

Moral imagination or heuristic toolbox? Events and the risk assessment of structured financial products in the financial bubble

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Abstract

The paper uses the example of the failure of bankers and financial managers to understand the risks of dealing in structured financial products, prior to the financial collapse, to investigate how people respond to crises. It focuses on whether crises cause people to challenge their habitual frames by the application of moral imagination. It is proposed that the structure of financial products and their markets triggered the use of heuristics that contributed to the underestimation of risks. It is further proposed that such framing heuristics are highly specialised to specific contexts, and are part of a wider set of heuristics that people carry in their cognitive ‘adaptive tool boxes’. Consequently, it is argued, when a crisis occurs the heuristics are not challenged, but are simply put away, and other more appropriate heuristics put to use until a sense of normality returns, and the use of the old heuristics is resumed.

Introduction

Do crisis events cause people to challenge their heuristic habits of thought through the application of moral imagination; or do these patterns of judgement re-emerge as soon as the immediate shock of a crisis has passed. To use a recent example that we will focus on in this paper, did events such as the collapse of Lehman Brothers cause the bankers and financial managers to reconsider their habits when assessing the risk of the structured financial products they were dealing in? In this paper, which is exploratory in nature, we draw upon the distinction made by the social psychologist Billig (1996: 161-176) between categorisation and particularisation. Categorisation is the cognitive process of allocating new problems to pre-existing categories that then constrain how people deal with that issue. Particularisation is the opposite cognitive process whereby people seek to differentiate a new issue from existing categories of problems. Where there are ethical dimensions to an issue particularisation will take the form of moral imagination, a term developed by Werhane (1999). Moral imagination is a conscious attempt to particularise situations and to understand why they are different from the paradigm case and to look at the issues from different ethical perspectives.

We argue that the nature and characteristics of the structured financial products, which were central to the recent financial collapse, encouraged the assessment of risk by a cognitive process of categorisation. This categorisation operated through the use of heuristics of judgement, which increased the probability that traders and markets would underestimate the risk of the financial products. We are nesting the psychological concept of heuristics within a broader sociological idea of framing and categorisation. Finally in this paper we explore whether the shock of crisis events then caused those involved to

apply the opposite process of particularisation so that they questioned their habitual behaviour and values and develop new perspectives and rules of thumb.

We will also argue that the categorisations and mental models dominating in the financial markets excluded ethical considerations. Therefore we will consider whether any processes of particularisation took the form of moral imagination (Werhane 1999). Moral imagination is the process of becoming aware of the harms that may arise from conventional actions, envisioning how things might feasibly be done better and developing a new social consensus that adopts the new understanding. Moral imagination, as a form of particularisation, begins not with general moral principles but with an individual's concern over some particular – a person, a deal or a situation. It proceeds by a sympathetic ability to understand the emotions, values and predicaments of others. Such sympathy, drawn as it is by Werhane (1999: 94) from Adam Smith's *Theory of Moral Sentiments*, implies only an understanding, and not necessarily an agreement with, the other's situation. On the basis of sympathy moral imagination then involves a surfacing of the mental models and narratives that the conventional practices are based on. Once emerged a person's moral imagination can challenge these models and identify others ways of understanding the situation. From these new perspectives moral imagination requires an ability to imagine new actions being enacted. In the final stage (Werhane 1999: 103-4), in which moral reasoning builds on moral imagination, the new actions become incorporated into a revised consensual model or set of rules that in time sublimate into cognitive heuristics. The question posed in this paper is whether the financial crisis has triggered such moral imagination amongst the financial markets that has led to new attitudes concerning structured financial products?

We are not however arguing that the heuristics of judging of risk were the only, or indeed even, the most important cause, of the financial collapse. Clearly other factors such as the social dynamics of bubbles, the performance management systems and reward structures of the banks, the availability of cheap wholesale credit and light regulatory regimes were all complicit in the collapse. The recent allegations of deception made by the Securities & Exchange Commission against Goldman Sachs (Treanor 2010) suggests that deliberate withholding of information by sellers of structured of financial products may also have been a factor.

The characteristics of structured financial products

Structured financial products, in the context of this paper, refer to asset backed securities (mainly mortgage based) and products such as collateralised debt obligations (CDOs) and asset-backed commercial paper (ABCP). As the proposition is that structured financial products, and the markets for them, had certain features that triggered heuristic or other behavioural economic effects, that led to banks/ traders misperceiving or disregarding risks it is necessary to attempt a description of such products. We will then identify particular characteristics and suggest the heuristics they might trigger.

Organisations have used securitisation and collateralisation as a source of long term finance for many years. Securitisation involves turning future expected income flows into an asset which is then sold to create immediate funding. For example, Iron Maiden, the rock band, issued a \$30m bond based on future earnings from royalties on their music (Arnold, 2008: 460). Through securitization immediate funds were made available and these would be paid for using future income flows.

In the US sub-prime mortgage market, mortgage lenders used securitisation as a means for credit creation and risk transfer. Mortgage lenders pooled the interest income streams of many mortgages and sold them to banks. These pools were known as residential mortgage based securities (RMBSs), similar in nature to bonds created by Iron Maiden. Pooling mortgages together provided some risk diversification benefits because even if a few mortgage holders delayed or defaulted on their payments, the majority of the mortgage payments would still be received. The losses from the defaulting mortgages would be shared amongst all those who had bought the RMBSs, so minimising the impact on any one investor.

Normally, the mortgage income coming into the RMBSs was divided into three levels or tranches. The highest rated tranche (80% of RMBS/CDO tranches according to Ryan (2009)) would attract the lowest interest, the lower rated tranche would attract a higher interest and the final unrated tranche would attract the highest interest or return (Fitch Ratings, 2007). In the event of default by the mortgage borrowers, the income from the unrated tranche would be reduced until it reached zero, followed by the lower rated tranche and finally the higher rated tranche. In this way the risk attached to the RMBS was spread (rather than diversified away). The highest rated tranche would be protected from defaults by the lower tranches. Purchasers of the tranches would bear the risks and reap the rewards depending on the tranche purchased. The relatively high returns from the sub-prime mortgages enabled these tranches to offer higher yields at each level compared to similar rated conventional products such as corporate bonds. Therefore these products became popular because of the perception of low risk and higher returns.

Banks (and hedge funds) would combine a number of RMBS tranches and other asset backed securities (and sometimes individual mortgages themselves) to create asset backed CDOs, and, like RMBSs, these CDOs in turn are carved into different risk level tranches and the tranches sold as bonds or financial products to banks, hedge funds and other financial institutions (Jacobs, 2009). The funds raised from the sale of the CDOs were used to buy more RMBSs and in turn provide funds for the issue of more sub-prime mortgages.

Two points can be made from this account: first, the creation of tranches by slicing and dicing income streams created liquid products from underlying illiquid mortgages. Mortgages cannot be sold off easily but the products emerging from them could be. Second, the creation of new tranches from existing tranches and new products from existing tranches made it extremely difficult or impossible to identify where the source income for the products was coming from. For example, as Jacobs (2009: 12) states “CDO tranches are also sliced and diced to produce other CDOs (known as CDO²s) and CDO²s tranches are sometimes used to make CDO³s”.

Insurance companies offered insurance against the loss of interest on the structured financial products resulting from default of the original mortgages in the form of credit default swaps (CDS). However, whereas with normal insurance there is one policy to insure an asset, several CDSs were taken out on the same structured financial products. Synthetic CDOs were in turn created from CDSs.

The creation of new products from existing products such as CDO², CDSs and synthetic CDOs, led to significant increases in the quantity of products that were intrinsically linked to each other, and which all originated from a narrow base. For

instance, SIFMA (2007) showed that the increase in issue of new CDOs in just two years, between 2004 and 2006, was almost 231% at \$520bn. Ferguson (2008: 4-5) notes that in 2006 there were more than \$3 trillion CDOs in issue and the notional value of all derivatives, including CDSs, stood at \$600 trillion. This can be compared against the entire world economic output in 2006 which totaled around \$47 trillion.

The sub-prime mortgage market was particularly susceptible to decline in the housing market. When US house prices fell, the high borrowing costs and a high proportion of loan to value (resulting in negative equity in the properties), meant that there was a high incidence of default. Furthermore, the benefits of risk diversification, by having a large quantity of different mortgages in an RMBS, disappeared, because declining house prices affected all or most properties, in most geographical areas. As the number of defaults in the sub-prime mortgage market increased the credit rating agencies downgraded the ratings of the products which were based on these. This created a problem for the balance sheets of many financial institutions. Greenlaw et al (2008), explain how the impact of a reduction of one dollar revenue would have a negative impact many times greater, because of the leverage that was created from that single dollar. This forced financial institutions such as hedge funds to sell their liquid investments such as shares and thereby causing stock markets to fall.

Heuristics and the financial bubble

Popular writers on the financial crisis have already noted the role of heuristics (Fergusson, 2008: 346-347) in the financial crisis. Heuristics are cognitive devices that reduce the amount of data needed, and use short cut 'rules of thumb', to form judgements. Unlike a rational approach to judgment heuristics are largely unconscious mental

processes. We do not choose to use a particular heuristic and we will be unaware of it unless we think reflexively about how we came to a judgement. The major debate about heuristics is whether they are causes of distortion and bias in judgement or whether they are, for the most part, efficient and effective cognitive mechanisms.

The original researchers into heuristics, Kahneman, Slovic and Tversky (1982), rather took a negative view of their impact. The title of their book *Judgement under Uncertainty: Heuristics and Biases* reveals one of the themes of this paper; that heuristics can be a cause of biased judgment, particularly in relation to risk assessment. A more recent programme of research led by the ABC research group, based in Berlin, has revisited heuristics and come to the conclusion that far from being a distortion of decision making they are both necessary and effective. Their research is intended to ‘capture how real minds make decisions under constraints of limited time and knowledge’ (Gigerenzer *et al.*, 1999: 5, see also Gigerenzer, 2008). They reject the rational, subjective expected utility, model as a description of decision making and instead propose the idea of fast and frugal heuristics. These are rules for limiting the search for information and options, and for making choices, that employ a minimum of time, knowledge and computation.

The differences between the two approaches to heuristics may reflect their different research methods. The original research used psychometric questionnaires and assessed people’s responses to scenarios using probability theory. The Berlin group used Monte Carlo simulations to model rational and heuristic decision making processes. The former technique highlighted the negative aspects of heuristic decision making whilst the latter tended to emphasis the positive. A summary that sought to integrate to two approaches would suggest that: heuristics are an inevitable, and generally effective, process of human

judgement; and people have a large adaptive tool box (a term proposed by Gigerenzer and Todd 1999: 29) of heuristics at their disposal. In some circumstances heuristics can lead to bias and distortion and sometimes the appropriateness or the selection of the heuristics needs to be challenged by particularisation. We advance the proposition that the markets for structured financial products triggered inappropriate heuristics that contributed to the misperception of risk that was one of the factors in the financial global collapse.

How the characteristics of structured financial products triggered heuristic based judgement of risk by those in the markets

- *Characteristic 1 – increasing complexity and sophistication*

The complexity of the range and form of structured financial products increased greatly from their origins in the 1980s up to the financial collapse. Complexity, as we have argued means that there is inadequate, and asymmetrically distributed, information in the markets about price and risk. Such situations can trigger heuristics such as anchoring and adjustment, and game like behaviour such as adverse selection.

Adverse selection can occur when there are different amounts of information available to the seller of a structured financial product and its buyer, known as a situation of information asymmetry. In adverse selection, one party lacks all the information when negotiating the contract and price with the other party. In theoretical terms, this would cause the party without the information to drive down the price of the product, which in turn would lead to poorer quality, cheaper products to come to the market, causing the natural workings of the market to break down (Akerlof: 1970). To counter the adverse selection issue Spence (1973) suggested that sellers would make more information

available to the market to enable it to operate properly in setting prices and Stiglitz (2001) suggested that the buyer would ‘screen’ the product to determine its quality.

Creating ever more complex structured financial products from underlying assets and securities made it virtually impossible to trace back to the origins of the products and limited the quality and quantity of ‘screening’. Credit rating agencies considering RMBSs, according to SEC (2008), rated these complex products without going to the fundamentals that constituted them. They would look beneath a layer or two but not right to the bottom of the pyramid. SEC (2008) also questioned whether the relationships between financial institutions offering the products and the rating agencies were perhaps too close. The financial institutions which purchased the structured financial products often relied on the credit ratings, instead of undertaking their own additional due diligence.

Anchoring and adjustment is a heuristic used when people have inadequate information, as in the situation just described. The heuristic involves the use of an initial cue that people then adjust insufficiently (Kahneman et al 1982: 14-16). The information on products from rating agencies and mark-to-model results acted as just such a cue. Although these were of insufficient quality purchasers would have anchored on them and, on average, made insufficient marginal adjustments in their buying decisions.

Characteristic 2 – securitisation and collateralization: slicing and dicing

Securitisation and collateralisation, as we have seen, appears to take riskier income streams and creates, by pooling them, products with a higher credit rating. This characteristic was reinforced by the issuers using CDSs, and retaining varying proportions of the first-loss tranches to mitigate adverse selection problems. These factors

may have triggered the availability heuristics and so affected people's judgements about the financial product's riskiness. Just as the availability heuristic caused people to think that lung cancer was a more probable cause of death than stomach cancer, because information about the former is more available (Slovic et al 1982: 467), then the apparent bulwarks against risk that surround securitised products led people to underestimate the recursive nature of the accumulated risks. Chen et al (2008: 1211) concluded that for securitisations that were transferred to SIVs (special investment vehicles) the accounting rule required the disclosure of more information than was actually useful in assessing potential risk. The provision of plentiful but irrelevant information would exacerbate the availability effect.

- *Characteristic 3 – the interdependency of structured financial products*

Ayal and Zakay (2009) have proposed a perceived diversity heuristic. People assume that the risk associated with a pool of things (in their experiments Ayala and Zakay used throws of dice and tosses of coins but the pool could also be a set of assets in a structured financial instrument) is less if the pool is diverse. Diversity is judged according to the multiplicity and distinctiveness of the items in the pool. But people can misperceive multiplicity and distinctiveness. This produces a perception of pseudodiversity which leads people to think that the pool is more diverse and less risky than it actually is. We suggest that such a heuristic may have been at work in the financial markets. The process of pooling and spreading risk, by combining many income sources into a single product, makes an investment appear more diverse to an individual investor but does not decrease the total risk of the whole pool. If anything the pyramidal structure of the products (CDO² based on CDOs based on ABS (asset backed securities) or RMBS),

where each tier of products provides a foundation for a further tier, actually increases the overall risk of the pool. The range of structured products on the market looked as if the products were multiple and distinct but they were in practice highly interrelated. In effect an incorrect assumption was made about the risk of these products.

It was assumed by the market that the mortgages on which the products were based were not correlated and therefore risk could be diversified away. As Ayal and Zakay point out (2009: 560-561) people judge multiplicity and diversity from the way that things are presented in different groups rather than from an assessment of the correlation of their performance.

Ayal and Zakay (2009: 561) linked the psuedodiversity heuristic with Kahneman and Tversky's (2000) prospect theory which proposes that people seek to avoid risk under conditions of gain but seek it in conditions of loss. If we apply both these ideas, (psuedodiversity and prospect theory) to the financial markets; the markets promised gains, everyone was seen to be making money, investors would therefore seek to minimise risk to protect their gains and the psuedodiversity heuristic gave investors grounds for thinking that risk was low. This cognitive double impact encouraged the growth of the markets for structured financial products

- *Characteristic 4 – Pricing the products*

There were suspicions that the prices or values of financial products, prior to the collapse, were exaggerated by the use of mark-to-model methods. Ryan (2009) suggests that because there was a limited market for these products it was not possible to price them using mark-to-market (that is letting the market determine the price of the product). Instead mark-to-model methods were used to price the products on the basis of variables

being input into stochastic models, such as Monte-Carlo methods, and using the results to determine the volatility of the product and therefore its price. This resulted in two problems: firstly, the outcome of any model is only as good as the input variables. If the assumptions made for the input variables are not reasonable then the outcome results would be inaccurate. Secondly, the mark to model methodology gave an illusion of a liquid market, whereas this was not the case. This phenomenon was implicated in the 1998 collapse of company called Long Term Capital Management (Fergusson 2008: 328-330).

These pricing algorithms incorporated heuristics such as wishful thinking, recency and the gambler's dilemma (These heuristics are described in Hogarth 1980: 169-170), which all operate on the basis that the future will follow the patterns of the past, inasmuch as they were based on limited past data and on misperceptions of the shape of the distribution curves in financial markets. The heuristics would all contribute towards a general overconfidence and a lack of alertness to the possibility of exceptional and particular events.

- *Characteristic 5: The framing of the market place*

Derivatives, which are simpler than structured financial products, were mostly traded in open outcry pits in which bids were called out and deals done. In a derivatives pit the context provides a frame which makes social and interpersonal information available to those in the market. Framing heuristics are very common and they influence judgements and decisions by controlling the flow of information. Increasingly derivatives trading is done electronically and this removes the social and interpersonal information that is available in an open outcry market and emphasises the analytical data that the trader can

see on their screens (Arnoldi 2006: 390). Much of the trading of structured financial products is done by OTC (over-the-counter) block trading. OTC trading is done by private negotiations between large financial institutions who are dealing in large contracts. The traders contact each other and may spend a day dealing with their counterparts and negotiating a deal. The framing of OTC trading therefore reinstates the social information that is absent in electronic trading but reduces the knowledge of what is happening in the wider market place. Such a situation can trigger the 'base line neglect' heuristic in which people place more consequence on information from their immediate interpersonal contacts and less on the, equally relevant background market information (Tversky and Kahneman 1974: 154-156). The nature of the market for the products becomes a heuristic device.

The impact of crisis events on heuristic thinking

We return now to the question of the impact of events. Billig (1996: 173-174) argues that categorisation and particularisation, as cognitive processes, are in constant dialogue. A crisis then might present an opportunity for particularisation to challenge categorisation by claiming either that a situation has been mislabelled or that the new situation represents a special case and ought not to be allocated to the standard category. Did the financial crisis instigate the cognitive process of particularisation such that people questioned their categorisation of financial risk; or argued that financial products should be a special case in relation to regulation? Did it cause people to consider reflexively their past habits of behaviour and judgements? As, for many people, the financial collapse has been the consequence of a moral and ethical failure – the result of corporate and individual greed, short-termism, a lack of social responsibility and moral hazard –

this question can be posed in an ethical frame. Did the crisis event cause those involved to exercise moral imagination. Such a crisis from this perspective would demand that those in the industry cease being morally mute (Bird and Waters 1989) and recognise that there is a social and ethical dimension to their behaviour? We will start our consideration of these issues with the proposition that crisis events do not trigger moral imagination. This initial idea is based on press reports of bankers' hostility to the proposals that have emerged to try and prevent future financial collapses. We will use the logical sequence devised by C. S. Peirce (Mounce 1997: 17-18) of abduction – deduction – induction to evaluate the proposition. This involves abducting from the literature a possible explanation of the failure to trigger moral imagination. From this theoretical position can be deduced behaviours and attitudes that would be expected to exist if the theoretical explanation is valid; and finally we will make a preliminary reconnaissance to see if those behaviours and attitudes could be observed in practice; and then suggest further research that could test the theoretical proposition further.

The theoretical abduction comes from the theory of heuristic decision making. Gigerenzer and Todd (1999: 29), as we have already mentioned, have argued that heuristics are highly specialised and that people have a cognitive 'tool box' containing many heuristics; each of which can only be applied in specialized conditions. For example the recognition heuristic only applies when a judgement has to be made about which of two things, of which little is known, is the greater when one of those things has been heard of by the decision maker and the other has not (Gigerenzer & Todd 1999: 41).

If people have large 'tool boxes' containing many very specialised cognitive tools, how would people deal with a crisis caused by a failure of a particular tool? A crisis

would cause new conditions in which it is easier to see the old tool as no longer appropriate than to say the tool needs to be modified or redesigned. If quotidian judgment making means constantly putting down and taking up tools as appropriate, then in a crisis one heuristic would be discarded and a new one adopted. The crisis would not occasion moral imagination challenging the usefulness of the tool. A crisis does not lead to particularisation but simply to a different categorisation. Consequently, as Greenspan said in 2009, “The crisis will happen again” (BBC 2009a).

It can also be speculated that social norms and organisational power within the financial services industry would reinforce the tendency to put heuristics to one side rather than apply moral imagination to them. As we saw earlier moral imagination requires the ability to both imagine a new set of values and behaviours and to imagine them being enacted (Werhane 1999: 100). An individual aware of problems might imagine a new approach but cannot imagine it happening or themselves being an instigator of the change. Within an organisation Bauman’s (1994: 7) concept of floating responsibility might apply. This means that if people follow organisational rules they bear no responsibility for the consequences of their actions and ‘it seems that the organisations is ruled by *nobody*’. People will also know that when others in the industry became whistle blowers about the risks of structured financial products they were marginalised by the disdain of their colleagues and the power of top management who were all absorbed by the profits from trading these products. Such vicarious experience would lessen the ability to imagine change happening. At the least people might be unable to imagine a new situation because, applying Festinger’s (1954) social comparison process, there would be no ‘social proof’ that people around them saw anything wrong.

If these theoretical speculations were to be in play what empirical consequences might we expect to see? Initially we would expect a switch in attitude to risk as different heuristics, appropriate to a crisis situation, were taken up. We would then expect a return to old behaviours as soon as the crisis was past. We would anticipate a re-running of arguments presented before the crash, in support of structured financial products, and no changes in bankers' attitudes. At this early stage of our research we can only use evidence in the public domain to enquire whether this is so; and it is evidence about the financial services industry in general and not specifically about the judgement of risk in structured financial products.

The immediate consequence of the financial crisis was a swing to risk aversion as the wholesale inter-bank markets closed down and banks became more cautious about trading in financial products, as well as in their commercial and mortgage lending. The change in attitude to risk can be seen in the collapse of the CDO market. The total issuance in 2007 was \$481bn but in 2008 it was only \$61bn (SIFMA 2009). Different heuristics would appear to have been holding sway.

Is there any available evidence that traders and bankers have revived their pre-crisis behaviours and attitudes in the aftermath of the financial collapse as a form of normality returns? The rejection by the banking sector of ideas, such as the Governor of the Bank of England's suggestion, that banks should not be both retail banks and investment banks, or the idea of a Tobin tax on financial product trading, which are both examples of moral imagination, suggests the crisis has not caused much self-doubt amongst the banks and their lobbyists (Mason 2009).

Some extracts from blogs by bankers, admittedly an unscientific source of evidence, nevertheless also raises the possibility that the financial crisis has not caused many within the banking industry to exercise moral imagination.

A wise man once said that there is nothing new in the world – a modern version of this is same rubbish different time. We may be a year into the financial disaster but nothing really seems to have changed.

The government needs to realise that they are doomed to fail in their quest to turn financial services into a sackcloth and ashes wearing charitable concern. What would be the point in lending money to a start-up business if you couldn't make a return while carrying all the risk of default by your customer?
(City Diaries "Laura", BBC 2009b)

Just because products lost the banks billions does not make them "socially useless". The mistake was in the way the products were risk-managed and that is what the regulator needs to address. There was nothing fundamentally wrong. There was nothing wrong with the product.
(City Diaries "Anthony", BBC 2009c)

A content analysis of broadsheet newspaper articles published between the start of January and the end of June 2010 provides, more representative, evidence that people in the financial services industries have not applied moral imagination to their professional practices. Table 1 reports bankers' attitudes to reform of the industry as expressed by their spokespeople or by individual bankers; and also the beliefs of third party observers (central bankers, journalists, politicians and so on) about the attitudes of bankers.

Insert table 1 about here

Only a tenth of the bankers reported were prepared to apologise for their institution's role in the financial crisis and to recognise the need for radical reform in the industry; in other words admitting the need for moral imagination. None of the observers

thought the bankers were showing signs of apology, even though the bankers ought to. Half of the bankers reported took a defensive line. They admitted that some changes were necessary but stressed that these should be limited and no major changes should be made that would threaten the future prosperity of the industry; indeed this was the position taken by the British Bankers Association. Of the observers 48% spoke as if bankers took this defensive line. A large minority of the bankers expressed the view that the need for change should be challenged, and that normal practices should be returned to. A much larger proportion of observers than bankers took the view that bankers thought that reform was not necessary. It can be inferred from these results of the content analysis that the experience of the financial crisis had not generally led bankers to apply their moral imagination to their working practices. In any case, as one hedge fund manager said ‘financial regulation ‘is like trying to regulate a Ferrari with a skateboard’ (Conway 2010)

This conclusion can be reinforced by looking at the issue of bank bonuses. Despite the failure of the pre-crisis system of performance management and rewards in investment banking bankers are still using the old arguments for high bonuses that they presented before the crash. Their argument is that they have to pay high bonuses or else they will lose their best employees to competitors. Table 1 gives the total value of City bonuses from 2001 to 2009 and gives projections for the following three years that show a return to the level of bonuses in 2005. Banks are not particularising and are not using the fact that those they recruited at high cost before the crisis did not turn out to be the best, but were just followers of fashion, to question the validity of the argument.

Insert table 2 about here

It is not claimed that this analysis is definitive; but it is argued that we have presented a prima facie case that the impact of a crisis is not to invoke moral imagination but simply to trigger the temporary laying aside of inappropriate heuristics until such times as they become appropriate once more. Clearly further research is required particularly to identify whether this failure of particularisation or moral imagination has applied specifically to the perception of risk of financial products.

Conclusions

This paper essays an initial attempt to understand why traders and bankers underestimated the risks associated with structured financial products, and further, whether the reasons for this miscalculation might help us understand whether crisis events, such as the global financial collapse, causes those involved to re-evaluate, to apply moral imagination to, the habits of thought that caused the problems in the first instance. Our proposition is that features implicit in the form of structured financial products trigger categorical thinking in the form of heuristics. In this context the heuristics can lead to a misperception of risk (even though heuristics are in many instances an effective way of making judgements). We have identified a number of particular features of the financial products and their heuristic and behavioural economic consequences.

There is prima facie evidence that the financial crisis, even particular catastrophic events such as the collapse of Lehman Brothers, has not caused those within the industry to switch from categorical thinking to particularisation and the challenging of their

assumptions, values and habits of thought. We suggest that this may be the result of the nature of heuristics. Heuristics are cognitive devices that are specific to particular types of judgement and decisions. Consequently there are many heuristics and people, without perhaps being aware of it, take up and put down heuristics according to the task facing them. When a crisis means that the task for which they have used particular heuristics disappears, then they simply put those heuristics back in the tool box. As the heuristics are put aside there is no reason to apply moral imagination to questioning their role and consequences. It also means that when normality returns those heuristics are likely to be taken out of the toolbox again.

Our proposition leads to possible insights into what would need to be done to prevent the structured financial products bubble re-inflating. If heuristics were implicit in the collapse then what needs to be done is to remove the triggers that led to heuristic thinking. Our argument is that it was the pyramidal and recursive structure of financial products that triggered the heuristics. Therefore it will be necessary to design these triggers, or opportunities, out of financial products. This may be tantamount to Lord Turner's (BBC 2009d), call for banks to end the trading of 'socially useless products'; whether they will do so voluntarily is perhaps the main issue.

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Table 1. Bankers' attitude towards reform of the banking system post financial crisis: a content analysis of UK broadsheet newspapers Jan.-June 2010

	Attitudes of bankers		
	Bankers should apologise for the crisis and be open to radical change	Bankers defensively accept the need for some change but argues it should not be an excessive over-reaction	Change is not necessary and would seriously damage the financial services industry
Statements by bankers	10% (4)	51% (22)	39% (17)
Statements by observers of bankers' attitudes	0% (0)	48% (10)	52% (11)
Content of article not relevant	(36)	N=100	

The analysis is based on a search of Nexis using the search terms 'bankers', 'regulation' & 'financial crisis'. This search identified a total of 200 articles from which a random 50% sample was taken for classification

Table 2. City banks bonuses 2001-2009 and projections for 2010-2012 (£m.)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
3,921	3,329	4,893	5,695	7,130	10,059	10,241	4,008	6,012	6,654	7,098	7,546

(Source: CEBR, 2009)

