

**Knowledge and Crisis - a case of knowledge and learning failure -
- by bankers, shareholders, auditors, accountants, rating agencies
& regulators**

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Abstract

Regulators such as Turner (2009) have identified excessive securitization, high leverage, extensive market trading and a bonus culture, as being major factors in bringing about the bank centred financial crisis of 2007-9. The core idea of this paper is that a lack of banking knowledge and history amongst bankers, shareholders, auditors, accounting bodies, rating agencies and regulators, was also deeply implicated in the crisis. Addressing this knowledge gap and its causes will be part of the solution to the crisis. The paper develops a framework for understanding the role and application of knowledge in banking and suggests how banks can institutionalise learning and actively create new knowledge through time to improve bank organisation, intermediation, and risk management. Similar arguments for learning concerning banks and banking can be extended to shareholders, auditors, accounting bodies, and rating agencies. The institutionalisation of banking knowledge across banks, shareholders, auditors, accounting bodies, rating agencies and regulators, ought to constitute an important element of any sustainable solution to the problems currently being experienced by the banking sector. By ensuring greater learning, knowledge creation, and knowledge use (concerning banks), governments, regulators and others could help reduce individual bank risk and the likelihood of future crisis.

Introduction

Turner (2009) summarised the reasons that led to the bank centred financial crisis in 2007-2009, as including, massive growth in securitised credit, securities trading, leverage and excessive dependence on short-term capital market funding. It seems that both the ratings agencies and the “sophisticated” mathematical risk management models seriously underestimated the risks associated with such a strategy and the “bonus culture” and high leverage greatly encouraged excessive risk taking by rewarding apparent success (luck) but not penalizing failure. However, the core idea of this paper is that knowledge and lack of it was also deeply implicated in the crisis and in many of the above problems, and hence addressing these issues will be part of the solution.

In **section 1** it is demonstrated that much was known long before the crisis about how effective bank intermediation and risk management worked, about problems with these mechanisms and of previous crises in banking markets. Application of this knowledge alone in the failing banks would have significantly reduced the chances of bank failure. **Section 2** explores how evidence to the UK Treasury select committee in 2009 and other sources revealed that much of the available prior knowledge was ignored or its relevance not understood at the top of the *failing* banks during the 2001-07 period. Unsurprisingly, relative to the more knowledgeable and cautious banks, their resulting high-risk business models proved to be appreciably more vulnerable during the 2008-09 crisis.

Section 3 also argues that the same problems of learning, knowledge, understanding and use concerning the nature of banks, bank disclosure, bank products, and interbank markets were evident in various external actors or bodies such as shareholders, auditors, accounting bodies, rating agencies and regulators. A systemic problem with knowledge was also identified in the Turner FSA report (2009). The latter emphasised problems concerning markets (Chapter 1, p39-47). In contrast this paper also highlights knowledge problems concerning the nature of banks, their organisation, and their intermediation processes faced by these other actors or participants in banking markets.

Section 4 develops a more general theoretical approach to understanding how banks can formally create and manage knowledge in a dynamic process through time to improve intermediation and reduce vulnerability. This conceptual frame is based, in part, on *existing* developments in universal banking (UB) practice (see Holland, 2009), and in part, on developments in the literature concerning knowledge as the ‘learning organisation’, knowledge management, ‘intellectual capital’, and competitive advantage. Working examples of these theoretical ideas are also discussed as they are connected to each other and to conventional ideas of bank intermediation and risk management functions. **Section 5** summarises the paper and, using the conceptual frame developed in section 4, argues that, to minimise the chances of future crises, governments and banking regulators ought to focus on improving learning, knowledge creation, and knowledge use in banking. This has to begin with the banks, but also has to be extended to shareholders, auditors, accounting bodies, and rating agencies.

1. Intermediation and Risk Management Knowledge prior to the 2007 financial crisis

Much was known long **before** the crisis regarding how bank intermediation and risk management worked and about problems with these mechanisms. There was considerable knowledge about the risk spreading and sharing capabilities of wholesale markets, and general principles of market efficiency. Much was known about the causes and anatomy of previous crises in banking markets (Kindleberger, 1996), about the ‘freezing’ of interbank markets and about previous problems of ‘toxic’ loans. Application of this prior knowledge would have reduced the chances of bank failure during the 2007-09 crisis.

Knowledge of specialist forms of bank intermediation and of risk management has long been available in the literature (Lewis & Davis 1987, Buckle & Thompson, 2004). Retail banks intermediaries spread their deposit and loan risks across liability and asset portfolios, and employed cash reserves and 'adequate' equity capital to absorb these residual risks. Wholesale banks spread withdrawal risk and bad debt risk by sharing large risks in the inter-bank and syndicated loan markets and by transferring this risk to these markets. Investment banks were security based banks that helped companies to design security issues, underwrite the risks of the issues, and find purchasers of the equity and bonds.

‘Commercial’ banks were combinations of retail and wholesale banks. The three forms began to be integrated as ‘Universal’ banks (UB) from the 1980s onwards. The bank changes were driven by financial market, regulatory and product changes as well as by previous banking crises such as the 3rd world debt problems. These boosted direct market transacting, threatened commercial banking, and created opportunities for investment banking (Lewis and Davis 1987, p380). Holland (2009) reveals empirical patterns during 1980-2000 in UB organising, and the search for knowledge advantage. This research and subsequent problems provided a historic grounding for this paper.

Long before the 2007-09 crisis serious problems with the UB model and its implementation were, however, apparent. Major joint problems of expansion and integration (Holland, 2009) arose in the late 1980s for UK and US banks in their UB development. Conflicts of interest arose with clients when corporate managers or their shareholders felt that confidential private information was being misused. There were problems managing information flows within the combined bank, and of developing of technology and information systems, to identify group risks and profitability of integrated lines of business and customers. Financial market problems included, oversupply in some functions notably equity areas, and poor group control over the combined investment and commercial bank, especially with the risk taking culture

of investment banking arms. In the period 2000-07 as increasingly complex and innovative securities were being traded, transactions became difficult for all but the specialists ('rocket scientists') to understand. This problem combined with the organisational change involved in combining investment and commercial bank functions made it difficult for the combined bank group and their managers to closely monitor what bank traders, fund managers, and corporate finance advisers were doing or to measure the exposure and risk they created. Not all UBs made mistakes but enough problems emerged to make it clear that in the 25 year period before the 2007-09 crisis there was a live experiment as bankers tried to find an effective organisational solution to these problems. Thus major knowledge and understanding limitations existed when developing the UB model. Banks argued however that their problems of survival would have been acute if they had not responded to changes in financial markets and in other non bank financial institutions.

In terms of markets, there was considerable public knowledge about the many previous crises in banking in London and elsewhere (Kindleberger, 1996). During 1973-74, in the inter bank markets for banks deposits, the markets froze for a period in the 'secondary' bank crisis. Reid (1982) blamed the crisis on the housing bubble, deregulation, oil prices hikes and the market culture of the London banking institutions from the late 1960s. The latter made market speculation and crashes almost inevitable. More broadly, Kindleberger, (1996) has argued that throughout the past 200 or so years, banking crises have been both endemic and remarkably similar in terms of causes and sequencing. Typically, a crisis is preceded by an extended period of high optimism and rising asset prices and an excessive use of leverage which produces overpriced and volatile asset prices; then unforeseen events, combined with the 'fragility' of the banking system, precipitate the bursting of the bubble, the consequent panic, rush for liquidity and credit squeeze.

2. Problems of knowledge for banks and bankers during 2007-09 crisis

Evidence to the UK Treasury select committee in 2009 revealed that much of the available prior knowledge on organisation, intermediation, markets and risk was ignored in the *failing* banks during the 2001-07 period. Boards and top management did not learn the lessons of prior bank problems (Holland, 2009) and crises (Kindleberger, 1996). Board directors and top management in the failing banks did not understand that their rapid growth models, their emphasis on a sales and trading culture, and growth based incentive and pay schemes, all led to the development of a very risky UB organisation operating with very risky new products in new untested variants of interbank markets. These banks did not appear to understand that

knowledge about intermediation and risk at the level of employee, middle management, top management and the board, was deficient, and this contributed to the failure of their intermediation activities, whether informational or financial, or specialised or universal. The *failing* banks did not understand how retail, wholesale and investment forms of banks worked together or created new risks for each other in a UB. They did not understand that the high level of risk taken in wholesale and investment banks areas also threatened equity capital shared with retail banks. Bank board directors and top management in *failing* banks prioritised their general knowledge of business strategy over knowledge of organisation, risk, intermediation and special function in banking. They appeared to pay at best 'lip service' to prior knowledge of risk management as they exclusively pursued growth, profits and bonuses. Similar problems of misplaced emphasis on mathematical knowledge and idealised theories of markets were to be observed at middle management and operational levels (during bank lending, valuation processes, market trading etc). This was also a failure of top management and their understanding of their business strategies. This was true of those commercial banks that went into investment banking operations, and those investment banks that developed on-balance sheet assets and liabilities. As the case studies of non-failing banks indicate however none of this was inevitable as these banks adopted far more cautious and knowledge-based alternative business strategies.

2.1 Bank Board, Top Management

Alistair Darling, the UK Chancellor, argued that the crisis had revealed that bank regulation overall had to be "*.. more intrusive and needs to ask harder questions*". The real problems were in boardrooms. "*Too many people did not understand the risks to which they were being exposed,*" ... "*You've got to make sure you've got the right people there to make the right judgments.*".... "*I strongly believe that the process of learning lessons has to start in the boardroom. Bank boards must have the right people, skills and experience to manage themselves effectively... their focus must be long-term wealth creation, not short-term profits.*" (BBC, Today programme, 17th June 2009) .

In terms of the *failing* banks, the treasury select committee (January to March 2009) identified major knowledge problems at the board level, especially in relation to non-Executive Directors. Key members of these boards and some top management lacked significant prior banking experience or professional banking qualifications. Board members were frequently very experienced in non bank business domains but did not use that knowledge to good effect

or adequately monitor bank top management. Typically, board members tended to apply their general knowledge of strategy formulation and implementation in non bank businesses to banks.

The Treasury Select Committee report on the banking crisis (May 1st, 2009, p40) noted that bankers in key banks (and regulators) did not understand how market behaviour hid risk and in some cases exacerbated it:

'We note that risk and complexity within the banking sector has increased dramatically over the last twenty years. The widespread—but at sometimes misguided—belief that risk was being dispersed and 'managed' led many banks to increase the complexity of their operations and their overall risk exposure. This was manifestly a false premise. Indeed one of the factors that is key to understanding the banking crisis is that some forms of securitisation, far from mitigating risk, actually obscured it.'

This knowledge problem was largely responsible for the freezing-up of inter bank markets for deposits, securitised credit and credit default swaps. This perhaps reflected a larger problem with UK boards whereby senior executives and NEDs formed a closed, elite network which inhibited board reflection on issues of social concern, of public confidence and on protecting the reputation of the banks with the wider public (Wheeler 2009, Clarke 2009). These authors also pointed to the need to diversify board composition with members outside this elite network. As well as reducing the risks associated with groupthink and an excessively narrow knowledge base, greater diversity of boards would be likely to raise the status of 'basic' retail banking and its role in the community.

2.2 Hindsight post crisis

Problems of knowledge and understanding with bank products

The following extract from the Treasury Select Committee report (2009, p39, May 1st) provides an excellent summary of the main problems of knowledge and lack of understanding by board members and top management of the complex derivative products increasingly being created and traded by bank employees: *Mr Moulton concluded that this lack of information and complexity meant "in the case of some of these assets the products are simply incapable of being analysed by the vast majority of people out there."Sir Fred Goodwin told us that securitised products "were knowingly being originated by professionals and sold on to professional investors and rated by their agents. The content was known"But other witnesses, such as Dr Danielsson, maintained that the bank bosses did*

not have a firm grasp of what their employees were doing: 'the individual making things complicated is not at the top of the bank, [he] is in the middle of the bank. This is the 'quant guy' [quantitative trader], the 35-year-old, whatever he is; he creates instruments. His boss has no understanding of what he has is doing, the regulator has no understanding of what he is doing. All they know is that he is making money from some black box.'

Problems of knowledge and understanding with bank models

These problems of knowledge and understanding concerning the UB model created conditions whereby many of the problems of the previous 25 years or so were crystallised, intensified and implicated in the crisis of 2007-2009. The problems meant (as in the past) parts of the *failing* banks could engage in very risky activities, without the rest of the bank being aware of these risks. The Treasury Select Committee report on the banking crisis (May 1st, 2009, p40) discovered that board members in the *failing banks* were highly incentivised to focus on 'growth' per se. This created a sales rather than a risk management culture and this permeated down the bank hierarchy. Specialist bank traders in investment or wholesale banking and specialist lenders in corporate banking did not have to understand wider bank principles of intermediation and risk management, to perform their tasks. Controls existed in terms of caps on transaction and risk levels. However, in the *failing* banks these employees operated in cultures of growth and subjected to strong incentives to boost profits. A sales culture dominated rather than a risk management culture at this operational level. Despite this, the 2007-09 crisis did not reveal many cases of individual rogue traders as in previous individual bank failures. This crisis was more of a systemic problem of many whole bank subsidiaries overtrading (betting whole bank) in markets. This operational culture was driven from above via strategies focusing on growth and profits which demonstrated little understanding of the risks involved to individual banks and the overall banking system.

Bankers in the *failing* banks did not seem to understand that their rapid growth models, with their emphasis on sales, trading and incentive pay schemes, all led to the development of a very risky variant of the UB model which operated with very risky new products in new untested variants of inter-bank markets. Investment banks over invested in bought securities (ABS, CDS etc) and funded these new assets in inter bank deposit markets. Commercial banks did much the same with their existing wholesale banking and investment banking operations. Bankers in the *failing* banks did not appreciate how retail, wholesale and investment forms of banks together created new risks for each component of the organisation. They appeared to pay only 'lip service' to prior knowledge of internal risk management as

they exclusively pursued growth, profits and bonuses. Other banks had been much more cautious as they moved out their traditional commercial bank or investment bank models towards the UB model. Their slower rate of growth and adaptation to new areas meant that their learning was at a higher rate than the environmental change. As a result their bank models were more robust during the 2008-09 crisis than those of the *failing* banks.

Problems of knowledge and understanding in markets

By early 2007, some international bankers appeared to have had a major memory or understanding lapse concerning market problems. They ignored prior knowledge of previous crises in banking markets (Kindleberger,1996) whereby weaknesses in lending and a heavy reliance on markets for liquidity interacted with market problems of confidence to trigger a financial crisis. Even though asset based securities and credit default swaps had been believed to be diversified across different banks, countries, and economies, the crisis in 2007-09 revealed that both sides of the balance sheet remained fully exposed to the same source of risk – primarily the US property market. Both asset and liability sides of bank balance sheets also faced common risks based on structural problems in the inter bank chains or networks trading in the complex new securities. The principal-agent model was severely weakened as high information asymmetries and conflicts of interest between members of these networks (bank issuers, bank advisors and rating agencies) compromised valuation standards in security issues. Indeed, limited understanding of the complex products, poor monitoring on the chain, and a combination of blind faith buttressed by overly optimistic quality ratings, meant that risk was not understood or monitored and end purchasers were sold very risky low quality assets masquerading as high quality and low risk.

An important feature of the 2007-09 crisis was its global nature, and this constrained and limited the effectiveness of individual country responses. European central banks and the Bank of England had to act within EU regulations and could not, as in previous crises, act quickly in private. A key factor this time was the 24 hour ‘gaze’ and connectivity of the global media and financial markets which ensured that as historic problems were repeated they were no longer allowed to remain private. Bankers and regulators had far less time to respond to events and those without an understanding of previous crises and of UB problems were even less prepared to deal with the 2007-09 crisis than previous crises.

2.3 Banking vulnerabilities revealed by the Crisis

As the crisis broke, knowledge problems and historic UB problems combined. *In part* they all contributed to new financial intermediation problems of assets deteriorating rapidly in quality under stress, of fragile and disappearing liquidity, and of low (inadequate) levels of equity capital. The pre-existing knowledge problems also contributed to new information intermediation problems that severely injured investment bank reputations for strict (security) valuation standards, for close monitoring of the sale of securities, and for working in the interests of ultimate investors.

The Lehmans failure on September 16th 2008 corresponded to Weick's (1988) idea of a 'cosmology episode', which arises when individuals, teams, organisations, and markets suddenly feel that the universe is no longer a rational, orderly system. What made the failure of Lehman so disturbing and shocking was that key players in *failing* banks suffered both from this catastrophic event and, simultaneously lost the means to recover from it. As Coutu (2003) remarked. 'A person feels like he has never been here before, has no idea of where he is, and has no idea who can help him. An inevitable state of panic ensues, and the individual becomes more and more anxious until he finds it almost impossible to make sense of what is happening to him'. Banks with more conservative transaction policies and clearer understanding of bank intermediation and risk appeared to have had lower exposure to and were less vulnerable to such a 'cosmology episode'. They were better prepared to act during the crisis and were not transfixed and made immobile by it. They had learnt enough to avoid the major risks, but were also in a position to profit from the *failing* banks by purchasing bank functions or whole banks to further develop their own UB model.

The 2009 events follow closely Kindleberger's (1996) model of the causes and sequence of many past financial crises. A boom, initially triggered by innovation and/or irrational speculation which, with the aid of high leverage, raises asset prices until they are significantly overpriced, certainly captures the main elements of the property asset bubble from 2004 to 2007. The revelation in 2007 that US property values were rapidly declining had such a massive negative impact on the securities based on US mortgages, that many securities could not be valued by large international banks. This coupled with the Bear Stern and Lehman failures in 2008, combined with the fragility of the banking system, led to the final, crisis and panic, stages; the bursting of the bubble, the rush for liquidity, and the subsequent credit squeeze.

3. Problems of knowledge for shareholders, auditors, rating agencies, and regulators during the 2007-09 crisis

This section also argues that the same problems of learning, knowledge, understanding and use concerning the nature of banks, bank disclosure, bank products, and interbank markets were evident in various external actors or bodies such as shareholders, auditors, accounting bodies, rating agencies and regulators. A systemic problem with knowledge was also identified in the Turner FSA report (2009). The emphasis of the latter has been with problems concerning markets (Chapter 1, p39-47). In contrast this paper also highlights knowledge problems concerning the nature of banks, their organisation, and their intermediation processes faced by these other actors or participants in banking markets.

Bank disclosure, markets, and stakeholders

Institutional shareholders, credit rating agencies, auditors, counter party (inter bank) traders, and regulators all had access to private and public sources of information from banks. Bank disclosure connected bank knowledge and understanding states to stakeholder knowledge and understanding states, especially that of stakeholders operating in information and reputation markets, in stock markets and in interbank markets.

However, bank board and top management problems of knowledge and understanding in bank decision making were also evident in major deficiencies and failures in their formal disclosure behaviour. This created further knowledge and understanding problems for market participants and other stakeholders.

Bank disclosure was one of the key areas of bank responsibility to shareholders and other stakeholders. The latter faced major problems with bank disclosure in financial reports and in other public disclosure mechanism. In 2007-09, these actors experienced many major surprises coming from complex instrument held in *structured investment vehicles (SIV)* owned by banks. The question is, why did they allow these banks to hide value and losses through such accounting disclosure rules? Part of the answer lies in time pressures and problems of complexity, as well as the points made by Turner (2009). The use of SIVs was legitimate within accounting standards but provided little insight to the risk associated with these off balance sheet vehicles. 'Fair value' of complex financial assets (ABSs, CDSs etc) was based on mathematical expertise and external ratings rather than some market price test. These methods concealed much risk. No attempt was made by shareholders, the accounting profession, and auditors to probe the complex logic of valuation of these assets. They did not understand the nature of these assets.

Shareholders, Credit raters, Accounting profession, Auditors

Treasury White paper on banking reform or 'Reforming Financial Markets' – July 8th 2009, commented p40. *'Similarly, there were failures on the part of some owners, in the form of institutional shareholders, to recognise the extent of these (top management and board understanding) deficiencies and to constrain their agents' actions through effective monitoring of and engagement with bank boards.'*

Major actors such as institutional shareholders, credit rating agencies, auditors, counter party (inter bank) traders, and regulators normally built up their understanding, knowledge and confidence in banks through a series of sources of 'evidence' such as information from private bank access and from bank financial reports and other public disclosure by banks. Bank promises and performance were important evidence. A continuous flow of information concerning banks was exchanged and shared between these actors within a 'network of evidence or meanings' or 'market for information'. These many sources of evidence were the means for each specialist to make their unique decisions and to produce their unique outputs concerning banks. These decision outputs included credit ratings, 'clean' audits, stable stakes by institutional shareholders or active buying and selling of bank shares, stable membership of inter bank tiers, and regulator 'light touch' actions or the absence of regulator intervention. These actors buttressed each other's confidence by their interactions and observation of each others' decision outputs. Each of these functions, processes and outputs were known to be narrowly conceived and focussed. Despite this, they used bank disclosure and each others' outputs to infer that larger bank processes (intermediation, risk management, strategy etc) and forms of organisation were functioning well. Such visible outputs, exchanges and sharing of understandings and confidence by key stakeholders in an active 'market for information' contributed to wider (securitised credit market and/or stock market) market information states and confidence. Continuous interactions in this way through time was the means for (informal) actor learning and knowledge creation concerning banks and this created an informed context for future decisions and outputs concerning banks. This 'market for information' also constitutes a 'network of meanings'. The participants in these networks and relationships, and interactions, as individuals and teams, were conscious of this meaning system which in turn aided their sense making during their ongoing decisions (Henningson, 2009)

Despite these explicit information sources and informal knowledge creation, all of these actors experienced many major surprises during the financial crisis in 2007-09. As noted above they faced major problems with bank disclosure in financial reports and in other public disclosure means, and they did not understand the complex instrument held in SIVs. Much of the prevailing conceptual framework used by these actors placed considerable faith in the

efficient functioning of markets, both for securitised credits and for bank shares. The Turner report (2009) noted that market efficiency does not imply market rationality, individual rationality does not ensure collective rationality, individual behaviour is not entirely rational, allocative efficiency benefits have limits, and empirical evidence illustrates large scale herd effects and market overshoots. This comment suggests that the collective process by which these market actors exchanged and shared their 'evidence' and their understandings and confidences in a 'market for information' shared the same set of flawed assumptions identified by Turner (2009) concerning the functioning of securitised credit markets and share markets. They also shared the same behavioural problems long identified amongst investors in stock markets. In addition, the many market actors discussed here did not appear to be aware of the history of 'freezing' of similar inter bank deposit markets during the secondary bank crisis of 1973, and they seemed to be unaware of the 'toxic' syndicated loans crisis with developing countries in the 1980s. The more sceptical stance proposed by the Turner report (2009) concerning the 'efficient' functioning of securitised credit markets could have helped these actors to consider these possibilities.

The narrow focus of these market actors on their specialised functions and their limited knowledge of banks, markets and transactions also meant they were unaware of the implications of their specific decision outputs and of their broader collective role in hiding well known problems of intermediation and of universal bank development. As the crisis broke, their individual contributions were challenged. Major critical questions were asked about the **specialised role and function of each of these key** players and how they combined to create a false sense of confidence in very risky banks, transactions and markets. The **collective process** by which they exchanged and shared their 'evidence' and their understandings and confidences was seriously undermined and wider market confidence evaporated. Prior knowledge of these actors and their ability to learn and create new knowledge were at the heart of these criticisms.

For example, Kershaw (2009) FFR09 commented that '**auditing** is broken' as a result of these events. In particular, the failure of bank disclosure, of 'fair value' and of 'mark to market' raised many questions about the accounting and auditing processes concerning banks. Redpath (2009) argued that the reputation of the credit and bank **rating agencies** had been much damaged by the 2007-09 crisis. If credit rating agencies had special inside knowledge of bank's risk, then either they not communicate it well to users, or they did not make sure that users understood the limits of their ratings. Competitive pressures played a

role reducing the quality of credit analysis. This can be interpreted as the rating agencies reducing the use of their well established prior knowledge and experience about risk in the rating process in the interests of securing growth in the ratings business. Such conflicts of interest suggest that the regulator should control the rating industries. High standards for the knowledge content of ratings and for the rating process could be established by regulators. Ratings agencies could lose their 'licence' to rate banks and their debt and asset instruments if they did not meet these benchmarks.

Wilde (2009) argued **that fund managers** rented top management assets (skills, strategies and qualities) to take risks on their behalf and hired the board to monitor management. She argued that NEDs should have acted as 'eyes and ears' of institutional shareholders to ensure that bank boards and management were doing this in shareholder interests. However, communication between bank board members and top management to shareholders was very limited with respect to the risks taken. Institutional shareholders were taken by surprise by the crisis events as they unfolded. Curtiss (2009) pointed out that before the crisis the heterogeneity of the institutional investor community created problems for institutional investors such as RailPen in the corporate governance of companies including banks. This variety in institutional investors was reflected in pension funds, insurance companies, unit trusts, investment trusts, and hedge fund managers. However, there are common investment interests amongst this diverse group of institutions (Holland, 2006). They all face the same basic problem of how to get information from companies, including banks, so they can assess the risk for the required level of return and thus value the bank. These shared problems are the basis for common action.

The behaviour of institutional investors before and during the crisis raised questions about their understanding and knowledge. The indications were that institutional investors focussed on a very narrow 'shareholder wealth' model of banks and ignored much of their underlying business models and risks. Evidence to the treasury select committee by key players such as Montagnon of ABI (27th January 2009), McKillop of RBS (10th Feb 2009), IMA, and by many others implicated narrow institutional shareholders knowledge and associated influences in the causes of the crisis.

Up to early 2007 before the crisis broke, shareholders pursued shareholder wealth maximising aims as their top priority. They were looking for increased growth, profits and value. They tended to downplay, ignore at times and not challenge issues of weak corporate

governance by the board over top management development and execution of strategy. They did not fully challenge the banks business models based on high growth. They did not probe the exposure implications of this growth for intermediation risks and risk management. They did not think their role was to second guess risk taking by managers. Indeed at times they were implicated in encouraging banks to reduce their equity base to maximise the profit potential of higher leverage. In some case shareholders were demanding that banks increased their dividends and share buy backs to reduce equity and increase gearing. The idea was banks should keep a 'lean' balance sheet and fully exploit gearing. Such shareholders did not seem to understand why banks were different and why 'adequate' capital had to be maintained to absorb unanticipated risk and hence protect their wealth.

They did probe to ensure that risk management systems were in place, and they did vote against some excessive pay schemes. However, their idea of intervention was very much circumscribed by their need for increasing share prices. If the pay schemes supported or did not clash with their shareholder wealth aims, then they accepted very high pay levels and rewards for success for bankers. Once the crisis broke, the institutional shareholders reversed their aims, their influence, and their intervention concerning their investee banks.

Regulators - FSA, Bank of England, Treasury

The paper (and the regulators) also argued that problems of knowledge and understanding, similar to those identified in banks, were evident in regulators such as the FSA. The FSA (in its report on Northern Rock 2008) and Adair Turners' comments (2009) on the banking crisis pointed to the weakened theoretical foundation of regulation. The Turner report (2009 p41) noted that regulators had many problems with their prior theoretical base *'the crisis also raises important questions about the intellectual assumptions on which previous regulatory approaches have largely been built. At the core of these assumptions has been the theory of efficient and rational markets.'*

The Treasury White paper on banking reform or 'Reforming Financial Markets' – July 8th 2009, commented (p8)

'This was not simply a question of the institutional structure of regulation. Rather, it was a question of making judgements and decisions based on credible experience, knowledge and robust analysis.'

Turner's (Jan 2009) comments revealed weaknesses in the conceptual framework and knowledge dominant amongst banks and market players before the crisis. Turner argued that the crisis showed that efficient markets (for securitized credits, for bank shares) can be irrational, were susceptible to irrational herd effects, and more liquid markets were not always better. Securitisation did not deliver the promised benefits and exacerbated risk. Risks could

not be understood and managed by sophisticated mathematics at transaction and bank level. Stock markets and associated market forces did not discipline banks or their managers. Financial innovation was of low social value, and rewarded a few market players with major losses faced by the public.

As a result, the FSA intended to adopt a more balanced conceptual approach to markets. As the Turner report (2009, p42) noted,

'the acceptance that financial markets are inherently susceptible to irrational momentum effects does imply that regulatory approaches should be based on striking a balance between the benefits of market completion and market liquidity and the potential disadvantages which may arise from inherent instabilities in liquid markets. The optimal balance may moreover be different when considering securitised credit markets compared with other markets (such as those for equities and commodities).'

Quinn (2009) argued that the Bank of England and the Federal Reserve reacted quickly to the crisis in 2007-09 by reducing interest rates and making liquidity available to the banking system in the UK and USA. However regulators needed more knowledge in the form of a 'map' of the banking system showing where the risks were, to make a full response to the new situation. Quinn's idea of mapping the system promises much. In this paper this can be interpreted as providing clearer understanding of the nature and number of banks and of near or 'shadow' banks operating in this system. It can also be interpreted as a clearer view of where risks are concentrated in inter bank markets, in bank products. It also involves isolating the conditions under which behaviour in these markets can switch from high confidence to depression to panic, and how this connects risks clusters and leads to systemic financial risks. This mapping may be too difficult to achieve given the complexity of banks, markets, and products. The regulatory solution may be to simplify all of these elements so that Quinn's knowledge and mapping aims can be achieved.

The UK Treasury, the Bank of England, and the FSA have recognised that knowledge of securitised credit markets is important. However, these regulators do not explicitly discuss improvement in the academic models and business models of the banking firm, specialised or conglomerate. They do not have a theory of the banking firm built on explicit ideas of knowledge, and they do not promote an active theory or policy of bank learning which could lead to the development of such knowledge. As a result, the UK regulatory response above (monitoring, insulate specialist banks) is inadequate given the problems of knowledge and understanding outlined in this paper. The final section of the paper explores how these problems of knowledge and understanding can be resolved in part by an active approach to learning and knowledge creation in banks.

4. Developing a conceptual frame for knowledge creation and use in banks.

In this section a more general theoretical approach to understanding the role of learning, knowledge creation and use in banking is developed. This conceptual frame is based, in part, on *existing* developments in UB practice (Holland, 2009), and in part, on developments in the literature concerning the ‘learning organisation’, knowledge management, ‘intellectual capital’, and knowledge based competitive advantage. Working examples of these theoretical ideas are discussed as they are connected to each other and to conventional ideas of bank intermediation and risk management functions.

4.1 Case examples of Banks as ‘Learning organisations’ and knowledge management

Banks such as HSBC provided a knowledge based response to the 2007-09 financial crisis and proved more robust than *failing* banks. The survival of banks such as HSBC, can be attributed in part to their more cautious approaches to the development of the UB. It can also be explained by their explicit policies to develop knowledge and to implement it at all levels in the bank businesses. Scandinavian banks such as Swedbank have also implemented similar policies to develop and implement knowledge and the Swedbank case provides further insights here.

Staffan Ivarsson (2003), deputy director of Swedbank human resources, has provided many insights into banks as ‘learning organisations’.

‘...Swedbank developed its Tool of the Future in 1992They started with the fundamental belief that the skills, motivation and satisfaction of their employees would be instrumental drivers of value for customers, which would in turn drive overall performance for the bank and especially profitability. First developing measures and then linking those through an economic model—human capital, market capital and profitability—became the Tool of the Future.The process began with surveys in every branch and among all employees, measuring such things as leadership, “businessmanship,” competence, internal support, etc. In parallel, Swedbank surveyed its customers on various dimensions measuring satisfaction and value. Both sets of measures were then matched with profitability and other financial measures, such as growth, profit per customer, revenue versus cost ratios, etc. The process yielded insight-producing distributions among all branches based on correlations between human capital resources and market capital, shining light on the performance of individual branches as well as on groups of banks that served particular markets.The key is understanding the economics of the human capital and human interactions and how those can be changed for the better.”As Swedbank continues to build its database, its analyses and understanding of the dynamic interplay between human capital, customers and profitability only becomes more sophisticated and useful..’ ...Finally, the whole effort required a

comprehensive learning management platform that could support a systematic and holistic approach toward learning and competency management, while reducing risks of increased costs generated by the need to train more people and deliver more training days.'

Bontis (1996) refers to a firm's knowledge management activities as acquiring, storing, disseminating and retrieval of intellectual resources throughout the organisation. This is illustrated by the HSBC case. Ellis (2003) reported on HSBC's successes and problems with knowledge management (KM) and learning.

'Knowledge-acquisition projects (Kaps) continue to be used to effectively download experience and wisdom from 'old heads' before they leave the business, into an accessible database format so that our organisational memory remains current and fresh. ...I believe that the success of Kaps is down to one thing: the desire that people – particularly, it would appear, wise old hands – have to tell their story. In an organisation as vast as HSBC, the very act of asking a senior person to 'download' the nuggets of learning they have picked up during their often outstanding careers makes them feel valued. And if that were not enough, it might actually help those left in the organisation to learn faster....On a negative side, the unit was unable to translate the sparkling array of KM tools and techniques into sufficiently well-understood concepts that the conservative (although some might say overtly cynical) culture of a traditional organisation could grasp. In particular, efforts to instil a need for intellectual-capital measurement and reporting fell on deaf ears, with most executives believing they had enough to measure already....'

4.2 Dynamic creation of bank knowledge and capabilities

Revans(1998) proposed a model of how learning should occur in organisations. He argued that learning should be greater than or equal to the rate of change in the environment. If not, then the firm would be unable to achieve a sustainable competitive advantage. This idea is clearly relevant to the core learning errors made by *failing* banks during the 2007-09 crisis and to bank specific mistakes in previous periods. The development of intellectual capital in these banks did not keep up with the expansion of financial capital and associated risks. In addition, the historic problems and the crisis both made it clear that the **focus** of environment and bank learning was critical. Too much emphasis on learning about product growth and complexity and too little emphasis on learning about intermediation and risk consequences constituted a major failure in learning. Some *failing* banks (eg Bank of America) had sophisticated learning and knowledge management capabilities. However during the crisis they suffered from problems of misplaced focus of knowledge and from poor top management leadership concerning learning, knowledge management and knowledge use.

Since Revans (1998) there have been further contributions to the idea of the 'Learning organisation' by Easterby-Smith et al (2000), and Morgan (1997) which provide clearer

theoretical guidance for bankers and regulators. Case banks in Holland (2009) had **patterns of organised learning**. They had internal organisation features suggesting they were 'learning organisations' as discussed in Pedler et al (1997). The banks 'looked in' and learnt **about internal organisational order** in the form of internal bank functions and processes and **new combined** intermediation processes. New order consisted of integrated corporate and consumer banking functions within the international bank. They looked in and learnt about bank M&A teams, corporate finance advice teams, finance raising teams and other functions, and how they worked together to produce joint products. The case companies also 'looked out' (Pedler et al, 1997). and learnt **about external order** in networks, 'tiers', relationships, transaction channels and processes in inter-bank, security, and derivative markets. The banks 'looked out' and sought to understand the corporate bank markets for corporate advice to clients, for M&A, for equity and bonds financing. They learnt how to reorganize their new internal functions around financial and corporate/consumer markets to create a market driven and responsive organization. They learnt how to create adaptive networks and channels for transacting with other banks and customers. They 'looked out' and learnt about the larger City of London institutional setting in which these networks, channels and processes existed.

The banks also learnt within this internal and external order. They learnt **how to act in decision processes** in these ordered and comprehensible contexts. They learnt about new composite bank products, how to produce and price them, how to spread and share risk across different forms of bank risk management processes and intermediation (on and off balance sheet). They used external networks and relationship in markets to learn, how to transact in markets, and how to spread and share transaction risk across different markets. They used these to learn and create information and knowledge advantages concerning the corporate/consumer market and financial/inter-bank markets. Learning also involved developing the new banking skills required in individuals and teams operating within the new expanded internal functions, external networks and markets, and the skills to integrate these functions and activities.

In Morgan's (1997, p90) terms, the employees, top management and boards of the UB **learnt about their uncertain environment** made up of markets for deposits, loans, payments services, securities and derivatives. They scanned this environment to anticipate change, and to detect significant variations. They purposefully learnt about how the bank interacted with this uncertain banking environment and how their actions (funding, lending, risk management, etc) changed external conditions. They developed an ability to question this

environment and to change their norms and assumptions. They learnt that they had to maintain a continuous purposeful interactive process with, and set of actions in, this environment. These were designed to alter an influential part of the environment in a desired direction. Such bank learning and strategic choices combined with evolutionary and competitive processes (Nelson and Winter, 1982) in driving bank change.

In achieving these learning aims banks 'learnt how to learn' and thus avoided getting trapped in simple environmental response systems based on defensive organisational routines. In Teece et al (1997) terms they had developed '**dynamic capabilities**' as competitive advantages to deal with rapid and unexpected change or as "*the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments*" (Teece et al., 1997: 516). In contrast to these patterns, there were many examples of mistakes and errors in individual bank learning and knowledge use. Learning in individual banks was not as systematic as the above multi case patterns suggested and arose via an iterative feedback process during errors, failures and successes.

4.3 The nature of bank knowledge and its role in intermediation

The learning process played a critical role in developing new bank knowledge or 'intellectual capital' (IC). This existed formally in the case banks' training manuals and information systems and informally in the experience and cognitive skills of bankers and external parties. This knowledge was constantly refreshed by new experiences and information on clients and their industries and by active financial market trading.

Literature on intellectual capital categorises the major types of knowledge used within the firm and its markets. The three major elements of IC: human capital, structural capital and relational capital (Meritum model (2001, p. 63) allow a holistic view of a company's value-creating resources to be constructed. In banking, human capital was interpreted as knowledge employed during funding, lending, risk management decisions and in wider intermediation processes. Structural capital was internal context knowledge, and relational capital was external context knowledge both influencing decision processes. Prior knowledge of how intermediation worked, how risk should be managed, and how markets worked and failed, was incorporated in IC, with this being matched to previous crises and previous variations in the economic cycle.

Banks learnt that intellectual capital had a direct impact on decision processes and on wider intermediation processes. High quality bank IC was used to interpret new information and events as they arose as well as providing the context within which to assess the significance and meaning of externally supplied information. This reduced the transaction costs (search, monitor, verify, evaluate) of various banking transactions with customers, when banks were intermediating between these customers and transactions on both asset and liability sides of the balance sheet. Knowledge as HC, SC and RC was the means to exploit new synergies such as a joint client base and stronger capital backing across a larger number of syndicated loans, asset based securities and other financial assets. A combination of investment and commercial bank client knowledge bases and relations was used to make broader use of tiers and reputation when transacting in inter bank markets. This also increased opportunities for diversification and for arbitrage, matching, and for mismatching. The use of broader corporate and inter-bank relations and their associated knowledge attributes were expected to stabilise expected income and to narrow the variance of income, via economies of scale and scope, by making it easier to forecast transaction flow. The joint exploitation of enhanced market tiers, and company relations was also expected to improve intermediation and to stabilize supply and demand and profit margins all across market cycles. In contrast to the above expectations, major systematic risks arose in the investment and wholesale banking arms of *failing* UBs. Extreme mismatching and intensive arbitrage activities, pushed intermediation to its limits and destroyed much of the expected transaction cost reduction and diversification benefits in the UB.

5. Conclusions

The core idea of this paper is that knowledge and lack of it amongst key players (board and top management) at the top of *failing* banks was deeply implicated in the 2007-09 crisis and addressing these issues needs be part of the solution to this crisis. The *failing* banks neither applied existing knowledge nor created new knowledge to deal adequately with the new issues that arose in relation to their new business models. The same problems of learning, knowledge, understanding and use concerning the nature of banks, their products, bank disclosure and interbank markets, were also evident in various external actors or bodies such as shareholders, auditors, accounting bodies, and rating agencies. The paper has explored how these problems can be resolved in part by an active approach to learning and knowledge creation in banks and others. This is guided by a new conceptual frame based, in part, on

existing developments in universal banking (UB) practice (Holland, 2009), and in part, on developments in the theoretical literature. Working examples of these theoretical ideas are discussed as they are connected to each other and conventional ideas of bank intermediation and risk management.

Knowledge alone will not solve the problems outlined. The active involvement of bank top management and the board and the exercise of their **power** on these knowledge matters is vital. An immediate and practical solution to the problems faced by bankers and other key players in the system would for governments and regulators to use the above analysis and framework to change the way they think about bank regulation. Instead of just focussing on conventional regulation issues concerning bank structure and legal form, prudential bank management, bank conduct with customers, bank risk management, or bank systemic risks, they should also turn their attention to bank learning and knowledge use. Practical action arising from the 2007-09 crisis may necessitate governments to legislate for demonstrated competence and understanding throughout the bank hierarchy, though especially at the board and top management levels, and in their ability to monitor knowledge use at middle management and operational levels. External actors or bodies such as shareholders, auditors, accounting bodies, and rating agencies would also be required to demonstrate their knowledge of banking. The regulator could make formal and explicit statements regarding core intermediation and risk management models and skills and competences required at various bank hierarchy levels and in external observers to ensure these ideas were implemented.

Quinn (2009) argued that existing law on fiduciary duty of directors could be the basis to require board members to demonstrate their knowledge of how banks are organised, how they work as intermediaries, of risk management, and of the nature of key financial products. The same legal duty could be the basis for directors to oversee ‘good practice’ in bank learning, knowledge creation and in training standards. Corporate governance guidance could be the means to raise the knowledge of bank boards to ensure that they ask the same questions of top management and other key decision makers in middle management. Similar comments could be made about auditors, credit rating agencies, and regulators.

Akerlof and Schiller (2009), argued that there are limits to knowledge in a world of ‘animal spirits’ where individual and group psychological states and fashion in markets vary through time. Bank boards and top management can also be captured by these events. If, as Akerlof

and Schiller (2009) suggest, new ideas and new psychological states spread like a new virus contagion or pandemic in a population without immunity, then this paper argues that part of the solution must lie with ‘immunization’ through prior knowledge and continuous learning. The transmission of stories through such contagion must be tested by deeper and more widely diffused knowledge at the point of story transfer. ‘Immunization’ through learning and knowledge use must take effect at top management, middle management, and operational levels in banks. Incentives to ignore knowledge and prior lessons, and encourage volatile inter bank market conditions, must also be removed by reforming bonus systems.

The solution must also lie with active learning through change to create a more informed, knowledgeable, robust, responsive banking and market **system**. Managing ‘animal spirits’ also requires governments, regulators, bankers, shareholders, auditors, accountant, and rating agencies to actively learn and become continuously informed by robust, knowledge based models of banks, bank disclosure, bank products. and markets. Regulatory intervention must lie in insisting that all the key players improve, agree, and act on this knowledge.

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