach of the FED, which identifies 27 sectors within the financial system. For instance, in Figure 1 we merged Pension Funds, Mutual Funds, Closed-end funds, and Exchange-traded funds into a single sector Investment Funds.

[10] The exemption is the result of a 1984 decision of the Congress, recommended by Volcker (Olso 2012).

[11] A further simplification of the social accounting reported in the tables is the inclusion of MBS among liabilities. Passing through securities is not an obligation of the originator.

[12] For a detailed explanation of securitization, see Coval et al. (2009), while for an explanation of their macroeconomic effects see Botta et al. (2016).

[13] Palley (2013, p.26) quotes Bernstein and Shierholz (2009), and stresses that "in 1979 the income of the top 5 per cent of families was 11.4 times the income of the bottom 20 per cent of families. By 2006 this ratio had risen to 21.5 times".

[14] Interestingly enough, following Palley (2013), a significant part of the increase in overall debt is due to the astonishing

rise of financial sector's own debt.

[15] In its original Marxian acceptation, the commodification of capital was referred to the stock of wealth lent by the capitalists instead of being used in industrial production. Combining the two concepts we could say that through securitization financial relations are commodified and transformed into a claim on money to be purchased by those willing to commodify the capital they own in money form.

[16] On this issue see Gorton (2016), as well as numerous contributions by Singh (e.g. Singh and Stella, 2012).

[17] On the macro-paradoxes in PK literature see Lavoie (2015, ch.1).

[18] Different kinds of repos have different timing, hence allowing to extend the duration of the loan, through revolving, reverse repos and rehypotecation.

Figures

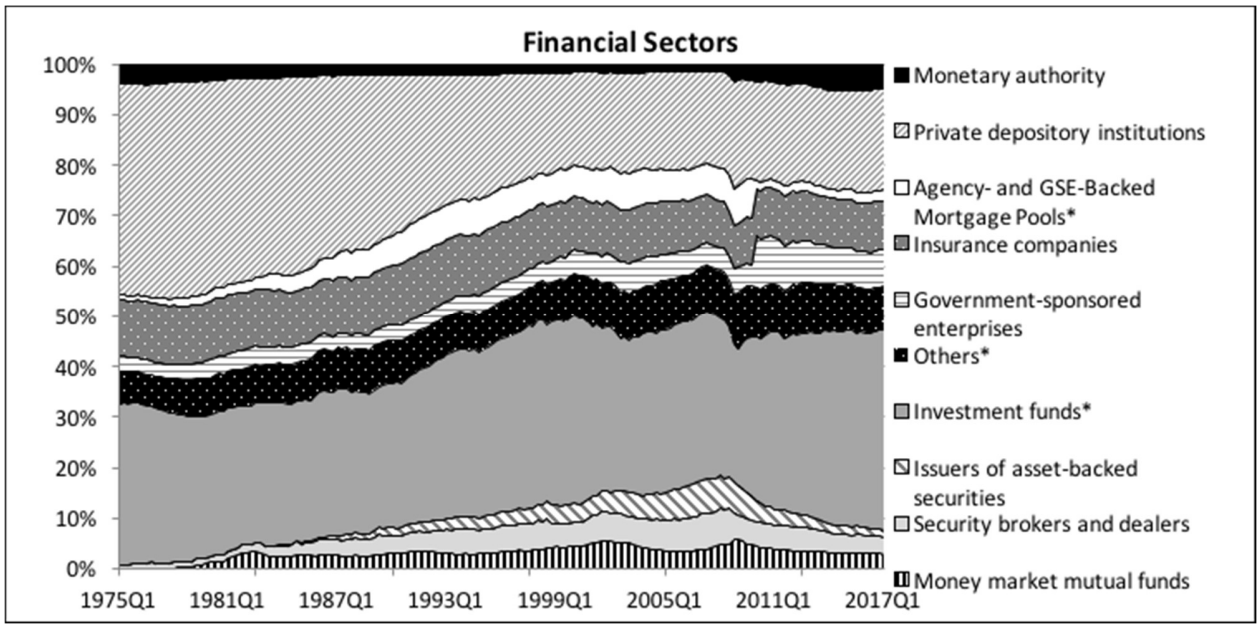
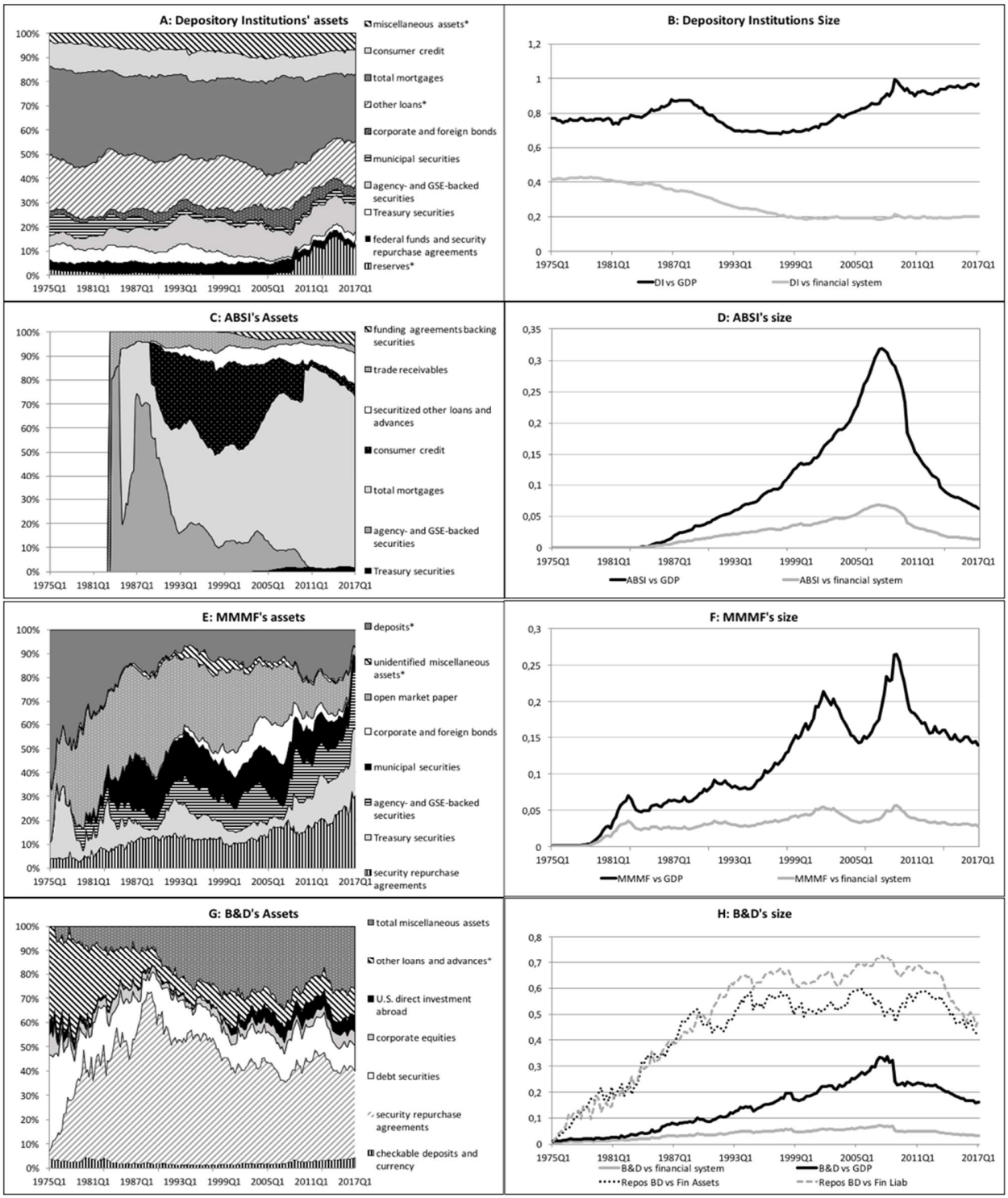


Figure 1 – Assets' share of the US Financial system's sectors (source FED Z.1 and, with asterisk, authors computation)



Source: FED Z.1, authors computation and, with asterisk, authors' computation.

Figure 2 – A to H: Assets and size - relative to GDP and the whole financial sector – of Depository Institutions (A,B); Asset Backed Security Issuers (C, D); Money Market Mutual Funds (E,F); Brokers and Dealers (H). Figure 2.H dotted lines: repos held by brokers and dealers as asset (black) and liability (grey) with respect to those held by the whole financial system.

Tables

T1										
	HOUSEHOLDS		**BANKS**		**SPV**		**B&D**		**MMMF**	
	assets	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**
Deposits	**+D_H**			**+D**						
Loans		**+M**	**+M**							
T2										
	HOUSEHOLDS		**BANKS**		**SPV**		**B&D**		**MMMF**	
	assets	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**
Deposits	**D_H**			**-D**	**-D_S**					
Loans		**M**	**M-ßM**		**+ßM**					
T3										
	HOUSEHOLDS		**BANKS**		**SPV**		**B&D**		**MMMF**	
	assets	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**
Deposits	**-D**			**D**	**D**		**D**		**+D**	
Loans		**M**	**M-ßM**		**ßM**					
Shares	**+S**									**+S**
Repos			**+repos**					**+repos**	**+repos**	
Securities						**-MBS**	**+MBS**			
T4										
	HOUSEHOLDS		**BANKS**		**SPV**		**B&D**		**MMMF**	
	assets	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**	**assets**	**liabilities**
Deposits	**D**			**D**	**D**		**+D**		**-D**	
Loans		**M**	**M-ßM**		**ßM**					
Repos				**repos**				**repos**		
Securities						**MBS**	**MBS**			
Shares	**S**									**S**
Deriv								**-Deriv**	**+Deriv**	

Table 1 – An example of securitization.