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The Performance of Liquidity in the Sub-Prime Mortgage Crisis

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Introduction: 'When the music stops …'

> When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing
>
> Chuck Prince, Chairman and CEO Citigroup, June 24th 2007

'Liquidity' has been highly significant to representations of the current financial crisis. Chuck Prince's frivolous description of the continued 'dancing' of Citigroup in June 2007 reflected, with hindsight, a serious concern on Wall Street that the 'music' of liquidity was due to fall silent in the very near future. The day before Prince's remarks, Bear Stearns pledged $3.2 billion worth of loans to support one of its hedge funds that invested in an alphabet soup of assets related to and derived from the repayments of sub-prime prime mortgagors in the United States of America (USA): mortgage-backed securities (MBS) and, especially, collateralised debt obligations (CDOs) and credit default swaps (CDS). The fund was now struggling to trade in these assets and, therefore, was unable to meet repayments to those institutions that financed its highly-leveraged activities. The fund's collapse, along with that of a second and similar fund run by Bear Stearns in early August 2007, is widely regarded as signalling the beginning of the crisis.

So, shortly after Chuck Prince's remarks, and like Bear Stearns and the other major and now largely defunct investment banks, Citigroup became exposed to what was commonly represented in the financial media and by practitioners and public authorities as a 'liquidity

crisis'. Once uncertainty over the value of sub-prime assets began to take hold, prices plunged, trading ground to a halt and investors began to rack-up major losses. By mid-October 2007, Citigroup announced $6.5 billion worth of losses on these assets, for example. Reported losses rose to between $8 billion and $11 billion by 4th November, then the largest known quarterly loss by an institution in Wall Street history. Citigroup turned to Asian and Middle-Eastern sovereign wealth funds for new capital to balance their books, and Chuck Prince hung up his dancing shoes and resigned. But, the liquidity crisis had already spread to the money and capital markets, as serious questions were asked about so-called 'counterparty risks' and the networks of lending and borrowing that bound all manner of financial institutions to investments in sub-prime assets. Central banks responded with emergency loans for banks at rates well below those prevailing in the money markets, and later through a range of actions that typically responded to the tumult by seeking to 'restore liquidity' to 'frozen markets'. And, in September 2008, the US Treasury Department's (2008) justification for public funding of the $700 billion Troubled Assets Relief Program (TARP) centred on 'the clogging of our financial markets' by 'illiquid mortgage assets'.

For at least twelve months or so from August 2007, then, and largely until the bankruptcy of Lehman Brothers and collapse in banks' share prices gradually led to it's recasting as a problem of 'recapitalisation', 'bank bail-out' and 'nationalisation', the present crisis was understood primarily through the rubric of 'liquidity'. This article offers a critical investigation of liquidity. It follows from previous research that has revealed close relationships between booming Anglo-American everyday finance, on the one hand, and innovations in wholesale capital markets, on the other (Langley 2008a). More specifically, the paper builds on research that has shown the constitutive significance of calculative

devices of risk in prime and sub-prime mortgage lending (Langley 2006, 2008b, 2009). Credit scoring and risk-based pricing, securitisation, interest-only adjustable rate mortgage products and default management through foreclosure made sub-prime possible as an apparently rational and highly-profitable, but ultimately exploitative and uncertain, financial network. In empirical terms, therefore, the article extends previous research by explicitly exploring sub-prime mortgage assets as objects of investment and speculation. And, in conceptual terms, it seeks to develop the category of performativity to interrogate liquidity, so that particular factors and forces, largely overlooked by existing analyses in political economy and beyond, can be grasped and appreciated.

It is the category of performativity and its capacity to critically illuminate contemporary financial markets that occupies the first section of the paper. Existing research in what is known as 'the social studies of finance' highlights the performativity of calculative devices, models, formulas and so on which do not simply record financial movements and machinations, but actually make possible pricing, exchange and circulation. Here I suggest that questions about performativity and the materialisation of markets are necessarily questions about the operation and limits of normalising financial power. I also stress that the prices of assets exchanged in contemporary financial markets typically symbolise claims on uncertain future income streams, claims which themselves are constituted through calculative and emotional performances of risk valuation. The second and main section then asks what performativity brings to the analysis of liquid markets in sub-prime mortgage assets. I show that while the 'dance' of liquidity in sub-prime was not staged, it was certainly citational, iterative and dramatic in important ways. The performance of liquidity in booming sub-prime asset markets turned on the affirmation and exemplification of wider norms of liquidity, and

upon specific calculative and emotional valuations of risk through underwriting procedures, bond rating and volatility trading. The performance of liquidity contains its other, however, and illiquidity was always likely to come to the surface in sub-prime asset markets where prices symbolised risk valuations. Such valuations proved to be contradictory, as incalculable uncertainties and distrust and fear produced crisis. The apparent 'illiquidity' of 'toxic assets' derived from sub-prime mortgages was thus a crisis in the pricing of those assets that followed from the inherently problematic valuation of the uncertainties that they symbolised.

Performativity, Power and Prices

That the models and tools commonly used by economists and economic experts do not simply describe an already existing material reality is a claim which has been made for some time by social scientists. The so-called 'new accounting history' has, for example, drawn attention to the ways in which specific calculations do not merely record economic and organisational life, but serve to bring form to its materialisation (Napier 2006). This claim has come to the fore recently in the material sociology of the market, however, as research has coalesced around the category of 'performativity'. Performativity has emerged as perhaps the key concept in research that seeks to understand the ways, and extent to which, actions and behaviours become 'disentangled' from their sociality in the process of qualifying as economic and becoming included in 'the market'. The principal point here, in contrast with the institutional tradition of economic sociology and political economy, is that 'the economy is embedded not in society but in economics' (Callon 1998: 30). Thus, in the definitive formulation and work of Michel Callon (1998: 2), the scholar who is widely credited with

ushering in the present concern with performativity, 'economics, in the broad sense of the term, performs, shapes and formats the economy, rather than observing how it functions'.

For material sociologists, studying the performativity of economics is thus not just a matter of extending a constructivist concern with the role of 'ideas' to the realm of the market economy. Neither is it a re-run of previous preoccupations with 'self-fulfilling prophecies' that might follow from the work of Robert K. Merton (1957; see Engelen 2009). Rather, as research into 'market devices' as 'material and discursive assemblages' illustrates, inquiry into the performativity of economics includes all manner of professions, techniques, procedures, formulas and objects that contribute to 'enacting particular versions of what it is to be "economic"' (Muniesa et al. 2007: 4). Crucial to the performance of a market economy in particular are those devices that make pricing, exchange and circulation possible (Callon and Muniesa 2005). Such devices render, qualify and abstract action in the calculative space of 'the market', and work to enrol and assemble particular market agents who think and act in rational and calculative ways.

Given the seeming approximation of financial markets to the ideal-typical form of a market economy, it is perhaps no surprise that the category of performativity has gained particular traction for material sociologists in what has become known as 'the social studies of finance' (Knorr Cetina and Preda 2005). Indeed, some contributors to this literature explicitly investigate financial market trading rooms as the 'laboratories' of economics (Beuneza et al. 2006). Performativity has tended to be deployed and developed in the social studies of finance in a manner that is consistent with the writings of J.L. Austin (1962), the pragmatist

philosopher of language and 'speech acts' who is widely recognised to have first formulated the category. Donald MacKenzie (2004, 2006), for example, as the leading contributor to the social studies of finance, takes inspiration from Callon's 'generic performativity' but, at the same time, explicitly seeks to recover 'Austinian performativity'. As such, and from Austin, 'a performative utterance' is 'a specific kind of statement or expression that establishes its referent through the very act of uttering' (MacKenzie et al. 2007: 2-3). So, while Austin is concerned with the uptake or 'normativity of any speech act' because of 'its implicit invocation of criteria that open it to assessment as valid or otherwise' (Loxley 2007: 120), it follows that the performativity of the financial market models that preoccupies MacKenzie is also far from straightforward. For example, in terms of the place of option pricing in portfolio insurance in the 1987 stock market crash, MacKenzie (2004: 306) develops the notion of 'counterperformativity' to explore whether this was a particular instance wherein the 'widespread adoption' of a 'theory or model … can undermine the preconditions of its own empirical validity'.

In interdisciplinary research into financial market economies, however, the category of performativity has not been the exclusive preserve of material sociologists. Marieke de Goede (2005) has, in particular, signalled a different conception of performativity derived from the work of Judith Butler which is itself grounded in a Foucauldian reading of power and Jacques Derrida'a deconstructionist engagement with Austin. Finance, for de Goede, is understood 'as a discursive domain made possible through performative practices, which have to be articulated and rearticulated on a daily basis' (p. 7). Performativity is therefore central in de Goede's analysis of the power of apparently rational and scientific modern finance, as 'processes of knowledge and interpretation do not exist in addition to, or of

secondary importance to, "real" material financial structures, but are precisely *the way in which "finance" materializes*' (p. 7, *original emphasis).* It follows that questions about performativity and the uptake of speech acts and models which tend to preoccupy Austin and scholars in social studies of finance necessarily become questions about the operation of normalising financial power. So, when addressing the historical contingency, limits and contestation of modern scientific financial power, de Goede's reading of Butler highlights that the performative forces at play in the materialisation of finance continuously confront their others such as gambling and speculation. Modern financial performativity does not simply hinge on empirical validity and the 'accuracy' of a model or formula, but also on scientific validity and the search for 'precision', 'for clarity, distinctness, and intelligibility of concepts' which 'by itself, stipulates nothing about whether and how those concepts match the world' (Datson 2005: 8). As Andrew Parker and Eve Kosofsky Sedgwick (1995: 7) highlight more broadly, what matters here is that 'the bonds that unite' bear 'as much explanatory weight as do the particular speech acts of supposedly individual speech agents'. What they call 'the space of reception' is shot-through with power relations. The credibility of a particular model or device amongst financiers cannot, ultimately, be determined by encounters with a material empirical realm that lies outside of scientific practice because, by definition, performativity embodies its others.

The category of performativity has the capacity, then, to critically illuminate the power relations at work as calculative devices make possible pricing, exchange and circulation in the materialisation of financial market economies. This is especially pertinent to understanding the ways in which modern financial power has, increasingly across recent decades, come to turn on complex mathematised projections of valuation and seemingly

rational claims on uncertain future income streams. As a growing body of research from a range of disciplines and perspectives attests, much of the growth in contemporary financial accumulation from the 1990s, and attendant developments in the regulation and governance of financial markets, can be attributed to attempts to calculate, diversify, price and exchange all manner of future economic uncertainties as 'risks' (e.g. Best 2008; Blackburn 2006; de Goede, M. 2004; Partnoy 2004; Taylor 2004). In simple terms, 'prices are signs that denote – or are meant to denote – value', and 'value is the thing of which the price is the sign' (Muniesa 2007: 378). Prices may symbolise, for example, underlying calculations about the future value of commodities or movements in an index. But, in contemporary modern financial markets, the 'thing' that is being valued and symbolised through price has been, increasingly and in effect, uncertainties and volatilities about future incomes streams calculated as risks. In enacting and bringing about the risks that they name and price, calculative devices have certainly remained historically contingent and sensitive to habits, customs, circumstances and controversies about their empirical validity (Beunza and Garud 2007). However, the performative forces of risk calculations are nonetheless crucial to the materialisation of financial markets for a bewildering array of assets, especially in the historically unprecedented period of financial accumulation prior to the sub-prime crisis.

As the category of performativity draws attention to the power relations at work as calculative devices make valuation and circulate possible in financial markets, it would seem to remain open to the charge that it leads to the neglect of the passions and emotions which can be seen to have driven booming prices and financial accumulation until the onset of the recent crisis. In the Keynesian (1961) tradition, for example, the uncertainty and unknowability of the future ensures that the collective emotions and beliefs of value

formation and, by extension, self-fulfilling price bubbles, are always present and intrinsic to financial markets. Periods of apparent stability and financial boom such as that of the recent decade and a half, when investors are relatively confident that they can predict how others will typically behave, are viewed from this perspective as ultimately destabilising (Nesvetailova 2007: 5-6). Not dissimilarly, in coming to stand as the touchstone for common sense accounts of the new economy and housing and mortgage market bubbles, Shiller's (2001, 2008) hugely influential notion of 'irrational exuberance' emphasises how collective psychology and herd tendencies lead to unsustainable price rises in financial markets.

The charge that, by stressing ritualised and iterative calculation, performativity leads to the disregard of emotions in contemporary finance can only hold, however, if reason and emotion are separated-out as seeming polar opposites. Social scientific research into emotions suggests that a simple dichotomy cannot be drawn between rationality, on the one hand, and social and relational emotions, on the other (Ahmed 2004; Barbalet 2001). Drawing on this literature to explore rapidly rising house prices, Susan J. Smith and her co-authors (Munro and Smith 2008; also Christie et al. 2007; Smith et al. 2006) have shown that the performance of market economies can combine calculative devices of valuation with price-sensitive emotional relationships. As they have it, the complex economy of agreeing value and purchasing a home is marked by a continuous and contingent 'calculated affection'. Furthermore, in the performance of contemporary finance, emotions are 'born not of personal desire but of the unknowability of the future' (Pixley 2004: 3). Collective emotions are not inborn, viewed from Keynesian and behavioural perspectives as ultimately a consequence of the 'animal spirits' and greed that is an assumed psychological trait of all individuals who speculate on the markets (Akerlof and Shiller 2009). The pricing and trading of assets in

financial markets may well be populated by highly-competitive, aggressive, gendered and violent subjects (e.g. Abolafia 1998), but it also features a 'sociality of emotions'; that is, relational feelings and energies such as trust and distrust and hope and fear that circulate through the market and generate effects (Ahmed 2004). As Pixley (2004: 30) puts it, the performativity of financial markets is inherently emotional because 'rationality about the unknown requires emotions'. Social and relational emotions of trust/distrust and hope/fear permeate and animate the seemingly rational calculations of valuation which, folding the uncertain future into the present as risks/returns, are crucial to the performance of contemporary financial markets.

Liquid and Illiquid Sub-prime

At the outset and intuitively, the category of performativity, and the emphasis that it places on the iterative calculations of price, exchange and circulation in markets, would seem especially apposite to interrogating liquidity: price determination and buying and selling are crucial defining features of a liquid market. As Carruthers and Stinchcombe (1999: 353) remind us;

> By liquidity of a market, economists mean that standardized products can be bought and sold continuously at a price that everyone in the market can know, and that products are not normally sold at a price that diverges substantially from the market price. The idea is that everyone can know at all times what the price is, and only one price obtains in the market.

But, what can the category of performativity, as it has been elaborated here, tell us about the materialisation of liquidity and illiquidity in sub-prime mortgage asset markets? The remainder of this section will show that liquidity and illiquidity were co-present in sub-prime asset markets; each mutually implicated their other. Utterances of 'liquidity' enacted what they named in booming sub-prime asset markets because, in the space of reception of modern finance from the mid-1990s, power relations normalised and reified liquid markets. Sub-prime, moreover, seemed to exemplify what was possible in this era of liquid finance. Specifically, the market that priced, circulated and exchanged sub-prime assets materialised through calculative and emotional performances of risk valuation that featured underwriting procedures, bond rating and volatility trading. Yet, these valuations of risk proved contradictory and unravelled in the face of incalculable uncertainties, distrust and fear. A crisis in the pricing and thus circulation and exchange of sub-prime assets emerged and then intensified, as talk of 'illiquidity' led to wider fears and doubts about seemingly scientific finance.

Utterance and the reification of liquid markets

The precise meaning of 'liquidity' is hotly debated, and much of its appeal may well arise from its multiple uses and applications (Nesvetailova 2007: 75). It has been commonly used to refer in quantitative terms, for example, to the volume of material and circulating capital which central banks 'pumped into' money markets after August 2007. But it is perhaps the qualitative characteristics signalled by the iterative naming of a specific market as liquid that would seem especially significant to the performative power of this mobile signifier. Liquidity indicates a 'deep' market in standardised assets which is populated by a crowd of willing buyers and sellers who are able to exchange assets without producing significant price

disruption. Assets in that market thus become regarded as fungible, safe and desirable by investors. As the other of a liquid market, the naming of a market as 'illiquid' indicates an absence of both buyers and sellers, and indeed that desperate sellers are likely to be present who are struggling to exchange assets and who are confronted by wide and volatile spreads between the 'bid' and 'ask' prices for the particular asset that they hold. A market that is named illiquid is thus a market that is to be feared and approached with great caution by investors.

Liquidity, as a performative utterance that enrolled investors and enacted what it named in markets for sub-prime assets, reinforced the norms and operation of power in contemporary finance. That a liquid market in sub-prime assets could and should be in existence was certainly affirmed within a discourse that, from the mid-1990s in particular, constantly and endlessly represented financial markets as efficient (i.e. continuously and instantaneously reflecting all available information in their prices) and liquid. For example, typical assessments of global imbalances during this period conflated the quantitative and qualitative characteristics of liquidity, positing the presence of a 'wall of money' flowing from Asia and oil exporting states into Western capital markets centred in Wall Street and the City of London (e.g. The Economist 2005). Such representations of finance filled apparently liquid markets with meaning, creating a context for action in which markets were fully expected to operate in a particular way. Put differently, liquid markets became knowable and a known thing or object that was regarded by investors as independent and external to them (see Smith et al. 2006: 86). Markets named liquid became objectified, then, having a reified actancy and 'life of their own' in setting and moving prices, facilitating exchange and so on.

Given the reification of liquid financial markets, there was little to suggest that markets for sub-prime assets named liquid would be any different from the norm. Indeed, in crucial respects, sub-prime mortgage markets in the USA seemed to exemplify what was possible in an era of liquid finance. Consider, for example, the ways in which the reification and objectification of liquid financial markets was present in the emergence and championing of a new strategy for commercial banking, the so-called 'originate and distribute' model. For banks and non-banks alike, with the latter often owned by the former as part of giant holding companies, it had become possible to create new assets (e.g. mortgages, loans, credit card balances) and to move them 'off-balance sheet' by securitising and repackaging them as risk instruments purchased and exchanged by capital market investors. As the Bank of England (2006: 21) puts it, while the originate and distribute model 'does not alter the financial sector's aggregate credit exposure to the non-financial sector', it promises to 'improve systemic stability if risk is held by those with the greatest capacity to absorb losses'. Furthermore, under the originate and distribute model, banks employed a range of in-house risk-weighted capital measures and management techniques that, approved under the terms of the Basel Committee on Banking Supervision's Basel II standard, hinged on the reification of liquid markets. So, at the same time as the movement of assets off-balance sheet reduced the need for capital on the liabilities side of banks' balance sheets, the measurement and management of the capital that remained assumed a 'static environment' of liquidity where 'positions can be quickly closed out', 'closing large positions does not itself move market prices' and 'the cost of hedging remains stable' (The Economist 2008: 14). While the pre-crisis Basel II standard included guidance on capital provisions for a whole host of risks, 'liquidity risk' was notable by its absence.

As the originate and distribute model took hold in commercial banking, specialist sub-prime mortgage lenders in the USA exemplified this strategy as they were almost exclusively non-banks or 'centralised lenders' who did not hold a stock of savings capital on the liabilities side of their balance sheets. Sub-prime lenders typically enjoyed large short-term lines of credit provided by banks that were also likely to be their parent company. These credit lines served as operating capital for the initial making of mortgages. Sub-prime lenders were also usually 'small cap' public corporations that raised some equity capital, or were owned in partnership by banks and all manner of institutional investors (Bajaj and Haughney 2007). Although diverse in terms of ownership and sources of investment capital, then, sub-prime lenders were nonetheless reliant upon off-balance sheet accounting and the techniques of securitisation for the continuous expansion of their loan books. It followed that, as contributors to the IMF's working paper series confidently put it during the summer of 2007 when the repayment problems of sub-prime mortgagors were already becoming apparent,

> The dispersion of credit risk to a broader and more diverse group of investors has … helped to make the U.S. financial system more resilient. The magnitude and scale of losses being currently experienced in subprime mortgage markets would have materially impacted some systematically-important U.S. financial institutions in the traditional originate-and-retain business model (Kiff and Mills 2007: 12).

The logic of originate and distribute and of risk dispersal through liquid markets ensured that even the 'risky business' of sub-prime lending, which targeting those who were much more likely to default on their repayments, was apparently safe and sound.

The reification and objectification of liquid financial markets was also present in the market making and investment strategies pursued by investment banks, strategies that were again exemplified when it came to sub-prime assets. Wall Street's investment banks earned fees by

organising the issue of securities backed by all manner of assets (e.g. prime and commercial mortgages, consumer loans and credit card receivables), and commissions by selling these assets to clients. Fees and commissions increased with the 'structuring' of these assets into differing 'tranches' of risk/return, and with their placement with investors who had a range of mandates and 'risk appetites' (Partnoy 2004). The issue, structuring and sale of sub-prime mortgages provided a lucrative further income stream for investment banks, then, especially as assets took the form of complex CDOs distributed to investors keen for higher potential yields in a period of low interest rates. But, the investment banks were also crucial to the exchange and circulation of sub-prime assets. As asset prices rose, investment banks took on increased debt in liquid markets that enabled them to increase returns on their equity. Not only was trading on their own accounts highly-leveraged – investment banks had first option on buying the sub-prime assets that they structured - but they lent in support of the highly-leveraged strategies of hedge funds and also became involved in the so-called 'liquidity leverage' of structured investment vehicles (SIVs) (The Economist 2008: 4). SIVs sought to take advantage of interest rate arbitrage, borrowing short-term with the backing of the banks that typically owned and ran them, and investing in MBS and especially CDOs. In the parlance of practitioners, SIVs were a vehicle in which to place 'surplus liquidity' for the 'enhanced yield' that was apparently on offer from sub-prime assets.

The standardisation and qualification of sub-prime assets

The performance of liquidity in sub-prime asset markets was, to borrow terms from MacKenzie (2004: 325), not 'only an attenuated form of performativity' that validated and exemplified the reified norms of liquid finance. Liquidity in sub-prime asset markets was also made possible through specific calculative and emotional valuations of risk. As Carruthers

and Stinchcombe (1999) stress in an analysis that includes detailed investigation of the emergence of a liquid market in prime MBS in the US from the 1980s, assets have to be standardised, classified and differentiated before they can become priced, trusted and exchanged in a liquid market. The artifice of 'grading natural products' or 'manufacturing standard products' is clearly important for pricing and exchange in product markets in general (p. 353). One would expect, for example, to pay more for an apple or orange designated 'Class 1' than for an equivalent product graded 'Class 2'. Yet, standardisation is especially significant for a liquid financial market because the assets that are priced and exchanged are 'legal instruments' which specify 'claims on an income stream' and have to become 'knowable' to a crowd of buyers and sellers (p. 353). Furthermore, as Carruthers and Stinchcombe suggest, critical to the standardisation of legal instruments as liquid assets are those devices that group and stratify assets through risk/return in a manner that 'orients expectations' (p. 356). One asset, and the legal obligations that it creates for counterparties, becomes differentiated from another in terms of risk and potential return, creating 'a public consensus about value' and 'the certainty that no one knows the market price better than the people who are selling (or buying) at that price' (p. 357).

Another way of thinking about the standardisation, classification and differentiation of assets through risk valuations is to ask how assets come to 'qualify' in investors' portfolios, and how certain 'qualities' become attached to them as products. As Millo (2007: 198) has it, 'qualification operates through the continual creation and recreation of relations between the evolving products and existing products. The temporary outcomes of these comparative exercises are performed each time the qualified product is bought and sold'. Given the specifics of the structuring of each individual set of sub-prime assets that was issued and

exchanged ‘over-the-counter’, the asset classes related to and derived from sub-prime mortgage repayments can be thought of as ‘a chain comprised of connected qualification attempts’ (p. 198). What ‘connected’ these assets, and was therefore crucial to their standardisation and qualification, were three sets of risk valuations.

First, as Martha Poon (2008) demonstrates, in sub-prime as ‘a novel network of investment grade lending’, the ‘everyday apparatus of underwriting … permitted a dramatic production of increased liquidity’. From 1995 Freddie Mac introduced credit scores produced by Fair Isaac Corporation (FICO) into the underwriting standards that it authored, enshrining a shift from ‘control-by-screening’ to ‘control-by-risk’ in the underwriting process. As sub-prime lenders and brokers increasingly deployed these standards in automated mortgage origination, it became possible for a loan to be approved ‘*without further manual underwriting* by simply offering that applicant a higher interest rate’ (Stuart 2003: 128 *original emphasis*). From the point of view of investors, assets backed by the repayments of sub-prime mortgagors were thus standardised and qualified. Underwriting standards made it clear that sub-prime assets were ‘non-conforming’ and ‘private label’ legal instruments, that is, they had been screened out of the traditional market for prime MBS in which the guarantees of Freddie Mac and Fannie Mae as Government Sponsored Enterprises (GSEs) loomed large. And, as FICO scores became central to the calibration and categorisation of types of sub-prime borrower, and to the associated charging of differential rates of interest in lenders’ analytical and algorithmic models (so-called ‘risk-based pricing’), so credit rating formed the calculative touchstone of the risk valuations of the assets backed by related loan pools.

Hence, and second, the calculative and widely trusted tools of bond rating were particularly significant to the differentiation of sub-prime assets. The allocation of a simple letter rating to all fixed-interest assets, in an evidently expert and objective manner by Moodys, Standard and Poors and Fitch as the principal agencies, creates apparent transparency and comparability for investors in bond markets (Sinclair 2005). During the early years of its growth from the early-to-mid-1990s, sub-prime lending thus sometimes came to be known as 'B-and-C lending'. For investors, this reference to the ratings that were usually given to sub-prime MBS immediately differentiated them from the AAA-rated bonds issued by the GSEs and backed by prime mortgages, for example. That said, the relationship between the aggregation of borrowers into a pool of collateral that backs a particular bond and the rating of that bond - what Marron (2007) calls the relationship between 'micro-risk' and 'macro-risk' - became increasingly blurred by the calculations of structured finance.

Structured finance complicated the differentiation and qualification of sub-prime assets through the risk valuations of underwriting and bond rating. Within sub-prime MBS issues, for example, structuring techniques created asset tranches as hierarchical sets of legal instruments with claims on underlying mortgage repayments. At the top of the hierarchy was a 'senior tranche' of assets which entitled investors to first claim on repayments. These assets were, therefore, rated more highly (all the way up to AAA, a rating usually reserved for instruments issued by only the most creditworthy corporations and sovereign governments) than the tranche of assets immediately below them, and so on down to the 'first-loss' or 'equity tranche' at the bottom of the hierarchy. What was especially appealing to investors about the triple-A senior tranche of a sub-prime MBS issue was they could buy into and receive the potentially higher returns without apparently holding any of the additional risk (Partnoy 2004). Hedge funds were more-often-than-not happy to trade the riskier tranches

that were left, and it was the 'mezzanine' tranches in the middle that were typically purchased and repackaged as CDOs from around 2002 onwards. As 'securitisations of securitisations', CDOs which had been first issued against corporate debt were now redesigned and came to provide investors with exposure to the risk/return valuations that characterised structured sub-prime MBS programmes (The Economist 2008: 10). What was being rated in the issue of CDOs, however, were legal instruments that gave investors a derivative stake in the uncertainties of sub-prime assets even though they effectively held no claims on the underlying repayments of mortgagors. As investment banks sought new and more profitable ways to disperse and concentrate risks across the different tranches of CDOs that they issued - including the creation of instruments derived from a mix of income streams that included sub-prime mortgages – rating these assets became more complex and hopeful. And yet, at the same time, the ratings given to CDOs became increasingly significant in creating seeming transparency and comparability for investors.

Third, a particular and significant facet of the issue of CDOs ensured that volatility trading through credit default swap (CDS) contracts also featured in the risk valuations which made possible the pricing, circulation and exchange liquid sub-prime assets. Ever since the first issue of CDOs by J.P Morgan to separate-out the default risks on their corporate loan book in late 1997, issuers had not fully parcelled-up and passed-on all such risks to investors but retained the so-called 'residual risks' of the 'super-senior tranche' on their balance sheets (Tett 2009). The super-senior was seemingly the safest and often largest tranche in a CDO issue, entitling holders to claims on repayments even before those holding assets from the senior tranche. Nonetheless, Basel standards still required that capital was held to cover potential losses from defaults. From the very outset of markets for CDOs, then, issuers sought to minimise the capital requirements on super-senior tranches through CDS contracts,

whereby another party (often American International Group, AIG) received premiums in return for agreeing to make a series of payments to the holder of the super-senior tranche in the event of a specified 'credit event'. And, as the volume of sub-prime CDO issues ballooned, so derivatives markets that already enabled trading in volatilities in all manner of prices and risks exploded further to include CDS derived from sub-prime mortgages. A liquid market for the pricing, exchange and circulation of the uncertainties of sub-prime, valued as risks, was thus seemingly complete. Sub-prime CDS became the focus for trading by hedge funds and others who bet on price movements, including 'shorting' falling prices, without actually owning MBS and CDOs themselves (Lewis 2008). Indeed, in a seemingly paradoxical twist, the CDS market actually contributed to liquidity in the CDO market (Tett 2009: 171). The ABX Home Equity indexes that referenced baskets of CDS on tranches of assets backed by sub-prime bonds were used by investors and issuers to deduce the value of the bonds within their own CDOs.

The incalculable uncertainties of sub-prime

Problems in sub-prime mortgages first began to come to light during the latter half of 2006. Sub-prime mortgages originated in 2004, 2005 and early 2006 were proving particularly problematic. In the terms of the industry, mortgages of these 'vintages' proved to be 'sour' as a growing numbers of borrowers failed to keep up with, and then defaulted on, their ballooning repayments. What was especially notable was the extent to which delinquency and default by sub-prime mortgagors was correlated, and the rates for both were well in excess of those calculated for by the risk-based pricing and default management models of lenders (Langley 2008b). In turn, the risk valuations that made possible the pricing, exchange and

circulation of liquid sub-prime assets proved unable to fully capture these and other uncertainties going forward.

To be clear, this was not simply a case, as Shiller (2008) and others have suggested, of participants in the exuberant sub-prime markets of the new millennium 'mispricing risk' due to a lack of historical data and a poor incentive structure that encouraged brokers and lenders to pay little attention to the quality of the loans that they made. Neither was it the case that a highly improbable and incalculable 'black swan' intervened in otherwise largely effective valuations of risk, revealing the need for such valuation to be more imaginary and anticipatory in design (see Taleb 2007). Rather, as a critical reading of Frank Knight's (1921) classic investigation of indeterminacy highlights in broad terms, risk is distinct from uncertainty, the former as the predictive calculation of the future and the later as incalculable and unknowable volatilities that are beyond prediction (Reddy 1996). The performance of liquidity in sub-prime assets contained its other, then, and illiquidity began to come to the surface as risk valuations unravelled in the face of inherently incalculable uncertainties.

Take, for example, the failures of bond rating that attracted considerable political and media attention as the crisis unfolded. Although rising delinquencies and foreclosure rates amongst sub-prime borrowers were apparent in late 2006, the bond rating agencies did not begin to downgrade the associated assets until the spring of 2007. During this period, the proprietary risk models of some investor's trading desks were highlighting troubles ahead and framing strategies that, in effect, raised considerable doubt about the ratings issued by the agencies (The Economist 2008: 3). Faith and trust in bond rating only ebbed away slowly, however,

and it was not until the crisis broke in August 2007 that the House Financial Services Committee of the US Congress and the European Commission both announced plans to investigate the bond rating agencies (Buck 2007). As statements to the Senate Banking, Housing and Urban Affairs Committee's Hearing on the role of the agencies in sub-prime illustrate (e.g. Read 2007), it is the integrity of the relationships between the agencies and their clients that has been the focus for this attention. Indeed, in this vein, media reports (e.g. Morgenson 2008) detail instances in which Moody's elevated the ratings that it had assigned to sub-prime MBS following complaints from issuers such as Countrywide Financial, then the largest mortgage lender in the United States.

A focus on the structure of incentives that supposedly encouraged the bond rating agencies to inflate ratings somewhat misses the point, however. It assumes that the agencies would have been capable of producing accurate ratings if an appropriate system of remuneration had been in place. There is no acknowledgement of the contradictions of bond rating, of the incapacity of risk valuations to fully capture incalculable future uncertainties. Consider, by way of illustration, the rating of CDOs which, as securitisations of securitisations, have been pivotal to ensuring that investors' losses on sub-prime assets have been far in excess of those generated directly by sub-prime defaults and foreclosures. The original rating of some super-senior and senior tranches of CDOs as AAA - which in bond markets represents an instrument as low risk and highly liquid, comparable with US Treasury bonds – now looks extremely dubious at best. It has led to class action lawsuits by institutional investors against the bond rating agencies on the grounds that they misrepresented risk (Essen 2007). It has also stimulated a search for the uncertainties that the risk calculation methodologies of the bond rating agencies failed to capture. Most notable in this regard would seem to be that

standard default correlation calculations utilised in the rating of CDOs issued on corporate debt were simply retained in the rating of issues of sub-prime CDOs, despite important qualitative differences between the uncertainties of repayment by corporations and mortgagors (MacKenzie 2009). But, during the period in which the rating of CDOs first came into question, what was most significant were fears that these risk valuations could indeed be imprecise at best, and downright misleading at worst, fears that contributed to the falling prices, fire-sale and 'toxicity' and 'illiquidity' of sub-prime assets.

Furthermore, given that the performance of liquidity in sub-prime assets affirmed and exemplified wider norms which were present throughout contemporary finance, 'illiquidity' quickly became a performative utterance that enacted what it named both in sub-prime asset markets and beyond. Crucial in this respect were the highly-leveraged positions that investors had taken, as even relatively small falls in prices for sub-prime assets created common pressures to sell in order that repayments to creditors could be made. In the terms of practitioners, this created 'counterparty risks' that spread like wildfire once prices started to fall and fear set in. So, for instance, a margin call by one bank that forced the closure of a hedge fund invested in CDS not only produced problems for the hedge fund itself, but also for the array of institutions that lent to that fund and which were involved in the writing and trading of CDS contracts.

For issuers and investors in sub-prime assets, the problematic of surviving in markets that were increasing becoming named illiquid was compounded by three further factors. First, when sudden price falls registered in banks' risk-weighted capital management techniques,

these models encouraged further sales into a falling market in order to reduce capital requirements on the liabilities side (The Economist 2008: 10). Second, International Accounting Standard 39, authored by the International Accounting Standards Board and introduced in 2005, required that assets included in financial statements were 'marked-to-market' at 'fair value' (i.e. at the price they could expect to fetch in present markets rather than their historical cost) (Nolke and Perry 2006). Thus, falling asset prices quickly impacted on return on equity calculations, and continuing to hold those assets damaged a bank's share price and increased the likelihood that holders of those shares would sell and force the price lower still. A falling share price also undermined the equity capital included on the liabilities side of a bank's balance sheet. Third, AIG and the other monoline insurers who had written CDS contracts were supposed to be at the end of the line in the hierarchies of structured finance, the insurers of super-senior tranches of CDOs who would only be called on in the unlikely event that times got really tough. But, AIG's desperately inadequate capital reserves were swamped by the correlation of the 'credit events' that demanded that they pay-out on the contracts that they had entered into. The much trumpeted and reified capacity of liquid capital markets to price and distribute risks, and thereby minimise systemic risk, had failed. Once flaws in risk valuations became apparent and asset prices started to fall, the spreading of risks through liquid markets, in effect, became the spreading of uncertainty, distrust and fear.

Concluding remarks

Rather than reiterating the arguments made above, I want to close by reflecting on the conceptual and political implications of understanding liquidity in the sub-prime mortgage crisis through the category of performativity. The category of performativity leads to a

markedly different conception of liquidity when compared with both mainstream and critical approaches. In mainstream economics, liquidity is the exemplary result of the inherent rationality of the market as the superior means of valuation and exchange; prices are 'real time' and not 'sticky' in a situation of liquidity and investors constantly have the option of cashing in their assets. In post-Keynesian economics where the work of Hyman Minsky is influential, liquidity may vary according to circumstance but is always artificial and illusionary: it creates 'a false sense of security and optimism' amongst investors and 'can help to disguise a systemic problem for a while' (Nesvetailova 2007: 75). The systemic problem that is obscured here is actually the 'progressive illiquidity' that lies at the core of capitalism, that is, the way that the 'debt commitments' become disproportionate to the 'real profit opportunities' and 'accommodating cash flows' which are necessary for preventing their collapse (p. 6, 140). Meanwhile, for Marxists who draw on the work of David Harvey in particular, the departure point for analysis is the innate and crisis-ridden tendencies of speculative financial capital, especially for increased velocity in the circulation of capital (Aalbers 2008; Wyly et al. 2006). The creation and collapse of a liquid market in sub-prime assets thus becomes the most recent instance where these tendencies have been unleashed on the 'real' economy, underpinned by the reign of neo-liberal ideology and the deregulatory policies of complicit state managers.

The category of performativity requires that, from the outset of analysis, the universal and systemic logics of markets or finance or capitalism which are assumed by orthodox and radical analyses are rejected. Instead, performativity encourages the exploration of how a liquid market for a particular class of asset materialises. Immediately, as we seek to critically investigate liquidity in recent financial history, the focus is upon the contextual specificity

and contingency of markets in sub-prime related assets and those calculative devices, models, formulas and so on which make possible pricing, exchange and circulation. Moreover, as it has been elaborated here and in relation to these markets expressly, performativity also draws attention to: the ways in which enacting liquidity affirmed and exemplified power relations manifest in the wider norms of Wall Street and the City; the calculative and emotional valuations of risk/return that were symbolised through asset prices; and the co-presence of liquidity and illiquidity that, ultimately, became apparent as the fallacy of valuing future uncertainties through risk was revealed. The contradictions of the liquid market in sub-prime assets did not arise, then, out of an ever-present logic of financial capitalism and a systemic disjunction between the financial and 'real' economies in the terms of either Minsky or Harvey, for example. Rather, these fragilities were present in performative valuations of risk themselves which, proceeding through markets for CDOs and CDS in particular, were marked by their very indifference to the exigencies of mortgage repayments and of the 'real' economy more broadly (Wigan 2009).

Understanding liquidity as performative immediately highlights, meanwhile, how talk of liquidity came to define the limits of what was deemed politically possible as the crisis began to unfold. Representations of the crisis in sub-prime and beyond as caused by 'illiquidity' served to hold out the imaginary of liquidity as the ideal-type end point to be achieved through crisis management, a state to which markets must be returned: liquid markets good, illiquid markets bad. The crisis was rendered as a governable object, and particular responses were licensed and legitimated. Political space for disagreement about the place of securitisation techniques in the provision of mortgage finance, for example, was closed down in favour of interventions that attempted to get securitisation working again.

Moreover, with such a representation of the crisis it also becomes impossible to recognise that liquidity and illiquidity are always manifest in each other, and that contradictions are present in the slicing, dicing and speculation of all manner of credit obligations, uncertainties and volatilities as risks. What can and should be done in the crisis is reduced to a set of technical and calculative questions about how much capital should be pumped in by central banks and governments to right the ship of liquid finance, on what terms, to which institutions, for how long, and so on. The on-going debates over the TARP programme are, for instance, especially revealing in this respect. Perhaps the most pressing political questions, then, about how investment and speculation in ultimately contradictory risk valuations introduce new volatilities, insecurities and inequalities into everyday life, are swept to one side by the performance of liquidity. The challenge in the politicisation of the crisis remains not simply to call into question and regulate away those institutions, individuals and performances most implicated in the excesses of liquid finance. Meaningful state regulation would be a start, but it may also shore-up traditional banking models and thus close down political space for the pluralistic and ethical questioning which is essential for the emergence of a genuinely democratic and inclusive finance.

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