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Securitization, Fragility, and Regulation

Antonio Bianco

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Abstract

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1 Background

In 1987, as Alan Greenspan was appointed US-FED chairman, markets were prepared for a keener fighter of inflation than Paul Volcker. Yet, in all his 19 years of monetary guidance, 'the Maestro' displayed a expansionary bias. The 'Greenspan Put', however, was not generating inflation. Rather, complications arose out of attempts at tightening: the first one, in 1987, resulted in the Black Monday (Oct. 19), and other subsequent attempts equally triggered financial collapses[1]. Presumably, our 'lender of first resort' was actually helming a radically transformed global monetary system. Policy options were much more complex and less symmetric than anyone could trust. His 'put' was a pragmatic approach to his implicit but foremost duty: protecting US monetary supremacy ('exorbitant privilege') from some strange new sort of financial instability. Instituted by Reagan in 1988 to look into the Black Monday causes, the Brady Commission observed that the widely presumed isomorphism in micro- and macro-perspectives on (broadly considered) economic policy was all off the point[2]. In introducing his early considerations after the Black Monday, Hyman Minsky remarked:

> It is necessary to understand what securitization involves and how it might affect the development of the world economy if central bank interventions and the government interventions that guide institutional developments are to be successful. (Minsky and Wray, 2008, p. 2)

That enduring presumption of isomorphism of micro- and macro-prudential policy may be fundamental to the enduring lack of an adequate understanding of securitization:

> Securitization is not only important because it is quantitatively important. It also challenges theoretical notions of the role of financial intermediation. ... Surprisingly, given the importance of securitization, the most basic questions remain open questions. Studying securitization offers an opportunity to examine some basic issues in financial economics and macroeconomics. (Gorton and Metrick, 2012, pp. 2, 59)

Some time before being appointed (2013) head of research at the Bank for International Settlements, H. S. Shin published *Risk and Liquidity* (2010).

[1] E.g. Mexican and Asian-tigers crises in 1994 and 1997, LTCM crack in 1998, dot-com burst in 2000, and the Global Financial Crisis preceded by the tightening of Jul. 2004–Dec. 2005.

[2] 'Institutional and regulatory structures designed for separate marketplaces were incapable of effectively responding to inter-market pressures. The activities of some market participants, such as portfolio insurers, were driven by the misperception that they were trading in separate, not linked, marketplaces. The simple conclusion is that the system grew geometrically with the technological and financial revolution of the 1980's. Many in government, industry and academia failed to understand fully that these separate marketplaces are in fact one market.' (Brady Commission, 1988, p. 68).

Shin's theory of the Global Financial Crisis is based on a inherent vice in modern risk pricing techniques[3], in which typically only prices are charged to signal a change in the fundamentals. However, 'the more weight is given to prices in making decisions, the greater are the spillover effects that ultimately undermine the integrity of those prices' (Shin, 2010, p. 4), i.e., the more *fragile* a financial system is. The reason why prices can play such a role was an object of reflection not only in the '30s, during the Great Depression (es. Myrdal 1931[1939], Hicks 1935, Keynes 1936), but also after 1906-07 global liquidity crisis:

> In short time-periods ... it is always supposed that the depreciation or appreciation is due to a qualitative variation of the commodity; this is admittedly possible with securities that can easily experience qualitative variations in a few hours' time lag; this is not possible with the commodities of other markets. (Pantaleoni, 1912, p. 198)

Pantaleoni's keynote is that individuals adopting risk-pricing techniques dominated by short-term incentives are prone to *interpret all variation in asset prices as a variation in fundamentals* and, in doing so, they make their system more vulnerable to liquidity risk. Just as Shin today, Pantaleoni pointed out (more clearly than 'high-theorists' of the '30s) that a hyper-sensitive risk management techniques give rise to a *'sell cheap, buy dear'* dynamics, i.e., lead to a substantial *reversal* in the price-mechanism. Sensitive traders interpret an appreciation of a risky asset as a decline in the risk premium, i.e., this asset is deemed worth to be bought as fast as possible, before others push its price further up by acting in the same direction (buy dear). Conversely, depreciations induce selling reactions (sell cheap).

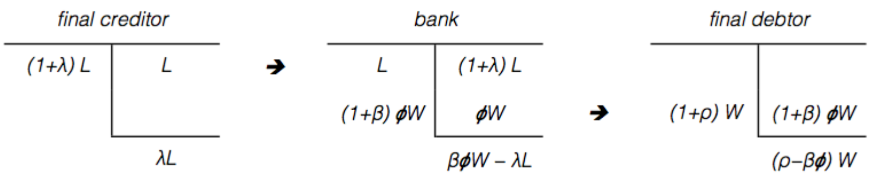
The present paper presents a very simple model of the key factors inducing fragility in a financial sector vitally engaged in securitization procedures (Sec. 2). Institutionalist accounts of its viability condition will allow to draw significant insights into historical experience and implications for current policy debate (Sec. 3).

2 OTH and OTD strategies of liquidity-risk management

The conventional account of banking activity is basically one of pre-existing liquidity ('currency') being channelled into new ventures. Assume T is the life span of the business plans that require external finance, L the average value of the stock of deposits the bank holds during the period $(0, T)$, λ the deposit rate measured on $(0, T)$, W the total cost of business plans, ϕ the

[3]Such a inherent vice, as identified by Shin, is also at the heart of R. Rajan's *Fault Lines*, Princeton University Press, 2010. Since 2013 Rajan is serving as Governor at the Reserve Bank of India.

ratio of external finance (credit) to W, and β the credit rate measured on $(0, T)$. The structure of banking intermediation can thus be depicted through a set of income accounts: inflows expected in the single period $(0, T)$ being accounted on the left, outflows on the right, net inflows are the income any concerned entity plans to collect in the period $(0, T)$:



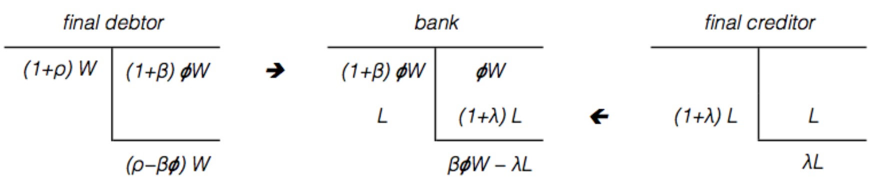
This system is (statically) viable if all parties's realized incomes are non-negative:

$$\begin{cases} \lambda L \geqslant 0 \\ \beta\phi W - \lambda L \geqslant 0 \\ (\rho - \beta\phi)\, W \geqslant 0 \end{cases}$$

i.e.:

$$\begin{cases} \lambda \geqslant 0 \\ \beta \geqslant \dfrac{\lambda L}{\phi W} \\ \rho \geqslant \beta\phi \end{cases}$$

Yet, as eventually stressed in a recent bulletin of the Bank of England (McLeay et al., 2014), representations as this trivialize liquidity-risk management, which is the precise reason why banks originate-to-hold *deposits* and hence banks themselves are *depository* institutions: the management of liquidity risk created by lending activity, i.e,. by its associated maturity lengthening, is the core banking affair. Whereas in the conventional ('currency') view banks seem to originate *loans* (i.e., assets) they hold in order to monitor borrowers, in the 'liquidity' view banks originate *deposits* (liabilities) to hold in order to manage idiosyncratic liquidity risk:



The viability condition are the same in both accounts of the originate-to-hold (OTH) model, yet in the 'liquidity' perspective the positions of the final debtor and the final creditor are *inverted*[4], and the directional arrows are *convergent*. These changes emphasize that new deposits are not so much a prerequisite for new loans as a means to preserve the realization of expected profits in case of a rise in liquidity risk: in a *dynamic* environment, liquidity is a prerequisite for solvency. Such a shift in perspective has a number of upshots, the most important to our ends being a fresh perspective on securitization – i.e., the originate-to-distribute (OTD) model – as a strategy of idiosyncratic liquidity risk management.

Assume a non-depository financial institution (a so-called *shadow bank*) whose assets are a mother-bank loans. As a matter of fact, a shadow bank is often a bank branch, i.e,. a so-called special purpose vehicle (SPV), or special investment vehicle (SIV). A shadow bank is there to originate (and distribute) a liability backed by these loans, i.e., an asset-backed-security (ABS). In distributing an ABS, the shadow bank is supposed to reduce its mother-bank liquidity risk out of a portion of its mother-bank future receipts[5] (backing assets). An ABS simply states: 'IOU X tomorrow (for $\sigma^{-1}X$ you give me today), X being secured on my assets D'. The shadow bank succeeds in distributing an ABS if $\sigma > 1$, i.e., if the buyer expects a positive net inflow by purchasing the ABS: σ^{-1} is a discount factor the market applies to an ABS face value, and σ a measure of an ABS illiquidity. To the ABS issuer (buyer), the net outflow (inflow) associated to ABS distribution amounts to:

$$X - \frac{X}{\sigma} = \frac{\sigma - 1}{\sigma} X.$$

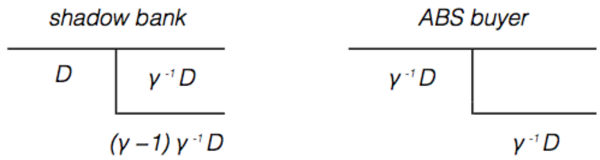
Assume the SPV is issuing ABSs for a total face value D (i.e., a full-performance hypothesis), and define γ as:

$$\gamma \equiv \frac{\sigma}{\sigma - 1},$$

so that γ is a measure of the market trust in the securitization services (good packaging of good assets), i.e., an ABS liquidity measure. Therefore, (net) income accounts of an ABS issuer and an ABS buyer amount to:

[4]The final debtor is 'the fundamental paper emitter and source of the cash flows from income that validate the securities' (Minsky and Wray, 2008, p. 4).

[5]In ODT, as if selling a debt, there is a liquidity risk transfer from those can bear it best to one who can bear it less. Yet, distributing an ABS is not the same as selling a debt: there is no transfer of collateral and hence no credit risk transfer (Shin, 2010, pp. 152ff). Rather, the ABS contains itself a credit risk depending upon the credit risk pending on the underlying assets: a OTD-strategy of idiosyncratic liquidity risk thus results in a rise in systemic credit risk.



For an ABS to be distributed, necessarily $\gamma > 1$. Once the ABS is distributed, the issuer succeeds in reducing liquidity risk by cashing an anticipation of $(\gamma - 1)\gamma^{-1}D$ on his future income stream D. The cost of this anticipation is a share $(\gamma^{-1}D)$ of such a stream which for now is still an illiquid (net) asset in a buyer's balance-sheet. The higher γ, the smaller a buyer's share. Yet, holding an ABS in a full-fledged OTD financial sector implies something more than mere yield: a potentiality to cash your assets value without waiting the due time. An ABS holder can use that ABS as collateral for an ABS-squared (ABS-backed-securities, aka CDO); in its time, the CDO (ABS-squared) buyer can issue a CDO-squared (ABS-cubed), and so on, for $\mathrm{ABS}^n/\mathrm{CDO}^{n-1}$: by means of securitization procedures, the (non-depository) financial system can monetize right now, at the least cost, every cent in its illiquid assets value (future incomes).

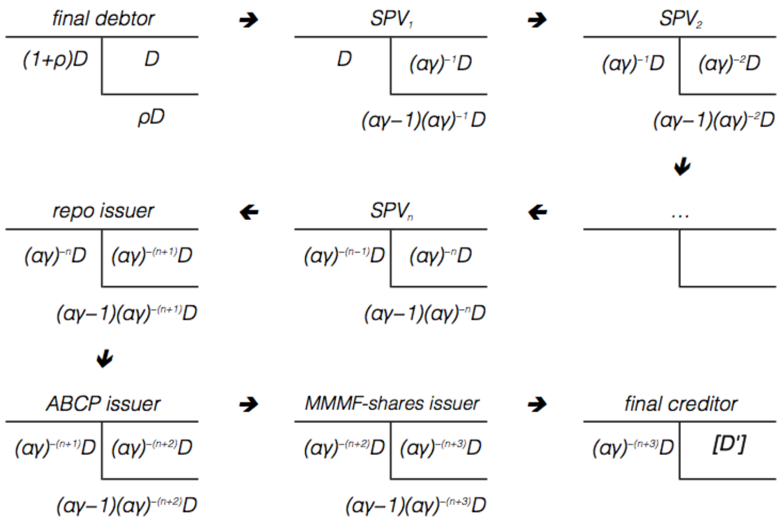
Basically, higher gammas (triple-A ratings) result in a win-win game: non-depository financial institutions abate liquidity risk by cashing all their assets value at the least cost, and rating agencies face a greater demand for their services. This common interest in high-gammas was essential for securitization procedures to assume a central role in modern financial systems. In case of low-γ underlying assets, non-depository entities can boost gammas by investing in credit derivatives – e.g., credit default swaps (CDS), interest rate swaps (IRS), etc. – or in strategies of *portfolio insurance* (dynamic hedging, high-frequency trading, statistical arbitrage, etc.).

These complex but crucial factors can enter into our picture in a pretty simple way. The basic idea is that the quest for high-gammas implied by OTD strategies of liquidity risk management did set in motion a tendency to adopt more and more sensitive risk management (pricing) techniques. My suggested short-cut is to consider the actual geometrical growth in financial volumes as if essentially led by such a creeping tendency to abate average maturities by raising roll-over frequencies.

The macro-financial effects of a full-fledged non-banking financial sector can thus be synthetically captured assuming that α $(0 < \alpha < 1)$ is the ratio of an ABS maturity to the maturity of its collateral. $\alpha < 1$ because for an ABS to be demanded it must be perceived more secure ('securitization'), i.e, more liquid than its collateral: $\gamma > 1 \Rightarrow \alpha < 1$. Assume for simplicity that α and γ keep constant throughout – so that γ is a measure of the market trust in securitization services *generally considered* – average maturities and roll-over frequencies at each ABS 'layer' can be resumed as follows:

	D	ABS	ABS^2	ABS^3	...	ABS^n
av. mat.	T	αT	$\alpha^2 T$	$\alpha^3 T$	...	$\alpha^n T$
r-o freq.	1	α^{-1}	α^{-2}	α^{-3}	...	α^{-n}

It is worth to notice that their factor keeps constant (T) throughout all layers, so that stock-flow consistency conditions can be easily met. Assuming the credit rate (β) on bank loans away, and neglecting all sort of 'inter-layer' complexity, a OTD financial system can be depicted as a creative finance circuit converging to the money market.



Assume a SPV$_1$ issuing an ABS backed by D, with maturity $\alpha\, T$, rolled-over α^{-1} times during T, and thus consisting in a SPV$_1$ net debt of $(\alpha\,\gamma)^{-1}\, D$ financing an anticipation of $(\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-1}\, D$. This new debt is a (net) illiquid asset to SPV_2, to be used as collateral for a CDO with maturity $\alpha^2\, T$, rolled-over α^{-2} times during T, and thus consisting in a SPV_2 net debt of $(\alpha\,\gamma)^{-2}\, D$ backing an anticipation of $(\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-2}\, D$. In absence of shocks, the 'creative' process can go on until a SPV$_n$ issues an ABS^n *whose perceived liquidity* (γ^n) *is sufficiently high* to be acquired by a repo issuer to back its issuance that is used as collateral by an asset-backed-commercial-paper issuer, whose ABCP is used as collateral by a money-market-mutual-fund to issue quasi-money of overnight maturity and infinitesimal interest rate—eventually discharged in favour of a final creditor in the form, e.g., of a zero credit rate on consumption credit (a penalty on paying for his new consumer durable cash)—i.e., eventually discharged if, *and only if*, the final creditor accepts becoming a new final debtor (re-starting a 'creative' financial process).

A double relation lays at the core of this model: the build-out (n) of a non-depository financial system is a positive function of the perceived liquidity (γ) in ABS generally considered; this, in its turn, is a positive function of the applied quantity (α^{-1}) in financial-engineering technologies. The model is viable so long as originated ABS are distributed, i.e., so long as a OTD liquidity risk management is in operation:

$$\begin{cases} (\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-1}\,D \geqslant 0 \\ (\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-2}\,D \geqslant 0 \\ (\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-3}\,D \geqslant 0 \\ \dots \\ (\alpha\,\gamma - 1)\,(\alpha\,\gamma)^{-N}\,D \geqslant 0 \end{cases}$$

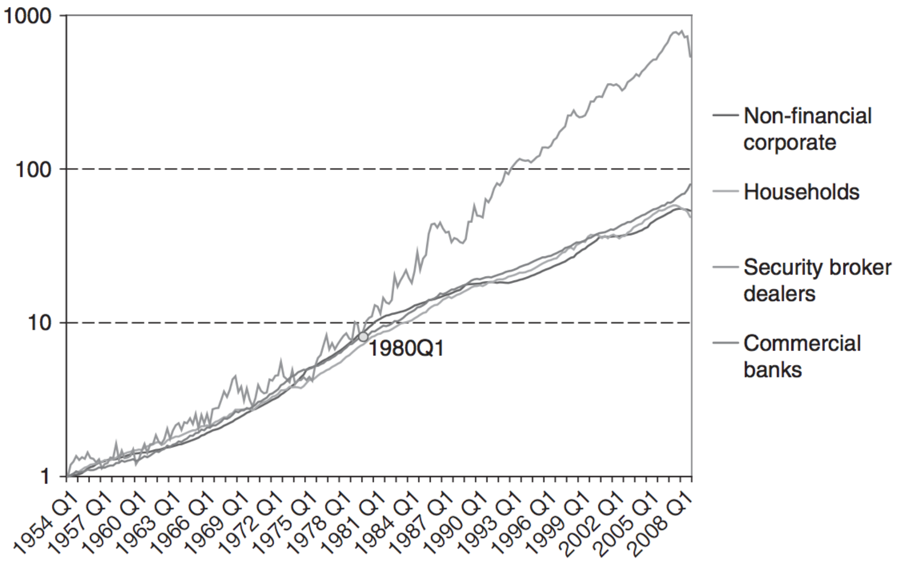
i.e., simply:

$$\alpha\,\gamma \geqslant 1.$$

3 Securitization, Fragility, and Regulation

This simple viability condition lets us introduce policy considerations into the picture, especially regulatory issues for economies where non-depository financial sector grows much more (say, ten times more) than households, non-financial firms, and depository finance (three sectors whose income dynamics – as a further matter? – keeps mutually consistent):

Growth of four US sectors, in log scale (1954-Q1= 1).
Source: Shin (2010, p. 169)



A macro-financial system as this is prone to generate endogenous impulses to instability if the ratio of γ to α^{-1} falls below 1. *Abstracting from potential manipulations of* α^{-1}, a situation where $\alpha\,\gamma < 1$ can only be interpreted as a collapse in γ leading to a so-called 'sudden stop' in non-banking processes of liquidity risk management. This looks like a purely financial crisis, in which the working of a non-depository financial system can be re-established only through an upward manipulation of γ. This kind of policy can be carried out in at least three, not mutually exclusive, ways:

1. trusting someone (e.g., rating agencies) the authority to *fix* the level of γ. Being a high-γ in the common interest of ABS issuers, ABS holders, and the same rating agencies, this kind of solution results in the institutionalization of a conflict of interest;

2. a Ponzi's strategy: the same originators sustain γ by boosting incentives for final debtors to inflate their obligations. That is how subprime lending arose;

3. an expansionary bias in monetary policy (e.g., the 'Greenspan Put') so that the central bank reaction function is essentially aiming at the injection of a banking basis to the non-depository financial sector ('lending of first resort').

We are thus in a position to suspect that more sustainable policies may be derived by attempts at manipulating α^{-1}. The best known device to manipulate α^{-1} is the Tobin Tax. Yet, the establishment of the argument that a transactions tax is the right tool for the financial stability job calls for a further reflection on the elasticity of γ to variations in α. Such an inquiry may also help establish the existence of policy options or institutional arrangements alternative to the Tobin Tax.

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