The art of leverage. A study of bank power, money-making and debt finance

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Abstract

There are two main theories of banking which seem to be incompatible by nature. According to the first, banks intermediate money through their credit infrastructure but are not themselves able to create new money. By contrast, the second argues that banks *do* create money out of nothing in the process of lending their credit. Significantly, despite their contrasts, both theories conceptualise banking in functionalist terms as the financing of other people's indebtedness. In so doing, they relegate to the side-lines the fact that banks are in the business first and foremost to 'make money' for themselves as they leverage their unique market position as dealers of other people's debts. The article thus investigates the phenomenon of modern banking as the art of leverage. After showing the specificity of bank leverage relative to other forms of leverage across society, it delineates the fundamentals of a political economy of banking, money-making and debt finance. Finally, the article turns to an analysis of how contemporary banks make money and at once weave the infrastructure of financial markets through leverage-enhancing techniques rooted in repurchase agreements.

Keywords

Banking Theory; Leverage; Money-Making; Debt Finance; Repos;.

JEL classifications: E02; E44; F3; G2; N20;.

1. INTRODUCTION: BANKING IN THEORY

What do banks do? How do they *make money* (in the twofold sense of both 'producing liquidity' and 'making profits')? Are banks neutral intermediaries – the middlemen of global finance – or do they take a distinct, *net* position in today's struggles between creditors and debtors? Ultimately, how do they wield power? Significantly, IPE offers no distinctive answer to these and other important questions about theory and practice of banking. The general tendency is to go along with economics and adopt an implicitly functionalist stance whereby both agency and purpose of banks are largely justified in terms of their capacity to finance *others*. In many cases, bank power is either assumed or assumed away, leaving no more than an impression on a field of inquiry that is dominated by two purely economic paradigms: the orthodox and the heterodox. The two stand against each other, as seemingly impermeable and ontologically incompatible theories, and yet they converge on some fundamental propositions that altogether contribute to delivering the current image of banking as *a function of other people's finance*.

According to the former position, banks intermediate money through their credit infrastructure but are not themselves able to create money *ex nihilo*. Its fundamental proposition is that 'deposits make loans': the total amount of monetary savings held in deposit by banks must necessarily pose a physical limit to the total quantity of money that they can raise for loans. The supply of 'loanable funds' can be elastically expanded thanks to the 'fractional reserve mechanism' and the 'money multiplier' (for a critique, cf. Sgambati 2016; Bianco and Sardoni 2017). However, as in a peculiar conservation law of finance, through banking no money is truly created or destroyed: instead, all money is transformed from one's saving (credit) into another's investment (debt), and banks only serve the function of equilibrating the supply and demand for monetary funds and clearing the market gap between borrowers and savers – the principal agents of finance.

By contrast, the heterodox position contends that banks genuinely create money out of nothing in the endogenous process of making loans. The core assumption is that 'loans make deposits' and not vice versa. Indeed, each loan by a bank implies the instantaneous creation of money in the form of a deposit at another bank – money is simultaneously debited *and* credited, so that at any point in time "for the banking system as a whole, total loans equal total deposits" (Moore 2003: 120). Far from being a necessary precondition to bank lending, the act of saving is its logical consequence: "saving is the accounting record of investment" (Moore 2006: 156). Alas, the heterodox understanding of banking similarly lends itself to functionalist interpretations of bank agency, such as the idea that

banks could create money by keystrokes and in whatever quantities they deem sufficient to accommodate the general, market-driven demand for credit[1].

More generally, despite moving from opposite premises, both orthodox and heterodox views converge on the following points. First, they understand bank profits as the by-product of lending money at interest. Second, they frame bank lending as originally (both logically and historically) a form of productive credit to firms and/or consumptive credit to households. Thirdly and related to the previous point, they give scarce consideration to the fact "that a significant portion of credit is created to finance purchases of financial assets" (Dow 2006: 44), thus relegating to the side-lines the question of how money and banking bear upon speculation in financial markets. The latter is usually intended either as an irrational outgrowth (in the orthodox story), or as the inescapable feature of a fundamentally unstable financial system (in the heterodox story). Either way, banks appear to enjoy little or no agency relative to market forces and investor sentiments – the "animal spirits" driving finance out of equilibrium.

1.1. The myth of the bank-market dualism

The theoretical debate on whether banks intermediate or create money (with its structural-functionalist undertones and idiosyncrasies about the nature of money, banking and speculation) is in turn compounded by the question of how banks and financial markets relate with one another. Until recently, the predominant position in economic sociology and financial theory was drawn upon Zysman's (1983) seminal work on varieties of capitalism. Zysman retained the orthodox view of banking as intermediation (Hardie *et al* 2013: 699) and understood the bank-market relationship as a dichotomy and a zero-sum game: more banking equals less financial markets and vice versa (Christophers 2015). Following Zysman, scholars have begun to distinguish between respectively 'bank-based' and 'market-based' financial systems. The former are non-competitive (qua

[1] Indeed, endogenous money theory assumes the existence of "a market mechanism that induces banks to supply just the amount of money that the public wants to hold" (Glasner 1992: 869; see also Lavoie 1999; Le Maux 2012). If money is supplied in excess, the private sector will get rid of it by either paying off its debts to, or by purchasing securities from, the banking system. In any event, excess money will be destroyed as a result of its flowing back to the banking system (Lavoie 1999: 111). This means that while "[o]n a theoretical level, the banking system could create money endlessly" (Realfonzo 2003: 62), on a practical level, due to a structural market imperative, the banking system is compelled to generate money *ex nihilo* until the demand for credit is saturated. In the end "*only desired money can exist*" (Le Bourva, quoted in Lavoie 1999: 109).

oligopolistic) in nature, based on personal ties and long-term credit relationships between banks and their borrowers. Here banks retain the power to influence prices (starting from the price of money) and allocate capital on a long-term basis, thus acting 'patiently' as a bulwark against market pressures. By contrast, market-based systems are highly competitive and based on arm's length financial relations: in this case banks have lost their capacity to price money and allocate capital, and are subject to market pressures coming from 'impatient' shareholders and institutional investors, which banks transmit to their borrowers (Engelen *et al* 2011: 102).

In recent years, critics of the varieties of capitalism approach have rightfully pointed out how the analytical distinction between bank-based and market-based financial systems no longer holds in the age of shadow banking (Hardie *et al* 2013; see also Erturk and Solari 2007; Sawyer 2014). Starting from the 1980s, all economies have converged towards the market-based, neoliberal regime. Rather than constituting a 'variety' of capitalism, the latter represents the culmination of an evolutionary process marking a secular transition from traditional banking, based on the classic 'originate-and-hold' model, to contemporary globalised banking, based on the 'originate-and-distribute' template of securitisation. Today all financial systems rely on growingly deeper and globally integrated financial markets, with Wall Street as their epicentre (Gowan 2009), and both banks and their borrowers have come to rely on myriads of 'functionless investors' funding financial markets.

However, pace the varieties of capitalism approach, the growth of market-based finance has not spelled the downscaling of banks and their disintermediation in favour of markets. On the contrary, more markets have gone hand in hand with *more* banking (Christophers 2015). Since the 1980s, banks have grown in size and increasingly diversified their activities (also due to bank mergers and acquisitions). Today banking encompasses asset management, securities dealing, brokerage and proprietary trading – namely a set of practices that do not so easily lend themselves to conventional economic theories (with their implicit bias towards retail and commercial banking), and which depart in many ways from the ideal-type of investment banking (with its emphasis on M&A, underwriting and other services offered to non-financial corporations) *since they involve the provision of liquidity services to other financial corporations* (the money-manager complex, see section 3).

More puzzlingly, bank profits are less and less derived from the interest component of income (Erturk and Solari 2007; Engelen *et al* 2011). Return on assets (ROA) – a proxy measure of the profitability of bank loans and an indicator of the relevance of interest-based payments to banks – has been meagre and steadily declined, especially starting from the mid-2000s, offset by return on equity (ROE) – a proxy measure of bank leverage. The latter reached above a record 25 percent for some investment banks before the crisis (Engelen *et al* 2011: 98). In general, despite a progressive disengagement from

canonical interest-earning activities, banks saw their profits grow significantly, especially between 2002 and 2006. Over this period, in the United States commercial banks averaged aggregate net income of about 50 percent (and this is without taking into account off-balance-sheet activities). However, the great bulk of money was made by the largest U.S. investment banks, with Bank of America and JP Morgan Chase averaging respectively 129 percent and 243 percent increase in net income (Schleifer and Vishny 2010: 316).

1.2. Market-*based* banking or market-*driven* banking?

Although scholars recognise that in the contemporary financial ecology the banks' capacity to supply liquidity to the system, *as well as their ability to make money for themselves*, relies less and less on the 'core' service of money-lending, and more on (allegedly) 'non-core' services of asset management, securities dealing and proprietary trading, and while they register that in the age of market-based finance banking has become all the more central to the financing of positions in capital markets, they are still reluctant to attribute autonomous agency and power to banks. The latter might be flooding markets with ever-growing liquidity and yet, in most cases, they are still conceptualised in mainstream terms as intermediaries – the middlemen rather than the principal agents of global finance.

Paradoxically, this view of banks as mere go-betweens especially applies to investment banking, despite the fact that in the last quarter century the latter has become heavily involved with proprietary trading – what Engelen *et al* (2011: 124) have caustically termed "banking for itself". With the exception of a few (e.g. Nersysian and Dantas 2017), heterodox proponents of endogenous money theory still hesitate to assign money-creating power to investment banks, or anyway to banks that do not lend money directly for productive and/or consumptive purposes. From a post-Keynesian perspective, investment banks are understood as facilitators of what Graziani and Davidson termed respectively 'final finance' and 'investment funding' (cf. Lavoie 2006: 67) – all in all, the provision of services (such as underwriting and M&As advising) to non-financial corporations (NFCs) that wish to finance their activities by issuing bonds or equities to be traded in capital markets.

With the financialisation of NFCs and the consolidation of shareholder-value principles of corporate management (Lazonick and O'Sullivan 2000; Krippner 2005; Knafo and Dutta 2016), final finance is said to have become part and parcel of a "dysfunctional rentier outgrowth" (Mitchell 2016: 8) fuelled by shadow banking: it is today a transaction fee-based, money-making machine for investment

banks *et alia* which in large part "involves the trading of already existing credit claims" (Mitchell 2016: 9). More importantly, the (dysfunctional) 'final finance' offered by investment banks is understood as logically posterior and subordinate to (functional) 'initial finance', namely "the power of commercial banks to endogenously create loans and deposits" (Mitchell 2016: 9). Ultimately, it is commercial banks that take *net* positions and originate ex-nihilo money – yesterday to finance production, today to finance consumption. Investment banks, by contrast, cannot create additional money claims but only transfer existing surpluses from retail and institutional investors to firms in need of market-based financing.

In general, global market-based banks are represented as lacking power. Hardie *et al* (2013: 712; 720), for instance, see securitisation as a sign of the secular decline of banks' financial power relative to market forces. Supposedly, financial power got dispersed in the 'daisy chain' of bank and non-bank financial intermediaries that ought to borrow from retail and institutional investors in order to fund their liquidity transformation processes and 'lend' (cf. Claessens *et al* 2012). The subtext is that the ability of global banks to function as a platform for 'capital market lending' is constrained by their capacity to tap on already-existing 'money market funding' provided by institutional investors – the ultimate creditors of global finance. Accordingly, global banks are caught between the rock of a purely speculative demand for liquidity by hedge funds *et similia* (the broader constellation of levered-up asset managers), and the hard place of a growingly impatient supply of 'funding liquidity'[2] by money market funds and other institutional cash pools (Pozsar 2014; 2015).

The bottom line is that global banks might be making money, yet their agency is inexorably nullified by a peculiar version of Say's Law: an iron law of financial markets whereby the funding liquidity that is globally supplied by institutional investors determines (the price and volume of) the liquidity generated locally by banks to meet the demand of their borrowers. The circle is now complete and we are back to the functionalist view of banks as go-betweens – intermediating funds from savers to borrowers (Claessens *et al* 2012: 4) – updated to the age of market-based finance.

And yet, global banks should be able to wield considerable power these days, considering the fact that they *make* the very markets they are supposed to be subject to (cf. Mehrling 2010; Mehrling *et al* 2013; Christophers 2015; Nersysian and Dantas 2017). 'Primary dealers', for instance, are committed to both buying and selling government securities as a way to generate liquid markets for them. In the process, they leverage their privileged position as the exclusive dealers of sought-after

[2] Brunnermeier and Pedersen (2008) distinguish between 'market liquidity' and 'funding liquidity'. The former represents the ease with which traders can trade whereas the latter corresponds to the ease with which traders can obtain funding. Global banks that deal in debts in financial markets at large fund their liquidity via the money market.

sovereign collaterals (cf. Gabor and Ban 2016). More generally, broker-dealer banks make markets in multiple financial assets, and these markets "are seldom anonymous or perfectly competitive; they are more often institutionally concentrated and hierarchical" (Chistophers 2015: 86). Crucially, the bank praxis of 'making markets' casts a long shadow not only on the varieties of capitalism heuristics, but also on the very analytical separation between banks and markets (Christophers 2015). To recast Keynes' (1930: 5) famous metaphor, in their capacity as market-makers, banks claim the right to enforce and write the dictionary of financial markets: they are by far the most powerful "market force", articulating the very infrastructure on which financial markets operate.

While this study does not neglect the existence of pressures and demands coming from various financial agents (money managers and investors), its purpose is to shed light on the autonomous agency and power of banks. This power, it is argued, is ultimately drawn upon the banks' ability to *fund their own indebtedness* in view of making money for themselves – the financing and refinancing of others being a means to this end. What banks normally do to increment their power is captured by a single, resounding word: *leverage*. To expand their liquidity provision services and renew the daily miracle of multiplying money for themselves as well as for others, banks must systematically and sustainably leverage their market position so as to acquire those raw materials of debt upon which they can establish their financial dominions (and build empires). They way banks leverage, however, defies common sense and a leap of imagination is required to grasp it. We know that leverage involves taking "a position in an asset without having to provide all or any funds for the position" (Nersysian and Dantas 2017: 291): in practice, it involves buying stuff with *borrowed* money. And yet banks leverage not when they borrow money but as they *lend* it! This paradox is the subject of the next section.

2. BANKING IN PRACTICE: LEVERAGE

In finance, the word 'leverage' describes the ability to borrow, not primarily in order to settle obligations, but in view of making investments in financial markets. As a manifestation of the desire to borrow to invest (rather than strictly to pay), leverage is an inherently speculative practice insofar as it meddles with the future. As such, leverage is not for everyone, for it requires knowledge, precision, timing and – what's more important – capital. The latter attribute is perhaps what best explains the difference between a debtor who owns nothing but her own ability to work, and who therefore earns not enough money but ought to borrow to pay for her expenditures, and a debtor who

on the contrary needs not borrowing, but chooses to do so on expectation to add more money to her capital "from knowing better than the market what the future will bring forth" (Keynes 1936: 170). The act of leveraging is therefore entangled with the existence of organised markets (for both commodities and money). Indeed, when we borrow to invest in a certain asset, we are not simply playing the odds and making a bet on the future profitability derived from the ownership of that asset. Instead, we are leveraging our position in a specific market, thus magnifying in a more or less conscientious manner our power to affect the market itself. In other words, when we leverage we *gear* the market towards meeting our expectations.

Significantly, the notion of leverage allows us to historicise the peculiar character of debt in modern times. For much of the history of civilisation, debtors would either throng to the bottom of social hierarchies (as bonded labour) or sit on top of them (as kings). Either way, being in debt was for them a social burden – the foremost economic symptom of 'not having' or 'lacking' sufficient political power. By contrast, starting from the modern era, being in debt has progressively become a basic rule for enabling one's agency in society and an instrument of emancipation that has gone hand in hand with the historical development of financial markets for all sorts of debts (commercial, public, corporate, household). The notion of leverage captures this radical transformation in the significance of debt as a "technology of power" (Di Muzio and Robbins 2016). Once framed as leverage, debt stops bearing its negative connotation and becomes a "dynamic, productive force" with "an indisputably positive aura, suggesting quite literally a means of transformation and a way to maximise opportunities" (Allon 2015: 687-8). Leverage thus redefines debt as a positive technology of power: a social relation that, rather than enabling a despotic, disciplinary control over debtors, can actually empower them in their struggles and negotiations with creditors by activating their power to affect prices and markets through levered-up investments.

Curiously, when searching for practical examples of leverage in textbooks, one often finds the story of a mortgagee who borrows from a bank to buy real estate, possibly amidst a housing bubble (e.g. see Admati and Hellwig 2013). Leverage is portrayed as a method by which individual borrowers can obtain liquidity from banks. And yet, in practice, leverage is usually neither a *una tantum* activity, such as getting a mortgage, nor an *individual* practice. Instead, it is a painstakingly professional, highly sophisticated and well-organised practice involving numerous parties. Only rarely will the successful Wall Street leverager be an occasional gambler moved by 'animal spirits'. Most likely, she will be a professional 'money manager' (Wray 2009) working in the asset management industry, driven by a relentless and systematic effort at making money, based on a cold calculation and valuation of risk.

The point is that while leverage involves making money 'out of debt', rather than 'out of labour', it nevertheless requires both technique, organisation, and time in order to pay off. And so, when we think about it, rather than the once-in-a-lifetime mortgagee who is rather passively caught in the eye of a housing bubble, we should consider the hedge fund whose job is to administer on a daily basis large volumes of money from different sources in view of generating capital gains for its distinguished clients. Unlike a mortgagee, the hedge fund is born with the mission to leverage its position, affect prices and move markets (Erturk *et al* 2010; Ben-David *et al* 2013), possibly contributing to setting up the very bubble the mortgagee gets caught in (this argument will be put forward in section 3.2).

However, an even better example of a highly leveraged agency is provided by banks. Normally portrayed as financial intermediaries and enablers of other people's leverage, banks are in fact masters of leverage. According to Stefan Ingves (2014), former chairman of the Basel Committee on Banking Supervision (BCBS), "[b]anking is all about leverage". To one's great perplexity, banks' capacity to lever is unparalleled. Unlike banks, most economic agents (households, non-financial corporations, governments and even hedge funds) ought to rely on far greater margins of capital to finance their activities and sustain 'balanced' levels of leverage, funding their assets around 50:50 with debt and equity. By contrast, "in banking, a more common ratio is 95:5 (and that can be before off-balance sheet exposures are taken into account" (Ingves 2014: 2). In other words, banks are able to expand their monetary liabilities (or claims) almost *ad infinitum* whilst relying on a ridiculously small amount of capital to back them up. As Mackenzie (2013: 7) explains, it is perfectly possible for a bank to fully comply with Basel III whilst having a ratio of regulatory capital to total assets of less than 5 per cent – which is another way to say that banks are uniquely able to leverage *out of all proportions*.

2.1. The specialty of banks

How is it possible that banks are able to leverage *beyond reason*, with ratios that settle very comfortably around 15 or more (cf. Kalemli-Ozcan *et al* 2012)? Why are they so 'special'? A clue to answer lies in the fact that banks lever according to a different logic relative to everybody else. According to a well-established literature (e.g. Adrian and Shin 2010; Schleifer and Vishny 2010; Kalemli-Ozcan *et al* 2012; Brummitt *et al* 2014), leverage is always *pro-cyclical* for banks whereas it is *counter-cyclical* for the rest of society. This means that when the prices of assets go up, everybody's leverage ratios go down, *except for banks*. This is because banks, in contrast to

everybody else, "aggressively expand their balance sheets and debt levels when asset prices are rising" and "contract balance sheets when asset prices are declining" (Brummitt *et al* 2014:1).

The pro-cyclicality of bank leverage is a consequence of the fact that *banks leverage their positions, not when they take deposits, but as they make loans* – something they predominantly do upon the surety of debtor's collateral. Significantly, as banks collectively engage in asset collateralising loans, not only do they increase their leverage, but they are also likely to inflate the price of collateral assets against which they lend (Werner 2005: 228; Fostel and Geanakoplos 2008). Reciprocally, when (collateral) asset prices fall, banks are most certainly bound to face liquidity problems as some of their risky borrowers may become insolvent. Depending on the severity of their liquidity problems, banks may become risk averse and seek to reduce their debt exposure to the point where they might even stop lending to each other – whence the pro-cyclical, magnifying nature of their leverage.

Due to its pro-cyclical and disproportionate nature, bank leverage can be extremely destabilising. Minsky, who understood banks as prototypical speculative organisations (Minsky 1986: 231)[3], argued that "[t]he leverage ratio of banks and the import of speculative and Ponzi financing in the economy are two sides of a coin" (Minsky 1986: 265). This is because banking involves routine "balance-sheet adventuring" (cf. Minsky 1986: 48): as banks carry out their loans, they are bound to take net positions in other people's debt that *at any point in time* are not immediately matched by incoming cash flows. Because of this fundamental dissymmetry in the time-structure of their balance sheets, banks are plagued by a structural *liquidity problem* consisting of daily cash-flow deficiencies, the magnitude of which is directly proportioned to their "willingness to lever or debt-finance positions in inherited capital assets, financial assets, and newly produced capital assets" (Minsky 1986: 208)[4].

At the most basic level, banks' cash-flow deficiencies are funded by attracting deposits. In turn, when the primary channel of deposit-taking becomes too expensive or is no longer available, banks may be forced to pledge, lend or sell assets to other banks or to genuine 'buyside' investors. This backup financing strategy is known as 'liability management'. Significantly, the funding liquidity channels offered by interbank credit and money markets are only "proximate lenders of last resort" (cf. Minsky

[3] On the speculative nature of bank leverage see also Konings (2018: 13-21; 75-83).

[4] Minsky (1986) used the terms 'debt finance' and 'speculative finance' as synonyms with leverage. For him, speculation had nothing to do with the quality of investments - namely whether money is channelled towards industry, consumption or financial markets. Rather, he understood speculation as the practice of financing investments through debt, therefore as a form of leverage that, when considered at a systemic level, is always bound to lead to "financial arrangements in which borrowing is necessary to repay debt" (Minsky 1986: 48). Following Minsky, in this study I will refer to 'speculation' as the debt financing of loans and investment (regardless of what these loans and investments are for) – an activity of which banks are the original masters. In turn, I will call professional (or active) speculators all those levered-up investors who affect prices and move markets in view of making money.

1986: 48) that cannot fully withstand the banks' overall demand for liquidity. Ultimately, banks' net liabilities ought to be financed and refinanced through "the rolling over of maturing debt" (Minsky 1986: 230) – they are discharged by yet more debt issued by the central bank[5].

To be sure, the banks' ability to valorise other people's debts with their relentless provision of liquidity makes them a most dynamic and productive force of capitalism – something "that makes it possible for us to pursue today dreams for the future that would otherwise be impossible" (Mehrling 2010: 11). However, precisely because of their inherent dynamism, banks are a most disruptive element of capitalism. Their practices are in fact a "driving force behind the privatisation of gains and the socialisation of losses, multiplying profits and bonuses in good times and multiplying losses and bailouts in bad times" (Engelen *et al* 2011: 112) – offering a 'financial fix' for structural global imbalances and capital-labour disparities (Taylor 2012; Pozsar 2014; Fernandez and Wigger 2017).

2.3. Fundamentals of a political economy of banking, money-making and debt finance

Interestingly, bank leverage has advanced to a whole new level in relatively recent years. Starting from the 1980s, we have witnessed what Taylor (2012) has termed the "Great Leveraging". Banks have been able to further increase their leverage ratios and "skirt capital requirements by using off-balance sheet investment vehicles" (Kalemli-Ozcan et al 2012: 285). Crucially, the globalisation of banking (as linked to securitisation and shadow banking) has coincided not only with a spectacular growth of bank profits, but also with a secular decoupling of bank loans from the traditional measures of 'broad money' (Taylor 2012). This decoupling has been mirrored by the explosive growth of new money market instruments – in fact, debt instruments that can be liquidated in the short term at par or quasi-par – often called 'quasi-money', 'near-money' or 'cash equivalents'. According to a growing body of literature, these instruments have come to bear monetary attributes and should be included in the lists of what counts as 'money' (Pozsar 2014; Gabor and Vestergaard 2016; Ricks 2016).

[5] Net liabilities that cannot be matched by incoming cash flows via both primary and backup funding channels are indeed recorded as debits against the central bank – the "ultimate fallback source" (Minsky 1986: 48) of funding liquidity for the banking system at large. In normal times, for every bank holding a debit against the central bank there will be another bank holding a credit against it – the central bank will thus serve primarily as a clearinghouse, keeping a record of how much banks owe to each other. Conversely, in exceptional times the central bank might be forced to expand its balance sheet and act as a *net* creditor of the banking system at large – the central bank will thus genuinely serve as the 'lender of last resort'.

While there is little doubt about the fact that shadow banking provides the main *explanans* for the Great Leveraging, it must be pointed out that banks were on a mission to leverage and expand their balance sheets *before* they became embroiled with the most recent financial innovations and bubbles. The U.S. 'flow of funds' data provided by Adrian and Shin (2010) shows that the leverage ratios of U.S. investment banks have been steadily growing between 1963 and 2006. In fact, if we exclude the stock market crash of 1987, ROE for *all* U.S. banks has been on the rise since the mid-1930s (Walter 2006: 71). More generally, scholars have stressed how equity levels of U.S. banks have been decreasing relative to total assets starting from the late nineteenth century – from 45-50 percent of total assets down to 6-8 percent or less today (Admati and Hellwig 2013: 30-1; Mackenzie 2013). This seems to suggest that well before they became officially 'market-based', and implicated with shadowy dealings in the upper layers of global finance, banks at large were already driven by a 'shareholder value' mentality that privileged ROE over ROA and aimed at growing leverage. This mentality is the *explanandum* of this study.

Alas, an extensive history of modern banking – its motives and rationalities – is beyond the scopes of this article. Its purpose is rather to shed light on the power and autonomous agency of contemporary banks through a study of how their leverage-enhancing practices increase their infrastructural capacity to make markets for debts and how this feeds into their power to make money itself. Hence, in the next section I look at contemporary banking and the global financial infrastructure it gives shape to. After providing a heuristics of the diverse pecuniary interests and agencies populating today's complex financial ecology, I examine the bank-engendered practices and processes through which cash equivalents are forged. In particular, I focus on how repos enable bank leverage and at once provide a stable interface between the capital market, where money is made by professional speculators, and the wholesale money market, where money claims are validated by institutional investors as temporary abodes of purchasing power (routinely rolled over by banks).

The analysis of contemporary banking is consistent with the following set of theoretical propositions, which altogether lay out some fundamentals of a political economy of banking, money-making and debt finance:

1. Banks make money for themselves and provide liquidity to the system at large as they leverage pro-cyclically and out of proportions. Their agency defies common sense, for banks truly borrow not when they accept deposits from savers (the ultimate creditors), but as they make loans to their borrowers and supply them with liquidity in the form of bank IOUs that trade at par.

2. Bank practices that are often categorised as 'loan-making' have very little to do with the semantics of 'money-lending' (cf. Minsky 1986: 256; 278; Werner 2005: 176). When banks make 'loans', they are in principle discounting other people's debts with their own debts. That is, banks *monetise* their own debts upon *capitalising* other people's debts (Sgambati 2016: 281-4). Hence, the liquidity they supply is not based on the classic creditor-debtor relationship but is the outcome of a swap of debts (Mehrling 2010). The latter establishes a unique relationship of *mutual indebtedness* – i.e. a debtor-debtor relationship – between banks and their borrowers (Hawtrey 1919: 9; Kim 2011; 2014; Sgambati 2016).

3. Accordingly, the banks' initiative in providing liquidity does not lie with ultimate creditors. Through banking, new money can be created without prior saving, therefore without the direct involvement of any genuine creditor whatsoever[6]. Creditors are not the original providers of money but, if anything, its final acceptors and validators. Bank money is utterly a *debtor's money*, part and parcel of a regime of 'debt finance' that is not predicated upon the final settlement of debts, but upon their funding for the time being (cf. Sgambati 2015; 2016).

4. Upon making loans, banks do not act as proxies of ultimate creditors, let alone remain neutral. On the contrary, they are impelled to protect and prioritise the interests of debtors over those of creditors, (if only) because their ability to elastically expand their balance sheet, increase their debt exposure and get their money accepted is above all linked to their debtors' solvency, hence their ability to earn money (to repay principal and service their debt). To paraphrase Palan (2015: 372), "in contrast to creditors", banks are interested in debtors "as living and growing entities that are likely to generate income in the future". Crucially, for bank borrowers to generate income and earn the money they need to stay solvent, said money ought to be produced by banks as they "*move forward in step*" (Keynes 1930: 26) with their unceasing debt financing.

5. The above is fundamentally in line with the heterodox idea that 'loans make deposits'. Having said this, while the volume of bank loans is never constrained by the volume of existing savings, bank capital and/or reserves, it is not possible for loans to occur "to which no savings corresponds" (Keynes 1936: 81). In the end, banks can only fund their indebtedness as long as their net money claims are validated as deposits. This is easier said than done, for "everyone can create money. The problem is to get it accepted" (Minsky 1986: 255). Having one's debt

[6] This strongly resonates with post-Keynesian circuitist theories of money (see Lavoie 2006; Mitchell 2016: 15).

circulated and stored as money – virtually unredeemed for the time being – involves generating and sustaining a demand for it.

6. While many accounts of banking are inclined to attribute the generalised acceptability of bank money to factors that are *beyond* bank agency[7], it is clear that banks themselves must play a crucial role in generating and sustaining the demand for loans *as well as* deposits. In particular, banks generate confidence (trust, security) in their money as they make markets for debts that at once bring forth: a) new investment opportunities for holders of bank money, thus feeding their desire to hold, borrow and/or invest money for speculative reasons[8], and b) novel strategies of liability management for banks. Indeed, it is no coincidence that, historically, the monetisation of bank debts has been mirrored by the development of lucrative markets for other people's debts (commercial, public, corporate, household debts) to which the ownership of bank money could offer exclusive access.

7. Ultimately, the significance of bank money ought to be sought in its liquidity. The latter is not simply a synonym for universal exchangeability (the medium of exchange function) but is a historically-specific relationship of exchangeability that *only* occurs between money and debt. Making money 'as we know it' involves generating liquidity which, in turn, entails *producing debts as commodities* that can be readily bought and sold in organised markets. In this respect, the ultimate concern of banks is not to ensure the solvency of debts (as liabilities) but to boost their capacity to trade and accumulate (as assets). This goes along a great tradition of financial studies that conceptualise banks as *dealers in debts* (Macleod 1866; Bagehot 1873; Hawtrey 1919; Minsky 1986; Mehrling 2000; 2010).

3. CONTEMPORARY BANKING AND ITS GLOBAL FINANCIAL INFRASTRUCTURE

[7] The most popular explanations attach paramount significance to the regulatory powers of monetary authorities, focusing for instance on their ability to generate confidence by devising deposit insurance schemes, lender of last resort facilities, regulatory frameworks for risk-taking and capital requirements (e.g. Rethel and Sinclair 2012). Others emphasise the fiscal power of the state, its ability to impose a tax liability which ultimately gives value to money (e.g. Wray 2012). Very few, however, seem to appreciate the autonomous workings of banks as 'market-makers' for both other people's debts and their own monies.

[8] In his General Theory, Keynes identifies three motives for wishing to hold money (and, reciprocally, for being willing to pay a price to borrow it): transactional, precautionary and speculative motive. Of the three, only the speculative motive is 'interest-elastic' insofar as it refers to the desire to hold money in a strategic fashion as a hedge against *fundamental uncertainty* concerning the future course of interest rates (Keynes 1936: 168). Hence Keynes primarily relates liquidity preference (the store of value function of money) to the prospect of making gains and "securing profit from knowing better than the market what the future will bring forth" (Keynes 1936: 170).

When today we talk about banks, it is not clear what we are talking about. In the paroxysm of confusion, the gap between theory and practice of banking is often filled negatively, by stressing what banking is *not*. The jargon of contemporary finance abounds of terms such as *non-bank* financial intermediaries, *non-bank* financial institutions, and even *non-bank* banks – labels that are used to refer to the ever-growing bulk of activities performed by non-licensed and/or largely unregulated banking institutions that do not take 'ordinary' deposits or make 'ordinary' loans, but preponderantly operate through markets. Ironically, according to current definitions, the largest banks on earth are somewhat *not* banks.

While this terminology is highly contestable for the semiotic blind spots that it produces, it is true that banks have been subsumed within a multi-layered infrastructure encompassing a 'daisy chain' of financial entities whose activities extend far beyond what can be captured by a single balance sheet and be regulated as such. In particular, banks have further intensified their ability to expand their assets under management by setting up off-balance-sheet structures, vehicles and conduits operating in the shadows (e.g. Thiemann 2012; Lysandrou and Nesvetailova 2015; Fernandez and Wigger 2017). The liquidity transformation that used to be carried out by a single banking institution is now broken down "into several discreet steps" (Helgadottir 2017: 920). In this connection, it would not be inappropriate to speak of contemporary banking as 'financial Taylorism' on a global scale: a money-making industry based on a scientific management of debt production, with each element of the daisy chain having a 'special purpose' in collectively transforming the diverse raw materials of debt into highly fungible, and extremely liquid, short-term debt instruments generally accepted as 'cash equivalents'.

And yet, despite the incomparably greater complexity of contemporary banking relative to the fairly primitive practices of debt financing performed by goldsmith bankers at the time of the English financial revolution in the late seventeenth century, there is nothing new under sun. Today, like 350 years ago, banking equally involves making money out of debt: a process that is ultimately concerned with generating 'liquidity' in the form of bank IOUs that trade at par on demand (Merhling 2010; Pozsar 2014; Gabor 2016; Murau 2017). However, while the liquidity generated by London's goldsmith bankers was primarily based on the discounting of self-liquidating commercial debt (Knafo 2008; Kim 2011), the liquidity produced by today's global banks has so far relied on two main financial innovations that have deeply altered the institutional landscape of global finance in the last 35 years: (a) the securitisation of consumer debt and (b) the collateralisation of public debt via securities lending and repurchase agreements (repos). Both innovations are predicated on the routine

'shiftability', rather than 'self-liquidability', of debts (Mehrling 2010) – whence on the deepening of both primary and secondary financial markets.

Although in the past ten years a great deal of studies in IPE and cognate social sciences have been devoted to the phenomenon of securitisation and uncovered its linkages with shadow banking (e.g. Nesvetailova and Palan 2013; Nesvetailova 2015), only a small, yet growing, body of literature has investigated how repos enable bank leverage and money-making. The remaining of this paper will thus focus primarily on the role of repos in articulating the current global financial infrastructure. The focus on repos is also for an empirical reason: following the 2007-09 global financial crisis, the securitisation channel seems to have lost its ability to produce cash equivalents in a sustainable fashion. Before the crisis, cash equivalents issued by global banks included two main classes of instruments: asset-backed commercial paper (ABCP) that was issued by bank-sponsored conduits via the securitisation channel, and which was based on collateralised debt obligations (CDOs); overnight repos issued by securities dealers, backed by the prime collateral offered by both triple-A CDOs and Treasury bills (T-bills). With the crisis, the market for CDOs has collapsed and ABCP have lost their capacity to trade at par on demand – they have been essentially *demonetised* (see Murau 2017: 23-4). By contrast, overnight repos that are fully collateralised by T-bills (i.e. T-repos) have proven to be resilient[9], in spite of the fact that the crisis ultimately unfolded as a "run on repo" (Gorton and Metrick 2012).

One explanation for the resilience of repos is that their liquidity has been sustained by the "dealer of last resort" intervention by the Fed and other monetary authorities following the onset of the crisis (Mehrling 2010; Murau 2017). Another, complementary explanation, which is explored in the remaining of the article, is that these instruments bear two exclusive attributes for making money in a sustainable fashion: (a) they carry a highly responsive, in-built mechanism of pro-cyclical bank leverage; (b) they offer negotiable security rooted in legal trust over tradable collateral, which makes it easier for banks to operate on a 'matched-book' basis[10] and provide a stable interface between capital and money markets (see section 3.2).

Following the crisis, repos have become the prevalent channel of what has been termed the "money market funding of capital market lending" (Mehrling *et al* 2013; Pozsar 2014), preserving global banks' infrastructural capacity to waive the fabric of contemporary financial markets, by linking

[9] The centrality of repos in today's global finance is further corroborated by the fact that, following the crisis, there has been a "shift from unsecured funding to secured funding; formerly the central rate for global dollar funding was LIBOR in the Eurodollar market, but now increasingly it is the tri-party repo rate" (Mehrling 2017).

[10] Briefly, the matching of books is the bank practice of equalising the maturities of bank assets (loans) and liabilities (deposits).

money and capital markets. In the former, the preference for liquidity is largely motivated by what Keynes (1936: 196-7, see also Fantacci 2010) termed 'transactions' and 'precautionary' motives; in the latter, the demand for liquidity is driven by a 'speculative' motive, namely by the possibility for levered-up investors to realise capital gains and high returns by affecting securities' prices and moving markets. By connecting these two markets, repos make it possible for global banks to harmonise the diverging, often polar, interests of numerous parties populating the financial ecology of "money manager capitalism" (Wray 2009; 2011).

On the basis of Pozsar (2014; 2015), global banks' clients can be heuristically grouped in two main categories of money managers: risk asset managers (risk AMs) and safe portfolio managers (safe PMs)[11]. The first group includes hedge funds and analogous levered-up funds in the asset management industry (e.g. mutual funds, equity funds, vulture funds). Risk asset managers are *active* investors: they are in the business to "beat the benchmark" (Pozsar 2014: 54) and generate high returns for their customers and shareholders. To that purpose, they *borrow* money from banks to invest in capital and derivatives markets. I will get back to risk AMs in section 3.2.

The second group of money-managers is formed by a constellation of retail and institutional investors that are predominantly risk-averse: their primary goal is to meet liabilities and their mandate is '*do not lose*' (Pozsar 2014: 62). Retail and institutional investors are *passive* investors: they allocate their surpluses to varieties of safe portfolio managers – pension funds, sovereign funds, corporate funds, etc. – which often go by the name of 'institutional cash pools'. Prominent among institutional cash pools are 'money market funds' (MMFs), also called 'money market mutual funds' (MMMFs). Typically, a MMF gathers funds from retail and/or institutional investors (including other funds) by issuing Net Asset Value (NAV) shares, usually worth 1 unit of the currency in which they are denominated (e.g. $1, £1). The NAV shares promise at par redemption on a daily basis. The MMF will seek to keep the value of its shares constant – this is known in jargon as not 'breaking the buck' – by investing its shareholders' funds in the wholesale money market, where it will mostly acquire cash equivalents supplied by global banks.

Crucially, a MMFs is a trust scheme (Kim 2014): its portfolio managers are the trustees and agent lenders, retaining legal ownership of the portfolio of cash equivalents purchased on the wholesale

[11] Pozsar (2014) adopts slightly different nomenclatures: he distinguishes between 'risk portfolio managers' (risk PMs) and 'cash portfolio managers' (cash PMs). However, he applies the same heuristic principle for separating them: the former employ leverage and are risk-seekers; the latter avoid leverage and are risk-averse. Once again, this distinction is heuristic, not analytical: in practice it is impossible to neatly separate money-managers that are completely risk averse and employ no leverage at all from money-managers that on the contrary reach for high yields and gear their portfolios. Many money managers are hybrid funds that seek both safety and risk in varying proportions. For a nuanced account of the asset management complex, see Office of Financial Research (2013).

money market. Its retail and/or institutional investors are the beneficiaries of the trust, holding claims to abstract pecuniary value in the form of NAV shares. What is more important, MMF investors are also the *tacit creditors* of the global banks issuing cash equivalents. By storing their income by means of what is in effect a two-tier, market-based savings system, investors are literally giving credit to banks, de facto validating – *giving value to* – their money claims.

3.1. Validating money in the money market: repos and institutional cash pools

Although scholars might disagree as to whether cash equivalents are truly money or not, central bankers, managers of foreign exchange reserves, corporate treasurers, and institutional investors unequivocally refer to them as simply 'cash' (Ricks 2016: 4). For them, "money begins where M2 ends" (Pozsar 2014: 4). And indeed, according to Ricks (2016: 44) "calling the holders of these instruments 'investors' is somewhat misleading. Holders of cash equivalents usually think of these instruments, together with currency and checkable deposits, as precisely *the resources they are not investing* (emphasis added)". A number of reasons can be provided as to why safe PMs choose not to store their liquid funds in conventional money forms (qua ordinary bank deposits): to name a few, the possibility to earn interest on deposits and avoid taxation. However, the foremost rationale is the *lack of security* that ordinary deposits provide: the size of institutional cash pools is simply too large to be covered by deposit insurance, and it would be unthinkable to hold such large surpluses in a narrower money form (Pozsar 2014; 2015).

And so, rather than investing (saving) their funds in the 'core' liabilities (deposits) issued via ordinary banking, safe PMs choose to satisfy their liquidity preference by investing (saving) in the 'non-core' liabilities (deposits) issued via market-based banking, which offer both redemption at premium and, we shall see, collateral security to make up for the lack of institutional insurance. Seen from a banking perspective, banks are able to secure "funding liquidity" (Brunnermeier and Pedersen 2009) via the wholesale money market, where they can obtain funds from safe PMs by issuing demand deposits that are 'as good as cash' for transactional and precautionary motives. Generally known as 'securities financing transactions', these instruments are equivalent to bank deposits (cf. Mitchell 2016: 19). Crucially, safe PMs seek especially overnight T-repos because the latter provide the greatest "proximity to the government" in terms of institutional insurance and guarantee of at-par redemption (Pozsar 2014: 4, 25). In effect, of all cash equivalents, repos alone seem to bear the promise of

delivering a new monetary and financial infrastructure capable of enduring trust, security and liquidity (cf. Gabor and Vestergaard 2016; Murau 2017).

Prima facie, repos appear as sale and repurchase contracts: in fact, they are collateralised loans (see Gorton and Metrick 2012: 426; Kim 2014; Gabor and Vestergaard 2016: 11). More importantly, like MMF shares, repos too articulate trust as a (collateral) double ownership scheme: when a bank issues a repo deposit, it loses the legal ownership of the collateral in favour of the repo buyer (typically a safe PM). The bank, however, remains the beneficiary owner of the collateral, meaning that it still bears the risk and receives the return on the collateral (Gabor 2016: 971). The ownership of the collateral is thus duplicated, giving rise to a complex legal-economic relationship: while the repo buyer now owns the collateral 'at law', the bank owns it 'in equity' and therefore retains the equitable claim over the quasi rent that it may or may not yield. The significance of the repo trust scheme lies in its capacity to bring together the otherwise conflicting interests of creditors-buyers and debtors-sellers on a crucial point: *their reciprocal need to assess, preserve and sustain the value of collateral.* It is precisely around this 'institutional need' that a relationship of trust (in both sociological and legal terms) is constructed between creditors and debtors and financial negotiations and struggles are carried out on a daily basis.

The need of assessing and stabilising the value of repo collaterals practically translates into a number of highly responsive mechanisms of collateral valuation for maintaining at par redemption of repo deposits. These mechanisms involve: haircuts; mark-to-market valuation; margin calls (Gabor and Ban 2016; Gabor 2016: 971). The haircut is a measure of the degree of over-collateralisation of a repo: it stands in inverse proportion to the degree of confidence in the security of the collateral and in direct proportion to the amount of capital that is required for a bank to set an effective margin of safety for its repo sale. A zero haircut virtually means complete confidence in the collateral on the repo-buyer side (the safe PM), and no capital buffer at all on the repo-seller side (the bank). Significantly, before the crisis began to unfold in 2007, haircuts on collateral assets were approximately zero: however, with the exception of overnight T-repos, they surged to reach nearly 50 percent at the peak of the crisis in 2008 (Gorton and Metrick 2012: 428).

The state of confidence in repo collateral is in turn assessed via mark-to-market valuation, an accounting method for registering contingent variations in the market price of a firm's assets. Because of mark-to-market valuation, a fall in the market value of collateral before the repurchase day translates into a margin call by the repo buyer: the latter can ask the repo seller to provide more collateral to replenish the loss of value. Conversely, a rise in the market value of collateral makes it possible for the repo seller to claim the capital gain. Needless to say, since it is so intimately linked

to the whims of financial markets, mark-to-market accounting magnifies volatility: a sudden fall in the price of an asset (or class of assets) is immediately transmitted across the financial system, causing a tidal readjustment/downsizing of balance sheets, whence a credit crunch or crash.

A case in point is the collapse of the market demand for CDOs. In August 2007 the demand for CDOs abruptly fell when BNP Paribas announced that it could no longer assess the market value of the CDOs held by three of its hedge funds (Lysandrou 2012: 243). At the time, CDOs were used both as collaterals for repo deposits and as second-floor, backing materials for the provision of ABCP by conduits (Lysandrou and Nesvetailova 2015). As confidence in the value of CDOs dropped, banks stopped accepting them as collateral for repos and haircuts on existing CDO-based repos surged. Hence repo buyers called margins, which put tremendous pressure on banks since they could not draw on sufficient capital for margining purposes. The only other choice was to forego collaterals, which was far from ideal. Indeed, failure to buy collaterals back triggered a 'fire sale': as panicking investors started to sell collateral assets to regain the lost value of their repo deposits, the market value of securities serving as repo collaterals dropped even further, alimenting a spiral of collateral asset-price deflation: "lower prices, less collateral, more concerns about solvency, and ever increasing haircuts" (Gorton and Metrick 2012: 428; see also Gorton and Ordoñez 2014). This eventually created a general distrust towards repo deposits' ability to deliver at par value on demand, which ultimately resulted in a run on repos. In short, failure to *valuate* collaterals for repos had quickly escalated to failure to *validate* repos as money.

3.2. Making money in the capital market: reverse repos and the asset management complex

Repos can only tell half of the story of contemporary banking: "[f]or every repo, the other side of the transaction is a reverse repo" (Gorton and Metrick 2012: 433). From a banking perspective, a repo deposit in favour of a safe PM, e.g. a MMF, is normally matched by a reverse repo loan made to a risk AM, e.g. a hedge fund (cf. Lysandrou 2012: 237; Adrian and Shin 2010: 428). In the former, the bank sells collateral to the MMF (with the promise of repurchasing it) as a way to fund its liquidity; in the latter, it buys collateral from the hedge fund through what is effectively a loan to the latter. Significantly, the main difference between these two complementary instruments is one of maturity: repo deposits are mainly overnight T-repos issued against general collateral (cf. Gabor and

Vestergaard 2016) and rolled over on a routine basis. By contrast, reverse repo loans are term repos with longer maturity dates, issued against specific collateral and bearing a fixed interest rate.

Repos and reverse repos belong to two different markets. On the one hand, repo deposits are generally issued via the tri-party repo market (cf. Gabor 2016) – a market that relies on the centralised clearing function offered by custodian banks[12], and which since the crisis has become a prevalent site of data collection and governance by regulators and policy-makers. On the other hand, reverse repo loans are commonly issued in the bilateral repo market (cf. Adrian *et al* 2013) – an over-the-counter, upstairs market where banks trade on their proprietary desks and deal directly with money-managers who can get access to 'lit' or 'dark' pools of liquidity (Banks 2010; Hatch 2010; Mackenzie 2015; Garvey *et al* 2016). Reverse repo loans supplied by global banks are relatively hidden from regulators (Bowman *et al* 2017). As a result, while the literature on repos is flourishing, little data is available for reverse repos (an exception is Baklanova *et al* 2017).

Reverse repo loans are a core source of leverage for the asset management complex. Risk AMs can borrow from global banks mainly in three ways: a) via (reverse) repos, as they *sell* securities part of their portfolio of assets with the promise to purchase them back at a later time; b) via securities lending, as they *lend* securities; c) via margin loans, as they *pledge* securities as a capital buffer for borrowing. In each of the above cases, risk AMs ought to commit securities as collateral to obtain the liquidity that they will use to leverage their portfolios and 'beat the benchmark'. With the borrowed funds, risk AMs can pursue a variety of strategies in capital and derivatives markets. For example, they can individually play *against* the market and go 'long' and/or 'short' on securities with the purpose of arbitraging between price mismatches. Contrariwise, they can collectively play *with* the market and drive asset-price bubbles (cf. Abreu and Brunnermeier 2002; 2003; Brunnermeier and Nagel 2004; Knafo 2009; 2012; Griffin *et al* 2011), on the expectation that other 'positive-feedback' investors will manifest a 'herding' behaviour (Sias 2004; Choi and Sias 2009) and follow their lead in the same inflated market. Finally, risk AMs can both profit from, and hedge, their bets via derivatives margining (cf. Brunnermeier and Pedersen 2009: 2229-31; Ang *et al* 2011: 122; Lysandrou 2012: 237; Pozsar 2014: 36).

It goes without saying, all these levered-up practices of money-making involve taking big risks with potentially catastrophic consequences. Once again, the events leading to the collapse of the market

[12] In the US tri-party repo market, the Bank of New York Mellon offers this clearing service. In Europe, the principal tri-party agents are Clearstream Luxembourg, Euroclear, Bank of New York Mellon, JP Morgan and SIS (https://www.icmagroup.org/index.php/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/24-what-is-tri-party-repo/).

for CDOs in 2007 provide an exemplary case. According to Lysandrou (2012: 231), "[t]he rapid growth in CDOs from 2002 onwards bears a close correlation with the growth of hedge funds assets". Although figures for CDO holdings for this period vary[13], there is no doubt about the fact that hedge funds were actively involved in the market for CDOs. The latter promised high yields and for this reason were considered very attractive. More importantly, CDOs could be used as collateral to obtain (reverse repo) loans to purchase more CDOs! This created a self-reinforcing pattern of leverage-driven, asset-price inflation. According to Lysandrou (2012: 237), hedge funds were able to leverage their portfolios of CDOs by a fourfold magnitude. Ang *et al* (2011) offer a more detailed, yet analogous estimate of hedge funds' leverage between 2005 and 2010: while some funds enjoyed leverage ratios well above 30, the average leverage ratio for hedge funds was 4.8 (with the exception of the less levered-up equity funds).

Significantly, hedge funds started to 'deleverage' in a counter-cyclical fashion, therefore increasing their cash holdings, "prior to the start of the financial crisis in mid-2007" (Ang *et al* 2011: 121; see also Liu and Mello 2011). What happened was simple: after riding the CDOs bubble with the help of investment banks, hedge funds 'beat the gun' and exited the market by promptly reducing their debt exposure in a collective selling effort. It is worth noting in this connection that the CDO market qualitatively changed starting from mid-June 2006 with the introduction of standardised forms of Credit Default Swap (CDS) that boosted the growth of synthetic CDOs. The latter made it possible for hedge funds to bet against the market and offset their 'long' positions in CDOs. As Mählmann (2013: 537) put it, "[t]hat way, they could make some money as long as the CDOs performed, but they stood to make more money as the entire market crashed".

Hedge funds were not loose cannons acting unpredictably and out of control. On the contrary, they were a "war machine" (Erturk *et al* 2010) oiled by banks. Indeed, far from resembling an impersonal market made of 'arm's-length' transactions, the market for CDOs grew between 2002 and 2007 as a "dense network of personal relations between pairs of agents at the very centre of which was the relation between the hedge funds and the investment banks" (Lysandrou 2012: 241). In some

[13] According to Lysandrou (2012: 233), by the end of 2006, hedge funds "held a little over 1 percent of the world's total stock of securities" and "nearly 50 percent of the total stock of CDOs". A different, though compatible, estimate is offered by the Financial Crisis Inquiry Commission (FCIC 2011: 192). Upon surveying more than 170 hedge funds, its analysts found that "of all the CDOs issued in the second half of 2006, more than half of the equity tranches were purchased by hedge funds that also shorted other tranches". By contrast, figures provided by the IMF director John Lipsky in July 2007 suggest that hedge funds held only 10 percent of the equity tranches in the CDO market (Dixon *et al* 2012: 45). Conservative figures, however, are likely to underplay the hedge funds' capacity to inflate the CDO market by leveraging their position. "It is worth noting that a relatively small amount of hedge fund capital can enable a large amount of CDOs to be issued" and "$1 million in hedge fund capital could support up to $50 million of CDOs" (Dixon *et al* 2012: 46).

instances, this special relationship was "cemented by the fact that investment banks owned the hedge funds they were dealing with" (Lysandrou 2012: 241). In effect, in the same way as MMFs have been functioning as the transmission chain in the two-tiered, market-based savings system, so hedge funds have come to serve as the outer, over-the-counter platform of a two-tiered, market-based *investment system* promoted by banks themselves: a network of 'funds of funds' of which banks are the limited or general partners, seeking to protect the interests of their clients as well as to continue their proprietary trading by other means.

We can envisage two main reasons why global banks supported hedge funds in inflating the capital market for CDOs. A first, system-wide reason is that the latter provided a key "second-floor" security for the production of ABCP (Lysandrou and Nesvetailova 2015) – a primary source of funding liquidity for the securitisation industry at large prior to the crisis (cf. Lysandrou 2012). A second, agency-centred reason is that the debt financing of the market for CDOs entailed increasing leverage for banks: a power that the latter thought they could harness through the "screening mechanism" (cf. Baklanova *et al* 2017: 4) offered by collateral. Significantly, both reasons converge on a crucial point: making the market for CDOs was essential to producing the highly tradable collateral that banks so eagerly "sourced" (Claessens *et al* 2012: 15) in order to satisfy the liquidity preference of institutional cash pools (which could not be met by the supply of T-repos alone). In one word, it was instrumental in *making the market for cash equivalents at large*.

In this respect, it is worth stressing one more time the superior efficiency and resilience of repos, relative to other monies, for the overall performance of banks. According to Pozsar (2014: 9; 55), about 80 percent of repo and reverse repo transactions are carried on a 'matched books' basis. That is to say, a broker-dealer bank that buys a CDO from a hedge fund in a reverse repo loan can match the loan by re-hypothecating the CDO in a repo deposit to a MMF (cf. Claessens *et al* 2012: 15; Mehrling *et al* 2013; Park and Kahn 2017). Crucially, if the price of the CDO goes up, as was the case between 2002 and 2007, all parties are satisfied. The MMF can deliver redemption of its NAV shares at par, and the hedge fund can claim the capital gain on the repo collateral that is now legally owned by the MMF. The capital gain thus serves to repay the hedge funds' loan to the bank. Like oxygen, it frees balance sheet capacity for the bank, which can now make yet another reverse repo loan to meet the bullish demand of risk AMs and increase the breadth of its assets and liabilities.

Besides harmonising the complementary goals of risk AMs and safe PMs (Pozsar 2014: 54), the re-hypothecation of collateral via repo transactions provides an elastic, in-built mechanism for pro-cyclical bank leverage (see also Fuhrer *et al* 2016: 1171) and allows a broker-dealer bank "to operate with a smaller stock of its own securities and thus reduce balance sheet costs (e.g. capital costs)"

(Financial Stability Board 2017: 4). What is more important, it also facilitates the matching of assets (bank loans) and liabilities (bank deposits), thus providing a dynamic hedge and an active liability management strategy to counteract the shortcomings inherent to bank leverage and asset management. The problem is: *books are never fully matched*. As a matter of fact, banks routinely make loans that are not immediately matched by deposits – that is, they generate market liquidity that is *not* funded. Pozsar (2014: 55; 2015: 8) hypothesises that 20 percent of global bank activities occur on a 'speculative books' basis. More recently, in their pilot study of the use of collateral in bilateral repos, Baklanova *et al* (2017: 8) have found that "[o]ver three days, securities dealers lent, on average, $1.6 trillion and borrowed, on average, $1 trillion", which altogether suggests that nearly 40 percent of loans might involve taking net inventory positions that are not immediately matched.

The bank problem of matching the books is the problem of making money via capital market lending and having it validated via money market funding – that is, the quintessential problem of creating money and having it accepted in the age of market-based banking. Following the establishment in 2008 of the Term Securities Lending Facility (TSLF) and the Primary Dealer Lending Facility (TSLF), the daily shortfall generated by global banks' loans can be readily shifted onto the balance sheet of the Fed, which has de facto taken "the lending side in tri-party repo transactions" (Murau 2017: 18) – that is, the side of institutional investors/savers. At last, the Fed recognises the infrastructural power of global banks as money-makers and, in its new vest, it acts as their creditor of last resort – literally *saving the day* by serving as a substitute for institutional cash pools whenever collateral assets fail to meet the latter's appetite for safety. With its new repo-based credit facilities and open market operations, the Fed is feeding repo markets and ultimately relaxing the survival constraint for global banks, "pushing the day of reckoning off into the future" (Mehrling 2010: 4): banks rest reassured about their ability to make money today and pay, maybe, tomorrow. *Chi vuol esser lieto, sia: di doman non v'è certezza*.

4. CONCLUSION

Banking is a complex game of money-making in which banks are not simply playing the odds, like all other participants, but are also dealing the cards. And so, while other players are more or less free to exit the game (depending on whether they are outright debtors who ought to 'borrow to pay' or

active speculators who wish to 'borrow to invest'), banks must see the whole game through – a game that has no *end* other than making money. To that end, banks are impelled to come up with financial innovations that, besides enhancing their leverage, propel an ever growing marketization of other people's debts. This says something about the significance of banking. As an industry that is *geared* towards producing debts as commodities, the function of banking is not really to provide a decentralised payment system (cf. Mehrling 2010), although its operations *do* enhance the transferability of money claims. In fact, the point can be made that since banking involves dealing other people's debts then, logically, it cannot truly fulfil the function of *extinguishing* economic obligations at a societal level. On the contrary, banking makes it possible for debts to be carried over in the future, to be financed and refinanced in a more or less sustainable fashion through financial markets. Bank leverage is therefore the art of making money in this 'in-between' dimension of finance where the accounts between creditors and debtors are left opened, un-cleared for the time being.

Crucially, rethinking banking as leverage requires that we drop once and for all the notion of banking as intermediation. The idea that banks borrow at a lower rate to *then* lend at a higher rate is a gross mystification: regardless of whether one is looking at commercial, retail or investment banking, one is always in principle witnessing a form of bank leverage that is executed without mobilising prior savings.Besides repudiating the notion of banking as intermediation, this study also challenges a generalised consensus in IPE and cognate social sciences which analytically sets banks and financial markets apart. Although the relationship between banks and financial markets is no longer framed as a zero-sum game, banks are still understood as market *participants* subject to pressures coming from market forces. In contrast to this dualistic modelling, this study contends that global banks are more than participants: they are the very *makers* of financial markets, holding their reins via a two-tier investment and savings system that brings together all sorts of money managers. Drawing a line between (market-based) banks and (bank-based) markets is not really possible since banks are in principle merchants of debt. Their business implies no less than making markets for securities: an activity whose ultimate aim is to promote and sustain a *market for their own monies*.

In this connection, the analysis of repos and reverse repos as market-based instances of respectively deposit-taking and loan-making activities shows how bank leverage is part and parcel of a process of money-making that runs from loans to deposits, in line with heterodox theories. Generating deposits, however, is not as easy as pressing a key on a keyboard. For safe PMs to be able to 'save' and validate their surpluses as 'money', a whole money-making industry ought to be in place which thrives upon speculation, namely the leveraging of positions in financial markets. In particular, global banks and the levered-up asset management complex need *ab origine* each other's investment in the capital market to transform the raw materials of private, corporate and public debt into money artefacts (debt

instruments that are equivalent to cash for practical purposes). Ultimately, it is in the fire of the capital market, where debts are sourced, liquefied and channelled towards the money market, that the price (and collateral security) of cash equivalents is forged. Repos, in particular, have proven to be a resilient vessel of liquidity, thanks to their in-built mechanisms for enabling highly responsive bank leverage and matched books.

Finally, this study points to a crucial element of the current financial regime that deserves more attention: namely the perverse phenomenon whereby holders of monetary savings – ordinary bank accountholders as well as retail and institutional investors in money markets who altogether act as tacit creditors of global finance – can only retain their purchasing power as long as banks sustain their leverage to ensure the unceasing debt financing of both active speculators (risk asset managers) and outright debtors (households, small- to medium-size firms and governments). That is, under current conditions, for money to exist and preserve its stable value, the smaller borrowers ought to keep borrowing and paying their dues for the time being, *not to creditors*, but to the greater borrowers leveraging their positions in financial markets. The latter are the "*new* aristocracy of finance" (Hager 2015) composed of global banks and associated professional speculators (and those behind them who are amassing unspeakable financial wealth). And yet, unlike what many are inclined to think (e.g. Hudson 2015), banks stand in principle as neither parasitical nor predatory agents. While banking might result in blatant predation, the survival of banks *as a system* largely depends on their mutualism, namely on their ability to establish relationships of mutual dependence among debtors, as well as on their unique capacity to build trust and harmonise the diverging interests of those debtors and creditors which are nevertheless invested in the same game of money-making. Tautologically, as long as banks will enable this game by making markets for other people's debts, their money claims will be validated and come true.

REFERENCES

Abreu, D. and Brunnermeier, M. (2002) 'Synchronization risk and delayed arbitrage', *Journal of Financial Economics* 66: 341-360.

Abreu, D. and Brunnermeier, M. (2003) 'Bubbles and Crashes', *Econometrica* 71(1): 173-204.

Admati, A. R. and Hellwig, M. (2013) *The bankers' new clothes. What's wrong with banking and what to do about it*, Princeton and Oxford: Princeton University Press.

Adrian, T. and Shin, H. (2010) 'Liquidity and leverage', *Journal of Financial Intermediation* 19: 418-437.

Adrian, T., Begalle, B., Copeland, A. and Martin, A. (2013) *Repo and Securities Lending*, Federal Reserve Bank of New York Staff Reports, No. 529.

Allon, F. (2015) 'Everyday leverage, or leveraging the everyday', *Cultural Studies* 29(5-6): 687-706.

Amato, M. (2010) *L'enigma della moneta*, Milan: *et al*/edizioni.

Amato, M. and Fantacci, L. (2012) *The end of finance*, Cambridge: Polity Press.

Ang, A., Gorovyy, S. and van Inwegen, G. (2011) 'Hedge fund leverage', *Journal of Financial Economics* 102: 102-126.

Bagehot, W. (1873) [1897] *Lombard Street. A description of the money market*, New York: Charles Scribner's Sons.

Banks, E. (2010) *Dark pools. The structure and future of off-exchange trading and liquidity*, Basingstoke, Hampshire: Palgrave Macmillan.

Baklanova, V., Caglio C., Cipriani M., and Copeland, A. (2017) *The use of collateral in bilateral repurchase and securities lending agreements*, Federal Reserve Bank of New York Staff Reports, No. 758.

Ben-David, I., Franzoni, F., Landier, A., and Moussawi, R. (2013) 'Do hedge funds manipulate stock prices?', *The Journal of Finance* 68(6): 2383-2434.

Bianco, A. and Sardoni, C. (2017) *Banking theories and macroeconomics*, Dipartimento di Scienze Sociali ed Economiche, Sapienza Università di Roma, Working Paper no. 3.

Bowman, D., Louria, J., McCormick, M. and Styczynski, M. (2017) 'The cleared bilateral repo market and proposed repo market benchmark rates', *FEDS Notes*, Washington: Board of Governors of the Federal Reserve System.

Brummitt, C., Sethi, R. and Watts, D. (2014) 'Inside money, pro-cyclical leverage, and banking catastrophes', *Plos One* 9(8): 1-13.

Brunnermeier, M. and Nagel, S. (2004) 'Hedge funds and the technology bubble', *The Journal of Finance* 59(5): 2013:2040.

Brunnermeier, M. and Pedersen, L. H. (2009) 'Market liquidity and funding liquidity', *The Review of Financial Studies* 22(6): 2201-2238.

Choi, N. and Sias, R. (2009) 'Institutional industry herding', *Journal of Financial Economics* 94: 469-491.

Christophers, B. (2015) 'Against (the idea of) financial markets', *Geoforum* 66: 85-93.

Claessens, S., Pozsar, Z., Ratnovski, L., and Singh, M. (2012) *Shadow banking: economics and policy*, IMF Staff Discussion Note, International Monetary Fund.

Di Muzio, T. and Robbins, R. (2016) *Debt as power*, Manchester: Manchester University Press.

Dixon, L., Clancy, N. and Kumar, K. (2012) *Hedge Funds and Systemic Risk*, RAND Corporation.

Dow, S. (2006) 'Endogenous money: structuralist', in Arestis, P. and Sawyer, M. (eds) *A handbook of alternative monetary economics*, Cheltenham: Edward Elgar, 35-51.

Engelen, E. *et al* (2011) *After the Great Complacence. Financial crisis and the politics of reform*, Oxford: Oxford University Press.

Erturk, I., Leaver, A. and Williams, K. (2010) 'Hedge funds as war machine: making the position work', *New Political Economy* 15(1): 9-28.

Erturk, I. and Solari, S. (2007) 'Banks as continuous reinvention', *New Political Economy* 12(3): 369-388.

Fantacci, L. (2010) 'What kind of calculation is implied in the money rate of interest', in Amato, M., Fantacci, L. and Doria, L. (eds.) *Money and calculation. Economic and sociological perspectives*, Basingstoke: Palgrave Macmillan, 79-100.

Fernandez, R. and Wigger, A. (2016) 'Lehman Brothers in the Dutch offshore financial centre: the role of shadow banking in increasing leverage and facilitating debt', *Economy and Society* 45(3-4): 407-430.

Financial Crisis Inquiry Commission (2011) *The Financial Crisis Inquiry Report. Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*, Official Government Edition.

Financial Stability Board (2017) *Transforming shadow banking into resilient market-based finance. Re-hypothecation and collateral re-use: potential financial stability issues, market evolution and regulatory approaches*, FSB Report.

Fostel, A. and Geanakoplos, J. (2008) 'Leverage cycles and the anxious economy', *The American Economic Review* 98(4): 1211-1244.

Fuhrer, L. M., Guggenheim B., and Schumacher, S. (2016) 'Re-use of collateral in the repo market', *Journal of Money, Credit and Banking* 48(6): 1169-1193.

Gabor, D. and Ban, C. (2016) 'Banking on bonds. The new links between states and markets', *Journal of Common Studies Area* 54(3): 617-635.

Gabor, D. and Vestergaard, J. (2016) *Towards a theory of shadow money*, New York, NY: Institute for New Economic Thinking, INET working paper.

Gabor, D. (2016) 'The (impossible) repo trinity: the political economy of repo markets', *Review of International Political Economy* 23(6): 967-1000.

Garvey, R., Tao, H. and Wu, F. (2016) 'Why do traders choose dark markets?', *Journal of Banking & Finance* 68: 12-28.

Glasner, D. (1992) 'The real-bills doctrine in the light of the Law of Reflux', *History of Political Economy* 24(4): 867-894.

Gorton, G. and Metrick, A. (2012) 'Securitized banking and the run on repo', *Journal of financial economics* 104: 425-451.

Gorton, G. and Ordoñez, G. (2014) 'Collateral crises', *American Economic Review* 104(2): 343-378.

Griffin, J., Harris, J., Shu, T. and Topaloglu, S. (2011) 'Who drove and burst the tech bubble?', *The Journal of Finance* 66(4): 1251-1290.

Hager, S. (2015) 'Corporate ownership of the public debt: mapping the new aristocracy of finance', *Socio-Economic Review*, 13(3): 505-523.

Hardie, I., Howarth, D., Maxfield, S. and Verdun, A. (2013) 'Banks and the false dichotomy in the comparative political economy of finance', *World Politics* 65(4): 691-728.

Hawtrey, R. G. (1919) *Currency and credit*, London: Longmans, Green and Co.

Helgadóttir, O. (2016) 'Banking upside down: the implicit politics of shadow banking expertise', *Review of International Political Economy*, 23(6): 915-940.

Hudson, M. (2015) *Killing the host. How financial parasites and debt bondage destroy the global economy*, Dresden: ISLET.

Ingves, S. (2014) *Banking on leverage*, keynote speech to the 10th Asia-Pacific High-Level Meeting on Banking Supervision, Bank for International Settlements (BIS), http://www.bis.org/speeches/sp140226.htm.

Kalemli-Ozcan, S., Sorensen, B. and Yesiltas, S. (2012) 'Leverage across firms, banks, and countries', *Journal of International Economics* 88(2): 284-298.

Keynes, J. M. (1930) *A treatise of money*, New York: Harcourt Brace and Company.

Keynes, J. M. (1936) *The general theory of employment, interest and money*, London: Macmillan.

Kim, J. (2011) 'How modern banking originated: the London goldsmith-bankers' institutionalisation of trust', *Business History* 53(6): 939-959.

Kim, J. (2014) 'Identity and the hybridity of modern finance: how a specifically modern concept of the self underlies the modern ownership of property, trusts and finance', *Cambridge Journal of Economics*, 38: 425-446.

Knafo, S. (2008) 'The state and the rise of speculative finance in England', *Economy and Society* 37(2): 172-192.

Knafo, S. (2009) 'Liberalisation and the Political Economy of Financial Bubbles', *Competition & Change* 13(2): 128-144.

Knafo, S. (2012) 'Financial crises and the political economy of speculative bubbles', *Critical Sociology* 39(6): 851-867.

Knafo, S. and Dutta, S. (2016) 'Patient capital in the age of financialised managerialism', *Socio-Economic Review* 14(4): 771-788.

Konings, M. (2018) *Capital and time. For a new critique of Neoliberal reason*, Stanford: Stanford University Press.

Krippner, G. (2005) 'The financialisation of the American economy', *Socio-Economic Review* 3: 173-208.

Lavoie, M. (1999) 'The credit-led supply of deposits and the demand for money: Kaldor's reflux mechanism as previously endorsed by Joan Robinson', *Cambridge Journal of Economics*, 23: 103-113.

Lavoie, M. (2006) *Introduction to Post-Keynesian economics*, Basingstoke: Palgrave Macmillan.

Lazonick, W. and O'Sullivan, M. (2000) 'Maximising shareholder value: a new ideology for corporate governance', *Economy and Society* 29(1): 13-35.

Le Maux, L. (2012) 'The Banking School and the Law of Reflux in general', *History of Political Economy* 44(4): 595-618.

Liu, X. and Mello, A. (2011) 'The fragile capital structure of hedge funds and the limits to arbitrage', *Journal of Financial Economics* 102: 491-506.

Lysandrou, P. (2012) 'The primacy of hedge funds in the subprime crisis', *Journal of Post Keynesian Economics* 34(2): 225-253.

Lysandrou, P. and Nesvetailova, A. (2015) 'The role of shadow banking entities in the financial crisis: a disaggregated view', *Review of International Political Economy* 22(2): 257-279.

Mackenzie, D. (2013) 'The magic lever', *London Review of Books*, May: 1-11.

Mackenzie, D. (2015) 'Dark markets', *London Review of Books*, June: 1-10.

Macleod, H. D. (1883) *Theory and practice of banking vol. I* (4th ed.), London: Longmans, Green, Reader and Dyer.

Mählmann, T. (2013) 'Hedge funds, CDOs and the financial crisis: an empirical investigation of the "Magnetar Trade"', *Journal of Banking & Finance* 37: 537-548.

Mehrling, P. (2000), 'Minsky and modern finance', *Journal of Portfolio Management* 26(2): 81-88.

Mehrling, P. (2010) *The New Lombard Street. How the Fed became the dealer of last resort*, Princeton & Oxford: Princeton University Press.

Mehrling, P., Pozsar, Z., Sweeney, J., and Neilson, D. H. (2013) *Bagehot was a shadow banker: shadow banking, central banking, and the future of global finance*, SSRN: http://dx.doi.org/10.2139/ssrn.2232016

Mehrling, P. (2017) *The year in money*, available at: www.perrymehrling.com/2017/12/the-year-in-money/

Minsky, H. 2008 (1986) *Stabilising an unstable economy*, New York: McGraw Hill.

Mitchell, J. (2016) *Do shadow banks create money? Financialisation and the monetary circuit*, University of West England, Economics Working Paper Series 1602.

Moore, B. (2003) 'Endogenous money', in King, J. E (ed.) *The Elgar companion to Post Keynesian Economics*, Cheltenham: Edward Elgar, 117-121.

Moore, B. (2006) *Shaking the invisible hand. Complexity, endogenous money and exogenous interest rates*, Basingstoke: Palgrave Macmillan.

Murau, S. (2017) 'Shadow money and the public money supply: the impact of the 2007-2009 financial crisis on the monetary system', *Review of International Political Economy*, http://dx.doi.org/10.1080/09692290.2017.1325765.

Nersisyan, Y. and Dantas, F. (2017) 'Rethinking liquidity creation: banks, shadow banks and the elasticity of finance', *Journal of Post Keynesian Economics*, 40(3): 279-299.

Nesvetailova, A. (2015) 'A crisis of the overcrowded future: shadow banking and the political economy of financial innovation', *New Political Economy* 20(3): 431-456.

Nesvetailova, A. and Palan, R. (2013) 'Minsky in the shadows: securitization, Ponzi finance, and the crisis of Northern Rock', *Review of Radical Political Economics* 45(3): 349-368.

Office of Financial Reseach (2013) *Asset management and financial stability*, OFC report to the Financial Stability Oversight Council.

Palan, R. (2015) 'Futurity, pro-cyclicality and financial crises', *New Political Economy* 20(3): 367-385.

Park, H. and Kahn, C. (2017) *Collateral, Rehypothecation, and Efficiency*. Available at SSRN: https://ssrn.com/abstract=2992797 or http://dx.doi.org/10.2139/ssrn.2992797

Pozsar, Z. (2014) *Shadow banking: the money view*, Washington, DC: Office of Financial Research, working paper.

Pozsar, Z. (2015) *A macro view of shadow banking. Levered betas and wholesale funding in the context of secular stagnation*, New York, NY: Institute for New Economic Thinking, working paper.

Realfonso, R. (2003) 'Circuit theory', in King, J. E (ed.), *The Elgar companion to Post Keynesian Economics*, Cheltenham: Edward Elgar, 60-65.

Rethel, L. and Sinclair, T. (2012) *The problem with banks*, London: Zed Books.

Ricks, M. (2016) *The money problem. Rethinking financial regulation*, Chicago, IL: University of Chicago Press.

Sawyer, M. (2014) *Financialisation, economy, society and sustainable development*, FESSUD, Working Paper Series, No. 19.

Schleifer, A. and Vishny, R. (2010) 'Unstable banking', *Journal of Financial Economics* 97: 306-318.

Sgambati, S. (2015) 'The significance of money. Beyond Ingham's sociology of money', *European Journal of Sociology* 56(2): 307-339.

Sgambati, S. (2016) 'Rethinking banking. Debt discounting and the making of modern money as liquidity', *New Political Economy* 21(3): 274-290.

Sias, R. (2004) ‘Institutional herding’, *The Review of Financial Studies* 17(1): 165-206.

Taylor, A. M., (2012) *The Great Leveraging*, Bank for International Settlements, BIS Working Papers, No. 398: 1-37.

Thiemann, M. (2012) ‘Out of the shadows? Accounting for special purpose entities in European banking systems’, *Competition and Change* 16(1): 37-55.

Walter, J. (2006) ‘The 3-6-3 rule: an urban myth?’, Federal Reserve Bank of Richmond *Economic Quarterly* 92(1): 51-78.

Werner, R. (2005) *New Paradigm in Macroeconomics*, Basingstoke: Palgrave Macmillan.

Wray, R. (2012) *Modern Money Theory. A primer on macroeconomics for sovereign monetary systems*, Basingstoke: Palgrave Macmillan.

Zysman, J. (1983) *Governments, markets and growth: financial systems and the politics of industrial change*, Ithaca: Cornell University Press.