

Private Debt as Shadow Money? Conceptual Criteria, Empirical Evaluation and Implications for Financial Stability

Steffen Murau¹ and Tobias Pfarr²

May 2020

Abstract

Some scholars have labeled the financial structures that faced a run during the 2007-9 Financial Crisis as ‘shadow banking system’ and have connected it to the emergence of new monetary instruments. This was the starting point for thinking about various forms of private debt as ‘shadow money’. Since then several shadow money theories have emerged, with seemingly different conceptualizations of shadow money. We argue that, despite different terminology and intellectual ancestry, these theories generally agree on three key criteria that define shadow money. A financial instrument must be met by a demand that considers it an alternative to established forms of money, has to trade at par to higher-ranking forms of money and must be created through a swap of private debt certificates (IOUs). Based on these criteria, we look at four instruments to discuss how and under what conditions they correspond, or have corresponded, to those criteria. These are money market fund shares, overnight repurchase agreements, asset-backed commercial papers and foreign exchange swaps. We show that the disagreement over what instruments to count as shadow money lies in the level of strictness in applying those criteria on real-world financial instruments. If we are mathematically strict, none of the instruments can be categorized as shadow money. If we allow for more empirical variation, then all of the instruments correspond to the definition.

¹ Global Development Policy Center, Boston University; City Political Economy Research Centre (CITYPERC), City, University of London; and Institute for Advanced Sustainability Studies (IASS), Potsdam.

² University of Reading and University of Warwick.

“In a parliamentary debate on Sir Robert Peel’s Bank Act of 1844 and 1845, Gladstone remarked that not even love has made so many fools of men as the pondering over the nature of money” (Marx 1859, 73).

1. Introduction

During the 2007-9 Financial Crisis, scholars and practitioners have come to call the financial structures that faced a run at the time as a **shadow banking system**. The term ‘shadow banking’ was coined by Paul McCulley, former chief economist at the investment firm PIMCO, in a speech at the famous Jackson Hole meeting in 2007 to provide an analytical account of the financial structures which, at that point, were at the brink of collapsing (McCulley 2009). Before the crisis, the opaque structures—described as ‘parallel banking system’ by D’Arista and Schlesinger (1993) or ‘new finance’ by Edwards (1996)—had mostly been neglected by scholars and journalists, simply because the world of models and acronyms had been perceived as geeky, boring and dull (Tett 2009). The catchy label ‘shadow banking’ allowed these issues to appear in a more appealing light for scholars.

Shortly after the crisis, the Financial Stability Board (FSB) developed a definition, which has become widely adopted. Shadow banking, accordingly, is “credit intermediation involving entities and activities outside the regular banking system” (Financial Stability Board 2011). Pozsar et al. (2012), in a paper by the Federal Reserve Bank of New York, argue even more specifically that the shadow banking system does what classical commercial banking does on its singular balance sheets but on different connected balance sheets “through a daisy-chain of non-bank financial intermediaries in a multi step process” (ibid: 10). This way of looking at shadow banking has become paradigmatic (Mehrling et al. 2013). Loosely based on Clausewitz, we may say that **shadow banking is the mere continuation of classical banking by other means** (Murau 2017a).

How does shadow banking affect the monetary system? The FSB definition treats it as a ‘non-monetary phenomenon’. However, if we acknowledge that traditional banking involves autonomous money creation by banks (Werner 2016) and if we apply this insight on money to shadow banking, we may say that shadow banking also involves money creation. This has been the starting point for thinking about various forms of private debt as ‘shadow bank money’ or **‘shadow money’**.

The concept of shadow money is built upon an important facet of monetary theory and the history of economic thought, namely that it is impossible to find unanimous agreement on how to define money in the first place and to clearly delineate between the categories of ‘money’ and ‘credit’ (Murau 2017b, Ch. 2). Moreover, definitions of money are historically contingent and change over time. Karl Marx’s dictum that ruminations on the nature of money have turned more people into fools than love also speaks to the difficulties involved. The shadow money concept indicates that it is most useful to think of **modern money as a spectrum of different credit instruments**.

There is a small but growing literature that considers shadow banking a monetary phenomenon. Intellectual pioneers for this monetary angle on shadow banking have been Perry Mehrling with his *Money View* approach (Mehrling 2011; 2012a; 2012b; 2013; 2015; 2016; 2017; Mehrling et al. 2013) and Gary Gorton who coined the term “run on repo” (Gorton 2010; Gorton and Metrick 2012).

In terms of **explicit shadow money theories**, there are three main proponents in the discourse and one prominent critic. First, Zoltan Pozsar has produced the reference work on shadow money, the 2014 paper

Shadow Banking. The Money View (Pozsar 2014). It stands in the tradition of Mehrling's *Money View* and is embedded in financial market practice. Pozsar today is managing director at Credit Suisse. In his previous positions at the New York Fed (Pozsar et al. 2012), the US Treasury (Pozsar 2014), the International Monetary Fund (Pozsar and Singh 2011; Claessens et al. 2012) and PIMCO (McCulley and Pozsar 2013), he has played a pivotal role in developing the analytical framework for shadow banking. Currently, his analyses are published in *Global Money Notes* at Credit Suisse (cf. e.g. Pozsar 2016; 2017; 2020). Second, Daniela Gabor and Jakob Vestergaard have published the 2016 paper *Towards a Theory of Shadow Money* (Gabor and Vestergaard 2016), which is the result of a research project for the Institute of New Economic Thinking (INET). The paper—following up on previous publications (also see Gabor 2012; 2015b; 2015a; 2016; 2018a; 2018b; Gabor and Ban 2016; Gabor and Vestergaard 2018)—approaches the issue from the perspective of Post Keynesianism and critical International Political Economy. Third, Morgan Ricks—law professor and a former investment banker and senior policy advisor to the US Treasury—has extensively published on ‘money-claims’ created in the shadow banking system, though without explicitly using the term ‘shadow money’ (Ricks 2011; 2012a; 2012b; 2013). His work culminates in the 2016 book *The Money Problem*, in which he develops the proposal for an “r-currency” to regulate shadow money (Ricks 2016). He comes from a Law and Finance tradition and repeatedly refers to Milton Friedman as one of his intellectual reference points.³ Fourth, a major critique of the shadow money approach has been published by Post Keynesian economist Jo Michell in his 2017 article *Do Shadow Banks Create Money? ‘Financialisation’ and the monetary circuit* (Michell 2017).

³ On the basis of those conceptualizations, a number of other scholars have contributed to the shadow money discourse (see e.g. Adrian 2014; Boy and Gabor 2019; McMillan 2014; Moe 2012;

Despite a common interest in analysing near-monies created by non-bank financial institutions, there is profound disagreement over what financial instruments to include in the definition of shadow money. Gabor and Vestergaard (2016)—in line with Gorton (2010)—have the narrowest definitions of shadow money and essentially restrict it to repurchase agreements (repos). Pozsar (2014)—chiming in with Mehrling (2011)—adopts a broader approach and integrates also asset-backed commercial papers (ABCPs) and money market fund (MMF) shares. In his earlier work, Morgan Ricks seems to agree with that assessment (Ricks 2011) but later broadens the focus to also include other private and public instruments such as Eurodollar deposits (Ricks 2016). Michell (2017), by contrast, discards the idea that shadow banks could engage in money creation entirely.

This *empirical* disagreement among shadow money theorists over instruments could be taken to imply substantial *conceptual* disagreement concerning the questions of how to define shadow money, how to empirically determine shadow money, and ultimately how to deal with the phenomenon from a financial stability perspective. Amidst various competing arguments over what constitutes shadow money and what not, we are left wondering: Under which conditions can we consider private debt as shadow money? Is any form of private debt shadow money? And: What implications for policy-making derive from the insight that some forms of private debt adopt the role of shadow money?

In this paper, we argue that there is actually less *conceptual* disagreement than it seems among the main shadow money theorists (Pozsar 2014; Gabor and Vestergaard 2016; Ricks 2016; Michell 2017).

2014; Moreira and Savov 2014; Murau 2017a; 2017b; 2018; Murau, Rini, and Haas 2020; Sunderam 2012; Vasudevan 2018; Wullweber 2020).

In fact, the writings of the authors suggest that they can generally agree on **three conceptual criteria** to determine whether a given instrument is shadow money: First, shadow money must be met by a demand that considers it an alternative to established forms of money; second, it has to trade at par to bank deposits as a higher-ranking form of money; and third, it must be created through a swap of private debt certificates (IOUs, as in *I owe you*).

Hence, the disagreements over which instruments actually count as shadow money depends primarily on how strictly these criteria are applied to real-world financial instruments. We can think of it as a version of the age-old problem of universals in philosophy: What is the relationship between *abstract* universals (here: the shadow money criteria) and *concrete* particulars (the different shadow money instruments)? We demonstrate this by discussing four specific instruments that have been referred to as shadow money in the discourse: MMF shares, ABCPs, repos and foreign exchange (FX) swaps. We show that if the three criteria are applied in a very strict way, none of the four instruments satisfies the shadow money definition. In this light, shadow money becomes a pure ideal that can never be found in messy reality. If we relax the strictness with which the criteria are applied, it becomes possible to argue that each of the instruments should be counted as shadow money.

This point is particularly relevant to the third criterion because what it means to “create credit” and “swap IOUs” cannot be strictly defined. If we take bank deposits and their way of swapping IOUs and creating credit as the only possible ideal type, then the other instruments indeed do not create credit and swap IOUs. However, we show that there are two alternative ways in which shadow money instruments can nevertheless achieve some functional equivalence. Financial institutions exploit a **‘bank-vs-fund dualism’** in the case of MMF shares and ABCPs, and an **‘asset-swap-vs-swap-of-IOUs dualism’** in the case of repos

and FX swaps. Such dualistic credit properties are a key feature for anyone concerned with questions of financial stability.

The remainder of this paper is organized as follows. Section 2 points out the three key criteria for determining whether an instrument is shadow money. Section 3 presents our analysis of MMF shares, ABCPs, repos and FX swaps and whether they correspond to these criteria. Section 4 discusses the findings and shows with reference to each of the criteria why we believe that the shadow money confusion relates back to the problem of universals. Section 5 concludes by reflecting on the problems this poses for financial stability and regulation.

2. Three criteria for shadow money

This section argues that the apparent disagreement notwithstanding, most theorists of shadow money rely on three criteria to assess whether a given instrument is shadow money or not. These are that the instrument has to be (a) a substitute for bank deposits, which (b) trades at par on demand and (c) is created via a swap of IOUs.

a) Substitute for bank deposits

The first criterion concerns the **demand side** of shadow money. Who wants to use the financial instruments we may think of as shadow money, and for what reason? There appears to be an agreement that to qualify as shadow money for users, the instrument must be a **substitute for bank deposits**. Some individuals or institutions make a decision of holding shadow money forms instead of deposits.

Ricks (2016, 4) explains this criterion very clearly: “The short-term IOUs that are issued by shadow banks are widely understood to be close substitutes for deposit instruments. For accounting and other purposes, these short-term debt instruments

are called cash equivalents. Corporate treasurers and executives just call them cash. Economists sometimes refer to them as near money or quasi money. Central bankers include many of these instruments in their broad measures of the money supply. And, not coincidentally, the market for these short-term IOUs is known in the financial world as the *money* market, as distinct from the more familiar *capital* market in which stocks and ordinary bonds are traded”.

The main reason to avoid bank deposits and look for substitutes is that deposits may be too risky. This is the case for institutional investors—“institutional cash pools” with the only mandate “do not lose” (Pozsar 2014, 25)—whose sums largely exceed the deposit insurance limits and to whom “a large *uninsured* bank account present unacceptable credit risk” (Ricks 2016, 37). Pozsar (2014, 4) famously argues that—as they cannot use the classical money forms measured in the money aggregates M0, M1 and M2—“for institutional cash pools, money begins where M2 ends”. Gabor and Vestergaard (2016, 2) are fully in agreement in this respect. But there are other reasons why investors look for deposit substitutes. On one hand, access to deposits may be restricted, for example for foreign institutions. On the other hand, deposits may not be lucrative enough as they yield too little interest. This may be due to bank regulation that places a nominal cap on interest rates such as Regulation Q (cf. Ricks 2016, 173, 203).

The underlying idea for the substitute for bank deposits criterion is that shadow money has to be embedded in a **hierarchy of**

money. This is the single most important idea that ties the shadow money discourse together.⁴ Integrated in a hierarchical structure of credit money claims, any credit money instrument lower in the hierarchy is a promise to pay a credit money instrument higher up in the hierarchy. Deposits are integrated in the hierarchy as a promise to pay central bank money, while shadow money is located lower in the hierarchy as a promise to pay deposits, and hence a substitute for deposits.⁵ Gabor and Vestergaard (2016, 2) state that a “hierarchy approach offers a powerful theoretical lens to trace new liabilities (promises to pay) created by shadow banks, and banks’ activities in the shadows”. In that sense, “shadow money are promises to pay ‘proper’ (state and private) money” (Gabor and Vestergaard 2016, 2-3). “With public and insured money claims off limits”, Pozsar (2014, 26) puts it, institutional cash pools and their portfolio managers “are limited to choose mostly from a menu of mainly public and private shadow money claims, where allocations follow a hierarchical order. This is the hierarchy of access — or cash pools’ access to money”.

All proponents of the shadow money concept agree that for a shadow money definition, there is **no central role for the traditional medium of exchange function**. Whether or not you are able to pay at the supermarket cashier with shadow money is of secondary importance. Shadow money forms have to substitute deposits primarily as instruments for the wholesale money market: “Asset managers’ money demand is not driven by transaction needs in the real economy but in the financial economy” (Pozsar 2014, 3).⁶

⁴ Influential conceptualizations of the hierarchy of money come e.g. from Minsky (1986), Bell (2001), Mehrling (2012a) and Wray (2015). Disagreement exists as to where this hierarchy comes from and if state money necessarily has to be on the top of the hierarchy (Murau 2017b, Ch. 2).

⁵ Due to the logic of a hierarchy of credit money claims, the substitute criterion omits alternative instruments from the shadow money definition

that do not represent a maturing claim on bank deposit, such as supermarket vouchers or airline miles. Instead, shadow money instruments are *claims* on exactly the same type of money they substitute—classical bank deposits in the case of shadow banking liabilities.

⁶ Pozsar’s analysis is very rich in institutional detail. “Institutional cash investors are institutional cash pools [...]. There are four

Rather, as Ricks (2016, 31) explains, shadow money forms “must be converted into the medium of exchange—by selling them or waiting for them to mature—before they can be used in transactions”. While it is possible to insist that the *medium of exchange* function should be key in defining money, it would point to a binary categorization of money that leaves us helpless for conceptualizing the shadow banking structures (ibid).

Even Michell (2017) agrees on the substitution criterion. However, he argues that the parallelism with bank money would have to refer to whether shadow money is also a **final means of settlement**, which in his eyes it is not: “a ‘traditional’ bank can fund the purchase of a security by issuing new demand deposits. Since such deposits are acceptable to sellers of securities as final means of settlement, the traditional banking system may obtain securities by issuing its own liabilities and providing them to sellers of securities. This is not the case for ‘shadow’ institutions which fund themselves by issuing liabilities which cannot be used for settlement purposes” (ibid, 13-14).

A further way to rationalize the substitution criterion is to say that shadow money, just as bank deposits, responds to **money demand**. Ricks (2016, 47) suggests defining money demand in line with Keynes’s liquidity preference theory and argues that both deposits and shadow money respond to the desire for security about the future price of the instrument.

b) Par clearance with higher-ranking money

The second criterion concerns the **price** of shadow money. If shadow money instruments are substitutes for bank deposits, what should be the rate at which they are convertible into each other? The shadow money theorists agree that both have to **trade with each other at par**—a one-to-one exchange rate. The specific challenge for shadow money instruments, and also their defining characteristic, is that they have to maintain par vis-à-vis bank deposits without having access to the established liquidity backstop from the central bank and the solvency backstop through deposit insurance.

Pozsar (2014, 7) is most outspoken about this criterion. For him, trading at par is the integral part of his shadow money theory: “Money is usually defined from a functional perspective as a ‘unit of account, store of value and medium of exchange.’ However, this definition does not take into account the **quintessential attribute of money**—that money always trades at par on demand—and the institutional arrangements that underpin this attribute” (bold emphasis by authors). In this, he adds more nuance to the dimension of hierarchy: “Money claims are also hierarchical [...] in the sense that not all money claims are equally strong in their par on demand promise in all states of the world, and that always and everywhere money is something different for central banks, banks, shadow banks and all other participants in the financial ecosystem” (ibid, 7).

categories of institutional cash pools: (1) the liquidity tranche of FX reserves; (2) the cash balances of global corporations; (3) the centrally managed cash balances of institutional investors and the largest asset managers; and (4) the cash collateral reinvestment accounts of securities lenders. [...] Unlike retail cash investors, who hold cash mostly for real economy transactions, cash pools hold cash balances mostly for financial

economy transactions — for the daily fixing of FX pegs; for the safe-keeping of corporate cash balances; and for supporting the liquidity needs of the modern asset management complex, partly stemming from the increased use of derivatives-based investments (such as derivative-overlay investments) and securities lending” (Pozsar 2014, 24).

To remedy the conceptual problem of different ‘strengths’ of par claims, Pozsar distinguishes between ‘**money claims’ offering par on demand**, and ‘**money-like claims’ offering par in the near future**. “Money claims with stated maturities longer than overnight but less than a year are money-like claims. Money-like claims offer par at maturity (in the near-term) but not on demand, and in case one needs to convert them into payment systems money before maturity, they are breakable at a penalty or negotiable at prices normally very close to par” (Pozsar 2014: 9). At the same time, he acknowledges that things get messy empirically: “In reality, the demarcation between money and money-like claims is not firm —money exists along a spectrum. Money-like claims with one, two, or three days or just a week left to maturity practically trade at par on demand because they have minimal price risk. That said, they are not quite as money-like as money claims proper, but are much more money-like than claims with for example one month to maturity” (ibid, 14).

Gabor and Vestergaard (2016, 2) follow Pozsar in placing emphasis on the par relationship between deposits and shadow money. Unlike Pozsar, however, they restrict their definition of par on ‘par on demand’, not ‘par in the near future’. Moreover, they add more institutional detail of how in the case of repo contracts par clearance is ensured. On one hand, they argue that par clearance can best be induced through a repo contract, which by definition is collateralized with securities, typically treasuries. Using treasury bonds as collateral brings the state into the picture, which is a better way to remedy for the uncertainty prevalent in the financial system than uncollateralized instruments. On the other hand, they stress that in the case of repos a “*private at par regime*” is in place, which is based on three components (ibid, 12): *mark-to-market*, which means that asset prices must reflect current market prices; *haircuts*, which implies that some of the market value of the securities used for repo are ‘cut’ to compensate for price volatility and

counterparty risk; and *margin maintenance*, which is a periodic procedure to balance the market value of the securities used for repo if the original haircuts no longer suffice.

Ricks (2016, 31) uses a different terminology but effectively refers to the par concept when he discusses what it means “to say that cash equivalents are ‘money,’ or that they are ‘moneylike,’ or that they have ‘moneyness,’ even though they are not a means of exchange”. He argues that “economic agents generally find it desirable to hold an inventory of liquid assets to facilitate near-term transactions, which we will call a ‘**transaction reserve**’. [...A]gents will generally want their transaction reserves to have a very stable value *in relation to* cash. Cash equivalents have this special property: unlike, say, longer-term Treasuries, they have practically no nominal price risk. For this reason they make particularly good transaction reserve assets” (ibid, 31-32, bold emphasis by authors).

c) Swap of IOUs

The third criterion concerns the supply side of shadow money. How are shadow money instruments brought into being?

Josef Schumpeter, in his *History of Economic Analysis*, argues that there are essentially only two monetary theories that deserve the name (Schumpeter 1954, 686): *monetary theories of credit*, which place logical emphasis on money as a token or commodity, and *credit theories of money*, which emphasize that money is nothing but a special form of credit, an IOU. All three shadow money theories are firmly embedded in the credit theory of money logic. Shadow money forms are debt instruments, not legal tokens or pure asset money that is no one else’s liability (cf. Gurley and Shaw 1960).

In all three shadow money theories, the authors appear to have ideas of credit money creation in mind that lie at the heart of shadow money issuance. However, this

similarity is concealed by the fact that they give different names to this process and describe with different terminology what exactly happens during this balance sheet operation. In line with Mehrling (2011), we will refer to this operation as a **swap of IOUs**, but we perceive other terminologies such as “creating liabilities to fund a position in assets” (Dow 2006) or “creating leverage” (Sgambati 2019) as equivalent.

Ricks argues that banking, very generally speaking, “refers to the business of issuing large quantities of money-claims—short-term debt instruments, excluding trade credit—to fund portfolios of nonmonetary (or at least *less* monetary) financial assets. The issuance of large quantities of money-claims that are continuously rolled over is the defining feature of our concept of banking” (Ricks 2016, 52). He attributes various labels to this process that are similar to the swap of IOUs terminology. It may be described as “loans create deposits” (ibid, 57) or ability to “create deposits ‘actively’ [...] in the process of acquiring investment assets” (ibid, 74), or money creation “out of thin air” (ibid, 57). Ricks argues that what distinguishes a shadow bank from a regular bank is just its legal status: “a shadow bank is an entity that uses large quantities of short-term debt to fund a portfolio of financial assets and that is not a chartered deposit bank. The shadow banking system is just the set of entities that meet these two criteria” (ibid, 2).

Gabor and Vestergaard (2016, 2)—citing Schumpeter—perceive “money as a balance sheet concept, an operation that records a social relation in the tradition of Keynes, Minsky, Wray and more recent

heterodox contributions”. They elaborate further that “the claim approach treats money as a ‘social relation of debt and credit denominated in a unit of account’” (ibid). With reference to the Bank of England paper by McLeavy et al. (2014), they explain the money creation mechanism along the lines of a swap of IOUs, without using the same terminology (Gabor and Vestergaard 2016, 5-6). In their example, they follow the depiction of Bell (2001) according to which the “creation of money [...] affects both assets and liabilities of the issuer” (Gabor and Vestergaard 2016, 5).

While Pozsar (2014) does not describe explicitly how shadow money is created, we may assume that he follows the swap of IOUs notion here as he puts his analysis in the context of Mehrling’s *Money View*. He talks generally about money claims that are issued by different types of financial institutions, which are “backed by public or private assets” (Pozsar 2014, 15). We may see here an implicit reference to the swap of IOUs logic.

Figure 1 shows the swap of IOUs logic as a balance sheet operation. A *credit money issuer* expands its balance sheets on both sides by issuing credit money as a short-term IOU against a longer-term IOU. It has a *borrower* as its counterparty that mirrors this operation. It receives credit money now in exchange for a promise to pay it back at a future point in time, codified as a loan or bond.

This structure is typically applied to bank deposits. The *credit money issuer* is a commercial bank which creates bank deposits while handing out a loan to or buying a bond from a firm or a household as *borrower*. Yet in a more general sense, this structure underpins

Figure 1—Credit money creation as a swap of IOUs

	Borrower		Credit money issuer	
t=0	+ Credit money (short-term IOU)	+ Loan or Bond (long-term IOU)	+ Loan or Bond (long-term IOU)	+ Credit money (short-term IOU)

all credit money creation. It is the key balance sheet mechanism of what we may call ‘endogenous money creation’. All four shadow money theorists, so we contend, effectively refer to this structure as the origin of shadow money. As a supply side criterion for the shadow money concept, it must be applicable to all empirical instruments we might wish to classify as shadow money.

The idea that the swap of IOUs structure is not unique to bank deposit creation can be attributed to Hyman Minsky. As to Gabor and Vestergaard (2016, 7), Minsky “questioned the idea of a ‘single, inelastically supplied monetary liability with known and unchanging properties’ that runs through discussions of bank money” and was “more interested in new liabilities with unknown and changing properties, issued in a monetary space shifting in its properties to meet the needs of structurally changing economies”.

Jo Michell’s critique of the shadow money concept is connected to this very balance sheet operation. He argues that shadow banks do not have “the same autonomy to expand credit as that of traditional banks” as “the creation of new credit either requires a prior decision to ‘not spend’, a shift in liquidity preference—leading to an increase in the holding of financial assets vis-a-vis deposits—or through the expansion of money and credit on the balance sheets of ‘traditional’ banks” (Michell 2017, 363).

The question of whether the issuance of a shadow money instrument corresponds to a swap of IOUs and thus involves autonomous credit creation is the fundamental point of contestation in the shadow money discourse. In the next section, we will show that—on a higher level of abstraction—shadow money instruments exploit a dualistic nature of the underlying accounting conventions through which they emulate the credit creation logic without fully replicating it. How to interpret and categorize this ambiguity underlying shadow money instruments is the main difference among shadow money theorists.

3. Empirical application

Following this conceptual discussion, we now look at four different instruments to discuss whether and under which conditions they correspond to three criteria. We will look at (a) money market fund shares, (b) asset-backed commercial papers, (c) repurchase agreements, and (d) foreign exchange swaps. We draw both on the writings of the shadow money authors and external primary and secondary sources.

a) Money market fund shares

Money market funds invest in short-term money markets. As such, they function as open-ended mutual funds that hold short-term debt-securities such as repos, T-Bills and commercial paper (Federal Reserve Board 2019). The aim of an MMF is to maintain a constant net asset value (C-NAV) of its share which in the United States is kept at 1 US-Dollar. The shareholders of MMFs (usually) receive daily dividend payments equal to the fund’s net income of the day. As long as the short-term debt instruments do not suddenly lose value, the net income stream which an MMF receives should always be positive. MMFs can be categorized on the basis of their investment strategies. For example, government and treasury MMFs invest at least 99,5% of their assets into cash, government securities or fully collateralized repos. Prime MMFs invest in floating or variable rate debt and commercial papers, and tax-exempt MMFs in obligations of state and local jurisdictions that are exempt from income tax (Investment Company Institute 2014, 196). A whole slew of other species MMF exist in addition.

Substitute for bank deposits: There is little disagreement over the assessment that MMF shares function as substitutes for bank deposits. MMFs developed in the 1970s as a response to regulatory restrictions on commercial banks, in particular the cap on interest paid on bank deposits due to ‘Regulation Q’. MMF shares were designed to directly compete with commercial bank

deposits by offering higher interest rates to investors. This was possible because regulators do not treat MMFs as banks but as funds. From an accounting and regulatory point of view, MMF shares are *equity capital*. In their practical treatment and trading, however, they resemble *debt capital*. Unlike regular equity capital, which can only be taken out of an entity via a dividend, capital paid into an MMF can be taken out daily via a sale of the equity. Similarly, equity can be paid in dynamically on a daily basis (Novick, Hoerner, and Mendelson 2011). This makes MMF shares in many respects equivalent to deposits, which are formally banks' *debt capital*. Regulated by the Securities and Exchange Commission (SEC) under the Investment Company Act rule 2a-7 (Fink 2011, 253), MMF shares transformed their role over time "facilitating efficient cash management for both retail and institutional investors who used them for everything from making mortgage payments [...] to the short term investment of cash received through business operations". To make MMF shares more attractive vis-à-vis deposits, MMFs even introduced cash management options such as check writing, credit and debit cards (Baklanova 2012, 98). Hence, MMF shares became even equivalent to deposits even as means of payment.

Par clearance with bank deposits:

There is no doubt that MMF shares come along with a promise to trade at par on demand with bank deposits if they promise to maintain a one dollar per share 'constant net asset value' (C-NAV). To achieve this, C-NAV MMFs make use of SEC approved accounting rules to promise that MMF investors will be paid back 'one buck on the dollar' (Fink 2011, 253). MMF shares—similar to bank deposits—are deposited on the respective accounts and can typically be withdrawn instantaneously. However, disagreement exists among the shadow money theorists on how strong this promise of par clearance is. Before the 2007-9 Financial Crisis, most MMFs had private guarantees from parent institutions as backstops. When a run on MMF shares

emerged after the collapse of Lehman Brothers, C-NAV could be maintained as most losses were covered by parent banks. However, the Reserve Primary Fund, which did not have a private backstop, broke the buck (Bernanke 2013, 82). In 2014, the SEC introduced regulations which effectively allowed only Government MMF to maintain a C-NAV (SEC 2014; Murau 2017a). Contrary to this, Gabor and Vestergaard (2016, 14) argue that the promise to maintain par is weaker because MMF shares, in contrast to repos, are not collateralized. They conclude that for this reason MMF shares do not "warrant treatment as shadow money". Pozsar (2014), however, sees MMF shares as a key shadow money form, even though the promise for par clearance is weaker—a position that Ricks would most likely concur with. We see here profound differences in interpretation of whether the par criterion is fulfilled empirically or not.

Swap of IOUs: Does the issuance of MMF shares satisfy the supply side criterion of a swap of IOUs? Here, the opinions differ considerably but are not discussed explicitly by the shadow money theorists. The key disagreement among shadow money theorists is whether the issuance of an MMF share merely is a *conversion* of a previously existing deposit, or if actual *debt creation* through an overall balance sheet expansion takes place. We argue that both positions are true, depending on how precisely the swap of IOU criterion is applied. Taking on board the observation of McCabe (2015) who notes that operation of MMFs can both be consistently interpreted as those of a *fund* and those of a *bank*, we call this analytically a '*bank-vs-fund dualism*'.

Figure 2 presents a stylized balance sheet example of how an MMF operates. An institutional investor—in Pozsar's words: a "cash pool"—has substantial deposit holdings and invests them in an MMF. The MMF issues an MMF share promising to pay back the deposit on demand ($t=0$) and subsequently lends out the deposit to a securities dealer ($t=1$).

Figure 2—Balance sheet dynamics for MMF share issuance

		MMF	
	t=0	+ Deposit	+ MMF share
	t=1	- Deposit + Security	
		Securities dealer	Institutional investor
	t=0		- Deposit
	t=1	+ Deposit - Security	+ MMF share

Gabor and Vestergaard (2016, 14), in agreement with Michell (2017), interpret this operation as that of a *fund* which is not able to create credit money. The MMF takes in the deposit and lends it on. In their assessment, “MMFs do not create money endogenously, as banks do”. And indeed, the pattern here is not structurally identical to the deposit creation process depicted in Figure 1 as the MMF does not have a single counterparty that would swap IOUs as well. Instead, it is embedded in the shadow banking daisy chain and just passes through the deposit. The institutional investor does not swap IOUs but does only an asset swap. Ricks and Pozsar, by contrast, adopt a counter position and see the logic of a swap of IOUs at play here. Having received and lent out the deposit, the MMF is conducting maturity transformation and holds different promises to pay of different maturities. It issues the MMF share as a promise to pay a deposit on demand, even though it does not have the deposit right now as it has been lent out, e.g. as an overnight repo. With the MMF share as a promise to pay higher ranking money and the corresponding security as a less liquid asset, the MMF swaps IOUs and creates credit. While this is not fully identical to how a bank creates deposits by swapping IOUs, there is some functional equivalence.

Assessment: MMF shares substitute bank deposits both on the wholesale and the retail market. Ricks and Pozsar integrate MMF shares in their definition of shadow money

because they accept the C-NAV accounting of MMFs as sufficiently strong promise to pay at par on demand and lean towards its interpretation of its operations as genuine credit creation. Gabor and Vestergaard mildly reject that MMF shares can be shadow money because for them the par promise is relatively weak, and they do not think that MMFs can genuinely create credit money as banks do.

b) Asset-backed commercial papers

ABCPs are short-term money market instruments, just as MMF shares. They are structured as the liabilities of ABCP conduits—Special Purpose Vehicles (SPVs) which are backed by a pool of financial assets. ABCPs are typically set up by large commercial banks, which use them as off-balance-sheet institutions to conduct banking functions while circumventing capital requirements (Covitz et al. 2009: 6-7), thereby also decreasing the leverage on the main balance sheet. These large commercial banks act as programme administrators, allowing them to earn fees. These commercial banks are also sometimes referred to as sponsor bank. ABCPs have been discussed as a key shadow money form until 2007. In the first wave of the 2007-9 Financial Crisis, a run on ABCPs emerged, leading to large losses of SPVs that had to be borne by the parent banks. In reaction to the run, US authorities largely dried out the ABCP market. Hence, ABCPs play at best a limited role today (Murau 2017b).

Substitute for bank deposits: None of the shadow money theorists doubts that ABCPs are to some extent a substitute for bank deposits. The ABCP market originated in attempts of commercial banks to find an alternative to holding deposits as liabilities. To issue ABCPs, sponsoring banks create a bankruptcy remote SPV that pools assets and funds them by issuing commercial paper. ABCPs are then purchased by MMFs and other institutional cash pools because they are short term, liquid debt, just as bank deposits (Gabor and Vestergaard 2016, 13; Sunderam 2012). However, it is not possible to withdraw ABCPs on demand. They can only be held until maturity or sold on the secondary market. Still, liquid secondary markets provide a close substitute to direct convertibility. Therefore, as Sunderam (2012) shows in an econometric study, ABCPs do respond to money demand, similar to regular deposits. ABCP issuance was mainly done in offshore financial centers (Haberly and Wójcik 2017). ABCPs came up as a financial innovation in the mid-1980 but only developed into a significant funding source in the 1990s. Due to the Basel regulations, large banks had to maintain more reserves and equity for their deposits. In the course of the liability management, banks sought to reduce the nominal amount of deposits held on their balance sheets and came up with ABCPs as an alternative instrument and accounting technique. In 2004, US bank regulators stipulated that assets held in SPVs required 90 percent less capital than assets on banks' balance sheets. This decision led to a sharp increase in ABCP issuance and reached a peak in July 2007 before the 2007-9 Financial Crisis started in August with a run on ABCPs (Bate, Bushweiler, and Rutan 2003; Acharya and Schnabl 2010).

Par clearance with bank deposits: Major disagreement exists among shadow money theorists whether it is fair to say that ABCPs trade—or rather before the 2007-9 Financial Crisis traded—at par to bank deposits. The key difference is how strict the criterion of a one-to-one exchange rate is applied. To use Pozsar's categories, do we ask

for 'par on demand' or 'par in the near future'? Ricks (2016) and Pozsar (2014) are fine with a definition of 'par in the near future' and claim that ABCPs broadly kept par with deposits. There is evidence for this position in the literature. For example, a paper of the Federal Reserve Board explicitly states that "[i]n the ABCP market [...] investors expect to be able to access their funds on demand at par value" (Covitz, Liang, and Suarez 2009, 2) and specifies further: "More than half of ABCP daily issuance has maturities of 1 to 4 days, and the average maturity of outstanding paper is about 30 days. ABCP is thought to be liquid because investors can liquidate their positions, as often as every day, with no price impact" (ibid, 7). Acharya and Schnabl (2010, 40) stress the role of the SPVs' private sponsors who have "to pay off maturing ABCP at par independently of underlying asset values". By contrast, Gabor and Vestergaard (2016) are highly critical of this position and only treat 'par on demand' as a valid argument. They argue that "the convertibility on demand was severely limited. Investors held the paper to maturity, typically under 30 days, and rolled it over. Thus, there was little secondary market trading [...], leaving holders of ABCP with little option to convert into bank deposits on demand before the ABCP matured" (Gabor and Vestergaard 2016, 13).

Swap of IOUs: Similar to MMFs, ABCPs are subject to the '*bank-vs- fund dualism*'. To see why, let us move on one further step in the shadow banking daisy chain (Claessens et al. 2012, 21). As [Figure 3](#) shows, MMFs invest some of their deposits with an ABCP conduit and receive ABCPs as short-term IOUs in return. The ABCP conduit uses the deposits to purchase asset-backed securities (ABS) from other entities such as SPVs of major banking corporations. As a result, the ABCP conduit accepts a maturity mismatch of ABCPs and ABS which may be interpreted as a swap of IOUs and hence credit creation. Still, since ABCP issuance could not be done without initial funding and the counterparties only swap assets, the approach is not identical to the mechanics of deposit creation.

Figure 3—Balance sheet dynamics for ABCP issuance

		ABCP conduit	
t=0		+ Deposit	+ ABCP
t=1		- Deposit + ABS	
		Special Purpose Vehicle	MMF
t=0			- Deposit + ABCP
t=1	+ Deposit - ABS		

Assessment: All shadow money theorists accept ABCPs as substitutes for bank deposits, even though they can only be used on the wholesale, and not on the retail money market. There is, however, a major disagreement over whether ABCPs can be taken to satisfy the par clearance and swap of IOU criteria. The issue of timing appears to be key in this debate. The questions range from the moment at which a swap of IOUs has occurred to the point when convertibility has to be obtained. While Ricks (2016) and Pozsar (2014) are comfortable with a less strict application of these criteria, Gabor insists on a more narrow application. As a consequence, they differ in their assessment on whether ABCP constitutes shadow money. However, this disagreement should not mask the fact that all three authors share three criteria as necessary conditions for something to count as shadow money.

c) Repurchase agreements

Repurchase agreements ('repos') are debt instruments constructed around the sale and repurchase of securities. The US repo market is run by securities dealers who—as they are willing to buy and sell repos at different prices and maturities—act as market makers (Mehrling 2013) while in Europe banks as issuers of repo dominate (Gabor 2016). The sale of the collateral is called 'first leg', the repurchase 'second leg'. The shortest possible

duration between the first and second leg is one day ('overnight repo'). Repos with longer maturities are 'term repos' (Pozsar 2014).

Substitute for bank deposits: There is a broad agreement among the shadow money theorists that repos are a key instrument to substitute bank deposits. Large institutional investors ("cash pools", in Pozsar's words) need to do safe short-term investments of huge sums that exceed the limit of deposit insurance. For them, using a standard deposit at a bank is highly risky. Repos were the alternative because the collateral served as an alternative insurance mechanism to deposit insurance that in principle didn't have any quantitative limits. In the bilateral repo market, the dealer and its counterparty are processing the repo transaction on their own. In the tri-party repo market, they bring in a 'custodian bank' (or 'clearing bank') as third party to facilitate the repo transaction. Due to its operational ease and efficiency compared to the bilateral market, the dealer community perceives the tri-party repo market as preferable (Global Investor 2010). This made it possible to design overnight repos "as 'simple as bank deposits', but with the added security of the collateral" (Jones 1997, 28).

Par clearance with bank deposits: Shadow money theorists agree that repos trade at par with bank deposits, but they slightly differ in their argument of the reason for it. Pozsar and Ricks stress that repos

maintain par if they have very short maturities, hence they pay particular attention to overnight repos. Securities dealers offer these overnight repos to MMFs who then ‘deposit’ their funds by purchasing the security. The MMF can decide on the next day whether to roll over the repo for another night or not. This makes its funds *de facto* available on demand. The short-termness of overnight repos reduces their price volatility and uses market forces to induce quasi-par to deposits as higher-ranking money form, making them “high-quality, highly liquid, short-term IOUs [... that as] a result of these characteristics [...] are subject to negligible price fluctuation” (Ricks 2011: 79). Gabor and Vestergaard (2016: 2, 11, 22) note that the use of collateral in repo transactions enhances the promise to pay par, and that mark-to-market practices of collateral portfolios help maintain par also for repos with maturity longer than overnight.

Swap of IOUs: The shadow money theorists agree that repos represent a form of credit creation, but in their main publications show no unambiguous examples for how to put this on-balance-sheet. In particular, the connection of the repo as IOU with the security as collateral that is sold and repurchased is often unclear. It has different properties, depending on the angle from which it is looked at. We frame it as an ‘*asset-swap-vs-swap-of-IOUs dualism*’: As *asset swap*, the depiction focuses on the exchange of higher-ranking money, puts the collateral in the focus and abstracts from credit creation and the issuance of lower-ranking money. As *swap of IOUs*, it abstracts from higher-ranking money and collateral but records the credit character and the issuance of lower-ranking money on-balance-sheet. This ambiguity resembles what is known as wave-particle dualism in physics when light can be consistently described both as a wave and as a particle.

Figure 4 depicts the repo transaction as an *asset swap* with two legs at two points in time. The first leg is the sale of a security from the securities dealer to the MMF at $t=0$. The second leg is the repurchase of the security at $t=1$. In an overnight repo, $t=1$ is simply the next day (Gorton 2010; Copeland, Martin, and Walker 2010; Copeland et al. 2011; 2012; Singh 2013; 2014b; 2014a; Choudhry 2006). Seen this way, both transactions are separate from each other and do not imply the issuance of an IOU. The repo does not expand the balance sheets of both institutions. No new liability emerges, no credit money is created.

Figure 5 portrays the same transaction as a *swap of IOUs* (Pozsar 2014, cf.; 2015; Mehrling 2011). In this view, the securities dealer issues at $t=0$ the promise to repurchase the security at $t=1$. It is a commitment for a future cash flow—a *repo IOU*. In exchange, the MMF as counterparty issues a *reverse repo IOU*—an asset that the securities dealer holds. In this perspective, the balance sheet mechanics do reflect a swap of IOUs that takes place at $t=0$.

Both ways of accounting attribute a fundamentally different role to the security. If we think of it as an *asset swap*, the security is what matters the most. Coming from this perspective, Singh (2013; 2014a) sees the collateral as the essential aspect of the instrument, a ‘financial lubricant’ that allows the two legs of the repo transaction to happen, and Gabor (2018b) stresses the importance of economic and legal ownership of the collateral for repo to work.⁷ By contrast, if we think of the repo as a *swap of IOUs*, the security does not appear on-balance-sheet—just as the house used as collateral in a mortgage loan—and is merely a commitment device in the context of credit creation.

⁷ Gabor (2018b) explains that “repo is a securities financing transaction structured legally as a sale and promise to repurchase corporate bonds, and in accounting terms as a new IOU issued to borrow cash against corporate bond collateral. Critically,

the collateral securities do not leave the investor’s balance sheet. [...] The buyer of collateral treats the repo IOU as a cash-equivalent (a safe asset), whose par value is preserved by mark-to-market of collateral and margin calls”.

Figure 4—Repo accounting as an asset swap without credit money creation

	MMF		Securities Dealer	
t=0	- Deposit		+ Deposit	
	+ Security		- Security	
t=1	+ Deposit		- Deposit	
	- Security		+ Security	

Figure 5—Repo accounting as a swap of IOUs with credit money creation

	MMF		Securities Dealer	
t=0	+ Repo	+ Reverse Repo	+ Reverse Repo	+ Repo

An additional point that Michell (2017, 373) as well as Gabor and Vestergaard (2018, 147–48) emphasize is the repo accounting when the repo issuer is not a dealer but a bank. When the bank sells the security, it may be paid in deposits which it had previously issued as its own liability. Then the purchase of the security makes the bank’s balance sheet contract and leads to a “destruction” of the deposit, a case that both Michell and Gabor and Vestergaard emphasize. [Figure 6](#) depicts the balance sheet mechanics for this operation in our framework. From our point of view, this repayment of debt is a variation of the asset swap logic (Figure 4), which is independent of conceptualizing repo as a swap of IOUs. We can still translate the operation depicted in Figure 6 in the logic shown in Figure 5 where repo and reverse repo claims are issued at t=0 to expand the balance sheets of the parties involved on both sides. Thus, whether the repo issuer is a bank or a securities dealer does not invalidate the dualistic nature of the repo issuing process.

Assessment: Repos are the only instrument that all shadow money theorists jointly think of as shadow money. They agree that it substitutes deposits and trades at par. While Pozsar and Ricks view overnight repos and term repos close to maturity as shadow money, Gabor and Vestergaard stress that due to mark-to-market regulations also term repos further away from maturity can count as shadow money. However, there are different ideas for putting the repo on-balance-sheet. Even though the shadow money theorists do not explicitly contrast the *asset swap* and the *swap of IOUs* logic, we understand this dualism to be at the core of much disagreement and opacity. In any case, repos offer the clearest example of how shadow money theorist rely on three criteria in order to assess whether an instrument should qualify as shadow money. The agreement among the shadow money theorists that repos are shadow money notwithstanding, it should be noted that they actually profoundly differ in their rationales to substantiate their conclusions.

Figure 6—Repo accounting with deposit repayment without credit money creation

	Counterparty		Bank	
t=0	- Deposit		- Security	- Deposit
	+ Security			
t=1	+ Deposit		+ Security	+ Deposit
	- Security			

d) Foreign Exchange Swaps

Foreign exchange swaps play a very minor role in Ricks's (2016) analysis and do not feature in Pozsar (2014) or Gabor and Vestergaard (2016). The debate on FX swaps gained traction in 2017 with a publication by the Bank for International Settlements. Borio, McCauley and McGuire (2017, 37) ask: "What would balance sheets look like if the borrowing through FX swaps and forwards were recorded on-balance sheet, as the functionally equivalent repo debt is?". The reason why "FX swaps, unlike repo, do not increase balance sheet size when done on a matched-book basis" is that "they receive derivative-accounting-status, despite an exchange of principal at trade initiation and termination" (Concentrated Ambiguity 2020). It did not take long until repo experts Richard Comotto and Daniela Gabor reacted to the BIS interpretation and criticized it in blog posts (Comotto 2017; Gabor 2018b). By contrast, it is broadly in agreement with Zoltan Pozsar's 'Money Notes' publication series which attributes crucial importance to FX swaps (Pozsar 2016; 2017; 2020). The step was not too far to hypothesize that FX swaps may be a shadow money form that is specific to the "Offshore US Dollar System" (Murau 2018; also cf. Setser 2019).

Substitute for bank deposits: By definition, an FX swap "involves an FX spot transaction with a simultaneous FX forward transaction in the opposite direction" (Stenfors 2017, 2). Two counterparties agree to exchange e.g. EUR and USD today and reverse the transaction at an agreed upon point of time in the future. The main institutions involved in FX swaps are typically banks and securities dealers. FX swaps are usually interpreted as a derivative to hedge against FX risk. However, as Toporowski (2017) points out, FX swaps also have properties of a money market instrument. If we think along these lines, we may see in which way they may substitute bank deposits. To an overwhelming extent, FX swaps are used for US-Dollar funding (DeRosa 2014). The

international monetary system runs on the basis of US-Dollars as a unit of account; non-US financial institutions often have the need for US-Dollar but do not have access to it onshore within the US monetary jurisdiction. As FX swaps involve the swap of two currencies on the spot and the reversion of the transaction at a future point in time, they can be used by institutions located outside of the US as an alternative funding channel to established forms of interbank lending (McGuire and von Peter 2009, 52). In particular, during the 2007-9 Financial Crisis, when all money market segments were at the brink of collapsing, the FX swap market was the one funding channel that continued to function relatively unhampered (Coffey et al. 2009). This is one of the aspects indicating that FX swaps may be seen as an alternative to established forms of deposit-based banking.

Swap of IOUs: Just as in the case of repos, we can think of FX swaps both as an asset swap and as a swap of IOUs. This, we contend, lies at the heart of the considerations of Borio, McCauley and McGuire (2017) that FX swaps are functionally equivalent to other money market instruments such as repos and effectively create debt-like obligations. As those obligations are not recorded on-balance-sheet, the debt is effectively missing. As Stenfors (2017, 2) puts it, FX swaps "can also be seen as a loan in one currency versus a simultaneous deposit in another currency for the same maturity and with the same counterparty" (Stenfors 2017, 2). In his *Global Money Notes*, Pozsar suggests that it is possible to comprehend FX swaps as an instrument similar to repos, the only difference being that foreign currency is used as collateral instead of a treasury bond.

Let us first look at the FX swap as an asset swap. [Figure 7](#) shows that this view is straightforward if we assume that one of the two counterparties wants to have one of the currencies, say USD, and the other bank wants the other currency, say EUR. In that case, they swap both currencies at $t=0$ and reverse the transaction at $t=1$ (see). By contrast, [Figure 8](#)

Figure 7—FX swap accounting as an asset swap without credit money creation

	Bank A		Bank B	
t=0	- USD deposit		+ USD deposit	
	+ EUR deposit		- EUR deposit	
t=1	+ USD deposit		- USD deposit	
	- EUR deposit		+ EUR deposit	

Figure 8—FX swap accounting as a swap of IOUs with credit money creation

	Bank A		Bank B	
t=0	+ “USD FX swaps”	+ “Reverse USD FX swap”	+ “Reverse USD FX swap”	+ “USD FX swaps”

indicates an alternative view. We may argue that most FX swaps today are being done not between two equal currencies, but in order to get the international key currency: the USD. From that perspective, the intention of the swap is to “borrow” USD today. The EUR deposit is merely given as collateral for the USD to be paid back in the future. Similar to the argument we have made about the economic logic of a repo transaction, we can then also write down the EUR-USD FX swap as *actually* an act of credit creation. We may call the promise to repay USD at t=1 ‘USD FX swaps’ and, vice versa, the position of the counterparty ‘reverse USD FX swap’.

This is a hypothetical example of how FX swaps *could* look on a balance sheet if accounting rules were different, which they evidently are not and will likely be not (Comotto 2017). Gabor (2018b) is quite explicit in rejecting this alleged parallelism between repos and FX swaps. Both an FX swap and a repo “promise to pay back USD”. However, she insists that “[o]nly the repo gives investors access to new funding via money creation. In contrast, the fx swap involves (twice) exchanging IOUs already created.”

Importantly, we must acknowledge that we could also interpret the same operation the other way around. It could also

be a EUR FX swap, issued against a Reverse EUR FX swap. Hence, looking at the swap of IOUs criterion, we see that we can indeed make the case that there is credit creation going, but reality is particularly messy here. In particular, accounting standards for various types of FX swaps are highly complicated and opaque (Vajdová 2004).

Par clearance with bank deposits: If we conceptualize FX swaps along the swap of IOUs perspective, we can hypothesize that the ‘USD FX swap’ IOU trades at par with the USD deposit as higher-ranking money if covered interest parity (CIP) is fulfilled. According to Avdjiev et al. (2017, 1), CIP is “perhaps the best-established principle in international finance, and states that the interest rates implicit in foreign exchange swap markets coincide with the corresponding interest rates in cash markets. Otherwise, someone could make a riskless profit by borrowing at the low interest rate and lending at the higher interest rate with currency risk fully hedged. However, the principle broke down during the height of the 2008-2009 crisis. [...] CIP deviations have persisted and have become more significant recently, especially since mid-2014”.

The interpretation of CIP as the par rate of the ‘USD FX swap’ IOU may help us contextualize the disappearance of CIP since the 2007-9 Financial Crisis (Borio et al. 2016).

It is the same breaking away of par that also MMF shares, repos and ABCPs have experienced during the run on the shadow banking system. Gabor (2018b) insists that a crucial difference between repos and FX swaps is that no mechanisms to ensure par are in place. However, some commentators argue that the Federal Reserve's central bank swap lines serve the function of supporting CIP for FX swaps (e.g. Mehrling 2015).

Assessment: The shadow money theorists barely feature FX swaps in their main publications (Pozsar 2014; Gabor and Vestergaard 2016; Ricks 2016; Michell 2017). While the debate on FX swaps has only gained traction after those publications had been released, the shadow money theorists have commented on them later in various ways. FX swaps stretch the definitional boundaries of the monetary spectrum even more than the other instruments and may be seen as the intellectual frontier of the field. While their common treatment as derivative conceals how they might fit in the shadow money spectrum, we can see how they correspond to the shadow money criteria if we interpret them as money market instruments. Indeed, they may be the key shadow money form of the 2020s (Pozsar 2020)

4. Discussion

Our analysis suggests that, despite coming from different intellectual traditions and often using different terminology, the shadow money theorists do not diverge so far apart in their conceptualization of shadow money. The key difference between them is the **strictness with which they apply these general criteria to the empirical instruments.**

If we take the three criteria for shadow money in a mathematically strict sense, then none of the instruments under scrutiny will count as shadow money. This is the position of Michell (2017). The other shadow money theorists vary in the degree of how strictly they apply the criteria and hence come to different empirical conclusions. Gabor and Vestergaard (2016) see repos as the quintessential form of shadow money because here par clearance can be guaranteed in the strictest sense. Pozsar (2014) and Ricks (2016) are less strict in applying the par criterion and thus also integrate a wider set of instruments in the picture. FX swaps constitute the frontier of these explorations. While shadow money theorists agree that they do not satisfy the criteria, some scholars more recently have presented arguments for why the criteria may have in fact been met. And as we demonstrate in our analysis above, it is possible to extend the very same logic which holds for repo, MMFs, and ABCP to FX swaps.

Let us go over the three criteria again. First, what does it mean to say that shadow money has to be a **substitute for bank deposits**? In the strictest sense possible, we would have to demand that shadow money forms have to be similar to bank deposits in *all respects*. In that case, none of the shadow money instruments is a perfect substitute as they are all subject to empirical variation. By contrast, being a substitute can also mean that, by virtue of being *promises to pay deposits*, shadow money forms are similar only in *some* respects. In that case, we will actually find some empirical instruments that satisfy this criterion.

We can show this point by discussing what is conventionally understood as the functions of money.⁸ The shadow money

⁸ According to the textbook approach, money has three standard functions: being a store of value, a means of payment and a unit of account. Sometimes, being a means of settlement is added as a fourth function. Such logic corresponds to monetary theories of credit (cf. Schumpeter 1954).

In a credit money framework, the unit of account (the US Dollar, the Euro, etc.) is just the measure in which we denominate IOUs in. It has logical priority, and is merely a fictional idea (Mitchell-Innes 1914) Hence, the functions we discuss here leave out the unit of account.

authors agree that the shadow money instruments substitute the *store of value* function, provided they trade at par. This is implied when the shadow money theorists emphasize that all shadow money forms have to be safe and liquid. It is trickier if we focus also on the *means of payment* function. Here, only MMF shares can (partly) substitute bank deposits because they sometimes can be used in retail stores to purchase actual goods and services. All other instruments are wholesale instruments. Finally, the question is to which extent the instruments can be a *means of settlement*. For Michell (2017, 361), this is one of two reasons to reject the shadow money concept altogether. He criticizes that shadow bank liabilities, unlike bank deposits, do not function as such a means of settlement. However, deposits are also not the *ultimate* means of settlement; in the contemporary system, this can be only central bank money. Hence, which instrument is acceptable as a means of settlement depends on where you are in the hierarchy. You can often settle claims without central bank money. For institutions located further down in the hierarchy of money, some deposit substitutes can actually be a means of settlement.

Second, there is no doubt that *par clearance* to higher-ranking money is a key criterion that an instrument has to fulfil in order to be counted as shadow money. The shadow money theorists also agree that backstops play an important role to achieve this, i.e. guarantees to maintain par clearance given by someone else than the shadow money issuer.

However, the shadow money theorists differ in their interpretation of what this means in empirical application. On one hand, how strict do we want to be in defining par itself? The idealized view is that there is an exact nominal one-to-one identity between a shadow money instrument and the higher-ranking money form. If we lean to this position, it is only the guaranteed C-NAV of MMF shares that can count as par, because the accounting rule allows a one-to-one

conversion. By contrast, if we are more forgiving, we would also be satisfied with a notion of 'almost par' or 'quasi par'. This is the more realistic case as most potential shadow money forms use techniques to minimize market fluctuations to achieve (almost) fixed exchange rates but are rarely nominally fixed.

On the other hand, opinions differ on what it means to have a backstop to guarantee par. The theorists agree that such backstops are important, and that a defining feature of shadow money is the absence of an explicit well-defined public *ex ante* backstop as deposit have it. Instead, shadow money instruments have other forms of backstops. Some are explicit and codified in law, others at best implicit and not formalized. We may think of these as a contingent liability of a sponsoring institution. While only an explicit guarantee may count from a legal perspective, the economic logic is all about avoiding a panic and runs as a self-fulfilling prophecy. An implicit guarantee may be most effective but is not measurable and doesn't count in a legal sense.

Third, it is not at all clear how explicitly the *swap of IOUs* criterion must be fulfilled. When Michell (2017, 363) argues that shadow banks do not have "the same autonomy to expand credit as that of traditional banks" as "the creation of new credit either requires a prior decision to 'not spend'" or "the expansion of money and credit on the balance sheets of 'traditional' banks", then he seems to have in mind that credit creation and swapping IOUs must occur exactly equivalent for shadow money instruments as for bank deposits.

Our analysis suggests, however, that all four instruments under scrutiny have a dualistic nature and can both be seen as either credit creation or not credit creation. In the case of MMF shares and ABCPs, this works through a '*bank-vs-fund dualism*'. In the case of repos and FX swaps, it works through an '*asset-swap-vs-swap-of-IOUs dualism*'.

This ambivalence can be put down in various ways on-balance-sheet, according to historically contingent accounting rules. This comes back to a seminal discussion by Morgan (1988) and Hines (1988) that accounting does not simply reflect reality but also creates reality. If we want to define ‘shadow money’ in a strict sense, then the swap of IOUs has to be put down exactly in the similar way as it happens between a bank and its counterparty—issuing a deposit in exchange for a loan or bond. We would have to look for the same accounting principles as for banks. Following the view of Ricks, we would not find them for any alleged shadow money instrument because shadow money is precisely defined as doing functionally the same as deposit issuance yet with slight variations in order to circumvent accounting and bank regulations.

Therefore, seen in a less strict sense, we can accept divergence in actual accounting rules and identify instances where the same operation takes place at a higher level of abstraction. The key element is that ***new promises to pay higher-ranking money*** are issued, independently of the actual accounting rules. The emphasis lies on expanding the credit money system by creating new claims, which can occur in different forms. This view is sensible in particular if we think not only about the balance sheet structure as an end in itself, but what their broader implications are for the financial system. Swapping IOUs means the ability to create money out of nothing, issuing promises to pay something that is not necessarily there, creating new cash commitments with a survival constraint (Minsky 1986). From a broader perspective, it means increasing the volume of the credit money system as a “self-referential network of expanding but unstable debt claims” (Murau 2017).

5. Conclusion

This paper has set out to compare the main approaches for conceptualizing shadow money—a phenomenon that has received increasing attention in recent years. We argue that the current disagreement about whether or not an instrument counts as shadow money is not so much due to conceptual issues but because of differences in how strict to be when applying the shadow money ideal-type to the real world.

Why does it matter whether a private debt instrument is shadow money or not? One reason we would like to emphasize are financial stability concerns. There is a huge inherent profit incentive for private financial firms to develop credit instruments that create shadow money as deposit substitutes. To achieve that, they will look for grey areas to make instruments trade at par to higher ranking money, function as convenient substitutes and be able to have credit properties. This seems to always involve finding creative ways to deal with accounting rules—whether through securing privileged regulatory treatment, circumventing minimum risk regulations, or concealing credit creation.

Our analysis therefore shows that the shadow money concept may be a good framework for looking for upcoming new threats to financial stability. Zoltan Pozsar’s work on the US monetary system under the Basel III regulations shows impressively how the instruments that had been involved in the 2007-9 crisis have subsequently been regulated and tamed. FX swaps, however, are off the radar of the Basel III regulations but have increasingly become the go-to-instrument. We suggest to put more emphasis on researching this highly opaque, hugely important, but widely neglected type of instrument, which may or may not be private debt.

References

- Acharya, Viral V., and Philipp Schnabl. 2010. "Do Global Banks Spread Global Imbalances? Asset-Backed Commercial Paper during the Financial Crisis of 2007-09." *IMF Economic Review* 58 (1): 37–73.
- Adrian, Tobias. 2014. "Financial Stability Policies for Shadow Banking." Staff Report No. 664. Federal Reserve Bank of New York.
- Avdjiev, Stefan, Wenxin Du, Catherine Koch, and Hyun Song Shin. 2017. "The Dollar, Bank Leverage and the Deviation from Covered Interest Parity." BIS Working Papers No 592. Basel: Bank for International Settlements.
- Baklanova, Viktoria. 2012. "Money Market Funds in the US and the EU. A Legal and Comparative Analysis." PhD thesis. University of Westminster, School of Law.
- Bate, Swasi, Stephany Bushweiler, and Everett Rutan. 2003. "The Fundamentals of Asset-Backed Commercial Paper." Special Report. Moody's Investors Service.
- Bell, Stephanie. 2001. "The Role of the State and the Hierarchy of Money." *Cambridge Journal of Economics* 25 (2): 149–63.
- Bernanke, Ben. 2013. *The Federal Reserve and the Financial Crisis*. Princeton: Princeton University Press.
- Borio, Claudio, Robert McCauley, and Patrick McGuire. 2017. "FX Swaps and Forwards. Missing Global Debt?" *BIS Quarterly Review* September: 37–54.
- Borio, Claudio, Robert McCauley, Patrick McGuire, and Vladislav Sushko. 2016. "Covered Interest Parity Lost. Understanding the Cross-Currency Basis." *BIS Quarterly Review* September 2016. Basel: Bank for International Settlements.
- Boy, Nina, and Daniela Gabor. 2019. "Collateral Times." *Economy and Society* 48 (3): 295–314.
- Choudhry, Moorad. 2006. *An Introduction to Repo Markets*. Chichester: John Wiley & Sons.
- Claessens, Stijn, Zoltan Pozsar, Lev Ratnovski, and Manmohan Singh. 2012. "Shadow Banking. Economics and Policy." IMF Staff Discussion Paper SDN/12/12. International Monetary Fund.
- Coffey, Niall, Warren B. Hrungr, Hoai-Luu Nguyen, and Asani Sarkar. 2009. "The Global Financial Crisis and Offshore Dollar Markets." *Current Issues in Economics and Finance* 15 (6): 1–7.
- Comotto, Richard. 2017. "Are FX Swaps and Forwards Missing Global Debt? Why the BIS Is Wrong." ICMA Center. <https://icmacentre.blog/2017/09/22/are-fx-swaps-and-forwards-missing-global-debt-why-the-bis-is-wrong/>.
- Concentrated Ambiguity. 2020. "Addressing Overseas USD Funding Conditions & the Fed as Global Collateralized LOLR." Blog. <https://concentratedambiguity.wordpress.com/2020/03/29/addressing-overseas-usd-funding-conditions-the-fed-as-global-collateralized-lolr/>.
- Copeland, Adam, Isaac Davis, Eric LeSueur, and Antoine Martin. 2012. "Mapping and Sizing the U.S. Repo Market." Liberty Street Economics Blog. Federal Reserve Bank of New York.
- Copeland, Adam, Darrell Duffie, Antoine Martin, and Susan McLaughlin. 2011. "Policy Issues in the Design of Tri-Party Repo Markets." Unpublished Manuscript. Federal Reserve Bank of New York.
- Copeland, Adam, Antoine Martin, and Michael Walker. 2010. "The Tri-Party Repo Market before the 2010 Reforms." Staff Report No. 477. Federal Reserve Bank of New York.
- Covitz, Daniel M., Nellie Liang, and Gustavo A. Suarez. 2009. "The Evolution of a Financial Crisis. Panic in the Asset-Backed Commercial Paper Market." Finance and Economics Discussion Series 2009–36. Washington D.C.: Federal Reserve Board.
- D'Arista, Jane, and Tom Schlesinger. 1993. "The Parallel Banking System." Briefing Paper. Washington D.C.: Economic Policy Institute.

- DeRosa, David. 2014. *Foreign Exchange Operations. Master Trading Agreements, Settlement, and Collateral*. Hoboken: Wiley.
- Dow, Sheila C. 2006. "Endogenous Money. Structuralist." In *A Handbook of Alternative Monetary Economics*, edited by Philip Arestis and Malcolm Sawyer, 35–51. Cheltenham and Northampton: Edward Elgar.
- Edwards, Franklin R. 1996. *The New Finance. Regulation and Financial Stability*. Washington D.C.: The AEI Press.
- Federal Reserve Board. 2019. "Money Market Funds. Investment Holding Details." <https://www.federalreserve.gov/releases/efa/efa-project-money-market-funds-investment-holdings-detail.htm>.
- Financial Stability Board. 2011. "Shadow Banking. Strengthening Oversight and Regulation." Recommendations. Financial Stability Board.
- Fink, Matthew P. 2011. *The Rise of Mutual Funds. An Insider View*. Oxford and New York: Oxford University Press.
- Gabor, Daniela. 2012. "The Power of Collateral. The ECB and Bank Funding Strategies in Crisis." Bristol Business School.
- . 2015a. "A Step Too Far? The European Financial Transactions Tax on Shadow Banking." *Journal of European Public Policy* DOI: 10.1080/13501763.2015.1070894.
- . 2015b. "Our Currency, Our Banks, Your Problem. On the ECB's Relationship with New Member States During and Immediately After the Crisis." Discussion Paper. Financial, Economy, Society and Sustainable Development].
- . 2016. "The (Impossible) Repo Trinity. The Political Economy of Repo Markets." *Review of International Political Economy* 23 (6): 967–1000.
- . 2018a. "Goodbye (Chinese) Shadow Banking, Hello Market-Based Finance." *Development and Change* DOI: 10.1111/dech.12387: 1–26.
- . 2018b. "The Global Dollar Footprint - Larger than You Think?" Critical Macro Finance. <https://criticalfinance.org/2018/05/03/the-global-dollar-footprint-larger-than-you-think/>.
- Gabor, Daniela, and Cornel Ban. 2016. "Banking on Bonds. The New Links Between States and Markets." *Journal of Common Market Studies* 54 (3): 617–35.
- Gabor, Daniela, and Jakob Vestergaard. 2016. "Towards a Theory of Shadow Money." INET Working Paper. Institute for New Economic Thinking.
- . 2018. "Chasing Unicorns. The European Single Safe Asset Project." *Competition and Change* 22 (1): 139–64.
- Global Investor. 2010. "The State of Tri-Party. From Post-Lehman Disruption to the Effects of the Task Force on Tri-Party Repo Infrastructures." *Global Investor Magazine* 11/2010.
- Gorton, Gary B. 2010. *Slapped by the Invisible Hand. The Panic of 2007*. Oxford and New York: Oxford University Press.
- Gorton, Gary B., and Andrew Metrick. 2012. "Securitized Banking and the Run on Repo." *Journal of Financial Economics* 104 (3): 425–51.
- Gurley, John G., and Edward S. Shaw. 1960. *Money in a Theory of Finance*. Washington D.C.: Brookings Institution.
- Haberly, Daniel, and Dariusz Wójcik. 2017. "Culprits or Bystanders? Offshore Jurisdiction and the Global Financial Crisis." *Journal of Financial Regulation* 3 (2): 233–61.
- Hines, Ruth. 1988. "Financial Accounting. In Communicating Reality, We Construct Reality." *Accounting, Organization and Society* 13 (3): 251–61.
- Investment Company Institute. 2014. "2014 Investment Company Fact Book. A Review of Trends and Activities in the U.S. Investment Company Industry." Investment Company Institute.
- Jones, Phillipa. 1997. "The Fight for Tri-Party Repo." *ICB* 13 (4): 28–33.

- Marx, Karl. 1859. "Zur Kritik Der Politischen Ökonomie." In *Bank 13*, edited by Karl Marx-Friedrich Engels-Werke (MEW), MEW 13, 3–160. Berlin/DDR: Dietz.
- McCabe, Patrick E. 2015. "Money Market Funds. Reconsidering the Mutual Fund Model." In *Shadow Banking within and Across National Borders*, edited by Stijn Claessens, Douglas Evanoff, George Kaufman, and Luc Laeven, 301–22. Singapore: World Scientific Publishing.
- McCulley, Paul. 2009. "The Shadow Banking System and Hyman Minsky's Economic Journey." *PIMCO. Global Central Bank Focus*.
- McCulley, Paul, and Zoltan Pozsar. 2013. "Helicopter Money. Or How I Stopped Worrying and Love Fiscal-Monetary Cooperation." Working Paper. Global Interdependence Center Global Society of Fellows.
- McGuire, Patrick, and Goetz von Peter. 2009. "The US Dollar Shortage in Global Banking." BIS Quarterly Review March 2009. Bank for International Settlements.
- McLeay, Michael, Amar Radia, and Ryland Thomas. 2014. "Money in the Modern Economy. An Introduction." Quarterly Bulletin 2014 Q1. Bank of England.
- McMillan, Jonathan. 2014. *The End of Banking. Money, Credit, and the Digital Revolution*. Zero/One Economics GmbH.
- Mehrling, Perry. 2011. *The New Lombard Street. How the Fed Became the Dealer of Last Resort*. Princeton and Oxford: Princeton University Press.
- . 2012a. "The Inherent Hierarchy of Money." In *Social Fairness and Economics. Economic Essays in the Spirit of Duncan Foley*, edited by Lance Taylor, Armon Rezai, and Thomas Michl, 394–404. Oxon and New York: Routledge.
- . 2012b. "Three Principles for Market-Based Credit Regulation." *The American Economic Review* 102 (3): 107–12.
- . 2013. "Financial Globalization and the Future of the Fed." In *Keynesian Reflections. Effective Demand, Money, Finance, and Policies in the Crisis*, edited by Toshiaki Hirai, Maria Cristina Marcuzzo, and Perry Mehrling, 268–85. Oxford University Press.
- . 2015. "Elasticity and Discipline in the Global Swap Network." *International Journal of Political Economy* 44 (4): 311–24.
- . 2016. "Beyond Bancor." *Challenge* 59 (1): 22–34.
- . 2017. "Financialization and Its Discontents." *Finance and Society*.
- Mehrling, Perry, Zoltan Pozsar, James Sweeney, and Daniel H. Neilson. 2013. "Bagehot Was a Shadow Banker. Shadow Banking, Central Banking, and the Future of Global Finance." Shadow Banking Colloquium. Institute for New Economic Thinking.
- Michell, Jo. 2017. "Do Shadow Banks Create Money? 'Financialization' and the Monetary Circuit." *Metroeconomica* 68 (2): 354–77.
- Minsky, Hyman P. 1986. *Stabilizing an Unstable Economy*. New Haven and London: Yale University Press.
- Mitchell-Innes, Alfred. 1914. "The Credit Theory of Money." *The Banking Law Journal* 31: 151–68.
- Moe, Thorvald Grung. 2012. "Shadow Banking and the Limits of Central Bank Liquidity Support. How to Achieve a Better Balance between Global and Official Liquidity." Working Paper WP No. 712. Levy Economics Institute.
- . 2014. "Shadow Banking. Policy Challenges for Central Banks." Working Paper No. 802. Annandale-on-Hudson: Levy Economics Institute.
- Moreira, Alan, and Alexi Savov. 2014. "The Macroeconomics of Shadow Banking." Working Paper. National Bureau of Economic Research.
- Morgan, Gareth. 1988. "Accounting as Reality Construction. Towards a New Epistemology for Accounting Practice." *Accounting as Reality Construction. Towards a New Epistemology for Accounting Practice* 13 (5): 477–85.

- Murau, Steffen. 2017a. "Shadow Money and the Public Money Supply. The Impact of the 2007-2009 Financial Crisis on the Monetary System." *Review of International Political Economy* 24 (5): 802–38.
- . 2017b. "The Political Economy of Private Credit Money Accommodation. A Study of Bank Notes, Bank Deposits and Shadow Money." PhD thesis, London: City, University of London.
- . 2018. "Offshore Dollar Creation and the Emergence of the Post-2008 International Monetary System." Institute for Advanced Sustainability Studies (IASS), Potsdam.
- Murau, Steffen, Joe Rini, and Armin Haas. 2020. "The Evolution of the Offshore US-Dollar System. Past, Present and Four Possible Futures." *Journal of Institutional Economics*, 1–17. <https://doi.org/10.1017/S1744137420000168>.
- Novick, Barbara, Rich Hoerner, and Simon Mendelson. 2011. "Money Market Funds. Potential Capital Solutions." BlackRock. <https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-money-market-funds-potential-capital-solutions.pdf>.
- Pozsar, Zoltan. 2014. "Shadow Banking. The Money View." Working Paper. Office of Financial Research.
- . 2015. "A Macro View of Shadow Banking. Levered Betas and Wholesale Funding in the Context of Secular Stagnation." Working Paper. Institute for New Economic Thinking.
- . 2016. "From Exorbitant Privilege to Existential Trilemma." *Global Money Notes* #8. New York: Credit Suisse.
- . 2017. "Excess Reserves and Global Dollar Funding." *Global Money Notes* #9. New York: Credit Suisse.
- . 2020. "Lombard Street and Pandemics." *Global Money Notes* #28. New York: Credit Suisse.
- Pozsar, Zoltan, Tobias Adrian, Adam Ashcraft, and Hayley Boesky. 2012. "Shadow Banking." Staff Report 458. Federal Reserve Bank of New York.
- Pozsar, Zoltan, and Manmohan Singh. 2011. "The Nonbank-Bank Nexus and the Shadow Banking System." IMF Working Paper WP/11/289. International Monetary Fund.
- Ricks, Morgan. 2011. "Regulating Money Creation after the Crisis." *Harvard Business Law Review* 1: 75–143.
- . 2012a. "Money and (Shadow) Banking. A Thought Experiment." *Review of Banking and Financial Law* 31: 731–48.
- . 2012b. "Reforming the Short-Term Funding Market." Discussion Paper No. 713. Harvard Law School.
- . 2013. "A Simpler Approach to Financial Reform. Financial Instability Is a Problem of Monetary System Design." *Regulation* 36 (4): 36–41.
- . 2016. *The Money Problem. Rethinking Financial Regulation*. Chicago and London: The University of Chicago Press.
- Schumpeter, Joseph Alois. 1954. *History of Economic Analysis*. New York: Oxford University Press.
- SEC. 2014. "SEC Adopts Money Market Fund Reform Rules. Rules Provide Structural and Operational Reform to Address Run Risks in Money Market Funds." Press Release. Washington D.C.: Securities and Exchange Commission.
- Setser, Brad. 2019. "Shadow FX Intervention in Taiwan. Solving a USD 100+ Bn Enigma." October 2019. New York: Council on Foreign Relations.
- Sgambati, Stefano. 2019. "The Art of Leverage. A Study of Bank Power, Money-Making and Debt Finance." *Review of International Political Economy* 26 (2): 287–312.
- Singh, Manmohan. 2013. "Collateral and Monetary Policy." IMF Working Paper WP/13/186. International Monetary Fund.
- . 2014a. *Collateral and Financial Plumbing*. London: Risk Books.
- . 2014b. "Financial Plumbing and Monetary Policy." IMF Working Paper WP/14/111. International Monetary Fund.

- Stenfors, Alexis. 2017. "Bid-Ask Spread Determination in the FX Swap Market. Competition, Collusion or a Convention?" Working Papers in Economics & Finance 2017-03. University of Portsmouth Business School.
- Sunderam, Adi. 2012. "Money Creation in the Shadow Banking System." Working Paper. Harvard Business School.
- Tett, Gillian. 2009. *Fool's Gold. How the Bold Dream of a Small Tribe at J.P. Morgan Was Corrupted by Wall Street Greed and Unleashed a Catastrophe*. New York: Free Press.
- Toporowski, Jan. 2017. "Currency Swaps and the Internationalisation of the Money Market." Conference Presentation. London: School of Oriental and African Studies.
- Vajdová, Eleonóra. 2004. "Accounting Treatment of Currency Derivatives. Currency Forwards, Currency Swaps, Cross Currency Swaps." *BIATEC XII* (6/2004): 22-26.
- Vasudevan, Ramaa. 2018. "Shadow Money in the 19th Century. Is Marx Relevant for Understanding Contemporary Shadow Money?" *Review of Political Economy* 30 (3): 461-83.
- Werner, Richard A. 2016. "A Lost Century in Economics. Three Theories of Banking and the Conclusive Evidence." *International Review of Financial Analysis* 46: 361-79.
- Wray, L. Randall. 2015. *Modern Money Theory. A Primer on Macroeconomics for Sovereign Monetary Systems*. Basingstoke and New York: Palgrave Macmillan.
- Wullweber, Joscha. 2020. "The Politics of Shadow Money. Security Structures, Money Creation and Unconventional Central Banking." *New Political Economy*
<https://doi.org/10.1080/13563467.2019.1708878>.

About the authors

Steffen Murau is a postdoctoral fellow at the Global Development Policy (GDP) Center of Boston University, City Political Economy Research Centre (CITYPERC) of City, University of London, and Institute for Advanced Sustainability Studies (IASS) in Potsdam. His research interests include monetary theory, shadow banking, the international monetary system and the European Monetary Union. Among others, he has published in the Journal of Institutional Economics, the Review of International Political Economy and the Journal of Common Market Studies.

E-Mail: smurau@bu.edu

ORCID-ID: <https://orcid.org/0000-0002-3460-0026>

Tobias Pforr is a postdoctoral fellow at the University of Reading and a Visiting Fellow at the University of Warwick. His research interests include monetary theory, development finance and climate change adaptation. He has previous professional experience in banking and financial markets and has worked with a number of international organizations such as the UN World Food Program, the Red Cross Red Crescent Societies, the German Red Cross, and the Overseas Development Institute.

E-Mail: t.pforr@reading.ac.uk

ORCID-ID: <https://orcid.org/0000-0003-1333-2074>

Acknowledgments

We have presented an earlier version of this paper at the conference ‘Intersection of Finance and Society’ at City, University of London on 12 December 2019. We wish to thank all participants for their valuable feedback. For reading and commenting on this manuscript at various stages, we are deeply indebted to Yakov Feygin, Daniela Gabor, Armin Haas, Elizaveta Kuznetsova, Perry Mehrling, Fabian Pape, Zoltan Pozsar, Morgan Ricks, Joe Rini and Jens van ‘t Klooster. All remaining errors are naturally our own.

Conflicts of interest

We have no conflict of interest to report.

Suggested citation

Murau, Steffen and Tobias Pforr (2020) ‘Private Debt as Shadow Money? Conceptual Criteria, Empirical Evaluation and Implications for Financial Stability’, Philadelphia: Private Debt Project.