



Faith in the numbers

John Roberts

From self interest to *inter-esse*

Far from representing a failure of knowledge, it seems to me that the crisis has its roots in too much certainty – a belief by market participants that they knew what they were doing. My own sense of reality begins to wane when we move from real to derivative products. Lots of money to be made here, but value seems to depend entirely on the capacity to calculate future probabilities in order to place a current value on future uncertainties. Risk in this way becomes something manageable – or at least that was the story we were told – but perhaps all that mattered was that risk had become tradable and hence profitable.

In my personal life I know the hurt and damage that can be done to others when I am careless or simply self-absorbed in my conduct. The extraordinary thing about the credit crisis is that the hurt and damage was similarly inevitable and yet we had all somehow come to believe in the magic whereby markets can transform aggressive self interest into a public good. The reach of my own conduct is relatively short; family friends, colleagues, students. Prior to the crisis ever more intense global interdependencies were being forged by the ever more aggressive pursuit of individual and institutional self interest, and yet, until the crisis happened, these interdependencies were largely invisible. Perversely most of us came to know of their existence only at the moment when they were about to cease to function: when self interest started to calculate that it was dangerous to trade, or more accurately when self interest could no longer be calculated and ceased to be able to be pursued. At this moment central banks had to step in in an attempt to preserve liquidity. A different and more fundamental notion of interests was being defended here: interests not as internal to the self but as *between* selves – interests as *inter-esse*. Since then self interest has only begun to emerge from its self-protective shell with the return of the lure of profit.

So the crisis points to a thoroughly nasty paradox. The conditions for the crisis were created by a belief that interests are internal to the self and that others are of concern only in so far as they can be instrumental to the self. The crisis itself was then precipitated by the cumulative effects of individuals and institutions seeking to defend this self interest from the real and anticipated threat of others. Finally, the public/social/relational nature of inter-ests has had to be defended by re-establishing the

conditions whereby “self” interest can again be calculated. In what follows I want to explore the nature of self interest in the hope of better understanding the construction of this illusion. Economics and finance has long taken self interested opportunism as a defining and dependable *given* of human nature that can be taught with confidence to successive generations. It is treated as an “agency problem” that can only be worked around, as with executive pay where apparently the only solution to executive greed is to align greed with the interests of shareholders.

Against this, I want to suggest that there is nothing at all natural about self interest. Instead, following Callon (1998), I want to argue that it takes a huge amount of effort to “frame” relationships in a way that allows the self and self interest to be “disentangled” from the network of relationships in which it is always embedded. Callon insists that such framing will be both “expensive and always imperfect” so that the sorts of overflowing that we witnessed with the financial crisis in which safely framed and profitable “credit” risk morphed into first “market” then “counterparty” and then “liquidity” risk is to be expected. Central to the construction of self interest is calculation, and here Callon points to the important role of “calculating tools” and in particular “that humble, disclaimed and misunderstood practice; accounting and tools it elaborates” (1998: 23). In the wake of the crisis many have looked to behavioural finance, and its exploration of the dynamics of “irrational” fear and greed, to explain the failure of rational calculation in financial markets. Here I want to supplement this by pointing to the role of non-human “actants” – notably models and accounting – in feeding the illusion of both rationality (greed) as markets were growing and amplifying panic and fear as the crisis unfolded.

Models and Accounting as Intermediaries in the CDO market

In the last decade or so the aggressive pursuit of self interest transformed the dull “originate to hold” model of mortgage lending into an extended global network of relationships involving mortgage brokers, banks, investment banks, hedge funds, insurers, credit rating agencies and investors. The product innovations that forged these new associations were dizzying in their complexity and ingenuity. Perhaps the simplest was “securitisation” – the bundling of assets together into a pool that could then be sold on to others in a way that was claimed would both dissipate risk widely and release capital for further profitable lending. The Collateralised Debt Obligation (CDO) offered a further innovation by devising a way in which such a pool of assets might be further divided in order to produce different “tranches” of securities each with a different risk/reward profile. There was magic at work here for the process claimed to achieve a form of “credit enhancement” that could transform once risky assets into highly rated risk remote securities offering superior returns to the most conservative of institutional investors. Such processes made “sub-prime” mortgages viable and attractive since they commanded higher premiums from the borrower yet through the magic of credit enhancement could still be transformed, or at least partly transformed into highly rated assets. The success of these products spurred yet further innovation, notably so called “synthetic” CDOs where ownership of the underlying assets stayed with the originator and only the risk was sold on to the investor by means of the use of credit default swaps. And then in the years immediately preceding the crisis yet further innovative

products emerged. Some bundled CDOs together into CDO² or traded against an index of CDOs. Yet more exotic variants had names like Leveraged Super Senior Tranches, Constant Proportion Debt Obligations and Structured Investment Vehicles that combined quality assets and very high levels of leverage to offer high returns at apparently low risk.

The grotesque irony of the credit crisis is that products that claimed to be able to manage and dissipate risk to the benefit of all in the end became themselves the source of realized risk first for the financial system and then the “real” economy. Here I want to trace this risk to the incoherence of the calculative mind set. At the moment when the new “originate to distribute” model of mortgage lending was embedding market participants in an ever deeper and more complex set of inter-dependencies, the calculative mind carelessly imagined itself to be safely getting rid of risk by passing it on to others. Part of this incoherence can be found in the notion of markets as an encompassing context for action, rather than as themselves the consequence, intended and unintended, of action. “Deep and liquid” global markets were conceived as somehow more than the cumulative sum of individual conduct and its effects, and were therefore taken for granted. The belief that “markets” were somehow separate and immune from the consequences of conduct then liberated individuals, and individual institutions, to focus all their energy on the pursuit of their own self interest. Indeed the market was argued to demand no less than this; as Chuck Prince put it: “while the music is playing, you *have* to dance” (Financial Times, 2007). What I want to explore here is the dependence of this pursuit of self interest on two key calculating tools – models and accounting – and the (misplaced) faith in the numbers that this involved.

What must first be observed is that accounting and models were key “mediators” in most of the extended network of relationships that the “originate to distribute” products created. Modelling, for example, was critical in the process of securitisation and, in particular, tranching upon which the CDO depended. Along with *pre payment variables* such as asset prices, interest rates and housing data, the tranching and pricing of CDO products depended upon the modelling of critical *default variables* such as loan to value ratios, default and recovery rates, as well as the potential for defaults to be highly correlated. The results could then be “stress tested” against multiple scenarios and market and historical data in order to verify the modelled assumptions, on the basis of which cash flows and risk could then be allocated to the different tranches. The sheer complexity of such processes and their incomprehensibility to all but a few elite “quants” staff was possibly enough to guarantee the authority of their output. There was in any case no alternative but to depend upon this outsourced calculative capability for, as Millo and Mackenzie (2009) have recently argued, the markets could simply not have operated without such computer based modelling capability. As they put it, their “inhuman speed and efficiency” made models an “irreplaceable and irreducible part of the constitution of markets” (2009: 641)

The modelling of product originators then had to be matched by similar processes in the credit rating agencies who initially adapted methodologies that they had developed for their traditional and less complex bond rating work. Their models were the basis of the AAA ratings given to the senior tranches of many CDO products; a rating that then encouraged and allowed yield hungry but risk-averse investors to buy. Models, notably

Value at Risk models, were also the basis of risk assessment within investment banks and hedge funds and thereby became central to the reassurance offered by seemingly rigorous “risk management” processes both to senior managers and directors as well as regulators.

Accounting arguably struggled to keep pace with such product innovation which required both the Financial Accounting Standards Board and International Accounting Standards Board to develop new standards for financial instruments. Many of the new products were housed in off balance sheet entities and post Enron, such structures required that no institution had control rights or held the majority of risks and rewards. For on balance sheet assets the new standards distinguished between those assets that were being actively traded and those that would be held to maturity. For traded assets both the IASB and FASB stipulated that they be measured at “fair value” or current “exit price” but then had to devise a hierarchy of measurement bases starting with quoted market prices for identical assets, or if these were not available then the use of “observable inputs” like an index, and finally and most problematic, measurement on the basis of modelled assumptions.

Up until the onset of the crisis both models and accounting seemed vital but uncontentious tools for market participants. Models in all their complexity and sophistication could be taken as the ultimate embodiments of the rationality so prized by economics and finance, and, having adjusted to this new complexity, accounting could again offer itself as no more than an independent observer of the profitable fruits of this computer enhanced rationality. In Latour’s (2005) terms, both models and accounting were treated as reliable “intermediaries” that facilitated market relationships through allowing the calculation of probabilities and hence profitability. When the spreads and hence the profitability of CDO indexes began to narrow in 2006, rather than being read as a possibility that risk was being under-priced, it was taken as a signal that risk was low and profitability was restored through the simple device of leverage. As Felsenheimer & Gisdakis (2008: 156) explain: “the investment rationale was very simple; if the risk premium is low, then the risk has to be low. And if the risk premium provides on a quarter of the return, then just invest four times as much”. The resultant levels of leverage were very high; in banks about 12 to 1, in investment banks around 30 to 1 and in some of the SIVs up to 60 to 1. Whilst there was faith in the numbers such leverage was just a rational way to multiply profits.

Losing Faith in the Numbers

As is now widely known, the trigger for the credit crisis was rising interest rates and the beginning of a decline in the US housing market in late 2006/early 2007. Sub prime borrowers were, of course, particularly vulnerable to these changes and, in the third quarter of 2007 the Mortgage Bankers Association reported that some 42% of sub-prime adjustable rate mortgages had begun foreclosure on their loans (MBA, 2008). Such levels of actual and potential defaults far exceeded those that had been assumed and modelled in the structuring of CDO products. Defaults rates, however, were only a part of the problem. In a rising housing market recovery rates post default could still make a loan profitable but in a falling housing market, where defaults were highly

correlated with each other, recovery rates also fell far below those that had been assumed in the models (Ryan, 2008). These were the shocks that then passed through to financial markets. June 2007 saw the collapse of two heavily leveraged hedge funds at Bear Sterns. But a more generalised shock was then delivered in July when the ratings agencies – Moody’s, Standard and Poor’s and Fitch – started to re-run their models with the new default and recovery data. There followed a huge number of re-ratings of CDO products, typically involving multiple-notch downgrades. For example Moody’s downgraded 252 AAA rated CDOs sold in 2006-7, some 20% of the deals issued in that period, by an average of eight notches, or all the way down to junk status. Both the volume and extent of these re-ratings was so severe that it cast doubt on the adequacy of the original ratings process for all CDOs. As the Counterparty Risk Management Policy Group described it, the downgrades resulted in “a collapse in confidence in a very broad range of structured product ratings and a collapse in liquidity for such products” (2008: 53).

The scale and severity of these rating agency downgrades also served to push market prices down and this then started a chain reaction that fed through money markets, SIVs and back into their sponsoring investment banks. SIVs relied on cheaper short term commercial paper to fund longer term debt, but now found themselves unable to “roll over” this paper as money markets effectively froze. This then threatened to trigger asset sales in an already depressed market, and required that they were effectively bailed out by their sponsoring banks. This was just one of the channels through which accounting started to signal that credit risk had escaped its profitable framing. Numerous other overflows started to occur. Most of the CDOs had been housed in off balance sheet entities which were allowed as long as no one had a controlling interest. Depressed market prices, or worse, the complete absence of a market, forced these entities back onto the balance sheets of the banks. The process of assembling assets for securitisation also meant that investment banks had “warehoused” some CDO tranches, or were actively trading these. In this way they found themselves holding some of the worst elements of these supposedly “pass through” products. These now had to be valued at market prices which, even in the absence of defaults, were below the value of the underlying cash flows. These losses had now to be recognised along with direct losses in the subordinate tranches of CDOs that were occurring as a result of the higher level of defaults and lower recovery rates.

The result, starting in July 2007, was the reporting of huge write downs by major investment banks, which in turn fed substantial falls in their stock market capitalisation requiring rapid de-leveraging, credit rationing or recapitalisation in order to meet capital adequacy requirements. The scale of the losses was shocking but so too were the big jumps in the value and timing of these write-downs. These further undermined faith in the numbers since investors feared that mark-to-model accounting was being used to hide or at least minimise reported losses. Such emergent “market” risk then began to morph into “counterparty” risk, in part as a result of the widespread use of credit default swaps in synthetic CDOs. This “over the counter” market lacked transparency, and so risk that had been dissipated very widely was suddenly everywhere. If an institution was uncertain about the liabilities it faced, then it was likely that those it traded with faced similar uncertainty. This logic then provided a further rationale for markets to freeze

hence creating “liquidity” risk. In October 2007 the IMF anticipated the kind of vicious circle that could now unfold.

A small loss in value can force funds to sell large amounts of assets as liquidations to meet margin calls and, simultaneously, their redemptions increase. Such ‘fire sale’ could lead to a vicious circle of forced sales, as the widening of spreads forces hedge funds and others who mark portfolios to market to post losses, possibly sparking investor withdrawals and further forced sales. (IMF, 2007: 20)

In the host of investigations that have accompanied the unfolding crisis once dependable models and accounting have both become the target of criticism. A common theme has been what the UK Turner Review (FSA, 2009) terms a “misplaced reliance on sophisticated maths”. The CRMPG similarly urged risk management professionals and senior management to recognise “the limitations of mathematical models” (2008: 83). The SEC in its investigations of credit rating pointed to the “very short” performance history of sub-prime mortgages and the “very benign economic conditions” that had informed the modelled projection of risk. Models are of course entirely dependent upon the assumptions that are built into them, and in this case the assumptions that originators and credit rating agencies made about default rates, default correlation and therefore recovery rates were simply wrong. Likewise, with the wisdom of hindsight it has become clear that the Value at Risk models that were relied upon for risk assessment were sending reassuring signals of low risk as actual risk grew (FSA, 2009). This reassurance occluded attention to “correlations between exposures” both within and between different institutions.

Fair value accounting has similarly become the target of criticism post crisis. Its defenders have insisted that to blame accounting is like “shooting the messenger” and the SEC in its own investigations into whether accounting “caused” the crisis argued that if anything there was the need for more accounting transparency. Opponents of fair value on the other hand have insisted that its effects had been pro-cyclical; encouraging over investment during the growth of the market and amplifying the downturn by forcing losses to be recognised across firms through the application of valuations arising from forced sales in an abnormal market.

Such attempts to blame (or exonerate) models and accounting misses the key point which is the need to observe the ways in which these non-human “actants” conditioned and (mis)informed human agency. Here I want to observe the possibly hyperreal interaction of models and accounting in both the growth and collapse of the CDO market. Macintosh et al. follow Baudrillard in defining “hyperreality” as a condition where “signs, images and models circulate, detached from any real material objects” (2000: 14). The innovations of credit enhancement and synthetic modes of disentangling risk from underlying assets possibly ushered in such hyperreality. Then, during both the rise and fall of the market for CDOs, accounting and models informed each other such that they arguably created a self referencing and reinforcing hall of mirrors. Risk became calculable, price-able and hence tradable in CDOs only through the projection and then discounting of the anticipated future cash flows from underlying mortgages, appropriately adjusted for anticipated levels of default, default correlation and recovery etc. The apparent focus of fair value on the current market “exit price” had been judged superior to earlier historical cost accounting, but in the case of traded risk

this seeming currency of valuation masked the way that this had the form only of a modelled *anticipation* of profitability. As we have seen the structuring of CDOs was model-derived in order to be profitable, and accounting duly captured these profits, either on the basis of similarly modelled assumptions or from model informed indexes. It was only once the mortgage assets acquired a real as opposed to assumed and projected history that these assumptions were revealed as incorrect and over optimistic. Post-crisis valuations, taken from indexes, were then driven below those implied by underlying cash flows by concerns with market and liquidity risk.

It could be argued then that market participants were simply led astray by the numbers, but of course their initial faith in the numbers was itself highly incentivised. There were strong financial reasons for both individuals and institutions to believe in their projections since huge profits and individual bonuses could then be taken on the basis of no more than the anticipation of the accuracy of the projected probabilities and profitability of CDOs. In this sense there was an incentive to censor doubt out of calculation for it was faith that was rewarded. The *Wall Street Journal* reported that between 2002 and 2008 the five largest US investment banks had reported \$76bn in net profits but paid \$190bn in bonuses in the same period, and even in 2008 when the crisis was in full swing reported losses were being matched with bonus payments (Wall Street Journal, 2009).

According to accounting standard setters the primary purpose of accounting information is to provide decision useful information to investors. However, it is important to observe that accounting also serves a more fundamental tool in making the calculation of self interest possible, through defining both the purpose and means through which profit can be realised. Accounting tools are critical both for setting performance targets for individuals and institutions, and then for monitoring actual performance against these. In financial institutions force was added to such measures by incentive structures which effectively shared profits between employees and investors through the payment of performance bonuses. Structured finance offered an almost ideal fuel for this profit driven enterprise, and by 2006 accounted for some 30% of investment bank earnings (Wall Street Journal, 2008). So long before accounting was providing decision useful information for investors it was framing the ends, means and driving motivation for the pursuit of self interest.

The Illusion of Self interest

The enduring self image of accounting is that it serves as no more than a neutral mirror of reality. As Christopher Cox, the chairman of the SEC asserted in a speech in 2008: “Accounting standards should not be viewed as a fiscal policy tool to stimulate or moderate growth, but rather as a means of producing neutral and objective measurement of the financial performance of public companies” (Cox, 2008). Here, however, I have argued that accounting and associated modelling tools served a much more active role in making possible the calculations upon which the disentanglement of self interest depended. To insist on the performativity of accounting tools in constructing self interest is itself something of a wound to the assumptions of traditional finance; the image of human rationality. To observe that such rationality had been outsourced to

non-humans which then worked back upon human subjects to amplify both greed and fear similarly undermines the conceit of rational control and the autonomy of human agency. However, this narcissistic wound is arguably an essential moment in any move to a more fully civilised understanding of financial markets.

The illusion of self interest can be easily stated. It imagines the self as essentially separate and self contained both from other “individuals” and from the “markets” in which it operates. On this basis it imagines that it is safe to ignore, deny or simply be indifferent to the consequences of its conduct beyond the achievement of its own individual ends. Post crisis multiple forms of such “moral hazard” have been discovered as investigations have sought to go behind the numbers to explore different aspects of the extended network of relationships created by the “originate to distribute” model of mortgage lending. Predatory borrowing and lending, regulatory arbitrage, careless and conflicted rating processes, the excessive use of leverage arguably all depend upon the assumption that risk could be safely passed onto others and thereby escaped. That “credit” risk that had been apparently safely and profitably framed then overflowed and fed back up the channels through which it had been distributed, should ideally have shattered this illusion of individual and institutional autonomy. Perhaps this is the root experience of panic – a sudden appreciation of the self as vulnerable and dependent – a recognition of the relational basis of self interest. But then panic grasps after its old certainties and seeks to calculate its own survival. Whilst seemingly rational from an individual or institutional point of view in practice this only adds further fuel to the vicious self defeating circle in which self interest is then caught.

What economics and finance take as a given of human nature – self interested opportunism – is more properly seen as an “imaginary” – an identification with no more than an idealised image of the self as autonomous and coherent (Roberts, 2005). In developmental terms this primitive foundation of the ego must suffer a further alienation in subjection to the law and language. The crisis similarly points to the need to go beyond the illusions of the autonomy and rationality of the self. To refuse the “naturalness” of self interest, to insist that it is a mentality that we have to work very hard to construct, suggests some very obvious ways in which it might readily be deconstructed by weakening the incentives that fuel its calculation.

references

- Callon, M. (1998) *The Laws of the Markets*, Sociological Review Monograph. Oxford: Blackwell.
- Counterparty Risk Management Policy Group III (2008) *Containing Systemic Risk: The Road to Reform*. August, CRMPG.
- Cox, C. (2008) ‘Remarks before the AICPA national conference on current SEC and PCAOB development’, December. [<http://www.sec.gov/news/speech/2008/120808cc.htm>]
- Felsenheimer, J. and P. Gisdakis (2008) *Credit crises: from tainted loans to global financial meltdown*. Weinham: Wiley-Vch.
- Financial Services Authority (2009) *The Turner Review: a regulatory response to the global banking crisis*. March. FSA: London.
- Financial Times (2007) ‘Citigroup chief stays bullish on buy-outs M. Nakamoto, & D. Wighton, July 9.
- International Monetary Fund (2007) *Global Financial Stability Report: Financial Market Turbulence – Causes, Consequences and Policies*. October, IMF.

- Latour, B. (2005) *Reassembling the Social: an Introduction to Actor-Network-Theory*. Oxford: Clarendon.
- Macintosh, N., T. Shearer, D. Thornton and M. Welker (2000) 'Accounting as simulacrum and hyperreality: perspectives on income and capital', *Accounting, Organizations and Society*, 25(1): 13-50.
- Millo, Y. and D. MacKenzie (2009) 'The usefulness of inaccurate models: towards an understanding of the emergence of financial risk management', *Accounting, Organizations and Society*, (38): 638-653.
- Mortgage Bankers Association (2008) 'Delinquencies and foreclosures increase in latest MBA national delinquency survey', March 3. [<http://www.mortgagebankers.org/NewsandMedia/PressCenter/60619.htm>]
- Roberts, J. (2005) 'The power of the 'imaginary' in disciplinary processes', *Organization*, 12(5): 619-642.
- Ryan, S. (2008) *Accounting in and for the Sub-Prime Crisis*. Stern School of Business, New York University. [<http://ssrn.com/abstract=1115323>]
- SEC (2008) *Summary Report of Issues Identified in the Commission Staff's Examination of Select Credit Rating Agencies*. July, SEC.
- Wall Street Journal (2008) 'Deal fees under fire amid mortgage crisis – guaranteed rewards of bankers, middlemen are in the spotlight', L. Plevin & S. Craig, January 17.
- Wall Street Journal (2009). 'Wall Street workers brace for more pay shrinkage', A. Luchetti & M. Karnitschnig, February 2.

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