

ICFR and Financial Times Research Prize Runner-up Essay

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The Future of Banking Regulation – *Apologia of the Free Market*

24th February 2010

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“If the misery of the poor be caused not by the laws of nature, but by our institutions, great is our sin.”¹

Abstract

This paper examines the key factors contributing to the 2008-2009 financial crisis: excess leverage, capital adequacy, asset price bubbles and overly accommodative monetary policy. By re-examining the inherently conflicted relationship between the public sector and a privately capitalised banking system, this paper concludes that a formal bifurcation of that relationship need be made in order that market expectations might be newly acclimatised to a framework where bank failure is a viable policy option. Some discourse on the regulatory conditions necessary for the stability of a free-standing banking system is presented. These include stabilising the volatility of the banking system’s capital adequacy requirements by re-orientating the pro-cyclicality of certain policies. An additional aspect is the creation of a commercially competitive public institution capable, *in extremis*, of filling the shortfall in credit availability during periods of pronounced volatility.

1. The Scope & Purpose of Financial Regulation

The harmonised deterioration in macro-economic conditions pursuant to the collapse of Lehman Brothers was amplified by a global cessation in credit availability. Critical to the management of the cyclical phases endemic in a market economy is the maintenance of an orderly flow of credit to its borrowers. Regulatory capital requirements, leverage ratio constraints, accounting policy and remunerative practices are all relevant to the issue of institutional solvency. Solvency itself however is ancillary to the central tenet of financial regulation, that is: the preservation of credit availability through the cycle. The banking system functions as the direct conduit of loan liquidity between the real economy and its central bank; financial regulation should principally matter thus as a means of contra-cyclically controlling this credit transmission process.

¹ Charles Darwin

Importantly, while the banking system is the direct channel through which central bank liquidity gets distributed to commercial and consumer borrowers, it is not the economy's primary creditor. Collectively: money-market and bond mutual funds (participants in commercial paper programmes), off balance-sheet Structured Investment Vehicles (SIVs) and Conduits (both lenders against least risky segments² of securitised risk), and hedge funds (leveraged investors in structured credit issuance) have supplanted the banking system as the US economy's primary commercial creditor in providing 80% of its required financing. By contrast to traditional bank and thrift lenders, this *quasi*-banking system has thrived under regulatory covenants which are not necessarily consistent with the socio-economic responsibilities intrinsic to the role of an economy's lead commercial lender³. In fact, its very evolution reflects private capital's Darwinian affinity to maximise return-on-risk within a system's regulatory constraints. In making relatively expensive bank capital allocated against commercial loans, regulation has facilitated the securitised migration of credit risk from banks' balance-sheets to this lesser regulated constituency of liquidity providers. Advancing a consistency of regulation across the broader lending community is an important prerequisite to managing credit availability through the cycle. More comprehensively defined financial regulation should necessarily redress imbalances in the competitive landscape of the orthodox banking system with respect to its *quasi*- banking counterpart.

During the fortnight which followed Lehman Brothers defaulting on its commercial paper obligations, money-market funds extracted approximately \$700 billion of liquidity from the system: as significant holders of unsecured corporate debt, money-market funds faced redemption pressures from its characteristically risk averse investor base. In seeking to mitigate risk at a time of heightened uncertainty, these fund investors acted, individually, as perfectly rational risk-bearing agents. Moreover, at an investor level, risk averse management sensibly decreased macro-systemic vulnerabilities at the margin. However, as with the *thrift paradox*⁴, an unequivocally

² The so called "super senior" tranche

³ These include ensuring liquidity remains available to the system in amounts and at prices consistent with macro-economic stability and is, at times, counter-commercial and may involve pricing subsidies.

⁴ The *thrift paradox*, first elucidated by John Maynard Keynes, is a game-theoretical construct exemplifying how rational behaviour at the micro level yields sub-optimality at the macro level. Increases in individual household savings during periods of economic contraction undoubtedly strengthen that household's balance-sheet. However, a coordinated increase in savings across many households, in aggregate, reduces overall consumption in the economy therefore, procyclically, increasing the rate of the economy's contraction. In the aftermath of the Lehman Brothers bankruptcy, credit markets underwent a *risk-averse paradox*: while individual investors strengthened their capital positions by moving from commercial paper into Treasury bills, aggregate risk aversion across wholesale liquidity

judicious risk practice unilaterally proved to be a macro-economic destabiliser when coordinated multilaterally. As wholesale investor liquidity withdrew from the short-term corporate credit market, banks proved to be insufficiently capitalised to fill this void, and trade financing credit stopped flowing. This was a first order failure of bank regulation.

The dearth of credit availability in the commercial paper market was one manifestation of the broader malaise effecting credit providers across financing markets. Municipal auction rate securities, wholesale Libor loans, promissory notes and bankers acceptances all similarly seized up as risk averse liquidity providers balked at rolling short-term debt obligations. Securitization - bundling bank originated credit risk, tranching it⁵, then on-selling the resulting stratified components to investors - is ultimately a carry orchestrated process predicated on the on-going availability of funding at prices marginal to the yield of the securitised risk. When short-term liquidity evaporated, investors in these structured forms of longer term credit risk (backed by, for example: non-agency mortgages, commercial mortgages, credit-card and auto-loan receivables) were unable to procure leverage - when at all - at a cost consistent with benchmark performance metrics, thus fundamentally undermining the investment thesis of the securitised credit market. As with the commercial paper markets, banks, busily replenishing their own depleted capital bases, were unable to step in to resuscitate the flow of financing credit to securitised commercial and residential real-estate markets. This was a second order failure in bank regulation.

2. Ensuring the Risk Implications of Leverage are Appropriately Capitalised

A contracting economy, when starved of credit, risks amplifying a cyclical recession into a catastrophic depression. That banks were neither willing nor capable of substantively extending credit when it mattered was a consequence of their perceived systemic insolvency. With banks running inventories of mortgage assets funded at between 20 and 40 times leverage⁶, the system had insufficient equity capital to underwrite risks intrinsic to the balance-sheet, making asset growth in a depressed market impossible. In addition to these explicit risks, banks implicitly

providers starved trade finance markets of credit, which reduced both domestic and international commerce flows thus depressing global economic activity.

⁵ The process of dividing up a corpus of credit risk into first-loss riskiest components (equity), second-loss pieces (mezzanine), & least risky (super senior) pieces

⁶ Leverage: the ratio of the market value of assets and the equity capital supporting the risk of those assets. 20 times leverage implies a 5% fall in asset value results in the market value of assets being less than the debt obligation financing the assets: that is, insolvency.

retained a latent connectivity to those asset-backed credit risks ostensibly on-sold through the securitization process. Specifically, providing conduit sponsored vehicles with liquidity back-stop facilities ultimately resulted in banks having to consolidate super senior tranches of conduit risk back onto their balance-sheets when the commercial paper funding market froze. Similarly, banks assumed the asset-backed collateral from non-recourse loan agreements as leveraged swap and repo-lending counterparties defaulted.

How this happened is a reflection of the extent by which regulatory capital adequacy requirements were (and remain) maladapted to the rapidly evolving landscape of structured derivative risk. If the primary mandate of bank regulation is to ensure the functional stability of credit availability, then a critical corollary of this mandate is a requirement that the financial system is adequately capitalised with respect to the market risks it underwrites. The Basel Accord, which defines *de minimis* levels of capital adequacy, permits banks to use their internal models to assess such capital requirements. These historically derived statistical models of risk measurement (*value-at-risk*) have been undermined by the credit crisis in two ways:-

First, pro-cyclicality. Periods of low market volatility, like the environment which immediately preceded the crisis, produce low measures of risk and capital requirement. This circumstance allows nominal sizes of positions to accumulate to a level that might otherwise prove untenable to capital ratios should volatility spike higher. This would matter less were exits of risk continually available. However, as volatility rises, capital ratios are strained at a time when the cost of replenishing lost capital increases. Forced liquidation of assets procured under more quiescent climes runs the risk of exacerbating market volatility (and deteriorating capital ratios), because the process of exiting strains the available liquidity of, what are typically, commonly held positions.

“To lose one parent, Mr Worthing, may be regarded as a misfortune; to lose both looks like carelessness.”⁷

Second, when liquidation does occur, it frequently induces a counter-intuitive correlation to seemingly disparate trading strategies. This was first apparent during the 1998 Long-Term Capital Management crisis when the collapse in the dollar-yen exchange rate, tightening in government-swap spreads, and divergence of option-related volatility strategies - all seemingly

⁷ Oscar Wilde, *The Importance of Being Earnest* 1895

unrelated - occurred simultaneously as dealers scrambled to exit commonly held positions. During the most recent crisis, dysfunctionality was wrought more systematically across the global spectrum of capital markets: the unwinding of the yen carry trade and the associated dollar strength, the divergence between credit derivatives and their underlying bond reference markets, and a decoupling in the relationship between Libor rates and the overnight swap market.

This latent correlation is a consequence of like-minded leveraged capital crowding into thematically similar trading strategies. Regulatory capital requirement founded on historically calibrated *value-at-risk* measurement underestimates this correlation because it fails to anticipate the behavioural risk dynamics induced by crowding. Moreover, such models are vulnerable to the procyclical feedback loop whereby risk reduction exacerbates volatility, increasing capital requirements, thereby forcing further, volatility-accretive de-risking.

The required overhaul in capital adequacy goes beyond redressing the inherent pro-cyclicality of *value-at-risk* models. By allowing banks to adopt their proprietary risk management systems for the purposes of capital assessment, the Basle regulatory framework subcontracts the quantitative expertise (and objectivity) required in modelling risk to banks themselves.

“I adore simple pleasures. They are the last refuge of the complex.”⁸

The banking industry has pursued a pseudo-scientific path to mathematically parameterising uncertainty where commercial expedience has frequently compromised the rigour with which those mathematics need setting. This typically manifests itself in the speciously simplistic assumptions prevalently invoked in derivatives modelling. The adherence to the normal distribution as a means of statistically representing market returns is the most apparent example of this, where the nonlinear complexities of a market are distilled to a single set of stationary risk parameters (covariance). More generally, an assumed structural stability⁹ in financial market behaviour is fundamentally belied on a regular basis when markets undergo chaotic state shifts. This has resulted in derivative models which, while retaining tractability and computational efficiency, underestimate the likelihood of extreme market movement – and, consequently, capital requirement.

⁸ Oscar Wilde, *The Picture of Dorian Gray*, 1891

⁹ The mathematical principle of *Ergodicity* is the preservation of a system’s underlying structure through time: though quantitative finance is founded implicitly on this idea, financial markets fail this principle in the disorderly way they discontinuously jump from one volatility regime to another.

The future regulatory environment needs to redress the conflict in using practitioners' models for their capital adequacy metrics. Models should be developed by a partnership of non-conflicted regulatory and academic agencies, and their application to institutional capital assessment made mandatory. Furthermore, regulation needs to mitigate the risk of systemic insolvency by introducing contra-cyclical bank capital requirements. These requirements should be based on a parameterisation of stress testing vulnerabilities whereby the severity of the stress test (and consequent capital requirement) is inversely proportional to the market price of risk¹⁰. Such stress tests should be founded on a combination of macro-economic and technical principles and designed to probe extreme movements in both markets and their covariance structure without recourse to probabilistic modelling¹¹. Scenario based stress testing should be holistically defined to address banks' explicitly retained risk as well as those contingent risks which arise as a consequence of the scenario specification. Minimum capital requirements are then established in order to ensure banks' equity is sufficient to withstand worst-case losses under the scenarios.

In addition, capital adequacy considerations need mandatory instigation across the broader financial system. As described earlier, the (unregulated) leveraged capital investment vehicle¹² had assumed a significant role in international credit flows in the years leading up to the crisis. The instability excited by its volatile participation in these flows contributed to the intensity of the 2008-2009 systemic event. As such, it is necessary that these vehicles be brought under the common umbrella of a stress-based capital adequacy regime applied to the financial system as a whole.

Even for those institutions constituted under an ostensible regulatory governance framework, the associated capital adequacy standards frequently proved to be maladapted to capital market risk undertaken. The collapse of insurer American International Group (AIG) best exemplifies this issue: its financial products division sold derivative credit protection in volumes outsized with respect to the liquidity risk inherent in margining the mark-to-market volatility of those contracts. While insurer regulation and accounting standards might be appropriate for fully funded obligations whose (corporate default) risk dynamics unfold over an extended period of time, the

¹⁰ A contra-cyclical stress test would increase the size of the test's parameterised shock as risk premium contracted. This is entirely intuitive: the tighter credit spreads the greater the potential for widening.

¹¹ Thereby circumventing historically derived volatility metrics which inappropriately bound stress tests to precedent established constraints.

¹² Hedge funds, mutual funds & private equity vehicles

implied leverage in the default swap product together with its collateral management mechanisms resulted in cashflow risk characteristics requiring bank-stylised capital adequacy requirements¹³.

How systemic insolvency developed through the credit crisis is now clear: the deployment of excessive leverage against a backdrop of hyperbolic house price appreciation. Accommodative central bank policy contributed to this by making available the cheap credit with which the leverage was financed, and future policy has a restraining role to play in conjunction with bank regulation. These issues remain, however, peripheral to the more primordial question as to why the system brought itself to the edge of the systemic precipice. The banking system's equity is financed by private-sector capital. Banks are consequently held accountable for return-on-equity metrics, earnings growth and dividend payout ratios sought by those equity markets which compete for that capital. The cult of the quarterly earnings cycle emphasises the immediacy of the gratification demanded by privately financed capital.

“Mr Kurtz lacked restraint in the gratification of his various lusts...there was something wanting in him...which could not be found under his magnificent eloquence.”¹⁴

The period from 2003-2007 was one characterised by steadily declining risk premium [see chart 1.0], when low volatility, tightening credit spreads and the trend to disintermediation undermined traditional sources of bank profitability. Strategies for continued revenue growth were largely predicated on programmes of massive-scale leverage procurement used to finance high-yielding assets. Coincidentally, competitive peer pressure worked to cannibalize the discipline of pricing for risk as cut-price deals and eroding leveraged loan covenant standards (flex language) left banks warehousing risk for insufficient compensation. Share buy-back programmes and the maintenance of dividend payouts were complementary strategies aimed at boosting stock prices while depleting the tangible common equity bases required to underwrite ever increasing inventories of risk.

This risk-taking profligacy, in a general sense, conflicts with the longer-term systemic stability necessary for sustainable economic growth. While bankruptcy is the ultimate arbiter of private

¹³ These cash-flow risks arose not by corporate default of the swap contracts *per se* but by mark-to-market collateral triggers for the bank counterparts to the derivative contracts – requiring AIG to post more margin. Thus, even though their positions by-passed mark-to-market accounting standards for financial records, collateral agreements implicitly introduced a mark-to-market risk to the insurer.

¹⁴ Joseph Conrad, *The Heart of Darkness* 1902

capital's risk capital deployment, the dependency of the macro-economy on a privately capitalised banking system makes recourse to this final arbiter practically untenable. When bankruptcy does occur, the propensity for a systemic propagation of contagious volatility frequently undermines the very confidence required to ensure economic credit flows remain liquid. The opacity and, at times, paralysis in banking regulators' recognition of this fact continues to be exacerbated by the fundamental conflict of public sector interest in bailing out the privately capitalised risk-bearing agents of its economy. The public sector has wanted it both ways: to reap the benefits of a commercially motivated, innovative private sector banking system¹⁵ without wanting to finance the, at times, catastrophic consequences of the system's behavioural tendencies. Future banking regulation needs necessarily to resolve the duality of this conflict.

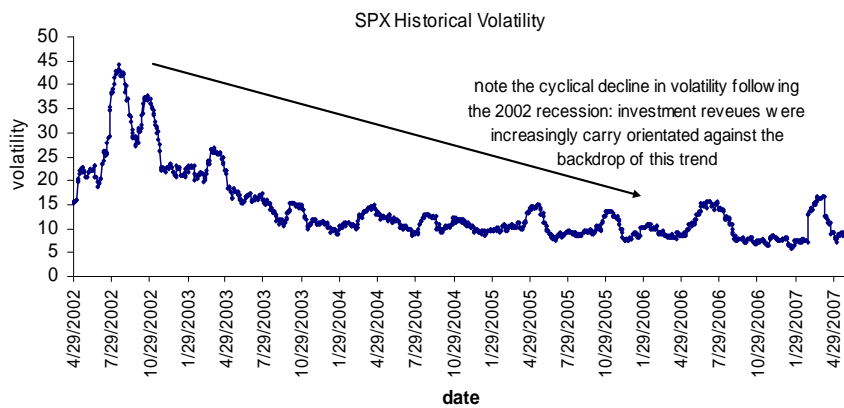


Chart 1.0: Cyclical decline in S&P 500 index volatility

3. re-Drawing the Competitive Landscape of Banking: Public-Private Sector

Much of the political debate so far has revolved around restraining private sector risk behaviour through tighter regulation. Drawing the locus of the debate in this direction is a natural response to the indiscriminate risk taking largess which preceded the crisis. It is, in particular, now clear

¹⁵ For example, the financial engineering which created the securitised mortgage products market largely facilitated home-ownership public policy

that the Greenspan doctrine of private capital having an innate tendency to self-regulate its own excesses is deeply flawed.

“...those of us who have looked to the self-interest of lending institutions to protect shareholder equity (myself especially) are in a state of shocked disbelief.”¹⁶

Private sector capitalism is aggressively Darwinian and its laws of natural selection in fact retain an intellectual consistency with this doctrine. Its failure during the 2008-2009 financial crisis is less a fundamental one, and more a consequence of the erosion in the regulatory restraints of private capital's self-interest, due to the perceived existence of a public sector safety net. The banking system maintains monopolistic control as the conduit of central bank liquidity to the real economy. This critical dependency comes with implicit understanding that it cannot be allowed to fail. Globalisation and the growth in bilateral derivatives markets has created fault lines of connectivity across the system's counterparties such that now, preserving stability in the system as a whole effectively means underwriting risk of its component-part lending institutions. Private capital acts at all times to maximise its utility function with respect to risk undertaken and naturally adapts to the perceived existence of this safety net by extending more credit than it would to an intrinsically riskier system that has no public sector support. So arises the *moral hazard*: banks and their private capital creditors formulate risk taking decisions motivated by less self-interested restraint than they would otherwise do because the final arbiter of failure, bankruptcy, is not a tenable option.

The *moral hazard* blurs the required nexus of demarcation between public and private sectors. The devastating risk consequences are best exemplified with regards to the 2008 collapse of government-sponsored mortgage associations FNMA and FHLMC¹⁷. Their aggressive deployment of leverage in the run-up to the crisis was well-known with aggregate balance-sheets larger than that of the Federal Reserve. That an informed constituency of investors (including Asia's central banks) retained unshakeable confidence in financing that scale of agency leverage reflected the extraordinary strength of belief in the implicit government guarantee. This belief

¹⁶ Alan Greenspan's congressional testimony – prepared statement October 2008

¹⁷ The Federal National Mortgage Association (FNMA) & The Federal Home Loan Mortgage Corporation (FHLMC): the two publically traded mortgage agencies oxymoronically labeled privately capitalized government sponsored entities reflects the ambiguity between state and private sector roles in underwriting risk. This ambiguity has compounded uncertainty during systemic crisis.

became self-reinforcing: as the agencies' balance sheets ballooned to systemically vulnerable proportions, the US government became shackled to the market's presumption that it was prepared, *in extremis*, to backstop the agencies' creditors. Failure to do so would have called into question the credit standing of the US government. Had the agencies operated in capital markets unfettered by an implicit state guarantee, it is unlikely investors would have been so forthcoming with leverage financing at the size and price with which their balance-sheets grew. The self-interest of rational risk-bearing agents would thus have acted as a natural restraint to the build up of balance-sheet leverage.

During Mr Greenspan's tenure as chairman of the Federal Reserve, the idea promulgated that the state's central bank stood ready to underwrite more broadly defined macro volatility. This was popularly memorialised as the *Greenspan Put* and manifested itself in several ways. For example, the measured pace of (excess) liquidity extraction from 2004 though 2006 suppressed volatility in the part of the yield curve where investors typically fund, engendering a belief that monetary policy- even when tightening - remained conducive to risk-seeking behaviour (see chart 2.0). This was a contributing cause of the 2008 sub-prime mortgage bubble¹⁸.

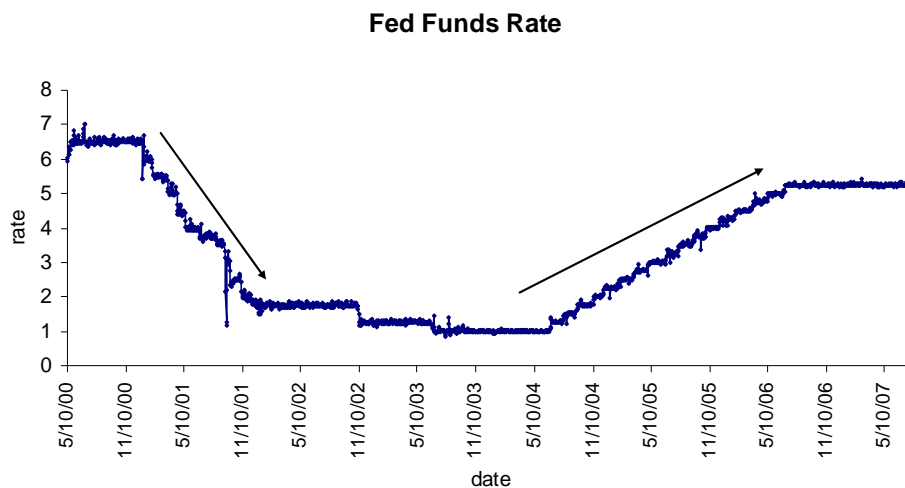


Chart 2.0: *The Greenspan Put in Action:* note the asymmetry in pace with which liquidity was extracted from the system (2004-2006) relative to its initial injection following the collapse of the US technology investment bubble in 2000

¹⁸ By 2006 sub-prime lending had approximately doubled to \$600 billion relative to its 2003 levels, as monetary policy remained accommodative. Source: *Inside Mortgage Finance*, Maryland US.

The Greenspan doctrine of self-regulation was made specious as a consequence of the myriad accommodation of the *Greenspan Put*. In order to preserve the structure of a banking system founded on private capital, its public sector subsidises – explicit or otherwise – need dismantling¹⁹. State interference in the pricing of capital markets’ risk should be eliminated. The self-interests of both investors and creditors to the system will only regulate effectively when the pricing of risk is, without subsidy, unambiguous, and when the economic consequences of bad risk decisions are allowed to propagate unfettered through the system. For the efficient market hypothesis to function in a self-regulatory way, competition should be uniformly established across internationally competing markets through harmonised standards of financial regulation.²⁰

A free-market system unencumbered by the anomalies in risk pricing created by state sponsored risk insurance and liquidity subsidies will function with greater self-regulatory restraint because equity and debt capital will be priced more efficiently with respect to the volatility it unambiguously underwrites. Capital will dynamically adapt its pricing as institutional risk characteristics change. The resultant variability in banks’ capital costs will raise associated risk premiums disproportionately across the system (riskier leveraged institutions will incur higher debt servicing costs) acting as a natural moderator of risk procurement. Moreover, lifting the pall of uncertainty around whether or not state intervention will be forthcoming during volatile climes will diminish the potential for market gyrations in response to changing expectations, thus ameliorating the severity of a systemic risk event.

Bank failure is more than an inconvenient corollary of a free standing system of agents competing for capital; it is the evidence that evolutionary economics is working. Bankruptcy should neither be feared nor shunned – that a certain amount of institutional failure occurs throughout the cycle should, in fact, be expected.

¹⁹ FDIC deposit insurance is a subsidy because the cost of protection does not appropriately differentiate between risky & less risky institutions. The offering of such liquidity at *subsidised* pricing levels should be phased out. This does not preclude the creation of a government guaranteed liquidity facility (to be discussed later) which backstops, not banks themselves, but credit flows to the real economy. The effect of such a body would be to displace riskier banks as volatility arises, facilitating bank failure whilst preserving credit flows to the economy.

²⁰ One of the unforeseen consequences of the un-level playing field created when the US Treasury undertook to guarantee money-market funds in September 2008 was to risk a flight of liquidity from the banking system operating under a capped deposit insurance scheme.

While unencumbered competition for capital might make the process of bank failure a more orderly one²¹, incompleteness in this market model might still, at times, result in instability: when risk premium is exogenously increased, volatility averse capital needs an alternative option to the free-market banking system. A market economy is neither stationary-stable nor does it tend to structural equilibrium over time. Rather, it is a highly complex non-linear system which lurches from one meta-stable equilibrium to another. Since its banking system retains a heightened sensitivity (through funding leverage) to these macro-economic instabilities, it is important that commercial and retail credit retain the ability to flow to a government-backed institution to ensure the continuity of its availability to the real economy through the cycle. Consumer depositors should have the ability to migrate funds in a frictionless way from risk-bearing institutions to the lower yielding environs of this backstop depository. Indeed the existence of such an institution would fine-tune the fair market pricing of volatility in the banking system: by competing directly on market price, risk bearing institutions would be required to fairly price the premium required to attract liquidity away from this government facility. A real and perennial threat of deposit flight will tighten bank discipline around liquidity risk management. In this regard, the market will exert a self-regulatory influence on institutional risk practices.

Maintaining the stability of credit flows to the economy means intermediating in the broader system from where wholesale credit flows emanate. The consumer deposit pool is an important, but indirect, facet of this system. The tri-party repo market constitutes a very significant and more immediate source of the real economy's liquidity, and preservation of its functioning through volatile periods is vital. As such, the liquidity backstop institution should have a participating commercial role in this financing market. Again, its involvement should be such that lenders and borrowers of collateralised credit have the on-going option of assigning repo to this institution at market clearing rates for government-backed credit. Collateral haircuts maintained by this lender-of-last-resort should be sufficiently robust to mitigate pro-cyclical inducement, and be openly disseminated to the market. As volatility conditions deteriorate, this structure will allow for the orderly redistribution of credit from risk-bearing entities to the backstop agent in a manner which is dynamically pre-emptive.

²¹ Riskier institutions will more immediately be priced out of the debt markets required to fund their leverage forcing preemptive balance-sheet reduction.

Regulatory reform should facilitate the efficiency with which private capital prices systemic vulnerability by enhancing bank risk disclosure, and rigorously enforcing consistent standards of mark-to-market accounting. Recent trends in allowing banks greater discretion in the way they mark their portfolios to market should thus be reversed, and a more prescriptive and transparent mechanism be established to ensure the system as a whole values commonly held positions consistently. Likewise, accounting reserves to safeguard against illiquidity should be externally mandated with an unambiguously formulaic prescription. Established accounting consistency will allow the market to price comparative risk with economic equanimity.

The existence of a market competitive government guaranteed liquidity provider does not obviate the role of a privately capitalised banking system. Rather, in dis-intermediating between the banking system and the real economy when necessary, it reinforces the free market by rendering redundant those state subsidies to banks, which are otherwise required to maintain credit flows to a crisis economy (see fig. 1.0).

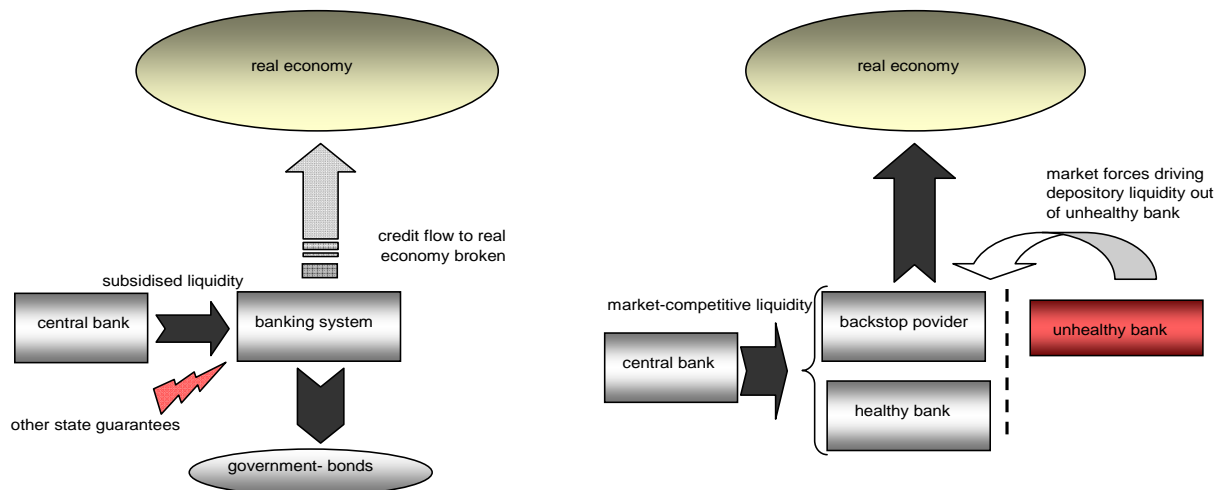


Fig 1.0 Current & Proposed Liquidity Models

current model of crisis credit flows

In the current model, though a central bank increases liquidity (and other pricing subsidies), flows emanating from the banking system to the real economy remain stymied because an undercapitalised system cannot grow credit assets. Instead, banks use the liquidity to buy government bonds, thereby detrimentally re-directing this liquidity away from the real economy. This is a consequence of the central bank subsidy which widens the gap between government bond yields and the cost of its money.

proposed model of crisis credit flows

A commercially competitive backstop provider dynamically displaces an unhealthy bank whilst preserving credit flows to the real economy: free market forces price the unhealthy bank out of the system as its depository liquidity flees to the backstop facility. Moreover, market pricing of central bank liquidity narrows the spread between government bond yields and the cost of its money, thus incentivising banks to create (higher yielding) credit assets in the real economy.

The market model for risk pricing dissemination should, ultimately, supersede non-market determinants of risk. In particular, the dependency on Ratings Agencies, whose historically calibrated theoretical models have been shown to lack the prescience required to adapt to paradigmatic shifts in underlying risk variables (and consequently underestimate stress-event likelihood), should be gradually deemphasised.

4. Monetary Regulation Should Augment Bank Regulation

While a transparent market will be better capable of efficiently pricing banks' risk premium, (thereby inducing a self-regulatory restraint on the industry's risk-taking excesses), efficiencies in such pricing cannot, in themselves, control asset price bubbles. Over the course of the last decade, monetary policy can be claimed to have been pro-cyclically accommodative on two occasions preceding the formation of recessionary inducing asset-price bubbles²².

**“The fault, dear Brutus, is not in our stars
But in ourselves, that we are underlings”²³**

A contra-cyclically inclined monetary policy needs to augment a system of market calibrated risk premium pricing to ensure that the base cost of leverage prudentially “leans against the wind” of speculative excess. In this regard, central bankers need to broaden their policy definition of (consumer orientated) inflation to include certain economic distortions implied in asset-prices. While it is acknowledged that hinging policy decisions directly on asset prices might introduce adverse volatility with respect to monetary management, using a combination of longer term value trends which measure the rate of asset price changes with respect to fundamentals would provide stable indicators of required policy restraint²⁴. Critics of this *ex ante* approach to asset price excesses cite the difficulty in pre-emptive identification of a bubble. Notwithstanding error estimates intrinsic to any predictive policy model, there exist long term value measures such as

²² In the aftermath of the collapse of hedge fund Long Term Capital Management in 1998 low rates proved a precursor to the US technology investment bubble, as they did in the run-up to the mortgage crisis between 2004 & 2006.

²³ Shakespeare *Julius Caesar* (I, ii, 140-141)

²⁴ For example, the annual rate of change of housing affordability with respect to disposable income, & the change in household leverage implied by shifts in mortgage financing terms.

cyclically adjusted price-earnings ratios²⁵ which frequently yield early warning signals on price sustainability. These can be used in conjunction with macro-economic derivative measures drawn from the capital markets to formulate policy response to nascent bubbles. A secondary criticism of an adaptive policy approach is that monetary management is often seen as a blunt tool for the frequently nuanced problem excessive speculation. This need not be the case as the crafting of policy rhetoric has often proved effective in redrawing expectations around future tightening, thus diffusing speculative froth.

A unilateral shift in the orientation of US monetary policy would risk amplifying the existing distortions in liquidity flows due to on-going macro-economic imbalances. While policy execution need not be synchronised across the globe, a multilateral undertaking to manage market excess needs formal agreement across central banks. In the same vein, policy should refrain from being used as reactive means of defending unilateral trade competitiveness. The risk in so doing is evident in the case of Japanese policy following the Plaza Accord:²⁶ its subsequent loosening in interest rates, in order to ameliorate the implications of a stronger yen, ignited Japan's asset price bubble of the late 1980-s²⁷. Similarly, in the aftermath of the 1997-1998 Asian crisis, governments began accumulating war-chests of US dollar denominated foreign exchange reserves to stymie the appreciation of local currencies due to foreign investment inflows. The re-cycling of these dollars into the US bond market created the glut of domestic dollar liquidity with which US mortgage speculation was financed.

4. Conclusions

The 2008-2009 financial crisis was a consequence of a confluence of related factors. Of these, perhaps the most important has been the ambiguity in policy, and the undermining of risk pricing discipline when the public sector undertakes arbitrary intervention in the private system. Free-market capitalism, and the self-corrective discipline it motivates, retains a critical role in the

²⁵ This ratio, popularised by Professor Robert Shiller, normalises valuation measures over a decade of earnings thus smoothing out the cyclic swings in earnings over the long term.

²⁶ The accord signed by the governments of France, West Germany, the United States & the United Kingdom in September 1985 orchestrated an orderly 51% devaluation in the US dollar against the yen from 1985-1987 thus damaging Japan's export competitiveness and resulting in an overly accommodative monetary policy to boost domestic demand.

²⁷ The official discount rate was cut five times by February 1987 from 5% to a then post-war low of 2.5%

future regulatory framework. A part of the new regime should be the facilitation of the market's ability to better self-regulate by dismantling all form of public sector risk-subsidies, enhancing risk disclosure and establishing a consistency of risk and balance-sheet transparency. A complementary aspect is the creation of a commercially competitive, government-guaranteed liquidity institution which provides investor capital, on an on-going basis, with the choice to migrate out of the privately capitalised system at prevailing clearing prices for risk. In a certain sense, the creation of such an institution makes formal certain of the extemporaneous facilities implemented by the Federal Reserve and other central banks over the course of the crisis. The crucial difference lies in its provisioning of liquidity at fair market prices reflective of institutional counterparty risk. By making it commercial, the competitive forces of capitalism will instil a risk discipline on the banking system as it vies for private capital against the backstop facility.

Banking regulation should aspire to minimise the risk that credit flows to the real economy are disrupted during cyclical down-swings. Removing the uncertainty of policy with respect to bank failure is critical; creating an appropriately capitalised system in conjunction with a backstop institution which can accommodate such failure will go some way to diminishing that uncertainty.