



Macquarie University ResearchOnline

This is the author version of an article published as:

Pixley, Jocelyn (2010) The use of risk in understanding financial decisions and institutional uncertainty, *The journal of socio-economics*, 39(2), p.209-222

Access to the published version:

<http://dx.doi.org/10.1016/j.socec.2009.12.002>

Copyright: Elsevier

The Use of Risk in Understanding Financial Decisions and Institutional Uncertainty

Abstract

The idea that rationality and emotional factors are involved in financial decisions is well accepted in many economic approaches and in organisation theory. This paper compares specific relevant arguments in behavioural finance and sociology. The aim is to show the implications of these different analyses for the financial sector. The question is whether behavioural finance emphasises the concept of risk more than uncertainty. The paper suggests that cognitive and emotional factors are usefully examined in light of approaches from both behavioural finance and sociology. The first looks at individuals primarily, the second at structural (policy and market) factors. I argue that the latter influence organisational choices of different time-orientations towards the future. In exploring the potential of this approach, the paper poses three organisational decision models, that take uncertainty and its relevant social institutions into account, while acknowledging that time preferences and discounting by individuals are well-explored in behavioural economic frameworks.

1. Introduction

A major problem for most economic decisions (as in life), is that we do not know how the outcomes (results) or the consequences of outcomes will turn out. In the financial field, as is well-known, policies to control inflation have reduced its uncertainty. Along with this renewed emphasis, and on independent, transparent central banks, technical risk analysis grew in importance. If all of this provided somewhat greater predictability to financial actors, uncertainty has not of course disappeared. Rather, it has been displaced into a

string of unexpected asset inflations (Greenspan¹) and, at the time of writing, a global financial crisis. It would again appear that the rationality of probability calculations cannot strictly apply. However, whereas many economic approaches to decisions explain failures and excesses as either irrational ‘residuals’ or, far more plausibly in behavioural economics, as due to limits to rationality, cognitive dissonance, human errors and bias or insufficient emotion-awareness, the argument here begins with the assumption that uncertainty cannot be overcome. Where scholars depart from, and practitioners’ rely on, predictive models, there is a tendency to avoid what institutional actors are *able* to do in real life situations, in trying to cope with uncertainty as best they can. In sociology, moreover, analysis of major economic sectors, like finance, starts in the context of organisational decisions, where aims are for profit and the maintenance of a corporate reputation. Sociology does not start with individual psychological preferences for immediate or delayed individual utility, as discussed in the literature on inter-temporal choice,² on the grounds that firms cannot be ascribed individual attributes such as urges for gratification, traits or feelings. An institutional office imposes specific duties on the person, who certainly comes to the job with traits, skills, values and habits. The suggestion here is the most that officials can do in reaching organisational decisions, however capable, experienced and professionally expert in calculating probability, is to imagine possible futures for the organisation. These are influenced but not determined by specific policies and acceptance of uncertainty or otherwise.

¹ Alan Greenspan, then Chairman of the US Federal Reserve made this point before the dot com boom really was underway; Transcription of Federal Open Market Committee (FOMC), 24 September 1996: 30-31. These transcriptions provide a wealth of data on the Fed’s past orientation (see Pixley 2004).

² For example an excellent review is in Frederick *et al* 2002. Further into this paper, the ideas of time discounting and time preferences are compared to organisational decisions. Sociologists regard Adam Smith’s reference to self-love as a bit cheeky in reference to a bakery *firm* or a butcher *shop*, even if self-interest can be imputed to a specific butcher. Thus for sociology, individual motives and organisational purposes, whilst not easy to separate are not the same, or do not follow the same operational logic.

Projected futures are not vague figments but can be precisely classified: they have clear methods which are institutionalised in organisations and determine new policies and create financial products. For example, futures can be imagined by constructing a few long-term and openly-declared uncertain futures in order to reach a decision or, conversely by drawing on a long-term past of booms, the Great Depression and hyper-inflation. Nearly every central banker constructs numerous parallels with historical pasts to arrive *ex ante* at what past event might plausibly apply to the current decision. This prevalent mode is not, then, about individual time-preferences. The most typical time-orientation of the commercial financial sector focuses on the present, yet, none of these time-views is an attribute of individuals or their personal psychology in the first instance. Individuals are required, in their official positions, to estimate futures in these specific time-frameworks (Pixley 2009). For example, well-capitalised firms could choose any time perspective, compared to individuals who may be constrained by socio-economic position and personality-type. But firms may have an imposed competitive framework, or large debt which renders ‘short-termism’ essential for profitability, share value or (sometimes) survival. With such a present-orientation, risk assessment models – with some assumptions that are quite ordinary often described as ‘extreme events’ in the tails of probability distributions (Rajan 2005) – are cognitive *and* emotional ‘scripts’ of organisations for rationalising away uncertainty and the necessity of emotions in the collective active sense of *esprit de corps*.³

³ To model ‘extreme events’ that occur once every 100,000 years, *except in actuality*, can become a straitjacket, as shown in a computer model of Goldman Sachs in mid 2007 that lost 30% of value over a week. Gillian Tett and Anuj Gangahar ‘Why computer models proved unequal to market turmoil’ *Financial Times*, 14 August 2007. Accessed Factiva same day.

This is less likely with the other time-views (which are not infallible either). It is fair to say, though, that financial problems have arisen with exclusive use of short-term models, such as the role of portfolio insurance in the 1987 crash (Jacobs 1999) and the predictive products which unravelled during 2007. Of course, whether individual creators of each innovative product *really* believed – *ex ante* – that their products were infallible, or just another approach in a pragmatic, competitive search for new ways to make profits and keep market share, is less easily answered. In my view, that is the crucial question. Meantime, the notion that emotions and intuition provide a rational, stabilising framework as much – or more than – a destabilising role for decisions, whether collective or individual (Pixley 2004) is increasingly accepted in a wide literature.

The paper first reviews, very selectively, the approaches to decisions in behavioural economics/finance and psychology where affect can be an alternative to cognitive reasoning or can help cognitive reasoning.⁴ It examines whether these challenges to the rational economic agent of orthodoxy start with an assumption of inevitable uncertainty or depart with other assumptions – more about risk. They certainly include the important one of heuristics, particularly affect. The paper also briefly reviews some organisation approaches. Second, it introduces three time-views, and briefly explores the explanatory potential of these dynamic models within firms and at the field level. The hypothesis is that collective *anticipations about the future* are framed by time-orientations which vary among firms/bureaucracies within the current Anglo-American financial policies that

⁴ This is an expanding literature (see Andersson 2006), although this paper does not pretend to be exhaustive. On this point, and others, I am grateful to additional comments and references from an anonymous referee.

regulate markets. The ways that time-views are chosen in other finance centres, and whether time-discounting by individuals is comparable to organisations, are also relevant to this question.

By introducing time into the question of how firms decide and act, I suggest that cognition, emotion and ethical responsibilities are equally involved in board-room and firm decisions. All three ways of facing the future could be usefully used in the process.

2. Risk

Before identifying basic assumptions in behavioural finance, this section clarifies how risk is used for the purposes of this paper. Sociologists usually link widespread adoption of active risk-taking with the rise of modernity. Types of risk assessment started in insuring against merchants' losses from sea-trading hazards, in bank loans for entrepreneurial ideas and in life insurance. The process of calculating the number of lives that would end in any one year was just one of the many efforts to improve techniques for estimating future profitable outcomes (Baker & Simon 2002). Max Weber cites the same efforts within firms – to arrive at calculated predictions with the use of double-entry book-keeping and what he claimed were *predictable* outcomes of class conflicts – as one unique aspect of the rise of western capitalism. Weber took a broad view of the conditions for rational capital accounting, which he alleges are more predictable ('formal rationality' meaning 'exact calculation': 1978: 111) than a planned economy. Conditions include the 'appropriation of the means of production by individual units', that is, by "property" (Weber 1978: 93) and, while profits (the aim of the enterprise) depend on

consumers' 'effective demand' (not wants or demand: p. 108) which did concern him, the 'highest possible degree of calculability' is gained from conflicts in the market. The outcome of these battles and compromises is, Weber argues, 'decisively influenced by the ability of persons who are more plentifully supplied with money to outbid the others, and of those more favourably situated for production to underbid their rivals on the selling side' (Weber 1978:93). Thus, outcomes are predictable provided that we are armed with knowledge of wealth and power distributions.

Weber's optimism for calculation is surely over-stated (see Wiley 1983), because, as Niklas Luhmann says (1988), fatalism or *fortuna* and traditional habits were replaced (to some extent) by active risk-taking and innovation (see also Knight 1921). Innovation by definition has uncertain, unknowable outcomes and such creative optimism is a hallmark of modernity. The uncertainties, new ideas (some successful, others not), and crises that developed out of such a changeable and unpredictable economy saw a move away from mechanistic, cause-effect laws so typical of the nineteenth century's hopes for a predictable 'science of society', and into 'the universe of probability'. It gave twentieth century policy-makers some coherence to cope with a modern 'risky' world. William James and Charles Pierce developed notions of 'standard deviation' and 'risk assessment' to help make chance 'inescapable and controllable' (Fraser 2005: 224), or at least to some extent, as Theodore Porter recounts in his *Trust in Numbers* (1995). Although these developments met moral (religious) opposition to seeing life and particularly economic life as a game of chance, I am only concerned with probabilistic risk. It can never imply certainty but it can appear to minimise uncertainty.

The practical problem is that when mathematical products based on risk distributions are computerised, they lock actors on a one-way track with no room for discretion. IT models are often claimed to minimise human error, but scholars like Friedrich von Hayek expressed disappointment with the emphasis on mathematical models. Yet the hope for reducing/converting uncertainty to risk remains among some economists. In behavioural finance, for example, this is one definition: ‘Finance looks at the various forms of human disappointments and economic sufferings as risks to which probabilities can be attached (Shiller 2003: 1). However, Frank Knight ([1921] 1965) codified the difference between risk (known chances, e.g. a dice game) and uncertainty at much the same time as Hayek disputed state-socialist hopes for prediction as ‘a slavish imitation of the method and language of science’ (cited in Mirowski 1989: 354). If Weber thought predictions were possible (only in a capitalist economy) Hayek, among others, accept that uncertainty cannot be overcome. John Maynard Keynes took this position too far for some, in his attack on the classical economic method of trying ‘to deal with the present by abstracting from the fact that we know very little about the future’ (Keynes 1937: 215).

Keynes also stressed the role of emotions, quite daringly at that time. Although abstraction has played a renewed role from the 1970s, recently there has been an academic revolution about the role of emotions in decisions (Gibson 2006). The rational risk model has been found wanting. Research on emotions is as marked in economics as in organisational and political theories and, if sociology has usually explored emotions (Neil Smelser renewed the tradition in economic sociology: e.g., 1963), only recently has

new work been done on emotions in finance. In Weberian sociology, however, emotions are ‘pre-modern’ and modern formal rationality gives predictability, while Keynes argued – in modernity – that uncertainty could only be dealt with through emotions and conventions. None start at the level of the individual.

In economic practice, risk management plays many roles. On the one hand, risk assessments can diminish a sense of uncertainty, but only while the assumptions that are built into predictive models continue to be validated. This is unfortunate when new financial products help to minimise perceptions of vulnerability (to dangers of drastic losses). Yet in many cases, uncertainty simply does not ‘matter’. It depends on the context: an airline or insurance company is vulnerable to unpredictable weather hazards, always. Other firms are less liable to loss from the fickle weather. Also dangers and risks, as psychologist Paul Slovic says, are defined mostly by the powerful (1999: 699), so that some dangers take years to achieve precautionary public-political action. Claims in the financial sector about ‘spreading risk’, when by 2008 the world learned otherwise, are a good example of that and the uncertainty about what might prove to be future dangers.

On the other hand, risk models can also be used interpretatively and comparatively, with significant discretion, as studies of central banking decisions show in Federal Open Market Committee transcripts (e.g., Pixley 2004; 2009). This is not to suggest that central bankers are somehow prescient. The overwhelming evidence is that stockbrokers (like central bankers) are as prone to error (in predictions) as personnel selectors and physicians – and more than weather forecasters (Mieg 2001). Having suggested that

predictions are part of the problem and no solution to understanding economic-social relations, how are errors explained?

3. Behavioural economics /finance: emotions and cognition

This section picks out only the assumptions in behavioural economics and/or finance that are relevant to this paper. It groups them very loosely, and not exclusively, under the following labels: a] the ‘errors school’, and b] the ‘emotions help’ school. This includes separate scholarly work on emotions in neuro-economics, which is disputed by c] the ‘emotions are irrational and unnecessary’ school.

(a) The errors school

Behavioural finance criticises rational choice theories: this is their departure point, and their justified criticism is about the errors people make in using probability. Behavioural finance does not (usually) criticise allegations that predictions are possible, instead, their evidence shows that humans make errors and inevitably (and I would say rationally and emotionally) rely on heuristics.⁵ By focusing on ‘what people really do’ when making investment decisions, it finds ‘many people’ willingly violate rational axioms, and fail ‘to infer basic investment principles from years of experience’ (De Bondt 2005: 165).

⁵ Kahneman argues that while he and Tversky did not emphasise heuristics so much in their early work, Kahneman says today that the affect heuristic is perhaps the most important, among others such as representativeness (or screening), availability, anchoring and adjustment. (Therefore they are not in the ‘errors school’ only, because the ‘emotions help’ school also applies). However, a major collection of cognitive psychology edited by Kahneman and Tversky (2000) makes two trivial references to Keynes, and not about emotions/uncertainty. Searching relevant work of Jon Elster (discussed below), on emotions *and* rational choice, brings no references to Keynes, nor to confidence or trust – anticipatory emotions for financial decisions. In contrast, Walter Bagehot (in *Lombard Street*) was remarkable for including emotions; Kindleberger (1989) covers 300 years of manias and panics.

The historical record of unpredicted cycles of booms and busts – as recounted by Charles Kindleberger for example – is not the departure point. Much of the evidence is from laboratory experiments. This attempt to show typical, systematic violations by individuals in a scientific, replicable way (to counter rational choice) is perhaps why Kindleberger complains that his work is criticised as merely ‘anecdotal’.⁶

The leaders in this field, however, use laboratory *and* anecdotal evidence and, most importantly, deny that uncertainty can be overcome. Whereas many behaviourists ignore uncertainty or at best describe behaviour in simple cases of uncertainty as ‘ambiguity aversion’ and ‘uncertainty aversion’, psychologists Tversky and Kahneman dispute (strenuously) the ‘bolstering assumptions’ in rational models. These are that ‘failures’ and errors in probabilistic reasoning, inconsistencies, and other violations, are due to the ‘cost of thinking’. Rational actor theory alleges that observed failures can be eliminated by incentives. Other economic and psychological literature shows errors persist ‘even in the presence of significant monetary payoffs’ and errors are not reduced by incentives (Tversky & Kahneman 2000: 221). Moreover, laboratory results are well-supported by evidence in ‘real world decisions that involve high stakes and serious deliberation’ (2000: 222). As they rightly say, ‘most important decisions are unique’ and these are unlikely to pave the way for learning to make better decisions the next time. They do not defend lack of professional experience, and are not simply members of the ‘errors school’. They instead imply that because unique decisions cannot be replicated, uncertainty cannot be conquered. This is the argument used by Frank Knight: if and when economic decisions

⁶ See Zinn & Taylor-Gooby 2006 on laboratory predictive failures about population responses to risks.

are unique (innovative), there cannot be the *known chances* that there are in a game of dice. And gambling – taking the risk while knowing every probabilistic outcome – cannot conquer uncertainty either. Most gamblers enjoy the pastime and know a lucky break is rare.⁷ If innovation is desired in economic action, its uncertainty cannot be described via risk distributions.

Werner De Bondt (2005: 164), in summarising the behavioural finance literature, emphasises that the ‘mental frames’ (introduced by his professor, Richard Thaler) which help decision makers are typically frugal, and they often mislead or are ‘demonstrably false’. Although De Bondt insists rightly (to a sociologist) that ‘culture matters’ and mental frames are socially shared (citing greater caution among European investors than Americans) – and he takes an inter-disciplinary approach – the question of uncertainty is not at the forefront of analysis of mistaken decisions. A similar criticism is directed to sociologist Viviana Zelizer (1994), who also, like Thaler, rightly shows how individuals reason consistently about money only within certain categories (e.g. Auntie’s money for ‘the children’ is culturally sacrosanct for some) and not across categories. She celebrates whereas Thaler is concerned the frames are irrational or false, but both neglect the uncertainty of money’s future possibilities as a promise. Should people invest Auntie’s money in a CDO?

⁷ Literature on ‘problem gambling’ in Australia shows that only 10% of the population is deluded or obsessed in the anti-probabilistic sense like the gambler’s curse of double or quits. Gambling is a very old pastime of many civilisations and, while usually regulated against manipulation, data suggest that most gamblers simply enjoy ‘a flutter’, and know they will lose (Pixley 2007). The finance sector is far less hazardous as a rule although top traders betting on options are on record for succumbing to the gambler’s curse (eg National Australia Bank in 2004).

Furthermore, as other sociologists see it, a problem with the concept of ‘mental modelling’ or mental accounts is that many of its proponents have over-emphasised a distinction between experts and lay people. Thus lay models are said to involve ‘outright misconceptions that can frustrate learning’ (Atman cited in Zinn & Taylor-Gooby 2006: 31). This holds the possibility of improvement by bringing lay people’s models closer to the level of experts’ models. But ‘bias’, emotion and affect are inherent to professionals as much as lay people (Slovic 1999).⁸ To sociology, everyone faces the world in undetermined yet inevitably ‘biased’ ways. The difference is that a professional takes ten years to learn how to ‘see things’ in their area of expertise *more quickly* than a lay person (Mieg 2001). We could all learn about why light bulbs turn on or how medical prescriptions work, but we live in a highly differentiated society with our own expertise and tend to trust other experts – until things go wrong.

In between this typical distinction between experts and lay people lies Robert Shiller who includes material from social psychology. He popularised behavioural finance with *Irrational Exuberance* (2000) and his reputation stands on having predicted the dot com crash. (Many high-level financiers and central bankers also thought it was inevitable when interviewed long before (Pixley 2004), in a circumspect way. No-one knows ‘when’, how severe or in what direction or from which source a crash will occur. Many joke that they have ‘predicted’ 20 of the last actual five crises.)

⁸ Slovic 1999: 699 suggests that the limitations of risk science, and difficulty of maintaining trust, calls for a new approach: ‘more public participation into both risk assessment and risk decision making to make the process more democratic’.

Shiller explores financial volatility (1989; 2000), by using a large quantity of aggregated data from his surveys of investors on the days just after the 1987 stock market crash. Describing emotions as irrational, Shiller concludes that emotions get in the way of *correct* market evaluations, due to 'millions' of 'diffusion' investors who, swayed by suggestion and influenced by the media, make emotional decisions (2000: 203). In contrast, 'smart money' investors do gain 'relevant' information, and these prices reflect fundamental values. While this rejects the strong Efficient Market Hypothesis (relevant information is already incorporated in prices), he seems to prevaricate, in later work (Shiller 1989: 49; cf. Shiller 2000: 172-75; 2003). This is a contentious claim, though Shiller admits that his distinction between smart and foolish emotional investors cannot be made from his own data. He finds that nearly double the per cent of 'institutional investors' (to individual investors) reported that on Monday October 19, 1987 they experienced 'unusual symptoms of anxiety'. He gave them examples, 'difficulty concentrating, sweaty palms, tightness of chest, irritability, or rapid pulse'. The same results obtained to his question about experiencing a 'contagion of fear' (1989: 389). Experts barely looked at 'technical analysis' or news of some change in 'fundamentals'. Rather, institutional investors reported following what they called the philosophy of 'the trend is our friend' (Shiller 1989: 392). Yet in 2000 (p. 175) he argues that 'smarter people will, in the long run, tend to do better at investing' although his own work rightly showed ridiculous P/E ratios at the dot com's peak. The paper considers other reasons for well-resourced firms to have ignored both pending collapses in later sections.

In Shiller's work we find, as economist Sheila Dow points out, a focus on emotions and animal spirits as a cause of irrationality and not a necessary part of a theory of uncertainty that Keynes developed. In Keynes's theory 'reason alone could never justify an active decision to invest' because of uncertainty (Dow 2009: 10). From a very different perspective, Richard Posner comes to a similar conclusion, about Shiller's recent book:

Akerlof and Shiller think that by "animal spirits" Keynes meant "noneconomic motives and irrational behaviors," and they imply that he wanted government to "countervail the excesses that occur because of our animal spirits." This is a misreading. The passage in *The General Theory* is not about excesses, and it does not argue that "animal spirits" should be damped down. It is about the danger of paralysis in the face of uncertainty ("if the animal spirits are dimmed and the spontaneous optimism fades, enterprise will fade and die") Posner 2009.

Matthew Rabin, in another summary of the literature, and drawing on studies by Tversky and Kahneman, suggests that the notion of 'rational maximising of preferences' be modified. It has too many defective assumptions, since rational in respect to probability is a poor assumption because, as we saw, most people are not good at calculating it, and there are systematic biases in 'judgements under uncertainty' (Rabin 1998: 11). One could ask, however, why he calls a judgement, when no-one knows the future, 'biased', unless uncertainty only means probabilistic risk. He rightly says that maximising is also a faulty assumption, partly because 'we often systematically mispredict our future experienced utility' even with accurate assessments of the past (Rabin 1998: 33). Also, the idea of 'preferences' forgets how these are framed. Most interesting, and relevant to Shiller's prevarication about smart money investors, is the laboratory evidence of the 'bias' towards 'over-confidence' exhibited *more by professionals* than lay people, especially those who work with 'rich models' (Griffin & Tversky cited in Rabin 1990:32). In other words, the more that experts search for patterns in a specific situation

with low predictability, the more confident they become. I would add that the ‘loss aversion’ found consistently in the laboratory experiments relies on tests to find errors in probability. But as I suggest, probability does not apply to investment and nor does ‘utility’ apply to firms. It is an individualist framework, useful as heuristic, though it can neglect real-life issues of discretionary income of individuals, and is logically distinct from financial instability, I argue later.

Nevertheless, Rabin summarises strong evidence against the idea that ‘smart money’ investors can face uncertainty that much better than the ill-informed. It is also perhaps a *hope*, when corporate decisions simply cannot be avoided, to find that correlation will turn out to mean causation. That flies in the face of first year statistical methods and also, of course, physicists’ work such as the Heisenberg principle and similar discussions as in ‘Goodhart’s law’. Each new expectation for selling an innovative product must be validated by actually selling it. Depending on the models’ chosen parameters and the fundamental need of sellers for buyers, decision-makers must trust the selected elements that *may* produce a predictable, risk-free environment. Charles Goodhart (1984: 96) showed that any assumed predictability of selected parameters collapsed under the pressure of assigning a control function to them. In the attempt to gain control today, the moment when action is taken, that parameter becomes uncontrollable by tomorrow.

Findings derived from laboratory experiments on people’s abilities to calculate probability are clearly useful but they cannot avoid abstracting from the lived experience of uncertainty and possible loss. Tversky’s cognitive school seems to understand most the

fraught attempts to decide under difficult circumstances by comparing laboratory results with real-life decisions and yet, this literature usually seeks stable, predictable correlations between their ‘stimulus-response’ experiments. It cannot explain ‘the large changes in behaviour associated with financial instability’ (Dow 2008: 3-4), because these biases, errors, emotions are always present, so too aggregated ‘overreaction’ in real life markets (De Bondt & Thaler 1985: 804).

The literature on human bias, however, certainly proves that emotions prompt decisions, that is, action. Not only does this approach point to anomalies and ‘irregular perceptions’ (De Bondt 2005: 165), but ‘irrational exuberance’ as we saw and other ‘predictable and financially ruinous *biases*’ are also studied. These include over-confidence, and also loss aversion, herding, psychological accounting, miscalibration of probabilities, and regret (Lo & Repin 2002: 323, my emphasis).

(b) The ‘emotions help’ school

The following, few examples show work which overcomes criticisms that laboratory tests do not elicit real-life decisions, though still in an individualist framework. One study based on *direct observation* involved sending SMS text messages at intervals during each day for a fortnight, to check five day-traders’ activities and emotional responses (Andersson & Tour 2005). The traders were dealing with their own money in real life. Moods did fluctuate, it was found, dropping through the day. Most interestingly, positive moods came *after* successful trades, *not before success*, which calls in question the notion of optimistic disposition as a fixed trait. (This is maintained in the Post-Keynesian

literature such as Dequech 1999; 2000.) Basically, traders ascribed successes to their own skills, and failures to the ‘unpredictability of the market’. The study confirmed a concern in social psychology about a ‘universal’ tendency to ‘self-attribution bias’ where failure is rarely due to oneself but to external factors, and success invariably to one’s skills (Andersson & Tour 2005: 96). The implications here are that preferable financial emotions would restrain potential arrogance, in line with professional evidence that it is easy to be a financial genius in a rising market, and one correct prediction should not turn a person into a ‘guru’.

It should be noted that general attribution theories in cognitive psychology (e.g. Weiner 1986:124-5) suggest more variations than externalising blame for failures. Weiner includes self-disgust, feelings of incompetence, resignation and gloom. In sociology this idea is developed by including the social conflict that is involved in attributions. Whether success/failure is located internally, or externally as a matter of luck, depends on the social power to define the success or to locate the blame (and, as Slovic says, to define the dangers). In the financial field, that is, a world of organisations, attributions are always subject to change by later ‘events’ and subsequent claims that over-ride previous ones. When in distress, financial actors cast blame on credit-rating agencies, central banks and regulators. The latter, in turn, try to stem these complaints (Pixley 2004: 90-3).

Some studies are more definite in arguing that certain emotions do not lead to success, whereas contrasting emotions may at least avoid losses. Like the discussion of experts, the argument here (e.g., Barber & Odean 2001), is that ‘trading is hazardous to your

wealth' because 'overconfidence' (in men more than women, *and* in mutual funds) leads to excessive trading and much worse performance, evident in lower returns. Indeed, the notion of 'attribution bias' implies that financial trading should be avoided because luck is involved in success *as well as* failure, and not skill. The reference to mutual funds, however, cannot be ascribed to overconfidence, when organisations are on short-term performance benchmarks and are not individuals with feelings. Traders for firms must engage in 'excessive trading' as a duty.

4. Neuro-economics versus rational choice

Another contender in the debate about financial decision-making is neuro-economics. It tries to *explain* emotional components in decisions, again *not* by looking at uncertainty, but at the human brain. It rightly includes emotions about the past, such as regret and somatic markers of terrible previous events, which frame ways that people face the future through anticipatory emotions of trust, distrust and confidence. This is a mixed literature between whether emotions are an aid or not, although it tends to frown on the risk-averse. This position is a problem raised by sociologists and in socio-economics, when representativeness, cultural and socio-economic variations are brought into the picture of financial decision-making. It is also the reason for their criticisms of lab tests because if one is merely conjecturing and not facing actual financial loss, one's answers cannot always have the same import.

In Pixley's quality survey of attitudes to financial risk-taking (2007), put to a representative sample of Australia's population, the views are heavily associated with age and income, so what people *feel* is worth asking. For example, Australian adults all must

use banks, but 75 per cent have least trust in banks than even ‘the media’. A majority ‘worry a lot about their financial future’ (back in 2005 even). Anxiety and confidence are future-oriented emotions of the uncertainty that matters, in gains, losses and dangers. They are anticipations whereas many emotions stem from the past – anger at a past scandal, trust betrayed – known events which can influence feelings towards the future (explored in the final section). The possible individual loss aversion – depends on the extent of loss or trust, or an existing cynicism (culturally-shaped), for example, to banks.

In neuro-economics, emotions play a major role, on the one hand, according to some, in providing imaginative capacities and – with the hormone *oxytocin* that is said to produce social bonding from trust to love – in reducing people’s aversion to taking a risky punt. On the other hand, for others, laboratory experiments on people with *brain damage* to emotional regions show they take bigger gambling risks. That proves, according to a second view, that emotional and imaginative capacity leads to *inferior decisions* (i.e. to loss aversion), which was not Antonio Damasio’s point.⁹ In his famous *Descartes’ Error*, Damasio (1994) points to total lack of imagination, emotional ‘flatness’ but good maths skills among patients with this brain damage, and ‘reckless’ neglect of possible losses. If he neglects uncertainty (too), imagination can always include thoughts of the unknowable, which helps make rational and sensible decisions.

Other real-life studies overcome problems with laboratory tests’ inability to replicate decision making ‘in the face of uncertainty’ (Lo & Repin 2002: 324). In one relevant

⁹ Cassidy, J. 2006 ‘Mind Games’ *The New Yorker* September 18:30-37. Some of this paragraph is a brief summary from Pixley 2002; and Pixley 2004: 18-20.

financial study, ten professional traders were wired for skin conductance, blood volume pulse, heart rate (etc), which changed *significantly* while they traded currencies. All fluctuations occurred during market events. The authors suggest that *intuition* is dominated not by cognition but emotion, and this is among highly-trained financial securities traders. Their conclusion (albeit with *caveats*), is that emotions must determine ‘the evolutionary fitness’ of the best traders (Lo & Repin 2002: 332-3). This is a strong claim that emotions are not only an aid but can help create successful financiers.

A problem with such neuro-economic literature is that it seeks to explain errors and successes in neurological terms and implicitly recommends *either* ‘trust and love’ hormones for all and, preferably an emphasis on emotions, *or* in complete contrast, attempts to remove emotions.

(c) The ‘emotions are irrational’ school

In a major challenge to this literature, Jon Elster (1998) criticises Damasio differently, and also accuses Rabin of making little reference to emotions which, he says, is typical of economics. In the *Journal of Economic Literature*, Jon Elster accused economics of refusing to incorporate emotions or even to consider emotions could be part of the ‘tool kit of economics’ beyond, at best, references to envy and guilt (1998: 47). Elster marshals an erudite array of literature in his *Alchemies of the Mind: Rationality and the Emotions* (1999), ultimately in order to diminish the challenge of emotions to rational choice. His version of the issue, despite his lengthy discussion, is that *emotions get in the way of rational decision making*. Damasio omits uncertainty as does Elster, but Elster’s solution

implies that *uncertainty does not exist*. He says, for example, ‘a rational person would know that under certain conditions it is better to follow a simple mechanical decision rule than to use more elaborate procedures with higher opportunity costs’ (Elster 1999: 290-1). This might entail flipping a coin or ‘a little click in my mind’ (1999: 296). For him, ‘the emotion serves as *a functional equivalent for the rational faculties it suspends ... that reason, if left undisturbed, could have come up with by itself*’ (1999: 291 his emphasis). Elster and Damasio accept that the time taken on counting every contingency might prevent a decision, however Elster takes the view that there is reliable information *today* about the future, it’s just too costly to get it.

Elster’s ‘solution’ is not plausible because the outcome of a decision cannot be known *ex ante*: there is fundamental uncertainty when there are unknown chances, unlike probabilistic risk. Even with that (e.g. gambling), one would necessarily hope, trust or even pray that the ‘cool’ mechanical rule or coin flip will work out *ex post*. Elster’s ‘hunch’ is that *successful* stock market investors are those who deploy his similar ‘click’ in the mind of ‘vastly more complex mental calibrations, not because they consult their emotions’ (1999: 296). But he does not mention that these ‘calibrations’ are, as they must be, extrapolating from data of past and present – not the future. Evidence shows (e.g., Pixley 2004), a decision requires an emotional preparedness to launch into it – an imaginative projection that emotionally-rationally but not actually reduces uncertainty.

It seems, then, that among economists who study emotions and decisions, some like Elster do not acknowledge that humans cannot have knowledge about the future and that

rationality in facing and acting on what may be a dangerous future depends on emotions.¹⁰ Even when emotions are freely admitted to play a major role by professional investors, errors in calculating probability distributions can prove disastrous. Professionals know this. Yet errors do not get at the heart of problems in economic decision making. Probability works best for gambling¹¹ in that it gives, as Knight insisted, *known outcomes* to provide parameters which are not available with unique economic decisions. It is natural that banks and other financial institutions will use risk assessment models, and sometimes accept the implications of the failures of such models, as shown in the important literature in behavioural finance and in sociology. It is another matter when risk models are obeyed slavishly for the very reason that they are said to remove the chance of human error. The models are, of course, designed by humans who choose parameters that are not always so certain or stable.

Sociology is often over-critical of laboratory experiments and yet, surely, we need to talk across our respective disciplinary expertise. Primarily we need to recognise that uncertainty that ‘matters’ (in loss or gain) cannot be overcome by individuals or by organisations. Emotions of trust and anxiety or fear of possible loss arise because many ‘mistakes’ are due to the unknowable nature of the future, and therefore are not, strictly-speaking, *errors* but bad luck.¹² Successes despite uncertainty are equally luck: Hyman

¹⁰ See F/N 5 and for a fuller exposition, Pixley 2002 pp. 73 - 77

¹¹ Even the insurance industry, where many risks can be calculated, is now openly reliant on government bail-out in unforeseeable situations (eg. terrorism, Cyclone Katrina).

¹² Part of the problem lies in self-attribution *conflicts*, not mere ‘bias’! The common self-experience of regret, self-hatred and guilt is to say, later, ‘if only I’d thought of *that* possibility’ when one cannot predict any one possibility let alone imagine all of them. Pixley (2004) pushes Weiner’s studies into organisational conflicts over failures and how organisations try to explain them. Weiner’s major contribution is the intuitively correct argument that successes are less *closely* studied (if a student passes an exam, she can move on). For organisations, success is a topic in MBA literature, announced in advertisements, in

Minsky (1985) talks about the ‘tranquillity of success’ at system level which gives rise to financial instability. It is, in these above senses, pointless to pretend that humans can either rise above, or use and manage emotions, in the *modern* hope for control over the future.

5. Organisations, uncertainty and emotions

Uncertainty is not conquered within organisations, either, and nor are emotions. No-one can deny that most major financial decisions are made by powerful organisations not lone individuals. As Donald Gibson says, it is often taken for granted that organisations, if rationally designed, *exclude emotionality*. But the organisation literature refutes this. ‘Rational organization, if anything, produces emotionality of a heightened sort. At the same time, it paradoxically structures itself to portray emotionality as aberration and neutrality as the norm’ (Gibson 1997: 229).

Problems in the behavioural finance literature – and its implications in organisations by HR divisions and consulting firms – arise from some of the recipes that the findings suggest. This is not to defend sociology and organisation theories derived from them as necessarily superior to behavioural finance, only to plead for a greater inter-disciplinary discussion about what level of analysis is appropriate for each approach, rather than the current stand-offs.

personalising certain attributes to a leader, in a host of self-help literature, business slogans, the self-esteem movement and memoirs, but the catastrophes are seriously studied. Disruption/blame prompts post-mortems and government inquiries. The ‘tranquillity of success’ (Minsky) and ‘hubris’ are bridges.

The first problem is in the school (a) about all the errors that people commit. Whether intended or not, some studies carry the implication that humans are inferior to technical calculation. Uncertainty has, since the work of March and Simons, been regarded in organisation theory mainly as an issue of ‘bounded rationality’ (March 1978), where the concept of decision-makers merely ‘satisficing’ is ascribed to the practical limitations of gathering knowledge and human’s computing capacities. Other classic organisation literature also agrees, for example, Cohen, March and Olsen (1972) discuss the ‘garbage can model’; and Lindblom (1959) points to the incrementalism, ‘muddling through’ and limits of rationality in organisational decision-making.

Practical efforts to overcome human limitations include major investment in IT-driven models of risk assessment by organisations. The hope is to remove those human factors prone to error. But since human judgement is involved in the design of risk models, others (in school (b)), as we saw, suggest that discretion could be aided by emotion-management by individuals. Computer engineers and mathematicians design predictive models, and financial experts and CEOs – preliminary evidence shows – often play little role in how engineers build assumptions into the probability calculations.¹³ The assumptions must still remain extrapolations from the past, no matter how much data is collected by financial institutions and national agencies (Pixley 2002a).

¹³ An informal discussion I had with a financial computer engineer in 2007 in Frankfurt said that he believed financial success was based on luck if not insider knowledge but, since the job was so lucrative, he continued building the IT models. Lo’s report to US Congress (2008) cites serious studies of lack of financial and economic training by financial ‘engineers’.

Organisation literature shows that the emotions of uncertainty entailed in rational decisions are not the only ones suppressed: this is relevant because they influence how uncertainty is managed. Organisations aim to be rational and seek empathetic, altruistic and ethical responses from officials. Anger is not permitted, except at the top. Yet, organisation research reports surprising levels of anger and conflict in ‘daily run-ins with managers’, and emotions of collective euphoria, to anger at loss arising from demotions, sackings and displacements.¹⁴ Managers and workers may spread misinformation, engage in ‘unreasonable’ debates and deploy divisive emotions, such as ill-founded, exaggerated fear, suspicion, envy, resentment. Managers also succumb to feelings of superiority – through a ‘disinterested’ interest (Swedberg 2003:263) – like being blasé about underlings’ ‘boring’ work. This appears to occur among senior management who also may not comprehend IT-driven models designed by technicians. Empathy is embedded in ‘market research’, because part of Adam Smith’s argument was that market actors empathise, or put themselves in the shoes of customers or opponents in the business world, in effect, to try to predict the future. Empathy in policies is driven by self-preservation, to outsmart the enemy, gain profits and lure buyers, although some firms display altruism with positive empathy. Empathy is also an ethical injunction in the great religions but, in high competition it may be embedded ‘not out of love’ but self-interest (in the individual) and, at the firm level, in an impersonal interest in profits or survival (Pixley 2002). Cut-throat competition may diminish policies of altruistic empathy, by externalising social and other costs as far as possible. As Beckert (2005) points out, some

¹⁴ Bryant & Cox (2006) ‘The expression of suppression’: 121-3.

firms have socially responsible policies only as a form of ‘Trojan altruism’. Given this necessary, imaginative empathy, how do firms deal with uncertainty?

Cognitive psychologists Kahneman and Lovallo (2000) argue that managerial decisions are choices between gambles because *most outcomes are uncertain*. Studies show that managements reject gambling metaphors. (And that is technically correct in Knight’s definition of uncertainty, though the organisation literature certainly shows management to be fearful of both risk and uncertainty.) Kahneman and Lovallo show firms are subject to a contradiction between ‘bold forecasts’ – unjustified optimism for large projects – and ‘timid choices’ or unreasonable risk aversion to small gambles. They also suggest that organisations are more prone to fostering these biases than individuals, citing robust, real life evidence of disasters and losses from both biases. To them, it is ‘the optimistic denial of uncontrollable uncertainty that accounts for managers’ views of themselves as prudent risk takers’, rather than as gamblers (2000: 394). They cite a well-documented ‘prevalence of delusions of control’ (2000: 409), where organisations are prone to optimistic bias and ‘managerial hubris’ in ambitious projects like mergers and acquisitions which, on average, do not make positive returns (2000: 410-11). Their conclusions are that ‘pitting two mistakes against each other’ is hardly ideal or efficacious: over-optimism against ‘timid attitudes’ might lead to excessive risk-taking, whereas pessimistic or ‘realistic’ assessments of ‘bold forecasts’ might lead to paralysis (Kahneman & Lovallo 2000: 413).

In what direction do these studies lead?

The reference to gambling, as above, is to be welcomed by a sociological approach to uncertainty which incorporates emotions into decision-making. So too, George Loewenstein (2000: 429) offers similar analyses. He argues that economics must pay attention to emotions because ‘important decisions induce powerful emotions in decision-makers’. Even more interesting is his claim that visceral factors are more predictable than cognitive deliberations (2000:427) because, while emotions fluctuate rapidly, their determinants and influence on behaviour are systematic. Consciousness overrides such predictable patterns with rationalisations and self-deception, he argues. However, emotions are the more dominant influence on human behaviour, even if most of us deny and severely underestimate the influence of emotions. As he says, humans share emotions with many other animals who function perfectly adequately, and ‘even conform to many of the usual “laws” of economic behaviour’ (Loewenstein 2000: 427) such as self-preservation. Emotions are predictable but uncontrollable.

Matthew Rabin also mentions other economically relevant psychology on topics of ‘non-expected utility’, which are useful for examining decision-making. Many combine cognition and emotions, such as sociological concepts of ‘status, envy, and social comparisons’, and ‘the tendency of “extrinsic motivation” (e.g., organisational incentive schemes) to drive out “intrinsic motivations” (e.g., the internal drive to excel at your vocation)’ (Rabin 1998: 12).

Strong evidence, therefore, exists for an interaction (in facing the future) in which emotions dominate over cognition which is less predictable than emotions. Spontaneous

emotions move between the outliers, fear and hubris. And yet, the ways that the future is imagined is various and more significant in framing inescapable biases and errors. For sociology, everyone is 'biased' in his/her cultural human-ness. One has to start from the assumption that correct predictions are a matter of luck and yet ways of trying to predict the future vary. And this is a cognitive assumption, it less concerned with whether individuals are prone to coolness or apathy in disasters, although specific emotions influence *any* time orientation, as the paper now goes on, finally, to suggest. Although it is important to emphasise anticipatory emotions in financial organisations which arise from uncertainty, and past successes and failures (e.g., Pixley 2004), the issue now becomes the unpredictability of some reasoning (e.g., Loewenstein 2000). I suggest that a combination of cognition and emotion needs examination in a new way. Interestingly, time-views are nearly the most 'neutral' of all cognitive outlooks as influenced by *arbitrary* emotional histories from somatic markers.

Decision-making models

In formal decision-making pronouncements, organisations acknowledge uncertainty in the *ceteris paribus* clause. It shows the decision procedure is extrapolation from the past, and *ceteris paribus* is an insurance against being blamed for the untoward, the unexpected. Its bland cover-all can foster confidence at the point of action.¹⁵ However, *caveat emptor* contradicts this soothing outlook, logically, because its required emotion, suspicion, is aroused by uncertainty *per se*, not only the information asymmetries,

¹⁵ One problem with the clause is that under uncertainty one cannot specify other things ('remaining equal' or the same as in the past) that are not known. The 2007 crisis was triggered, however, by assumptions that housing prices would continue to rise when they were known to be already falling.

potential guile and treachery noted by many economists (e.g., Williamson 1993). The unknowable future cannot be overcome, even though policy-makers may well be correct to demand transparency and openness, and attempt to remove conflicts of interest which are a source of treachery. None of these policies, however, is able to tame uncertainty. Suspicion can itself produce unexpected betrayal *or* collapse of confidence: there are many types of outcomes of uncertainty, honest, unintended failures being one.

In Pixley's work on Anglo-American financial institutions, which shows that uncertainty is suppressed as a norm, emotional factors and imaginative capacities are *dominant* over cognitive processes. Also ethical concerns shape decision-making – whether to adhere to them or suppress them.¹⁶ Professional officials are required to cope as best they can. So, it is quite rational in today's context of reliance on risk analysis to *hope* that 'things' might stay the same in the future, and to rely on various emotions (trust or distrust, in numbers, in institutions, in organisations etc.) and imagination, in formulating expectations. In the competitive conflicts between financial firms (and between officials, e.g., anger), a conviction (projection) of certainty is the order of the day in boom-time; in a slump firms publicly complain about uncertainty. These are the requisite emotion rules in today's financial world (Pixley 2009). No-one can predict when *ceteris paribus* might fail to hold and which assumptions or 'things' (parameters) *must stay stable* rather than other 'things' (whether inflation, property prices, credit ratings or any other factor). Therefore, trust and political conflicts may be unavoidable. Anticipations provide the impetus to decide, to act as rationally as possible, and reactions to outcomes are also

¹⁶ This is a major topic in itself, which cannot be developed here. Ethics influence rationality and emotions. For example, an ethics statement, duty of care or principle that is broken by a firm or government can prompt individual anger that motivates whistle blowing and so forth, entirely against rational self-interest.

emotional. But it is a pity that uncertainty is often an excuse afterwards but not mentioned beforehand.

This is where the significance of time orientations emerge. My hypothesis is that organisations' time-orientations shape the cognitive and emotional 'scripts' of the decision process. Temporality – the neglected problem of the unknowable future – is itself *too simple* to account for ways that uncertainty, given vulnerability to losses, is managed and futures are imagined. So, my explanatory model has *three time orientations*.¹⁷ Organisations investigate the chosen orientation thoroughly, with research investment at a premium, so individual proneness to errors is not the issue. Each is projected into three possible futures: whether from a distant past with many contradictory cases, or within the immediate short-term present (with allegedly many similar cases) *or* through a long-term future orientation. This third, 'future-view' – which is rarely mentioned – may give rise to precautionary procedures *or* to moral hazard, such as when banks or shadow banks purposefully become 'too big to fail', the dark side of relying on the Keynesian convention of providing confidence-boosting policies.

When Keynes was prompted in disgust, to say: 'In the long run we'll all be dead', the idea implies that orthodox economics was masking its time-orientation. At that time (1930s), orthodoxy denied that temporality is *dominant* in cognition and in specific emotions. Orthodoxy suggests (still) that government intervention would make matters worse: the market will restore equilibrium *in the long run*. Yet the market of insolvent

¹⁷ It expands the model of emotions in financial decision-making in Pixley 2004: 67-71; 2002a & b, with a view to global-national comparisons that seek to specify differences and similarities within financial centres, in national policies.

financial businesses and untraded products turned to governments in the current financial crisis. This is not preferred to financial institutions behaving *as if* there were both a short and a long term for populations. The practical problem is that immediate social-economic distress cannot be ignored by democratic governments.

Why is time so important, and how is its influence felt? First, there is never systemic equilibrium but a constantly fluctuating and increasingly complex range of institutionalised human actions. This is suggested in the behavioural and sociological literature reviewed here and obviously in the notion of innovation. Second, in the financial field, political conflicts over inflation and full employment entail different time orientations, not only battles between market and state, industrialists and financiers, creditors and debtors. Time-views are implicit (unstated) when uncertainty and vulnerability are denied. This is plain in positivist hopes, whether for corporate risk management, on one side, or Keynesian state demand management on the other.

The following analysis moves from the individual level of behavioural finance, to the organisational and structural level. Investment bankers' implicit hopes can prompt *more or less than prudent levels* of risk-taking.¹⁸ Another way of saying this, and taking a sociological analysis to *the financial field*, is that money contracts or expands because of bankers' anticipations which become decisions. And in today's deregulated financial field, central banks have been –increasingly – forced to validate the new money created

¹⁸ These points are in reviews of *Emotions in Finance* by Donald Gibson, and Sir Christopher Ondaatje 2005, who wants an exploration of a 'safer future'; hence time orientation models.

from securitisation, loans and accommodate banks' creation of 'near money', evident from 2007 on.

6. Three Time Orientations

The significance of time orientations is that, conceptually, they can help to form a bridge between cognition and emotions (and ethics) in studying decisions in impersonal contexts. First, in order to show the different impacts of time-views on decisions, it is necessary to reverse the convention in formal risk calculation that stability prevails (*ceteris paribus*). Although conditions often do remain stable, to assume that extrapolation is a faulty starting point. It is not about optimism or pessimism as in interpretations between bulls and bears, or whether the glass is half full or empty, because the glass *may* be dropping off the table. Uncertainty about human and organisational intentions bring profits and losses: neither occur in a predictable future.

In turning to whether *the past*, the present *or the future* is emphasised in creating an outlook towards the financial future, what is ignored most is that there are two long-term views. Most people merely see a short-term and a long-term, and yet precautionary principles arise from imagining a long-term future, without retreating to seek historical parallels. Time is an inescapable concept in framing views, although neither past nor future models extrapolate short-term 'stability' so *radically* as the present-orientation.¹⁹

¹⁹ Governments tend to define short-term problems as long-term catastrophes, *except* about the economy: financial institutions underplay risks and uncertainties in 'normal' times.

(There are other short-term views that do not involve uncertainty, such as deciding to take lunch now.)

None of the time-orientations is more or less ‘political’ and none is more or less emotional or cognitive: everyone is conscious of conjuring up a past, present or future, if asked. Take a present-orientation. First, even cautious bankers report a relentless pace where each decision must be made in 30 seconds.²⁰ Second, studies by Jens Zinn and colleagues (Bonß & Zinn 2005) demonstrate conclusively that shortening the time frame is a common strategy for dealing with uncertainty. (For example no-one decides to laze on the beach until the day/hour, but unfortunately some firms and traders also ‘wait’ for inside knowledge.) Keynesians often use the metaphor of the sounding rope: if the rope is touching the rocks, a ship *will* founder and that is certain (Pixley 2004: Ch 7). Third, the ‘professional investor’ must guess opinion about opinion to ‘beat the gun’ (Keynes 1964: 155), and knows that *ceteris paribus* holds only for short periods of time. Clearly, short-termism is an everyday strategy for all these reasons.

In contrast, previous ghastly experiences (somatic markers: Damasio 1994) are highly influential and are, politically, quite arbitrary. It is pure chance if a lucky individual or organisation escapes all disasters. Longevity of organisations can influence decisions because poor outcomes and policy failures might be regarded as increasingly likely, and these somatic markers give officials or members of boards a ‘very different take on life’, a former Bank of England official told me. Emotions from somatic markers shape time-views, although Loewenstein (2000), who cites Damasio, argues that we underestimate emotions when in a

²⁰ Interview with the CEO of a German Landes Bank in March 2007; other interviews confirm this.

cool mood. This hot-cool distinction is disputable, whether among individuals or organisations. For example, if a firm has just suffered public humiliation, new policies will be put in place to avoid repeating that past. At the level of the field, the Depression left a long-term impact on *entire populations* for a generation; so has hyper-inflation, and these institutionalised legacies of ‘loss-aversion’ or risk-taking (whether cool or hot) are rarely captured in hypothetical tests. The same problems arise with approaches to time discounting. In organisations, decisions are not made on the basis of ‘the preference for immediate utility over delayed utility’ (Frederick *et al* 2002: 352) because utility is not applicable to firms or governments, but profits and re-election, respectively. The purpose of an organisation, policies of the day and more are the prompts for a time-orientation, as next shown.

6a. Influence of Past-time Orientation on Financial Organisations

So, how do the emotions of somatic markers, and historical memory *per se* interact with cognition among officials? In deliberating the future, we all look back at past actions as that is all we have. The longer the memory, it may be, the more tortured the assessment, as Figure 1 shows. How *many* aspects of financial history are used that influence decisions? Investment analysts and central bankers like Alan Greenspan constantly use the phrase ‘history tells us’ *something* and, by picking one past fact (successfully) perhaps Greenspan’s guru status grew. However, history cannot ‘predict’ if today’s as yet unknowable problem is a bad or good fit. History only ‘tells us’ that today’s serious uncertainties may be a 1929, and also that we cannot know if that might have been so, after a specific intervention (e.g. 2007-08) changes the situation. ‘What if’ other options had been taken? We can never know. Military historians trawl over every occasion the battle was won but the country lost, so do economic historians.

The trouble is, which fragment of history are we to pick, and what does historicist deduction now ‘tell us’? Beyond correlating a mass of evidence, predictions like these are liable to counter-moves by actors to avert the self-fulfilling element, or the situation is indeed only correlation, or repeated in farce.

So, the most preferable aspect of directing attention to the past is how it shows uncertainties are widespread in monetary economies (in historically diverse past cases which only ‘tell us’ that the previously unknowable or unthinkable happens unpredictably). Such events are not trivial but ‘matter’ in huge successes and vulnerability to dreadful outcomes. Therefore awareness of ups and downs and policy failures and successes is, in general vital, but picking *which* event today’s crisis resembles is debatable.²¹

What emotions are associated with *a past-oriented view* and its cognitive deliberations? In finance the possibilities are anxiety, paralysis and bearishness, or professionalism and ethical sensitivity against succumbing to the latest fashions. In politics, a heavy defence expenditure shows the reverse, not ‘loss aversion’, but action. Action is here justified by predicting from the past, such as reference to avoiding appeasement of Hitler, but other wars in hindsight can turn out to be more vaguely similar. Economic-financial analysis is set out in Figure 1.

<Figure 1 here>

When an organisation is mostly *past-oriented*, expectations for rational decisions are formed by extrapolating the past: here it stretches way back. Because there are so many

²¹ It is well-known that Ben Bernanke, chair of the US Fed, is an expert on the Depression, but we will not know for years if this was efficacious and anyway, many still dispute analyses of the 1930s.

different, negative and positive cases, the convention that the future resembles the past/present is terribly difficult to simplify. Intuition and emotions are often acknowledged; the present is studied only for its similarities to past events. Is today's crisis a 1929 case or not? What were the crucial factors in 1996 (which was the build-up to the dot com boom), or the antecedents of the railway bonanza of the 1840s? Are the paths to success/failure the same today? Such worries and careful, time-consuming conjectures are evident in Barings Brothers' cautious policies for decades after its near collapse in 1890 (Gapper & Denton 1996). Central Bankers typically deliberate on numerous events for days (as evident in FOMC transcripts). Is it 1964 or 1983? Should they 'prick the bubble' or sit still to 'avoid the odium' of the crash? Paralysis can set in and there may be a tendency to 'cling to Nurse/for fear of finding something worse'. But are they all Dr Glooms? Not necessarily, but a firm might refuse to engage in certain activities if a past calamity gives a corporate memory of foreboding, and prefer engaging in financial activities for which the firm has high competence, past successes. Long memories can foster bravery to reject the fashionable finance instruments of the day.

What structures are likely to foster a past-orientation? Interview data suggests overwhelmingly central banks, and possibly partnership firms. The latter were prevalent in City of London and Wall Street firms to the 1980s and may have been past oriented in putting the overall stability of the firm as the main principle. That could be also be partially future-oriented. Partnerships were secretive, exclusive old school tie affairs, with salaries hidden inside the firm, according to interview material. But bonuses were not ethically acceptable and all partners were committed to the survival of the firm. Rise by

seniority may possibly involve a past-orientation when seniors give historical advice to those who want to climb up. Responsibility might also rest clearly at the top along with its potential anxieties, whether ‘hot’ or ‘cool’ as individually felt.

In the post-war financial sector in which state-owned banks, partnerships and mutual funds also operated, John Bogle (founder of Vanguard Mutual) argues that Wall Street had a stewardship view where mutually-owned firms tended their fiduciary responsibilities with care:²² shame might also operate, perhaps too much so (e.g. suicide). A promise made was one to be kept into the future, and partnerships were liable to make good the losses, as were the Lloyds underwriters more recently. Promises are a good example of the past not existing in the present. Promises are forged in, and rule ethically from, the past and, like money ‘look forward’ into the future. So, one time-orientation may fruitfully complement the others.

6b Short-termism

Now compare a *present-orientation*, where only recent outcomes of millions of cases are counted: firms and customers must look alike; so they are classified and clustered by their similarities, in order to find trends. This model of expectation formation copies the cognitive rules of statistical probability. The ‘convention’ that the future *will* resemble the past is radically simplified by shortening the time-span to give an appearance that a probability can be assigned to each outcome, and to *imagine* that risk management is

²² Bogle, Chair and Founder of Vanguard Funds (in Pixley 2004: interview)

possible. Decisions here are quick, short-term. Memories are short, particularly if the previous attribution struggles were won, and *these successes* help this mind-view dismiss past-orientations as too cautious, even fuddy-duddy. In finance, the ascendancy of rational choice (which I have already shown is found wanting by behavioural finance and sociology) and more so rational expectations promoted a present-orientation. This is also found among fatalists and Buddhists who live for each day; however they make no attempt to ascertain the future whatsoever. Forecasters must.

<Figure 2 here>

Figure 2 shows the reasoning process starts on present trends from the immediate past; not trends from the dark ages of the 1920s. Also the feedback loop is weak, under relentless systemic competition, unless the situation is as dire as 2007-08. Agent-principal models foster a present-orientation with relentless benchmarks for 'owners', and firms pay bonuses *partly* on that faulty assumption that incentives improve predictive capacity (as criticised by behavioural finance). Professionalism about uncertainty is very different. American evidence shows that with an annual bonus system, a conformity is inadvertently imposed on individuals (Pixley 2009). Here the clock starts on January 1, and risk-aversion or frantic emendations sets in once traders gain a lucrative yearly bonus or lose dreadfully. For example, if success occurs early in the year, trade slows later on, neither being necessarily a benefit for the firm. Traders rationally compare the past and the future (in a hidden way) since their behaviour shows they obviously know that severe losses are possible, from a policy which imposes a present orientation.

Another present-orientation criticised many times (e.g. Shiller 2000), is to argue that ‘things are different this time’. Poor Irving Fisher claimed a few days before the 1929 crash, that Wall Street had reached a permanently high plateau. In early 2007, prognosticators tried to argue that independent central banks had overcome booms and busts, on grounds that volatility is due to political meddling. ‘Soaring corporate profits’ were also said to be due to the expansion of the global labour supply which had bid down wages, however in the USA profits are mostly in the *highly-paid* financial sector. Others claimed risk had been spread, and defended derivative markets for boosting liquidity in ‘a new and sustainable way’. But according to the *FT* journalist recounting 2007’s ‘new era’ hopes, ‘derivatives are a zero-sum game, a kind of gigantic betting system. The amount people bet on horses is driven not by the supply of race tracks, but the amount of spare cash they have’. And when head-hunters claimed that bonuses in the City were sustainable, the *FT* concluded it was ‘a huge web of special pleading, a collective whistling in the dark’.²³

Such debates about the entire financial *field* did perhaps prolong the rising levels of debt in allegedly sophisticated products. As long as competition pushes buyers/sellers who *keep believing*, and as long as the public continues to part with its cash, there will not be a crash. Although it is not possible to quantify the probability in the tails of a distribution, which can whip up unpredictably, they were called *extreme events* as in pure gambling odds. But they proved to be as ordinary as a decline in home sales.

²³ Jackson, T. 2007 ‘Assessing the cycle – is it really different this time?’ *Financial Times*, May 14: 17

6c. The precautionary principle in future long-termism: two versions

A *future-orientation* is as prone to accept uncertainty as the past-view, but it is *not* expecting that history ‘tells us’ what the future will be. Here, history only ‘tells us’ that there is uncertainty with problems that can never be resolved. In finance, this future-view would – if open about uncertainty – slowly and publicly propose precautionary measures against unknowable dangers. To make this point clear, the principle of insurance in which probability calculations usually can predict the number of deaths, cannot by definition prevent deaths. But when dangerous financial products are sold far too often, a future-oriented view openly declares that the very idea of risk-free products is *impossible*. Insurers cannot in principle calculate unknown chances of finance deals, as evident in the collapse of large insurers in 2008. Instead a precautionary view acknowledges past failures and successes, and studies present data, but both are viewed as mere guides. The major focus is on the current decisions to be made. Decisions need open debate with public participation and genuine publicity to counteract short-term horizons and definition of dangers by fiat (e.g. Slovic 1999). For example, corporate social responsibility and investment in environmental job creation and infrastructure are defended for potentially being more profitable in the long-term. In principle, because lending for innovation may go wrong in the financial field, these are more likely to involve declared values and possibility of revision and support, not breaking promises.

The policies to invest in new computers before the Y2K clearly took precautionary principles to heart. Financial authorities and firms all stated that there was no way of knowing what would happen, so precaution was sensible, and popular in the financial

sector for keeping the dot com boom afloat a little longer. Evidence too, on German relationship banking indicates a personal, cautious approach to lending to industrial firms and to individuals, because the banks stay with their firms, providing advice. Recently they started bank branches in China and India at centres near German firms' new ventures. These practices keep depositors' money *safer* into the bargain. While this long-termism was somewhat reduced, due to investment in Wall Street's latest products and other factors, the point remains.²⁴

<Figure...3...here>

As can be seen in Figure 3, the past and future are both taken into account but the deliberative focus is on formulating expectations and studying the various, often conflicting later outcomes much more carefully and over a longer term. The idea that any decision is a genuine leap into the unknown is a further contrast with the other two time-views. The related precautionary principle is for the above reasons unlike 'loss aversion' which is a well-studied phenomenon of mental framing by individuals. In addition, precaution involves active decisions (even if non-acting is still a decision). The G20 and many high-level organisations take decisions to attempt to prevent another financial catastrophe. Strategies for prevention are formulated and debated by immense public and private research bodies. Perhaps outcomes may influence loss aversion among officials and individuals, but the financial industry is banking on winning the battle to define mere risk. At the time of writing some banks are near monopolies, OTC derivative sellers are rent seekers, but right now no-one knows which will win. The situation is way over the

²⁴ Interview 'off-the-record' with the CEO of an L-Bank, corroborated by Jens Beckert, Max Planck Institute, Köln; March and June 2007.

possibilities of aggregations of individuals unless everyone stuffs money in their mattresses, again.

More alarming to the authorities and the banks that stress precaution (possibly HSBC, BNP Paribas, Commerzbank and others) is, therefore, the type of bank or insurer that demands to remain reckless, heedless of the future. In my view this points to two types of future orientation in the financial field. The second type acts *as though* it were present-oriented, in competitive operations with other firms. With the popularity of acquisitions and mergers, and in the financial sector the largest was Citigroup after it took over Travelers, there appears to be an unstated, implicit long-term future orientation. That is, there is an acceptance of uncertainty but not in public, in developing such large financial firms/products that they become 'too big to fail'. Many officials across the world accuse these banks of acting on a long-term, unstated assumption that the state will arrange a bail-out if 'something happens'. Perhaps the banking lobby is deceiving itself, but major actors were quick to demand state bail-outs in 2008. These cases of moral hazard – or even that some banks' only internal precaution is to assume they can blackmail governments - stand in contrast to an openly-declared future horizon.

While one could *try* to see this as time discounting, which is a term for 'any reason for caring less about a future consequence', however, the psychological approach is individualistic, and finds that discounting has diverse motives, is not in 'error' nor violates personal principles (Frederick *et al* 2002: 352). In contrast, these banks build dangerous, highly profitable edifices in 'the market', but leave their major social

responsibilities to external state and taxpayer support. Such cases could be said to violate the banking system's immense public role in taking responsibility for risky, uncertain future ventures (Schumpeter 1934). Financial literacy schemes are not at issue: the public pays banks in fees and interest payments for loans, and deposits in trust, in order for banks to take professional responsibility for risks and dangers.

Conclusion

Formal rationality is not possible in the sense that calculations cannot be made about the unknowable.²⁵ Officials have to cope. The *processes* of formal rationality are recreated each time the rules of the financial game are changed: as Wiley puts it, we only have 'cognitive wrappings' to put around uncertainty and simply make leaps of faith (Wiley 1983: 42;40). This paper argues that cognitive and emotional rules prescribe three coping strategies, in different assessments of past, present and future. When the rules of the financial game changed in the 1970s, an emphasis on present-orientation and reliance on probability set in, despite many banks facing failure and bail-outs since then.

So, as discussed, major economic decisions are made rationally under the motivation of specific emotions. The neglect of uncertainty is a source of irrationality, not emotions which give direction and motive to decisive action. Although banks invest heavily in IT-driven predictive models, it is difficult to assess the extent that prediction over the short-term is relied upon *irrationally* by the financial sector, when long-term leverage for

²⁵ Weber assumed firms, which calculate and, he said thus predicted. Mainstream economic rationality takes this only at the level of individuals. Opposing heterodox models such as Dequech (1997, 1999, 2000) are still based in methodological individualism, not the Schumpeter, Minsky and Keynes traditions.

arbitrage and so forth is the other still-current practice. A system-wide ‘tranquility of success’ does give motive to a boom just as emotions of pessimism give direction to depression, but is that because competition truly instills a present-orientation or because some banks do accept uncertainty, but pass on very poor outcomes to others?

Although emotions are not fully controllable, trust and distrust in the social institutions and conventions that reduce our perceptions of uncertainty are not irrational, in that nothing new would happen, gains and losses would not occur, if our world were predictable. *Reason* can show that, but rationality (e.g., in rational choice) cannot. Although research in behavioural finance proves conclusively that emotions are involved in decisions, its early tendency to focus on biases and errors in probability gave little space to the problem that it is not possible to predict the future. It emphasised decision-making in the short-run too much. The ‘bias’ towards ‘over-confidence’ among experts is a very useful finding, and includes convictions about a grim future.

Yet, to that we should add the self-referential nature of money in the broader context. However professional and trustworthy financial agents may be, financial decisions are always reliant on promises being met. At a systemic level, unpredictably depending on competitors, incentive structures, policies and time-views, people have to believe and to act, even if *some* of this negative or positive confidence later proves ‘wrong’. Human frailty is ever-present, it will never control the unknowable future, but how humans face time is perhaps mid-way between the emotions that we share with animals, and cognitive

patterns taken to time that help us to imagine a future and decide, for good and ill. Individual time preferences and motives may vary, conflict and they are socially shaped.

Yet how organisations face time is not readily comparable. Psychological analysis of people's time preferences cannot show why central banks invariably take a past orientation, nor why banks vary in time-views, yet why the present-view is currently so dominant. Behavioural economics has convincingly repudiated rational choice and yet sociology can show systemic problems that cannot be neglected. Global policies and historical transformations shape the climate of feeling that motivates action at important moments, and becomes institutionalised for varying lengths of time. It would be nice to see combined research on this worrying matter.

References

- Andersson, P. & R. Tour 2005 'How to sample behaviour and emotions: a psychological approach and an empirical example' *The Irish Journal of Management* 26 (1): 92-106
- Andersson, P. 2006 Book Review of *Emotions in Finance*, *Journal of Socio-Economics* 35 (6):1094-96
- Baker, T., & J. Simon (eds), 2002, *Embracing Risk*, University of Chicago Press.
- Barber, B. M. & T. Odean 2001 'Boys will be boys: Gender, overconfidence, and common stock investment' *Quarterly Journal of Economics* 116: 261-92
- Beckert, J 2005 'The Moral Embeddedness of Markets' *MPIfG Discussion Paper 05/6* Max Planck Institute for the Study of Societies, Köln.
- Bonß, W. & Zinn, J. 2005, 'Erwartbarkeit, Glück und Vertrauen - Zum Wandel biographischer Sicherheitskonstruktionen in der Moderne', *Soziale Welt*, vol. 56, no. 2/3, pp. 79-98.
- Bryant M & J. W. Cox (2006) 'The expression of suppression' *Journal of Management and Organization* 12 (2):116-30

- Clark, G. 2002, 'Embracing Fatality through Life Insurance'. In Baker & Simon, *Embracing Risk*.
- Cohen, M, J. G. March & J. P. Olsen 1972 'A Garbage Can Model of Organizational Choice' *Admin. Science Quarterly*, 17(1): 1-25.
- Damasio, A. R. 1994 *Descartes' Error: Emotions, Reason, and the Human Brain* New York, G. P. Putnam's Sons
- De Bondt, W. 2005 'The Values and Beliefs of European Investors' in *The Sociology of Financial Markets* (eds) K. Knorr Cetina & A. Preda, New York: Oxford University Press
- De Bondt, W. & R. Thaler 1985 'Does the Stock Market Overreact?' *The Journal of Finance* 40 (3): 793-805
- Dequech, D. 1997 'Different views on uncertainty and some policy implications' in *Improving the Global Economy* (eds) Davidson, P., and Kregel, J. Cheltenham, Edward Elgar
- Dequech, D. 1999 'Expectations and Confidence under Uncertainty' *Journal of Post Keynesian Economics* 21 (3) 415-30
- Dequech, D. 2000 'Confidence and action' *Journal of Socio-Economics* 29 (6) pp 503 – 515 Downloaded from www.sciencedirect.com/science?_ob=ArticleURL&_udi
- Dow, S. 2008 'The psychology of financial markets: Keynes, Minsky and emotional finance' *SCEME Working Paper* No 22; Stirling Centre for Economic Methodology, University of Stirling. Accessed at www.sceme.org.uk
- Dow, S. C. 2009 'Cognition, Market Sentiment and Financial Instability: Psychology in a Minsky Framework' Forthcoming *SCEME Working Paper*; Stirling Centre for Economic Methodology, University of Stirling.
- Elster, J. 1998 'Emotions and Economic Theory'' *The Journal of Economic Literature* XXXVI (1) pp. 47 - 74
- Elster, J. 1999 *Alchemies of the Mind: Rationality and the Emotions* New York, Cambridge University Press
- Fraser, S. 2005 *Wall Street: A cultural history* London: Faber & Faber
- Fredrick, S., G. Loewenstein & T. O'Donoghue 2002 'Time Discounting and Time Preference' *Journal of Economic Literature* 40 (2): 351 – 401
- Gapper, J. & N. Denton 1996 *All that glitters: The Fall of Barings* London: Penguin Books
- Gibson, D. E. 1997 'The Struggle for Reason: The Sociology of Emotions in Organizations' in R. J.

- Erickson and B. Cuthbertson-Johnson (eds) *Social Perspectives on Emotion*, Vol. 4, pp. 211-256. Greenwich, CT: JAI Press.
- Gibson, D. E. 2006 Book Review Emotions in Finance *Contemporary Sociology* 35 (5): 483-5
- Goodhart, C. A. E. 1984, *Monetary Theory and Practice*, London: Macmillan.
- Guseva, A. & A. Rona-Tas 2001 'Uncertainty, risk, and Trust: Russian and American Credit Card Markets compared' *American Sociological Review* 66 (October):623-646
- Jacobs, B. I. 1999, *Capital Ideas and Market Realities: Option Replication, Investor Behaviour, and Stock Market Crashes*, Malden MA: Blackwell.
- Kahneman, D & Lovallo D. 2000 'Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking' in D. Kahneman & A. Tversky (eds) *Choices, Values, and Frames* New York: Cambridge University Press/Russell Sage Foundation (pp 393 - 413)
- Kahneman, D. & A. Tversky 2000 'Judgment under Uncertainty' in D. Kahneman & A. Tversky (eds) *Choices, Values, and Frames* New York: Cambridge University Press/Russell Sage Foundation
- Kahneman, D. & A. Tversky (eds) 2000 *Choices, Values, and Frames* New York: Cambridge University Press/Russell Sage Foundation
- Kemper, T. D. 1978 *A Social Interactional Theory of Emotions* New York, John Wiley & Sons
- Keynes, J. M. 1936, reprinted 1964 *The General Theory of Employment, Interest, and Money*. New York: Harbinger/Harcourt
- Keynes, J. M. 1937, 'The General Theory of Employment', *Quarterly Journal of Economics*, 51, February: 209-33.
- Kindleberger, C. P. 1989, *Manias, Panics and Crashes: A History of Financial Crises: Second Edition*, London: Macmillan.
- Knight, F. H. 1965 [1921] *Risk, Uncertainty and Profit* New York: Harper Torchbooks
- Lindblom, C E 1959: 'The science of "muddling through"' *Public Admin. Rev.* 19: 79-88
- Lo, A. W. & D. V. Repin 2002 'The psychophysiology of real-time financial risk-processing' *Journal of Cognitive Neuroscience* 14 (3): 323-39
- Lo, A. W., 2008. *Hedge funds, systemic risk, and the financial crisis of 2007-2008*, written testimony prepared for the Hearing on Hedge Funds, the U.S. House of Representatives Committee on Oversight and Government Reform, 13 November 2008.

- Loewenstein, G. 2000 'Emotions in economic theory and economic behavior' *American Economic Review* 90 (2): 426-32
- Luhmann, N. 1979 *Trust and Power*, Chichester, John Wiley & Sons
- Luhmann, N. 1988 'Familiarity, Confidence, Trust' in *Trust* (ed) D. Gambetta, Oxford, Basil Blackwell
- March, J. G. 1978 'Bounded rationality, ambiguity and the engineering of choice' *The Bell Journal of Economics*, 9 (2).
- Mannheim, K. 1936, *Ideology and Utopia*, London: Routledge & Kegan Paul.
- Mieg, H. A. 2001, *The Social Psychology of Expertise*, Mahwah NJ: Lawrence Erlbaum Associates.
- Minsky, H. P. 1985 'The Financial Instability Hypothesis' in P. Arestis & T. Skouras, eds *Post Keynesian Economic Theory* Sussex, Wheatsheaf Books
- Mirowski, P. 1989 *More Heat than Light. Economics as Social Physics* Cambridge University Press
- Ondaatje, Sir Christopher 2005, 'World banks on an empty promise', *Times Higher Education Supplement* 7 Jun.
- Pixley, J. F. 2002 'Emotions and Economics'. In *Emotions and Sociology: Sociological Review Monograph*, The Sociological Review/Oxford: Blackwell.
- Pixley, J. F. 2002a 'Expectation, emotions and money' in S. Clegg (ed.), *Management and Organization Paradoxes*, Amsterdam: John Benjamins.
- Pixley, J. F. 2002b 'Finance organizations, decisions and emotions' *British Journal of Sociology* 53 (1): 41 - 65
- Pixley, J. F. 2004 *Emotions in Finance: Distrust and Uncertainty in Global Markets* Cambridge University Press
- Pixley, J. F. 2007 'How do Australians feel about financial investment?' *Australian Social Attitudes 2: Citizenship, Work and Aspirations*, D. Denemark et al (eds), Sydney: University of New South Wales Press.
- Pixley, J. F. 2009 'Time Orientations and Emotion-Rules in Finance', *Theory & Society* Vol 38 pp 383 – 400
- Porter, T. 1995, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, Princeton University Press.

- Posner, Richard A. 2009 'Shorting Reason: Review of *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism* By George A. Akerlof and Robert J. Shiller' *The New Republic*, Wednesday, April 15, 2009, Downloaded 17 June 2009.
- Rabin, M. 1998 'Psychology and Economics' *The Journal of Economic Literature* XXXVI (1) pp. 11 – 46
- Rajan, R. G. 2005 'Has Financial Development Made the World Riskier?' (Director of Research, International Monetary Fund); Paper on www.kc.frb.org/PUBLICAT/SYMPOS/2005 downloaded June 11, 2007
- Schumpeter, J. A. 1934 *The Theory of Economic Development* Reprinted 1961, Cambridge MA, Harvard University Press.
- Shackle, G. L. S. 1967 *The Years of High Theory: Invention and Tradition in Economic Thought 1926-1939* Cambridge, Cambridge University Press
- Shackle, G. L. S. 1972 *Epistemics and Economics* Cambridge, Cambridge University Press
- Shiller, R. J. 1989 *Market Volatility* Cambridge MA, MIT Press
- Shiller, R. J. 2000 *Irrational Exuberance* Princeton, NJ, Princeton University Press
- Shiller, R.J. 2003 *The New Financial Order*, Princeton University Press
- Slovic, P. 1999 'Trust, Emotion, Sex, Politics and Science: Surveying the Risk-Assessment Battlefield' *Risk Analysis* 19 (4): 689 - 701
- Smelser, N. 1963 *The Sociology of Economic Life* Englewood Cliffs, NJ. Prentice-Hall
- Swedberg R. 2003 *Principles of Economic Sociology* Princeton University Press
- Tversky, A. & D. Kahneman 2000 [1986] 'Rational choice and the Framing of Decisions' in D. Kahneman & A. Tversky (eds) *Choices, Values, and Frames* New York: Cambridge University Press/Russell Sage Foundation (pp 209-23)
- Weber, M. 1978, *Economy and Society*, eds G. Roth & C. Wittich, Berkeley CA: University of California Press.
- Weiner, B. 1986 *An Attributional Theory of Motivation and Emotion* New York: Springer-Verlag
- Wiley, N. F. 1983 'The Congruence of Weber and Keynes' *Sociological Theory* 1983 (ed) R. Collins, San Francisco, Jossey-Bass Inc. pp. 30 – 57

Williamson, O. E 1993, 'Calculativeness, Trust and Economic Organization', *Journal of Law & Economics* 36, April: 453–86.

Zelizer, V. A. 1994 *The Social Meaning of Money* New York: Basic Books

Zinn, J. & P. Taylor-Gooby 2006 'The challenge of (Managing) New Risks' in P. Taylor-Gooby & J. Zinn (eds) *Risk in Social Science* Oxford University Press