



Shadow banking and the moral hazard

Principles for reducing model-based opacity in securities finance

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MAY 2013

SUMMARY

When markets are unable to value an asset properly, financial intermediaries are in position to take advantage of other market participants. This moral hazard-problem is central to understand the destabilizing impact of shadow banking activities, and to effectively address problems involving valuation of complex financial instruments in illiquid markets. The guiding principles for regulation are straightforward: radical disclosure, shifted burden of proof and the rule of precaution applied to financial engineering.

Introduction

“Financial crises take place because economic units need or desire more cash than is available from their usual sources and so they resort to unusual ways to raise cash” (Minsky 1982, p. 125). Rarely has Hyman Minsky’s (profoundly Keynesian) thesis of endogenous financial instability been illustrated with such clarity as in the last years’ financial turmoil. What has become known as “shadow banking” played a crucial role in this process; indeed, it is a key feature of the finance-led era of capitalism. As such, it also is a major source of instability and systemic risk.

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Many commentators observed that the financial meltdown of 2007/2008 started outside traditional banking, and yet that banks were key players in the chain of events that unfolded. These non-banking activities require particular attention from regulators and supervisors, and we need to better understand the threats they pose to economy and society.

Acknowledging this fact, the European Commission published recently a Green Paper on shadow banking, launching a new round of consultations on future regulation of the banking and finance activities in Europe. The aim of the Commission is “to examine existing measures carefully and to propose an appropriate approach to ensure comprehensive supervision of the shadow banking, coupled with an adequate regulatory framework” (European Commission 2012, 10). Previously the issue had been raised at G20 Summits in 2010 and 2011, and last year the Financial Stability Board (FSB) published a report with recommendations on oversight and regulation (FSB 2011). All these steps are very much needed as substantial evidence points out shadow banking as a major risk factor for future crises.

While drawing on recent literature, academic and institutional, this paper points out a particular aspect of the problem, namely the destabilizing and opacity-creating role of “sophisticated” models and model-based valuation used in modern finance – both for pricing the assets and for evaluating risk exposures. It is a well-known fact that “the absence of market prices, trading activity, or comparable instruments’ prices and inputs is a prominent feature of complex structured credit products, many of which are held off balance sheet” (Novao *et al* 2009, 5). In absence of market mechanisms, failures of model-based valuation have been appalling, particularly so – but not exclusively – when it comes to securitization¹ and financing operations involving securities-backed assets, *i.e.* repos transactions² and secured lending; that is precisely the activities that lie “at the heart of the development of shadow banking prior to the crisis” (FSB 2011, 22).

The problem of model-based valuation is often mentioned in literature, but far too often it is reduced to volatility concerns in the context of fair value accounting, and especially to downwards asset price spirals in the bust phase of the business cycle. Whereas fair value is clearly an issue, we need to take a broader stand and address complexity, opacity and “structural” financial engineering as such. Opacity might emerge in various ways, from financial innovations and accounting arbitrage to the way supervisors chose to analyze market operations and publish the data.³ Whenever a price is a function of a

¹ Securitization refers to the process of transforming “passive” assets held by banks on the bank-sheets (debt instruments such as mortgages) into tradable assets or securities. The bank sells the claim to the cash flow generated by the asset in question. “This is accomplished by setting up another company, called a special purpose vehicle (SPV) or special purpose entity, and then selling the specified cash flows to this company, which purchases the rights to the cash flows by issuing (rated) securities into the capital market. The sponsor services the cash flows, that is, makes sure that the cash flows are arriving, etc. The SPV is not an operating company in the usual sense. It is more of a robot company in that it is a set of rules. It has no employees or physical location.” (Gorton & Metrick 2010, 40)

² A repo (repurchase agreement) is a transaction when one party sells a security to the other for a specific period of time, and simultaneously agrees to repurchase it at a specified price at the end of the contract. A repo transaction amounts to a loan of cash against a security as collateral. Most repos are short-term transactions for a period from one day to two weeks.

³ As for the latter, a case in point would be the commodities derivatives trade, the supervision of which relies almost exclusively upon the commitment of traders (COT) report published every week by the U.S. Commodity Futures Trading Commission (CFTC). Data on individual positions are kept secret for commercial reasons, while the disclosed aggregated data does not allow for a clear distinction between operational hedging and speculation for the trading book. As it is, the CFTC classifies traders rather than positions, while most of operating firms involve in both. As a result, the existing data simply does not allow accessing the extent to which trade book speculation impact on commodity prices. John Kemp, “Inside the commitments

“sophisticated” model for betting on the future, the solidity of the model should be verified by deep and liquid markets, markets that should remain liquid even in stressed conditions. Just as in the case of stock markets, there must be an active secondary market even for “sophisticated” financial products. If “sophisticated” products don’t fulfill these criteria, the volumes of trade should be substantially reduced, since the very idea of “rocket science” asset managers pricing “unique”, illiquid assets is a gateway for speculation and accounting arbitrage at best, deceit and fraud at worst.

In both cases, compensation schemes are the real driver of the whole process. The opacity issue should be addressed at its core, *i.e.* on the level of incentives: when markets are unable to value a security or a structured product, financial intermediaries are in position to take advantage of other market participants. This is the fundamental moral hazard analysis behind the former US Fed chairman Paul Volcker’s call for “thinking more boldly” in matter of finance and banking regulation⁴. Similarly, the Chairman of British Financial Services Authority, Adair Turner, speaking about shadow banking, affirms that “this time we need to ensure that we are sufficiently radical”⁵

A first step in that direction would be to adopt plainly Hyman Minsky’s approach to financial crisis, in which it is the stability itself that breeds instability (Minsky 1986). In the case of shadow banking, excessive risk-taking and speculation in securities financing are greatly facilitated by opaque models that create illusion of cheap liquidity offering high yields at low risk: the more opaque the models, the greater the illusion among market participants, and the higher reward for intermediaries.

Accordingly, regulators should go beyond fine-tuned monitoring and supervision, higher provisions and counter-cyclical mechanisms against risk-taking (the haircuts⁶ applied to repo transactions and securities lending), which are the main measures proposed. However useful, such measures will unlikely prevent future crisis, as they address the symptoms and not the cause. And things could get worse by declaring central banks “lenders of last resort” for securities finance as well, as suggested by some (Pozsar 2011, 22). This would amount to extending the safety net covering banks to shadow banking markets, whereas – as prudently put by one central banker – “the sheer volume of trading in some of these markets should be questioned” (Moe 2012, p. 43). Indeed, shadow banking activities built an immense mountain of credit upon a substantially smaller rock of “safe” assets, securities. Not only would it be improper to create additional too-big-to-fail traps, but the whole purpose of this trade is dubious. Banking and finance have a strong public good-dimension, but many of activities labeled as “shadow banking” seem to serve more the industry itself than the public.

In sum, we need a cultural change in the approach to regulation and supervision. Of course, the finance industry intermediaries claim and will continue to claim to possess highly qualified expertise on valuation of unique assets, and they’ll continue to defend their right to nondisclosure.⁷ But the evidence of failed techniques for valuation of assets

of traders report”, Reuters, 9th May 2012.

⁴ “Paul Volcker: Think More Boldly”, *The Wall Street Journal* web edition, December 14th, 2009.

⁵ Lecture given at the Cass Business School in March 2012, “FSA chief Turner wants radical rules for ‘shadow banking’”, *Daily Telegraph* (web edition), 15th of March 2012.

⁶ A haircut is as margin applied to collateral pledged by borrowers in a repo transaction (see below). Depending on the size of the haircut, the collateral pledged will be valued at less than market value. This reflects how safe the collateral is considered to be (its default risk) by the market.

⁷ The question of valuation models has been brought to the fore during the AIFM Directive consultations. In its response to ESMA (European Securities Market Authority), a major European hedge fund lobbyist, European Private Equity & Venture Capital Association, explained why it is opposed to disclosure of valuation

is just too overwhelming for those arguments to be trusted. Rather than trying to find out how to save illiquid markets, we should ask what purpose there is in trading assets markets cannot value correctly, in the first place. Who benefits from trading such assets? Is the public good well served by this? These questions lead to three simple principles for an effective regulatory response: *radical disclosure* beyond what is currently required by international accounting standards (IFRS) and its US equivalent (GAAP), *shifted burden of proof* as for who is charged to prove how models actually work; and *precaution* in matter of financial innovation.

I. What is Shadow Banking?

The key word in literature is “systemic”. It is widely acknowledged that the term “shadow banking”, of very recent origin as it is, should not refer to some particular sector of the financial industry but to the system as a whole. Shadow banking is a complex system in which various actors (money market funds, investment bank broker-dealers, asset managers, hedge funds, banks off-balance sheet entities, insurance companies...) connect through a web of transactions and obligations such as bank sponsorship, repo transactions, liquidity puts, securities lending, etc.

In spite of many whistle-blowers (Galbraith 2009), regulators in US and elsewhere seem to have been caught by surprise. As acknowledged by the U.S. secretary of the Treasury Tim Geithner, before the crisis “a large shadow banking system had developed without meaningful regulation, using trillions of dollars in short-term debt to fund inherently risky financial activity. The derivatives markets grew to more than \$600 trillion, with little transparency or oversight.” (Geithner 2012). Testimonies of this kind flourished in the aftermath of the crisis.

Non-bank credit intermediation

Both the FSB and the European Commission’s Green Paper (March 2012) define shadow banking as “a system of credit intermediation that involves entities and activities outside the regular banking system”. According to a sample study conducted by FSB (2011), key players of this system are investment funds, “vehicles⁸” and money market funds⁹. Thus, a typical credit intermediation chain could imply a money market fund lending on short term to a Structured Interest Vehicle (SIV)¹⁰ investing in long term debt instruments

models: “the choice of valuation methodology and the application of it in relation to a unique, illiquid asset requires a significant degree of expert judgement, and the portfolio managers have by far the greatest familiarity with, and expertise in relation to, that asset. (...) Valuations can be performed properly in-house with significant involvement from the AIFM’s senior investment professionals, provided that there are other arrangements to mitigate conflicts of interest”.

⁸ A “vehicle” is legal entity owning a portfolio of asset-backed securities (ABCP) and legally separated from the sponsoring firm (in most cases a bank), thus protected from any risks linked to its other investment strategies. In virtue of this separation, the “vehicle” is supposed to be a safe instrument. According to Arteta et alli, a vehicle is a “robot firm that is bankruptcy remote from its sponsor and has no employees and no offices (...). All of its operations are conducted by service providers (such as law firms and investment managers) that contract with the vehicle. Thus, while the sponsor captures profits from the credit arbitrage strategy, if the sponsor fails, ABCP investors have the sole claim on vehicle assets and are isolated from the sponsor’s bankruptcy procedures”. (Arteta et alli 2009, 6-7)

⁹ Money markets trade assets involved in short-term borrowing and lending (original maturities of one year or shorter). Common money market instruments include certificate of deposit, repurchase agreements, commercial paper, Eurodollar deposit, Government and municipal short-term notes, money funds, foreign exchange swaps, short term mortgage- and asset-backed securities.

¹⁰ Also known as credit arbitrage vehicle, a SIV raises cash by issuing short-term securities and lends it long-

issued by another “vehicle”, Special Purpose Vehicle (SPV)¹¹.

Of course, as banks are major sponsor for most of these vehicles, they are fully integrated in the chain. In this example, they would typically be involved in several ways:

- by sponsoring the vehicles that issues asset-backed debt instruments, arranging the whole deal and receiving the proceeds.
- by investing into securities issued by vehicles sponsored by other banks.
- by borrowing from money market funds to fund these investments.

As reminded by Turner (2012, 6), “many financial flows occur outside banks and always have done”. Flaws linked specifically to shadow banking are those where two distinctive features of classical banking – leverage and maturity transformation – emerge in other parts of the chain, posing threats to financial stability that banking regulation doesn’t address.

Leverage and maturity transformation

Leverage and maturity transformation emerge through three activities, identified by the European Commission’s Green Paper as being at the heart the shadow banking: securitization, securities lending and repo transactions. Accordingly, in addressing the systemic risks involved in shadow banking, both market participants and regulators need to understand how securities are created, valued and traded.

Maturity transformation was traditionally considered as a pure banking business: short-term savings were channeled by banks and used to grant long-term loans. As for other financial institutions (mutual funds, insurance companies, pension funds, hedge funds, etc.) and capital markets, they were mostly thought of as a link between long-term creditors (primarily households) and long-term investments. This picture changed radically with the emergence of shadow banking, however. Pozcar and Singh speak in this regard of “reverse maturity transformation” where asset managers – the key players of the system¹² – transform long-term savings into short-term savings, and this “in spite of the long-term investment horizon of households”. This point is crucial: to what extent is the resulting mismatch of time horizons in the interest of end-users of financial intermediation, and to what extent is it driven in the interest of the intermediaries themselves? There are arguments on both sides, but this question must be dealt with much more thoroughly than until now.

There is substantial literature showing that the securitization of passive debt instruments (residential mortgages, corporate loans, etc.) was driven by demand for eligible assets

term securities at higher interest rates, thus earning a “spread” between the two interest rates.

¹¹ Special Purpose Vehicle (SPV): A legal entity (corporation, trust, or a limited liability company) put in place by another entity, called the sponsoring firm or sponsor (mainly banks). A SPV may or may not figure on its sponsor’s consolidated bank-sheet, for tax and accounting purposes. As its name implies, an SPV is created for some specific purpose, for instance to carry out specific transactions.

¹² As stated in the Key Report about UK equity markets, the finance industry has changed radically since the 1980s. “Today the key agents in the investment chain are professional asset managers. Some of these professional asset managers are standalone businesses; others are subsidiaries of financial conglomerates. Some have been created through the outsourcing of investment activities by insurance companies and pension funds, which have established asset management companies that seek business in the wider marketplace. Some asset managers are based in the UK. An increasing number are not, although many global firms manage their UK or European investments from London.” (Key Report 2012, 5-6)”

among banks and other financial institutions as way to obtain cheap liquidity. Long-term investments become collateral pledged as guarantee for short-term loans (obtained through repo transactions) drawn from cash pools of money-like instruments. Pozcar and Singh compare this process to mining: asset managers first “explore” passive sources of different quality, then “extract” and use them in various ways: packaging and repackaging, pledging and re-pledging (“rehypothecation”¹³). As summarized by Gorton, who confirms Minsky’s thesis made thirty years earlier, “essentially, there is not enough AAA debt in the world to satisfy the demand, so the banking system set out to manufacture the supply” Gorton (2010, 9).

The leverage created by shadow banking comes not only from the fact that collateral is “extracted” in order to obtain new loans. In addition, asset managers that receive securities in deposit as collateral might set out to re-pledge it to obtain new loans themselves. This method of re-pledging the same collateral several times creates a multiplier effect within the system and builds up hidden leverage.

In sum, asset managers fuel this process both on the supply side and the demand side. “On the supply side, asset managers are now important suppliers of collateral. On the demand side, asset managers are significant demanders of safe, short-term, liquid instruments, or non-deposit money claims. These supply and demand aspects of the asset management complex together determine the shadow banking system” (Pozcar and Singh 2011, 3-4).

How big is shadow banking?

The systemic feature of shadow banking makes it difficult and less relevant to estimate its exact size. Nevertheless, the FSB values it at €46 trillion in 2010 (up from €21 trillion in 2002), or 25-30% of the global financial system (FSB 2011). Pozsar and Singh (2011) advance the figure of \$25 trillion; Bouveret (2011) speaks about \$15 trillion in the case of European shadow banking.

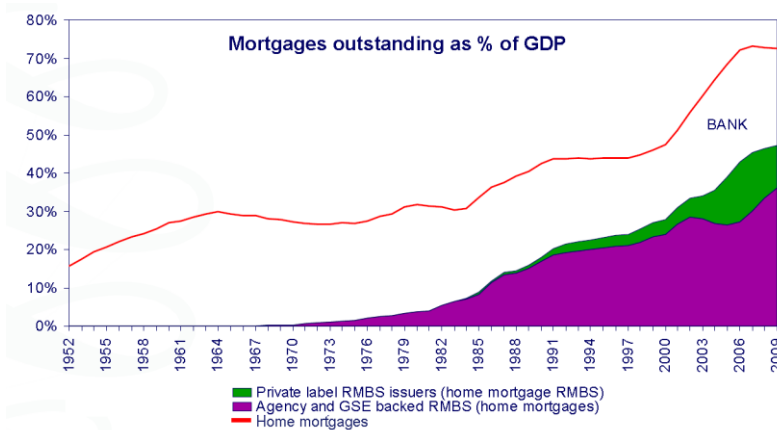
More important than the exact figure is the historical trend. As shadow banking transactions are funded upon securitization, the order of magnitude is given by securitization volumes. In the case of US residential mortgages, for instance, securitization of “passive” assets took off in the 1970s and grew substantially since the 1990s. Figure 1 below shows the amount of outstanding mortgages as proportion of GDP, both those kept on bank balance-sheets and securitized by government-sponsored enterprises or private entities (investment banks, real estate trusts).

The European trend is quite comparable, though securitization took off later. For both US and Europe, FSB observes that during the years before the crisis, the growth of shadow banking coincided with sharp growth of bank assets.

Figure 1. US mortgages on bank balance sheets and securitized (1952 – 2009)

¹³ Rehypothecation is the practice of re-using collateral received in one transaction in a new transaction, unrelated to the first one. Rehypothecation is a major source of hidden leverage within the system.

Shadow banking and the moral hazard



Source: U.S. Flow of Funds, quoted after Turner (2012).

Driving forces

The key question is *why* asset managers demand ever more liquidity. Gorton explains this by institutional investors and non-financial firms demanding “short-term, safe, interest-earning, transaction accounts like demand deposits: repo.” (2010, 15). For assets managers, it is cheaper to obtain liquidity in this manner than borrowing in the old-fashioned way. For commercial banks, securitization offers substantially higher profits than traditional lending.

There is no doubt that repo transactions play a role comparable to money creation. As Gorton and Metrick (2011) put it, “repo is money”, and the recent crisis should be understood as a “run on repo”, which is the securities-banking equivalent to traditional bank runs. Still, this explains only *how* asset managers accomplished this extraordinary credit expansion outside traditional banking, not what it served for, nor how it served society. Institutional investors should normally be interested in long-term investments, since this is the time horizon of their clients. As for big companies, there was of course growing demand for interest on very short-term and risk-free deposits, which traditional bank deposits cannot satisfy for big accounts – hence the growing role of money market funds since the 1980s. But clearly, short-term financing operations cannot be seen as the essential activity of firms, small or big, unless they evolve into financial institutions with non-financial activities.

Mehrling (2011) comes closer to the profound motives in observing that the demand for cheap liquidity was fuelled by derivatives-based investments, which in turn raises the question of social benefit of derivatives trade. More generally, the historical rise of securitization is concomitant with the rise of financial innovations such as collateralized debt obligations (CDOs)¹⁴. Whereas long-term asset management has a clear social purpose, it is far from clear what social benefits of reverse maturity transformation at such a massive scale really are, nor whether the benefits outweigh the systemic risks.

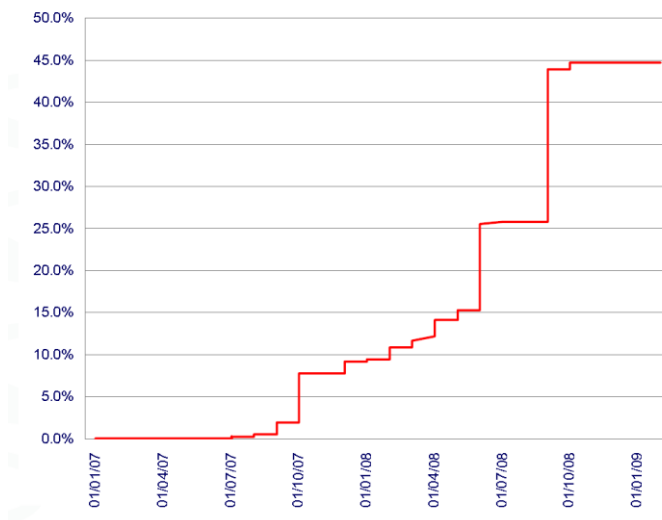
“Haircuts” and asset price spirals

A key element of concern expressed by regulators is the procyclical character of securities trade, with upwards/downwards asset price spirals and consecutive

¹⁴ A CDO is a special purpose vehicle (SPV, see below for definition) that issues different tranches of risk and invests proceeds in fixed income assets. Depending on their quality (default risk), these tranches are divided into three categories: senior tranches, mezzanine tranches, and equity tranches (unrated, thus most).

leveraging/deleveraging. This procyclicality is inherent in repo transactions and securities lending of mark-to-market securities: as risk awareness grows among market participants, the liquidity providers/lenders start to demand bigger haircuts for collateral posted by the borrowers. If unable to distinguish solid assets from the toxic ones under stressed conditions, they'll apply these additional haircuts to all collateral. Unable to refinance their positions, fund managers are obliged to sell massively their assets, and since everyone is doing this at the same time, this creates a classical downward spiral. The procyclical effects of haircuts during the US subprime crisis are illustrated in the figure below.

Figure 2: Average “haircuts” in the US bilateral repo market (2007 – 2009).



Source: Gorton & Metrick (2009)

However, this figure shows only the “end-game” part of the cycle, e.g. once the Ponzi-like schemes applied to the process of “manufacturing assets” have been made apparent for market participants. The question is: how were the initial value and risks estimated? What were the incentives involved in this process? Clearly, the more valuable and safer the collateral pledged, the more and the cheaper the credit; the riskier the investment, the higher the spread. These purely speculative incentives led to loosening-up criteria for eligible assets and mispricing these assets.

II. Addressing the problem

According to Minsky’s theory of financial cycles, stability breeds instability. In periods of sustained growth, financial markets search for ever higher yield, inventing “sophisticated” products, taking bigger risks and increasing leverage. Such a product might be the CDO, for instance, which emerged massively in the mid-1990s in US and European markets, “as investors sought yield in a low rate and spread-compressed environment and issuers adapted the structuring technology to new asset types” (Deutsche Bank 2000). The underlying asset portfolio in a cash flow CDO were not subject to an ongoing mark-to-market requirement; “the manager is not required to mark the collateral portfolio to market, but must ensure that the transaction can generate cash flows to meet obligations to bondholders.” (Ibid) Clearly, this was a recipe

for speculation that must end with disaster, as did the infamous Constant Proportion Debt Obligations (CPDOs), “Holy Grail of structured finance”, elected “Financial Innovation of the Year” and defaulting soon after.¹⁵

As the quest for the yield intensifies, sustainable financial positions are progressively replaced by speculative bets and positions which will require refinancing at some future point. Speculative positions will in turn evolve into Ponzi-like positions, which can only be refinanced by new borrowing on an ever-increasing scale. Eventually these Ponzi schemes must collapse once it is recognized to exist. As summarized by J. Galbraith:

“Minsky’s analysis showed that capitalist financial instability is not only unavoidable, but intrinsic: instability arises from within, without requiring external disturbances or ‘shocks’. There is no such thing as an equilibrium growth path, indefinitely sustained. Short of changing the system, the public responsibility is to regulate financial behavior, limiting speculation and stretching out for as long as possible the expansionary phase of the cycle.” (Galbraith 2009, 92).

The dominant approach to financial regulation prior to the crisis did exactly the contrary, however, relying more and more on “self-regulation” – which was in fact, as it turned out, deregulation. On the asset and growth side, fair value accounting increased the incentives for model-based manipulations and accounting arbitrage; on the risk management side, Basel I & II rules paved the way for more leverage and risk taking by allowing banks to develop their own models for risk-weighting their core capital.

In the aftermath of the crisis, with exception for some regulatory “bold thinking”¹⁶, the main focus lies on fine-tuned monitoring of banking and shadow banking activities, stronger capital buffers and counter-cyclical mechanisms. Hopes are high that higher and countercyclical haircuts for collateral assets will mitigate the risk-taking, “which in turn can result in greater stability of the supply of secured financing.” (CGFS 2010).

As helpful as these measures might be, they will unlikely prevent future crisis as they address the symptoms and not the cause, *i.e.* distorted incentives structures behind the models. The very first requirement of effective monitoring is to understand what is happening “in the shadows”, how securities are “mined”, traded and priced. But how supervisors understand what is being traded if they have only partial access to the underlying models, or if these models are so “sophisticated” that neither markets participant, nor the credit rating agencies nor supervisors fully understand them? For instance, to what extent did insurance companies like A.I.G. understood asset-backed securities (ABS)¹⁷?

These questions cannot be waived away by proposing countercyclical haircuts. Clearly, demanding 10% haircut up-front is better than demanding 0%, but it won’t help if the initial error margin of underlying models turns out to be close to 100%. The opacity

¹⁵ The first CPDO deal, ABN Amro’s “Surf”, was arranged during the summer 2006 and finalized in November the same year. It obtained a AAA-note and hit their cash-out trigger the following year.

¹⁶ Examples of bold thinking with systemic relevance are two provisions of the US Dodd-Frank Act (fiercely disputed by US financial lobby), the first one prohibiting banks from proprietary trading (trading for their own books and not only for their clients – the latter would still be allowed), the second from investing in hedge funds. Would these rules be implemented and would they apply to all the off-balance sheet vehicles, they would substantially (but not completely) reduce the size of shadow banking. A similar result might be tried by separating commercial bank activities from investment banking; proposals of this kind are not on the table, however.

¹⁷ ABS is a bond backed by cash flows from a pool of assets such as residential mortgages, car loans, credit card receivables, student loans, aircraft leases, royalty payments, etc.

multiplies the effects of normal perception variations.

Dynamic risk picture

Speculative finance did not end with the 2007/2008 meltdown. On the contrary, it is widely recognized that typical shadow banking risks can easily migrate from one part of the industry to the other in response to new regulatory measures, creating hidden leverage and exposure where they are not expected. For instance, Pozsar and Singh observe such movements in the case of increased use of securities lending:

“With dealers’ ability to borrow and re-pledge collateral having become more restricted post-Lehman, new collateral mines and mining techniques are being explored—see the increasing prominence of corporations as securities lenders in the U.S. and elsewhere, and the recent innovation of collateral upgrade swaps with pension funds and insurers in the U.K., respectively. These are examples of off-balance sheet related cross-border interconnectedness and collateral chains that regulators need to attend to.” (Pozsar and Singh 2011, 15)

Shadow banking is indeed cross-border and transatlantic, with very intense trade of securities between US and European banks. What’s more, regulatory arbitrage applies not only to different countries and jurisdictions, but to different parts of the financial sector within the same country. Paul Fisher, the Bank of England chief policymaker, warned recently against the combination of quest for yield and shortage of high-quality, low-risk assets, which “encourages investors to look for additional yield by moving into more illiquid products (...) or into more complex products (which they might not fully understand)”. Fisher pointed out as an example the rapid growth of exchange traded funds (ETFs)¹⁸, characterized by “increasing complexity, opacity and interconnectedness”¹⁹.

Any regulatory response has to take into account this dynamic risk picture. In the specific case of EU legislation, it is crucial that relevant regulations “fit” well together with other pieces, be it on trading venues (Mifid Directives and Regulation)²⁰, capital requirements for banks (CRDIV Directive), alternative investment funds (AIFM Directive)²¹ or collective undertaking schemes (UCITS Directive)²². Most of all, it is necessary to use shadow banking regulation as an opportunity to finally address the issue of systemic risk, as serious and well informed doubts are expressed to what extent recent EU regulation represents any true progress on this field²³. It would seem that some parts of new

¹⁸ ETF is an investment fund traded on stock exchanges. An ETF holds assets such as stocks, commodities, or bonds, and trades close to its net asset value over the course of the trading day.

¹⁹ “Markets’ hunt for returns poses financial stability risk”, *Daily Telegraph* web edition, 1st of July 2011.

²⁰ In force since November 2007, the MiFID Directive consists of a framework Directive (Directive 2004/39/EC), an implementing Directive (Directive 2006/73/EC)³ and an implementing Regulation (Regulation No 1287/2006). In October 2011, the Commissions proposed a new version of the Directive.

²¹ Contrary to European Commission’s original proposal, the final version of the AIFM Directive (Directive 2011/61/EU of 8 June 2011 on Alternative Investment Fund Managers) allows for marketing of non-EU alternative funds to European investors without domiciliation of the fund nor its management. Hedge funds will thus continue to operate within the EU wherever they are located.

²² The UCITS Directive (Directive 2009/65/EC of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities).

²³ As showed in the Finance Watch position paper on CRDIV Directive (2012), the new capital rules proposed, however useful, will not be of much help in addressing the systemic risks.

regulation actually extend the scope of shadow banking, rather than reducing it²⁴.

Evidence of failed model-based valuation

Problems with model-based valuation came to the fore during and after the 2007/2008 meltdown. The US Financial Crisis Inquiry Commission concluded that opacity played a significant role in the financial crisis, especially asset valuation opacity that made it impossible for supervisors to distinguish insolvent banks from the solvent ones. Similarly, the Committee on the Global Financial System (CGFS) within the Bank of International Settlements observes:

“In the run-up to the crisis, the range of collateral assets used in secured financing transactions expanded to include assets whose mark-to-market values were dependent on the modelling of complex contingent cash flows. When the model-based valuation uncertainties on these assets exceed the overcollateralisation secured through the haircut, adverse selection risk increases. This risk materialises particularly in stressed market conditions, and the valuation uncertainties can force such securities to lose their collateral eligibility” (CGFS 2010, 13).

Indeed, many failures of model-based valuation used in the years preceding the crisis are quite appalling. It is a well-known fact that valuations of assets, liabilities and risks change with the business cycle and market perceptions. What’s new and radically disruptive about shadow banking is the valuation opacity induced by presumably “sophisticated” models. The 2007/2008 crisis brought to light all the risks linked to valuation of complex financial instruments in “illiquid markets”, but also the manipulations and accounting arbitrage it allows. Novoa *et alli* give an account of what happened during the turmoil:

“As the illiquidity of certain products became more severe, financial institutions turned increasingly to model-based valuations that, despite increased disclosure requirements, were nevertheless accompanied by growing opacity in the classification of products across the fair value spectrum. Moreover, under stressed liquidity conditions, financial institutions made wider use of unobservable inputs in their valuations, increasing uncertainty among financial institutions, supervisors and investors regarding the valuation of financial products under such conditions.” (Novoa et alli 2009, 3)

The principle of fair value has been a topic of fierce debate since the crisis, as it was fair value accounting that allowed for artificially blown-up asset portfolios. Both the international IFRS accounting framework and its U.S. equivalent (GAAP) define fair value as “the amount for which an asset could be exchanged, and a liability settled, between knowledgeable, willing parties, in an arm’s length, orderly transaction” (Novoa et alli 2009, 3). The magic word being, of course, “could”: of the three “levels” of fair value that banks and financial institutions may choose between when the value their assets within this framework, only Level 1 is the actually observable market price, the Level 2 and 3

²⁴ For instance the AIFM Directive, which allows for marketing of non-EU alternative funds to European investors without domiciliation of the fund, nor its management. As before, hedge funds will thus be able to operate within the EU wherever they are located. We realize the significance of this fact by looking at the list of investors concerned by these funds: high net worth individuals but also retail investors, charities, distributors, fund of funds, pension funds, insurance companies, corporations and government entities. Finally, the UCITS Directive, it rather strengthens the interconnections than reducing them, allowing collective investment schemes to invest in derivatives. A number of hedge fund strategies will thus be accommodated within the UCITS format, such as equity long/short betting and others.

are models relying on various variables, time series and the like. Not surprisingly, Level 1 was adopted during the speculative boom before the crisis and abandoned when the crisis unfolded.

However, the issue of model-induced opacity is much more general. On the risk management side, for instance, the empirical analysis of a sample of 735 asset-backed securities CDOs²⁵ conducted by Anna Katherine Barnett-Hart (2009) concludes that “credit ratings failed to capture the true amounts of risk associated with different CDOs, granting similar amounts of AAA notes “despite substantial differences in asset quality, liability structure and the underwriter.” This lack of variation was most likely a result of the rating agencies’ overreliance on computer models:

“The investment banks were given access to the software used by the rating agencies, and became skilled at selecting collateral that would give the highest amount of AAA possible. Presumably, underwriters found ways to garner similar ratings for a multitude of CDOs by manipulating certain modeling inputs, most easily the correlation number.” (93-94).

According to Barnett-Hart, rating agencies errors stemmed from “the outsourcing of credit analysis to computer models and the low level of human input used to rate CDOs”. While errors can never be excluded, neither can they be completely dissociated from existing incentive structures. In their study of a large sample of credit arbitrage ABCP vehicles (sponsored by US and European banks), Arteta et al find evidence of distorted incentives behind banks’ excessive risk taking. Interestingly enough, these distortions lie not in government guarantees (such as deposit insurance), but in “owner-manager agency problem”, such as opaque bank risk postures combined with equity-based incentives. “This result provides evidence that better compensation practices decrease the incentives for managers to take on excessive risks” (Arteta et al 2010, 23).

Principles for reducing model-based opacity

Examples above show only some of the problems with models used in “structured finance”. These problems can be summarized in three points:

First, by creating or intensifying opacity, these models multiply the moral hazard pointed out by Volcker and others, giving a decisive advantage to financial intermediaries. Asset prices and future returns given by proprietary models that remain partially or completely undisclosed are gateways to moral hazard – would they be made public, we might suspect that products like CDOs would find very few buyers, if any.

Secondly, models diffuse *temporary illusions of unlimited liquidity*. The illusion is fuelled by a vast range of “innovations”, circumvention of rules and regulatory arbitrage, accounting arbitrage, deceitful behavior and fraud. Up to 2007, securities seemed an easy and risk-free way to access to cheap liquidity, but in stressed conditions the collateral pledged or transferred turns out to be illiquid. And the last crisis is by no means the first one where model-based valuation and “sophisticated” products have been used in deceitful practices.

To put it differently, models create an illusion of functioning market prices where there is no true market price, as there are no true markets. Liquid products presuppose active markets with buyers and sellers: in real economy, the demand for products might fall in

²⁵ ABS CDO is a CDO with underlying portfolios consisting of asset-backed securities (ABS) such as residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS).

distressed market conditions, but it will rarely dry out completely. And yet this is what happens time and again with financial “innovations” obtained through the securitization process and securities trade.

Last but not least, these models diffuse the illusion that what Keynes called *radical uncertainty*²⁶ can be reduced to “probability”, and thus properly measured. The more this illusion is diffused among market participants, the less risk-aware they become. One way to maintain the illusion is to rely on stochastic models where the future is deduced from previous time series. Another way is to assume exogenous risk distribution, while financial risks are distributed endogenously. Techniques used in securitization models amount to “statistical mechanics” that treats asset prices as if they were physical particles, each one moving independently from the others. This is obviously not the case of movements of prices in asset portfolios are not comparable events. These assumptions are revealed as false once the crisis unfolds. But during the boom phase of the cycle, it is a useful illusion, especially for financial intermediaries.

A general solution to these problems is not to replace bad models with good ones, as the overall ambition is not to radically eliminate the volatility from financial markets – this volatility is inherent in portfolio decisions made under conditions of Keynes’ radical uncertainty. Rather, it is to radically reduce the “opacity-building” capacity of model-based finance and thus the moral hazard.

This objective can be achieved by adopting regulations relying on three simple principles:

1) *Radical transparency* and public disclosure of all methods used in model-based valuation, especially on “sophisticated” products such as CDOs and SIVs. Liquidity provisions and countercyclical “haircuts” aren’t enough; radical disclosure is needed across the business cycle. Mandatory disclosure rules should go much further than what is currently required by international accounting standards (IFRS) and the US GAAP standard. This should apply not only to banks’ own propriety trading but to the whole financial industry.

2) *Shifting the burden of proof*. We should take Paul Volcker’s words very seriously: “I wish that somebody would me some shred of neutral evidence about the relationship between financial innovation recently and the growth of the economy, just one shred of information²⁷”. Basically, it should be the responsibility of “financial engineers” to provide regulators with a demonstration how their models actually work in practice, and this demonstration should respect basic standards of intelligibility (possibility to reproduce the results, etc). As soon as these standards are respected, many “sophisticated” products would most probably drop out of the market.

3) *Precautionary principle*. This point is crucial, as the industry’s and regulators’ chief response to critique after the 2007/2008 meltdown has been that innovative products where to novel to be correctly understood. Just as for all other products, no innovations

²⁶ “By ‘uncertain’ knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. (...) The sense in which I am using the term is that in which the prospect of a European war in uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolesce of a new innovation, or the position of private wealth owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know. Nevertheless, the necessity for action and for decision compels us as practical men to do our best to overlook this awkward fact and to behave exactly as we should if we had behind us a good Benthamite calculation of a series of prospective advantages and disadvantages, each multiplied by its appropriate probability waiting to be summed”. Quoted in Minsky (2008, 64).

²⁷ “Paul Volcker: Think More Boldly”, *op. cit.*

should be allowed on the market without being tested in advance. Importantly, Volcker expresses very serious doubts about boards of directors being capable of understanding the innovations proposed, which means we can't rely on banks and financial institutions to regulate themselves financial innovation, sorting out toxic products from the safe ones.

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