Relationship Banking, Shadow Banking, and the Economics of Depression

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Abstract: A stock-flow consistent and simple methodological account of the influence of financial markets over the real economy is here presented. Based on an original interpretation of the basic heterogeneity in relationship and shadow banking operations, often referred to as OTH vs. OTD banking models, this methodological article develops an accounting model that emphasizes the interdependencies in entrepreneurs' variations in animal spirits, financial institutions' liquidity risk management, and households' effective demand. The model captures the idea that fluctuations in the composition of property incomes lead to fluctuations in borrowing for non-financial purposes that, in their turn, drive fluctuations in spending. The model is so devised as to allow a tidy comparison in the role played by relationship or shadow banking over the dynamism of a depressed economy.

JEL codes: B52, E12, E20, E44, M40.

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1. Introduction

On May 2014, the ECB and the BOE launched a paper to discuss with leading European private financial institutions the ways to re-activate the presumed variety of benefits that shadow banking provides to ABS issuers, investors, and the real economy (BOE and ECB, 2014): this discussion was perplexing those who believed that shadow banking, while relegated to para-religious dogmas in the pre-crisis period, could be considered *essential* to any policy strategy only the day after a reliable narration of its macroeconomic role was found. The development of a macroeconomics of shadow banking is still in a tentative phase (Brunnermeier and Sannikov 2014, Moreira and Savov 2014, Pozsar 2015), yet. This article aims at contributing to this empbryonal literature by concentrating on the role played by relationship and shadow banking over the dynamism of a depressed economy.

Central to the financial revolution and the evolution in financial instability phenomenology occurring since the 'Nixon shock' (1971) was a quantitative and qualitative proliferation of securitization procedures. Economists were not alone in lagging their theories behind this epochal change in practices: accounting scholars proved inattentive of accounting practitioners' involvement in securitization schemes (Arnold 2014), too. Accordingly, shadow banking developed in a theoretical and accounting vacuum shrouding securitization in an eerie veil of mist. The post-2007 experience has inspired several attempts at laicization, albeit not that effective in consolidating a narrative much dissimilar from that proposed by an American Securitization Forum delegate's before the US House of Representatives (Cowan 2003): securitization enhances financial diversification, flexibility and (financial) 'democracy'. In surveying pertinent literature, Gorton and Metrick (2012, p. 1, 59) fret about the fact that although securitization 'has fundamentally altered capital markets, the functioning of financial intermediation, and challenges many theories of the role of financial intermediaries [… , yet] the most basic questions remain open questions'. Having this mismatch practice/theory in mind, they mean that the study of securitization 'offers an opportunity to examine some basic issues in financial economics and macroeconomics'.

This opportunity was indirectly (securitization is never mentioned) but decidedly (focus is on the nature of money and financial intermediation) caught by a group of economists at the BOE's Monetary Analysis Directorate. McLeay et al stress how the current procedures of money creation throw an un-orthodox light on the nature of money itself (2014a): the vast majority of 'broad money' being in the nature of deposits created by commercial banks, money is to be regarded as *a consequence rather than a premise* of lending (2014b). Rather than the standard sequence of loans being originated out of deposits, the actual sequence goes the other way round: creation of deposits (money) is a *consequence* of lending decisions. This point of view was defended many times in the vast (but politically uninfluential) literature concerned with the 'endogenous' character of money creation, as opposed to the 'exogenous' character implicit in the standard understanding of financial intermediaries' role. Now, a number of central bank's economists

suggest this 'heretical' point being a key element to understand essential features of modern macro-financial systems.

A key macro-financial issue relates to the key differences in how alternative business models in banking impact on the real economy. Banking models are universally categorized into two broad classes, known as originate-to-hold (OTH) and originate-to-distribute (OTD). Without exception, OTH and OTD are regarded as models of *credit risk* management: banks are supposed to originate their own (illiquid) assets and either hold or distribute the associated credit risks (Bord and Santos 2012, Bouwman 2013). In the OTH model, banks originate loans and hold them so as to manage credit risk by screening and monitoring borrowers; in the OTD model, banks originate loans whose credit risk is distributed with the help of securitization procedures (Gennaioli et al 2013). We shall argue that this approach to *both* OTH and OTD is improper. Rather, OTH and OTD can be more properly interpreted as alternative methods financial institutions can adopt to manage the rise in idiosyncratic liquidity risk associated to liquidity creation[2], i.e., to purchases of illiquid assets (loans) by means of liquid liabilities (deposits).

Our proposed model is in the spirit, but not to the letter, of the so-called Post-Keynesian stock-flow consistent (PK-SFC) approach to monetary analysis (Godley and Lavoie 2007). The modelling strategy here proposed is of accounting nature and is based on a simple monetary circuit whose setting allows bringing our issue to a focus. The topic OTH vs. OTD has received little attention in the PK-SFC literature (Taylor 2008, Lavoie 2013), yet it is essential to help answering a most pressing theoretical challenge in present-day macroeconomics: the provision of a consistent and simple methodological account of the influence of financial markets over the real economy. We deem accounting a *lingua franca* to enhance the visibility of economic issues and indeed construct reality[3]. In order to make our topic as intelligible and workable as possible, we abstain from proposing the typical Post-Keynesian SFC apparatus (transactions flow matrix) and adopt 'changes in balance-sheet' accounts as defined in the ESA framework[4]. A transaction flow matrix can be thereupon derived.

The article is structured as follows. Section 2 makes explicit the basics of our accounting model. Its fundamental principle is that, as far as financial items are concerned, one can only 'originate' his/her own liabilities. This principle is so developed as to capture the idea that fluctuations in the composition of property incomes leading to fluctuations in borrowing for non-financial purposes that, in their turn, drive fluctuations in spending. This 'mechanism' is considered under the hypothesis that financial firms are the only institutions to

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[2] '[S]ecuritization do[es] not alter the fact that bank-intermediated liquidity creation occurs in the economy – it merely reflects a change in the *process* by which liquidity creation is occurring' (Bouwman 2013, p. 21).

[3] Suzuki (2003) shows how the birth of macroeconomics and the spread of economic management principles in modern societies owe much to the movement of accounting expressionism. In a similar vein, the 'money view' of shadow banking (Mehrling et al. 2013, Pozsar 2014) is based on an accounting 'expressionist' approach.

[4] 'The changes in balance sheet account [IV.2, or LX] records changes in the value of assets and liabilities in the course of the accounting period and aggregates the amounts recorded in the various accumulation accounts' (Eurostat 2013, 8.62).

actively manage liquidity risk. A financial sector adopting a OTH approach to liquidity risk management is considered in section 3; the OTD situation in section 4. Section 5 concludes.

2. Basics of the model

Ours is a closed monetary macro-economy in which the public sector is not changing its fiscal and monetary regulation ('doing nothing'). In view of the problem at hand, we assume that, contrary to the financial sector (hereafter S.12), the households sector (S.14) and the non-financial corporate sector (S.11) are *not* concerned with liquidity risk pending on their characteristic operations (production and consumption). Admittedly, as far as the S.11 is concerned, this shortcut is pretty extreme[5]. It is therefore important to keep its consequences in mind: production processes are instantaneous and market output is perishable (households can carry no real asset over the next period). This means that *both* S.11 and S.14 do not prudentially constitute reserve funds and that we can pass over the accounting of non-financial assets and focus on financial items. Our extreme hypothesis makes financial accounts informationally equivalent to capital accounts.

As far as S.11 and S.14 are concerned, the only concession to realism is a fixprice assumption: within the period, suppliers set prices. While it is pragmatically inconsistent with our assumption on S.11 and S.14 liquidity risk management, this fixprice assumption ensures that we can legitimately focus on how actively the financial sector (S.12) manages the liquidity risk pending on its characteristic operations (liquidity creation). With our extreme shortcut, we are fully allowed to consider production processes being wholly financed by issuances worth D in IOUs (loans, AF.4) the financial sector purchases paying $(1-d)D$ in form of transferable deposits (AF.22). Before considering how past profits play an even more important role in our model than as funding source, notice that the values of D and d are essentially determined by entrepreneurs' confidence in a given opportunity to start new production processes (*animal spirits*). The desiderata of a financer do certainly play an important role in their determination; yet, the issuance of this kind of IOU is a decision in borrowers' hands, definitely. They cannot be forced to borrow against their will.

Always and everywhere, as far as financial items are concerned, one can only 'originate' his/her own liabilities[6]. In our view, this point is absolutely essential to the 'endogenous money' view[7]. Contrary to conventional wisdom, financial institutions originate either deposits or debt securities (or any other kind of financial liability); they simply cannot 'originate' loans: banks create liquidity by purchasing loans worth D with the creation of $(1-d)D$ in deposits. It cannot be claimed that these loan-backed-deposits are, in any

[5] Bianco (2015) includes an accounting model focusing on S.11 and S.14 liquidity risk management.
[6] In a *monetary* economy real liabilities cannot be originated at all. Yet, always and everywhere, one can originate *real assets* (with his/her own work).
[7] Of course, it remains perfectly possible to originate real assets. On the other side, the basic assumption in a theory of a *monetary* economy is that real liabilities cannot exist at all.

sense, liabilities the bank originates 'to hold'. Rather, one may say that banks originate them 'to distribute', as borrowers borrow because in need of immediate expenditure capacity. When borrowers spend, banking liabilities are cancelled out. Be it as it may, this does not seem to be the place where the distinction OTH vs. OTD must be relevant. So, limiting our attention to relationship banking, let us enquire into the possible important factor inducing the bank to originate a liability 'to hold'.

When creating liquidity, a bank overall balance sheet is left with an extra amount D in illiquid asset that is corresponded by a liquid[8] liability worth $(1-d)D$: all in all, the position of the individual bank and the banking sector as a whole is worth more than before; yet, having purchased illiquid assets with liquid liabilities, the individual bank and the whole banking sector are left in a more illiquid position, i.e., their ability to meet unexpected liabilities (non-measured downward risks) declines. This increase in (funding) liquidity risk is somehow to be managed. As it happens, traditional banks originate deposits (assumedly worth F) backed by $(1-f)F$ in liquid assets, say currency (AF.21). Banks cannot prevent runs from taking place, yet they would rather see depositors not using their ATM card even! Until the rise in liquidity risk is regarded as adequately balanced, currency-backed-deposits are originated-to-hold, definitely.

This interpretation of the liquidity creation process in relationship banking implies a *reversed* take on the intermediation sequence order: final debtor → financial intermediary → final creditor. Somehow, the former row is for the credit market, the latter for the money market. As we are going to see, mutatis mutandis this approach applies to shadow banking (OTD), too (Sec. 4). In our model, the first link of the chain, namely final debt originated by non-financial corporate borrowers, depends on variations in entrepreneurs' animal spirits. Let us simplify things about animal spirits by assuming that variations in the S.11 (as a whole) confidence are positive if, at the end of the preceding liquidity creation cycle, S.11 entrepreneurial income (Π_{-1}) is greater than S.12 entrepreneurial income (R_{-1}).

That profits crucially depend on effective demand (C) is not conflicting with our neglect of changes in non-financial stocks (AN): the quadruple entry principle will apply to the purchase of real assets, too. The model is so set as to focus on the liquidity shifts characterizing a simple monetary circuit consisting in six steps, each implying its own changes in sectorial balance sheets (LX)[9]:

LX.1. On the basis of previous period proprietary incomes (Π_{-1} and R_{-1}), S.11 sets the variation D in its own stock of debt[10];

LX.2. The principal $(1-d)D$ is used to compensate employees (production is instantaneous);

[8] For the individual bank this liability is likely to be ephemeral, but for the banking sector it is not. In the micro-perspective, it depends on whether workers' banking institution is the same as their employers'.

[9] Being the direct effect of autonomous decisions by (distinct) institutional kind of units, LX.1, LX.3 and LX.4 can be considered as *primary changes*; on the other side, consisting in sequels of primary changes, LX.2 and LX.5 can be regarded as *secondary changes.*

[10] In what follows, it is assumed that the *starting* stock of debt is always zero.

LX.3. S.12 decides how (OTH vs. OTD) managing the rise in liquidity risk associated to new loans;

LX.4. S.14 sets the amount C of effective demand;

LX.5. S.11 and S.12 clear their own debt positions. The liquidity creation cycle ends as these sectors distribute proprietary incomes to S.14.

Focus on liquidity shifts allows us investigating the financial viability of a process of change consisting in a sequence of single periods. Our period being a liquidity creation cycle, it can be inferred that viability is granted once profits are greater than interests. Yet, we may need more than that for the current performance to help step out a liquidity trap. We abstract from the role of general government (S.13) and the foreign sector (S.2), so to emphasize the interdependences in such factors as:

a) variations in (entrepreneurs') animal spirits,
b) financial institutions' strategies of liquidity risk management (OTH vs. OTD), and
c) households' effective demand, this being composed of both property and labour incomes.

The first factor is the fundamental driver of our process dynamics. Such a dynamics, however, is critically influenced by the second factor. A tautology lays the grounds of our approach: there is a trade-off between confidence in 'non-financial' relative to 'financial' opportunities and confidence in 'speculative' opportunities relative to 'productive' opportunities. This tautology can be given a macroeconomic meaning as soon as we imagine investors (as a whole) 'bulling' in productive opportunities rather than in speculative ones to the extent of the difference between S.11 and S.12 net incomes (investors' incomes are *proprietary* incomes) of the preceding period. If net profits were greater than net interests, the ratio of non-financial to financial investment increases; vice versa, financial investment 'crowd out' non-financial investments. Fluctuations in the composition of property incomes lead to fluctuations in borrowing (for non-financial purposes) that, in their turn, drive fluctuations in spending.

3. Relationship banking.

At the end of a liquidity creation cycle, the non-financial corporate sector (S.11) and the depository financial corporate sector (S.122) distribute to households (corporate owners, S.14) all the incomes produced in that cycle: profits (D.421: Π_{-1}) and interest (D.41: R_{-1}), respectively. This distribution determines a variation (ξ) in entrepreneurs' state of confidence having the same sign of excess profits over interest: to take the simplest assumption, take $\xi = \Pi_{-1} - \mathrm{R}_{-1}$. Entrepreneurs' (S.11 as a whole) willingness to borrow a fund D

(AF.4) to pay for non-financial (real) ventures shall be a positive function of ξ. Relative IOUs are issuers' (entrepreneurs') liabilities (debt), and assets (loans) to subscribers (banks); the corresponding transaction consists in a right to draw $(1-d)D$ on transferable deposit funds (AF.22) originated by banking sector. These funds are debtors' assets and banks' liabilities. The overall stock variations induced by borrowing are depicted in LX.1.

S.11			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		F.4	**D**
		B.10	−dD

S.122			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	
		F.22	(1−d)D
F.4	D		
		B.10	dD

S.14			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	

Banks do originate this kind of deposits in view of holding them, yet. Debtors are meant to exercise their own drawing right as soon as possible in order to pay $(1-d)D$ for their non-financial plans that are meant to produce a cash inflow eventually larger than D. This expenditure implies a corresponding increase in households' assets (labour incomes, D.1). LX.2 assumes that compensation of employees is executed via giro orders. LX.A simply adds LX.1 and LX.2 together.

S.11			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
F.22	**−(1−d)D**		
		B.10	−(1−d)D

S.122			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
		F.22	−(1−d)D +(1−d)D
		B.10	∅

S.14			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		B.10	(1−d)D

S.11			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
F.22	∅		
		F.4	D
		B.10	−D

S.122			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
		F.22	(1−d)D
F.4	D		
		B.10	dD

S.14			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		B.10	(1−d)D

We have assumed that only financial corporate sector actively manages liquidity risk. As far as this risk is concerned, its position is worse off: the sector has financed an inflow of illiquid assets (F.4) with an

outflow of liquid liabilities (F.22). Banks are thus disposed to give up a part (fF) of expected interest inflow dD in view of holding additional liquid assets worth $(1-f)F$. The banking sector thus issues liquid IOUs (deposits) worth F so to obtain from households $(1-f)F$ in liquid assets, say currency (AF.21)[11]. In order to reach a position where liquidity risk is effectively lower, banks are decidedly inclined towards *holding* such deposits. Holding them implies holding the corresponding assets, indeed: accordingly, we suggest interpreting the originate-to-hold (OTH) as a model of liquidity risk management, rather than credit risk management (as both the mainstream theory and the SNA/ESA framework[12] do). This OTH operation is depicted in LX.3, while LX.B adds LX.A and LX.3 together.

S.11			
LX.3	**changes in balance sheet: OTH-ILRM**		
ch. in assets		ch. in liab. and n.w.	
		B.10	

S.122			
LX.3	**changes in balance sheet: OTH-ILRM**		
ch. in assets		ch. in liab. and n.w.	
F.21	(1−f)F	F.22	**F**
		B.10	−fF

S.14			
LX.3	**changes in balance sheet: OTH-ILRM**		
ch. in assets		ch. in liab. and n.w.	
F.21	−(1−f)F		
F.22	F		
		B.10	fF

S.11			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.22	∅		
		F.4	D
		B.10	−D

S.122			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.21	(1−f)F	F.22	(1−d)D + F
F.4	D		
		B.10	dD −fF

S.14			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.21	−(1−f)F		
F.22	(1−d)D + F		
		B.10	(1−d)D +fF

At his point, it is households' turn to originate their peculiar IOUs: effective demand. Assume that purchases of goods and services offered by the non-financial corporate sector are settled by giro orders. Effective demand for goods and services is depicted in LX.4; LX.C adds LX.B and LX.4 together.

S.11			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
F.22	C		
		B.10	C

S.122			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
		F.22	C −C
		B.10	∅

S.14			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
F.22	**−C**		
		B.10	−C

[11] Needless to say, discount rates are inversely related to the perceived liquidity of related IOUs.

[12] As far as national accounting is concerned, the classification of financial institutions doing relationship banking under the label 'deposit-taking corporations' (S.122) can be easily improved: theoretically speaking, 'depository corporations' can be a much more 'flexible' definition.

S.11	
LX.C	LX.B + LX.4
ch. in assets	ch. in liab. and n.w.
F.22 C	
	F.4 D
	B.10 C −D

S.122	
LX.C	LX.B + LX.4
ch. in assets	ch. in liab. and n.w.
F.21 (1−f)F	F.22 (1−d)D + F
F.4 D	
	B.10 dD −fF

S.14	
LX.C	LX.B + LX.4
ch. in assets	ch. in liab. and n.w.
F.21 −(1−f)F	
F.22 (1−d)D +F −C	
	B.10 (1−d)D +fF −C

All sectors having made their own characteristic decision, the cycle goes to an end with debt clearing (LX.5). This is not inducing any 'change in net worth' (B.10).

S.11	
LX.5	**ch. in b.s.: CLEARING**
ch. in assets	ch. in liab. and n.w.
F.22 **−D**	
	F.4 −D
	B.10 ∅

S.122	
LX.5	**ch. in b.s.: CLEARING**
ch. in assets	ch. in liab. and n.w.
	F.22 −D
F.4 −D	
F.21 −F	
	F.22 −F
	B.10 ∅

S.14	
LX.5	**ch. in b.s.: CLEARING**
ch. in assets	ch. in liab. and n.w.
F.21 F	
F.22 −F	
	B.10 ∅

S.11	
LX.D	LX.C + LX.5
ch. in assets	ch. in liab. and n.w.
F.22 C −D	
	F.4 ∅
	B.10 C −D
	= Π

S.122	
LX.D	LX.C + LX.5
ch. in assets	ch. in liab. and n.w.
F.21 −fF	F.22 −dD
F.4 ∅	
	B.10 dD −fF
	= R

S.14	
LX.D	LX.C + LX.5
ch. in assets	ch. in liab. and n.w.
F.21 fF	
F.22 (1−d)D −C	
	B.10 (1−d)D +fF −C
	= − (Π+R)

LX.D (sum of LX.C and LX.5) shows how both profits and interests eventually financed out of households' expenditure, as distribution of Π and R shall balance households' loss in net worth. Yet, even before this distribution and turning a deaf ear to our simplification, this loss is practically more than balanced with goods and services purchased.

This sequence of accounts is stock-flow consistent and can therefore be useful in drawing dynamic implications[13]. Our primary interest is in property incomes causing fluctuations in borrowing and hence in

[13] "PK-SFC models explicitly account for the discrepancies between *ex post* realisations, which are given on the one hand by statistical accounting equilibria (every spending of someone is the income of someone else) and on the other are the result of modelled behaviours based on *ex ante* values. These discrepancies are incredibly relevant in that they represent dynamical adjustment processes such as capital gains" (Caverzasi and Godin, 2014, p. 4).

spending. We are left with two residual property incomes: $C - D = \Pi$ (profit) and $dD - fF = R$ (interest). Given our behavioural assumption about variations in animal spirits: $\left(\xi \propto (\Pi - R)\right)$, ξ is non-negative as soon as $\Pi - R \geq 0$, that is when:

$$C - D \geq dD - fF. \qquad [1]$$

When (net) profits exceed interests, animal spirits excite and, in the next period, entrepreneurs are willing to originate more debt and boost production: an 'endogenous' impulse to move out of the depression is produced. This reverberates on households' confidence, too: rising wages are likely to enhance effective demand (C) relative to precautionary or speculative demand (F). Provided that they do not lean against this wind (speculating on the failure of new ventures, rising beyond a certain threshold d and, most importantly, f), the (relationship) banking sector as a whole seems is likely to ease this way out depression: the success of non-financial ventures should be their main concern, as it constitutes a prime factor in the dematerialization of liquidity (and credit) risks[14].

Effective demand (C) is the deciding variable for condition $[1]$ to hold. Condition $[1]$ implies that consumption must overshoot the cost of non-financial investment ($D =$ wages plus interest) by an amount no smaller than S.12 surplus $(dD - fF)$. In other terms, condition $[1]$ implies that consumption and investment must be in a certain relation: the effective contribution of investment to demand depends not only on the quantity and but also the quality of investment. How far expanding on this issue can lead us is only too obvious. Fortunately, these pages are not the proper place to discuss this issue, which more naturally arises in a model where production takes at least two phases (periods), one in which productive capacity is being built, another in which is being used, so that producers *must* manage liquidity risk (Bianco 2015) and the accounting of non-financial items does matter. In this case, a macro-foundation of learning would be naturally implied: new investment (innovation) needs activate an inter-temporal co-ordination between its costs and proceeds (effective demand). Under our assumption on liquidity risk this issue is essentially set aside; yet, its implications are implicit in condition $[1]$.

When condition $[1]$ does not hold, the current performance is depressive to animal spirits. In the subsequent period, entrepreneurs are likely to moderate supply of debt and hence investment and, consequently, households' labour incomes. In relative terms, households' (in particular as recipients of proprietary incomes) are likely to boost precautionary motives relative to transaction motives. Banks have some good reasons to negotiate higher ds and impose lower fs, so to exacerbates the required excess of consumption over investment expenditure that is necessary to reverse confidence dynamics. The only feasible way out of depression is thus public sector visible hand.

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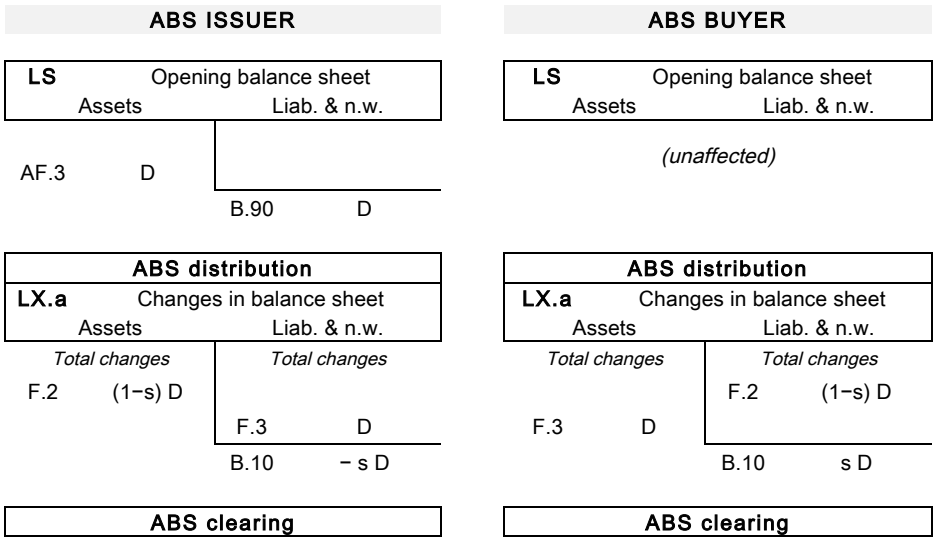
[14] 'Credit is the pavement along which production travels and the bankers if they knew their duty, would provide the transport facilities to just the extent it is required in order that the productive powers of the community can be employed at full employment' (Keynes 1930, 220).

5. Shadow banking.

Literature on securitization has developed since 2007 only, at the Great Financial Crisis outset. Claessens et al (2012, p. 5) highlight three main strands in shadow banking literature, focusing on issues in private liquidity creation, market failures, and the importance of shadow banks in supporting collateral-based operations in the financial system, respectively. Our suggested approach pertains to the first strand. Yet, we try avoiding overemphasizing partial aspects and open a perspective based on elements as simple and general as possible. Let us thus stick to the ESA definition of securitisation: 'the issuance of debt securities for which coupon or principal payments are backed by specified assets or by future income streams' (Eurostat 2013, 5.104). Such a securities are called asset-backed securities (ABSs) because defining element is the collateralization by the cash flows produced by a *predetermined* pool of financial or non-financial assets (ib., 5.110, 20.260). As it may be considered a part of the originator's estate and used to satisfy other creditors' claims, the collateral is somehow segregated into a legally separate entity that, in national accounting jargon, is called financial vehicle corporation (FVC) (ib., 2.90).

Beyond definitions, the essential thing with securitization is that 'financial institutions and business of all kinds use securitization *to immediately realize the value of a cash-producing asset'* (Cowden 2003, our emph.). Assume an individual bank holding a pool of assets expected to produce a cash inflow worth D. In order to manage the liquidity risk associated to the cost of purchasing this pool (momentarily excluded in the following table for sake of clarity), the financial institution is not issuing deposits but asset-backed-securities (ABSs). As in OTH banking, the management of liquidity risk is costly: the market applies a discount rate s on ABS facial values. When focusing on someone holding a pool of asset worth D and originating to distribute an equivalent amount in ABSs, the sequence of accounts is:



LX.b	Changes in balance sheet		
Assets		Liab. & n.w.	
Total changes		*Total changes*	
		F.2	D
		F.3	− D
		B.10	Ø

LX.b	Changes in balance sheet		
Assets		Liab. & n.w.	
Total changes		*Total changes*	
F.2	D		
F.3	− D		
		B.10	Ø

Net changes (LX.a + LX.b)			
LX	Changes in balance sheet		
Assets		Liab. & n.w.	
Total changes		*Total changes*	
F.2	(1−s) D	F.2	D
		F.3	Ø
		B.10	− s D

Net changes (LX.a + LX.b)			
LX	Changes in balance sheet		
Assets		Liab. & n.w.	
Total changes		*Total changes*	
F.2	D	F.2	(1−s) D
F.3	Ø		
		B.10	s D

LE	Closing balance sheet		
Assets		Liab. & n.w.	
AF.2	(1−s) D	AF.2	D
AF.3	D	AF.3	Ø
		B.90	(1−s) D

LE	Closing balance sheet		
Assets		Liab. & n.w.	
AF.2	D	AF.2	(1−s) D
AF.3	Ø		
		B.90	s D

Just like in relationship banking, debt clearing implies no changes in net worth (B.10): however rudimentary, this point is important as it allows reaching a standpoint to skim through securitization while losing no essential element. Let us call *interim balance sheet* that which results after the ABS is originated and distributed, but before it is cleared (LI = LS+LX.a):

ABS ISSUER			
LI	**Interim balance sheet**		
Assets		Liab. & n.w.	
AF.2	(1−s) D		
AF.3	D	**AF.3**	**D**
		B.90	(1−s) D

ABS BUYER			
LI	**Interim balance sheet**		
Assets		Liab. & n.w.	
		AF.2	(1−s) D
AF.3	**D**		
		B.90	s D

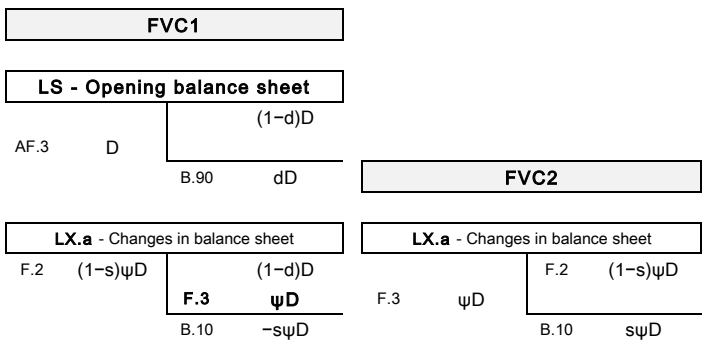
The interim stock identity retains all essential (and persistent) information involved in a securitization procedure: the pre-existence of the collateral (AF.3 in issuer's assets column), the origination-and-distribution of the ABS (AF.3 in issuers' liabilities and buyer's assets), the liquidity risk transfer (transaction in AF.2) and, crucially, net worth equivalent to closing ones. Therefore, we consider interim identities particularly apt in serving as a tool to evaluate the ex ante impact of securitization procedures.

FVCs have a special interest in distributing low-discounted ABSs: the lower s, the lower the cost to immediately realize the collateral facial value. The discount rate s is a measure of a buyer's liquidity premium. As for ABSs buyers, other kinds of securities allow better economic and legal guarantees. It is therefore unlikely that a liquidity-constrained operator other than a shadow-banking unit (another FVC) is

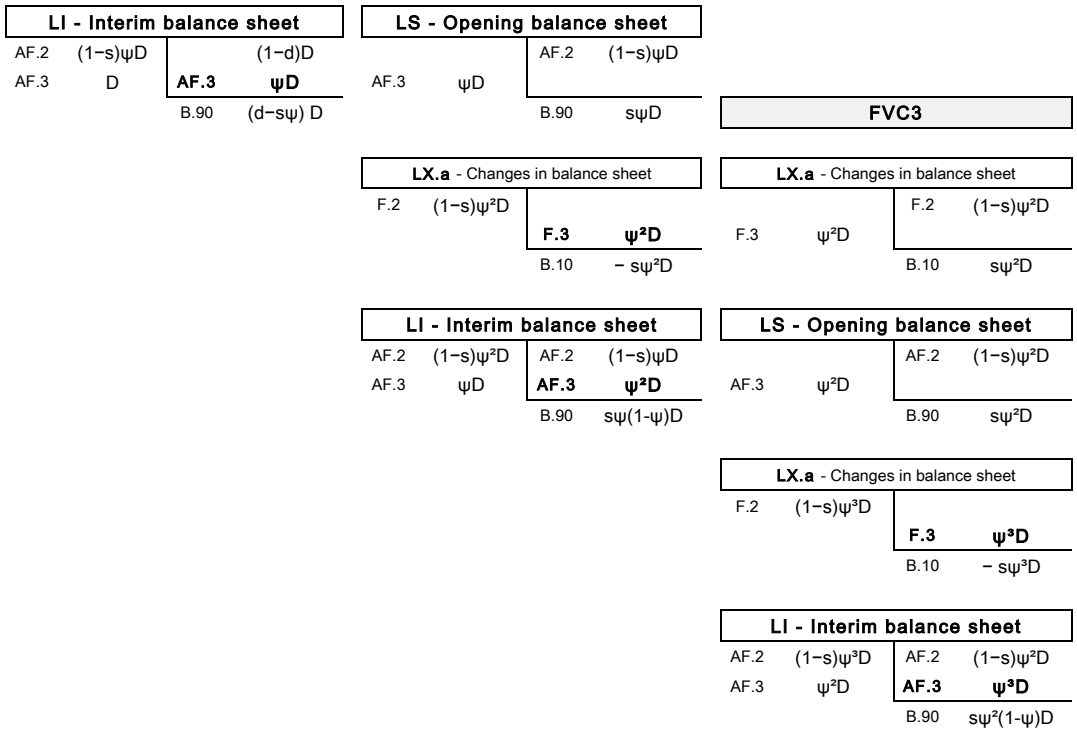
interested in purchasing an ABS that is not perceived as liquid as money. Most of the time, ABSs are not traded out of the financial sector: ABSs are held until maturity by other vehicles that employ them as collateral to continue the liquidity transformation process, so as to originate ABS-squared, ABS-cubed, etcetera. These n^{th}-order ABSs are also known as collateralized debt obligations (CDOs), CDOs being no else than ABS²s, CDO² being ABS³, and so on[15]. Continuous liquidity transformation, while being a clear ingredient of liquidity risk management, is a clear element in the structural change that has inflated the size, the complexity, the interconnectedness and the layering in pre-crisis financial markets[16].

Let us sketch a first approximation of a shadow-banking sector abstracting from variations in the discount rate s down the liquidity transformation process n layers. Let ψ $(0 \leq \psi \leq 1)$ be the fraction of total cash flows from illiquid assets that is used as collateral. To keep things simple, let us assume constancy of ψ down the n layers, too. Constancy of s is not only unrealistic but also prejudicial of a consideration of the role of credit risk transfer instruments (CDS, IRS, and other derivatives alike) or liquidity enhancement strategies (most importantly maturity transformation[17]), whose crucial role is checking discount rates (i.e., originators' costs of liquidity risk management). Be it as it may, with our assumptions we are left with the possibility of a tidy comparison with our account of relationship banking (sec. 3), i.e., a benchmark model of a theory of the role of OTH/OTD banking over macroeconomic dynamics.

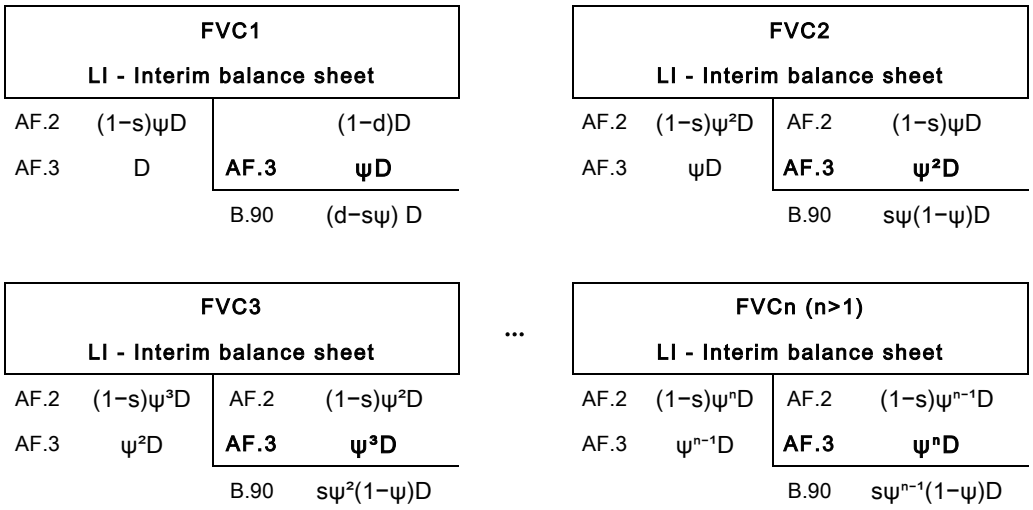
Suppose commercial banks hold D in illiquid assets, corresponding to liabilities originated by non-financial firms, purchased by originating $(1-d)D$ in deposits. The associated liquidity risk is managed with an OTD approach: banks recommend their incorporated FVCs to issue ABSs for a facial value amounting to a fraction $0 \leq \psi \leq 1$ of D (so that, within the maturity period of D, the value of ABSs outstanding is ψD). In doing so, FVCs rightly cash $(1-s)\psi D$ in liquid assets financed out of FVC²s liabilities. FVC²s manage the associated liquidity risk by originating $\psi^2 D$ in ABS²s (CDOs) so to cash $(1-s)\psi^2 D$ in liquid assets… and so on with FVC³, …, FVCⁿ.



[15] A more accurate picture of securitization as a liquidity transformation process can be found in Bianco (2014).
[16] Pozsar et al (2010) schematically represent the funding flows of the shadow banking system.
[17] It is worth to notice that maturity transformation in shadow banking is 'reversed' as compared to relationship banking: in the latter case, maturity is typically lengthened; in the former case, maturity is shortened, instead. Bianco (2014) draws a model of ABSs markets liquidity crises in which maturity transformation plays a key role.



It is possible to grasp what happens down the n layers with the help of a set of interim balance sheets:



Supposing that the eventual ABS^n is hold until maturity by the households' sector, the interim balance sheet for the financial sector as a whole amounts to:

SHADOW BANKING SECTOR	
LI	*interim balance sheet*

assets		liabilities	
AF.2	$(1-s)\sum_{i=1}^{n}\psi^i D$	AF.2	$(1-d)D+(1-s)\sum_{i=1}^{n-1}\psi^i D$
AF.3	$\sum_{i=0}^{n-1}\psi^i D$	AF.3	$\sum_{i=1}^{n}\psi^i D$
		B.90	$(d-s\psi^n)D$

We are thus in a position to make a comfortable and consistent comparison with our model of relationship banking (Sec. 3). Before considering the whole sequence of changes in balance sheets, let us notice that the net worth of a shadow banking sector is limited to the amount of interests dD paid by 'originators-of-last-resort' (i.e., originators of D).

S.11			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		F.4	D
		B.10	−dD

S.125			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	
		F.22	(1−d)D
F.4	D		
		B.10	dD

S.14			
LX.1	**changes in balance sheet: BORROWING**		
ch. in assets		ch. in liab. and n.w.	

S.11			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
F.22	−(1−d)D		
		B.10	−(1−d)D

S.125			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
		F.22	−(1−d)D + (1−d)D
		B.10	∅

S.14			
LX.2	**changes in balance sheet: COMPENSATION**		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		B.10	(1−d)D

S.11			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
F.22	∅		
		F.4	D
		B.10	−D

S.125			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
		F.22	(1−d)D
F.4	D		
		B.10	dD

S.14			
LX.A	LX.1 + LX.2		
ch. in assets		ch. in liab. and n.w.	
F.22	(1−d)D		
		B.10	(1−d)D

S.11			
LX.3	**changes in balance sheet: OTD-ILRM**		
ch. in assets		ch. in liab. and n.w.	

S.125			
LX.3	**changes in balance sheet: OTD-ILRM**		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-s)\sum^{(1\cdot n)}\psi^i D$	F.2	$(1-s)\sum^{(1\cdot n-1)}\psi^i D$
F.3	$\sum^{(1\cdot n-1)}\psi^i D$	F.3	$\sum^{(1\cdot n)}\psi^i D$

S.14			
LX.3	**changes in balance sheet: OTD-ILRM**		
ch. in assets		ch. in liab. and n.w.	
F.2	$-(1-s)\psi^n D$		
F.3	$\psi^n D$		

		B.10	$-s\psi^n D$

		B.10	$s\psi^n D$

S.11			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.22	$\varnothing$		
		F.4	D
		B.10	$-D$

S.125			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-s)\sum^{(1\cdot n)}\psi^i D$	F.2	$(1-d)D+(1-s)\sum\psi^i D$
F.3/4	$\sum^{(0\cdot n-1)}\psi^i D$	F.3	$\sum^{(1\cdot n)}\psi^i D$
		B.10	$(d-s\psi^n)D$

S.14			
LX.B	= LX.A + LX.3		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-d)D-(1-s)\psi^n D$		
F.3	$\psi^n D$		
		B.10	$(1-d+s\psi^n)D$

S.11			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
F.22	C		
		B.10	C

S.125			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
		F.22	$C-C$
		B.10	$\varnothing$

S.14			
LX.4	**changes in balance sheet: EFF.DEMAND**		
ch. in assets		ch. in liab. and n.w.	
F.2	$-C$		
		B.10	$-C$

S.11			
LX.C	LX.B + LX.4		
ch. in assets		ch. in liab. and n.w.	
F.22	C		
		F.4	D
		B.10	$C-D$

S.125			
LX.C	LX.B + LX.4		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-s)\sum^{(1\cdot n)}\psi^i D$	F.2	$(1-d)D+(1-s)\sum\psi^i D$
F.3/4	$\sum^{(0\cdot n-1)}\psi^i D$	F.3	$\sum^{(1\cdot n)}\psi^i D$
		B.10	$(d-s\psi^n)D$

S.14			
LX.C	LX.B + LX.4		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-d)D-(1-s)\psi^n D-C$		
F.3	$\psi^n D$		
		B.10	$(1-d+s\psi^n)D-C$

S.11			
LX.5	**ch. in b.s.: CLEARING**		
ch. in assets		ch. in liab. and n.w.	
F.22	$-D$		
		F.4	$-D$
		B.10	$\varnothing$

S.125			
LX.5	**ch. in b.s.: CLEARING**		
ch. in assets		ch. in liab. and n.w.	
		F.2	$-D$
F.4	$-D$		
F.2	$\sum^{(1\cdot n-1)}\psi^i D$	F.2	$\sum^{(1\cdot n)}\psi^i D$
F.3	$-\sum^{(1\cdot n-1)}\psi^i D$	F.3	$-\sum^{(1\cdot n)}\psi^i D$
		B.10	$\varnothing$

S.14			
LX.5	**ch. in b.s.: CLEARING**		
ch. in assets		ch. in liab. and n.w.	
F.2	$\psi^n D$		
F.3	$-\psi^n D$		
		B.10	$\varnothing$

S.11			
LX.D	LX.C + LX.5		
ch. in assets		ch. in liab. and n.w.	
F.22	$C-D$		
		F.4	$\varnothing$
		B.10	$C-D$
			$=\Pi$

S.125			
LX.D	LX.C + LX.5		
ch. in assets		ch. in liab. and n.w.	
F.2	$(2-s)\sum^{(1\cdot n-1)}\psi^i D+(1-s)\psi^n D$	F.22	$(2-s)\sum^{(1\cdot n-1)}\psi^i D+\psi^n D-dD$
F.4	$\varnothing$	F.3	$\varnothing$
		B.10	$(d-s\psi^n)D$
			$=R$

S.14			
LX.D	LX.C + LX.5		
ch. in assets		ch. in liab. and n.w.	
F.2	$(1-d+s\psi^n)D-C$		
F.3	$\varnothing$		
		B.10	$(1-d+s\psi^n)D-C$
			$=-(\Pi+R)$

The only difference with the relationship banking (OTH) is in the financial sector liquidity risk management cost function: from fF to $s\psi^n D$. Given our behavioural hypothesis, under a shadow banking financial regime animal spirits excite when:

$$C - D \geq (d - s\psi^n)D. \qquad [2]$$

Once securitization (OTD) is understood as a model of liquidity risk management, ψ can be regarded as an indicator of originators' liquidity preference: when their confidence declines, distribution of ABSs (ψ) is enhanced. At the same time, ABS buyers are likely to levy higher discount rates, so that shadow banks confidence in their business model further declines and ABSs distribution *accelerates*. This applies also when discount rates autonomously rise, of course. All in all, for the sector as a whole, as soon as the net cost of the OTD approach $s\psi^n$ increases, the balance $\Pi - R$ tends to get larger and hence entrepreneurs' animal spirits to excite $(\xi > 0)$. On the contrary, a fall in s moderates the aggregate costs of securitization and therefore implies a greater appeal for financial activities and a consequent atrophy of animal spirits. The intuition is that, at least as far as discount rates (liquidity premia) are concerned, what is beneficial to market-based finance can have a depressing impact on the real economy; vice versa, what is detrimental to OTD procedures is liable to result in a stimulus to non-financial activities.

This can be extended to the costs associated to a given regulatory framework. Although such a framework is not explicitly considered in the present version of the model, the parameter n allows catching a glimpse of its possible role: loose regulation is likely to result in high n; tight regulation is likely to discourage excessive financial layering. A negative relation between n and the strength of the regulatory framework being admitted, $0 \leq \psi \leq 1$ implies that that a relaxation of regulatory constraints, by tapering securitization costs $s\psi^n D$, is likely to have a depressive effect on animal spirits. Vice versa, a tighter regulation is likely to have a positive impact on animal spirits and hence the real economy.

5. Conclusion

A sense of contradiction between shadow banking and such ambitions as economic growth and financial stability is gathering pace in the literature. Luck and Schempp (2014) find that the relative size of the shadow banking sector determines the stability of the financial system: if the sector grows too large, it becomes fragile. A similar argument, with a stronger accent on maturity transformation, can be found in Bianco (2014). On the other side, Cecchetti and Kharroubi (2015) argue that by draining resources and skilled labour from the real economy, financial sector growth becomes a drag on real growth, in particular for financially dependent and R&D-intensive industries. In these pages, the draining effect is macro-founded (following a behavioural assumption about the evolution of animal spirits) and enhanced by a shadow banking setting. A

Kaleckian take on investment funding inspires our behavioural assumption on investment expenditure. The effect of labour incomes on animal spirits is only indirect, and the allocation of investment expenditure between financial or non-financial ventures mirrors the distribution in proprietary incomes. With some amendments, our suggested approach may account for more subtle distribution-related issues.

Moreira and Savov (2014) rightly stress that shadow banking consists in a liquidity transformation process and claim that the conventional (Basel) capital scarcity view (fragility arising out of a shortfall in capital) conceals the actual role of intermediaries' *liabilities* as the essential link between the financial system and the macro-economy. Yet, their liquidity view is based on households' liquidity motive. Here, this motive is inherent to financial firms, instead.

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