

Chapter 1

Introduction

‘I doubt whether we are sufficiently attentive to the importance of elementary textbooks’

(Lewis 1944).

This book aims to help guide advanced undergraduates and Master's degree students to an understanding of the currently topical area of 'behavioural' finance. It provides an interpretative lens on a huge and growing literature. As such it can at best be a good departure point, but never a good place of rest. As the opening quotation from Clive Staples Lewis implies, a textbook can be both helpful or even dangerous and corrupting in setting the context for future understanding and research. I hope my book helps students understand and be excited about the behavioural approach to finance.

'Behavioural finance' denotes the study of finance based on credible assumptions about how people behave, often confirmed by psychology experiments such as those by the 2002 Nobel Prize-winners Vernon Smith and Daniel Kahneman.¹ The first sentence of Shefrin's (2005) book on behavioural asset pricing states 'Behavioral finance is the study of how psychological phenomena impact financial behavior'. In reading most standard finance teaching texts one is struck by the way in which any human drama, the greed, eccentricity or caprice of market participants has been purged. As Thaler (1993, p.xv) points out, anyone reading about the tumult and avarice of financial markets, or watching it unfold on television, might be quite perplexed about how its activities could be illuminated by the neoclassical economic theory which dominates academic journals.

While the behavioural perspective was initially presented as a challenge, or an alternative to, traditional finance based in neoclassical economics, a process of assimilation into our existing corpus of theory is now well underway. Thaler (1999) has declared the 'end of behavioural finance', for as he asks 'what other sort of finance is there?'. Finance theory, like any other form of economic theory, requires some explicit assumptions about how investors' decisions are made, how they evaluate the risks facing them, etc. The only difference between behavioural and traditional approaches to finance lies in the explicit recognition of the need to ground theoretical innovations of financial decision making in an understanding of how decisions are actually made. Indeed, the attempt to decant human behaviour into the one-size-fits-all portrayal of 'economic man' may be seen as a detour from the tradition of the founding fathers of economics of whom Hayek (1946, p.14) states,

In their view man was by nature lazy and indolent, improvident and wasteful, and it was only by the force of circumstances that he could be made to behave economically or carefully to adjust his means to his ends.

So man, far from being rational and goal orientated by nature, is only coerced into feigning to be so by the discipline of markets. Adam Smith, the founding father of modern economics, placed such emphasis on the philosophical and psychological aspects of choice that he explored them more fully in his early work *The Theory of Moral Sentiments*, prior to writing his masterpiece *The Wealth of Nations* (1776). The spurning of psychological insights by the early neoclassical economists may be

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seen as a consequence of the rather unscientific and speculative nature of the subject at that time. If a coherent body of experimental evidence on human choices had then existed (as later developed by Professors Plott, Kahneman, Tversky, Smith and others), the path taken by neoclassical economics and its child, traditional/neoclassical finance, might have been very different (see Camerer & Lowenstein 2004).

Recently De Bondt (2008) has contrasted ‘introverted’ standard finance with its focus on hypothesis generation from the logically coherent structure of neoclassical economics with its ‘extrovert’ behavioural alternative. In the behavioural perspective facts drive a renewal of theory or the creation of new theory. So in the behavioural approach:

Research methods are mainly *inductive* not deductive. We collect facts based either on experiments, or questionnaires, or observation – and we organize them into a smaller number of super-facts. One might say we draw maps

(De Bondt, 2008).

Such maps are now much needed given the ‘financial tsunami’ unfolding as I complete this book. In an appendix to this chapter I briefly consider how the current crisis might give us pause to reflect on the need for a modelling framework which better captures the human frailties in decision making that we are all subject to.

1.1 Illustration and Structure

To begin at the ending of this book (or at least Chapter 19) consider the collapse of Arthur Andersen the accounting firm, following it being debarred from filing accounts under the Securities and Exchange Commission’s rule 2(e). Andersen’s downfall contains many of the classic causes of cognitive errors that I shall be discussing in this book. I draw here on Gerstein’s (2008) account of the crisis.

Andersen’s started out as a prestigious, Chicago-based, audit firm led by auditors of high moral rectitude. Indeed, Leonard Spacek, who succeeded the founder Andersen as managing partner in 1947, was threatened with expulsion from the profession because of his public denouncement of declining audit standards.

With its innovative use of computers, then a novelty, in running General Electric’s pay-roll system in the early 1950s, Andersen’s developed an acknowledged expertise in systems audit and management information systems in general. This subset of partner expertise soon spawned the wildly popular Andersen Consulting, today called Accenture. By the recession of the early 1990s a large chunk of the partnership’s total revenue came from Andersen Consulting and it was only granted independence following an agreement to pass 15% of its revenue to its poorer audit-based relations. The message was clear, an audit partner who wanted a decent salary made sure his clients were happy enough with what they were getting on the audit side to retain Andersen Consulting for other business needs, such as tax advice, corporate strategy and information systems. Rocking the boat by challenging accounting practices was not the way forward. Lowballing and cosy lunches with partners were normal.

Over the years Andersen’s audit practice was challenged on a number of occasions in the courts by shareholders left penniless when their investments in Andersen audit corporations imploded without warnings from the published accounts. Such scares included Waste Management, Sunbeam and Global Crossing, but Enron was to be the hole that sunk the Andersen boat.

Enron had caused alarm by adopting a number of opaque, but possibly ‘aggressive’, accounting practices, including the adoption and widespread use of mark-to-market accounting to record trading profits in assets with no liquid market and consolidation of a pyramid of subsidiaries into special-purpose entities. These had not gone unchallenged or unnoticed by Andersen partners. But nothing was done because the total revenue on the Enron account was just too tempting. In fact, Carl Bass, a member of Andersen’s Professional Standards Committee, was removed from their audit at Andrew Fastow’s request (Fastow, now in jail, was CFO of Enron and perhaps the fall guy for many others seeking to avoid blame).

The collapse of Andersen contains three elements that are central to the discussion of financial markets in this book. These are:

- *Optimism*. Giving fee-revenue chasing priority over integrity strategy had worked so far, challenges were usually settled out of court without Andersen admitting any blame.
- *A focus on the near-term maximization of fee revenue*. Professional integrity was clearly a very important issue but by implication it was something that could be addressed later.
- *Conformity*. Whistle-blowers were not welcome and even bad practice could be justified with an ‘everybody is at it’ shrug.

All three elements will feature in later chapters of this book. In Section 1.2 I open the discussion of behavioural finance by emphasizing what finance theory does rather than says. That is, I focus on the use of behavioural approaches to motivate new trading strategies and seek out new arbitrage opportunities. In Section 1.3 I look at the challenge ahead for behavioural finance theorists and those who will rise to the challenge of testing those theories. I also briefly enquire whether we would be starting from here if the founding fathers of economics and finance understood what we now know about how the brain works and how it sets about deciding what to do. In Section 1.4 I return to the foundational assumptions of our subject to see how a behavioural finance research programme might steer a different, and perhaps more useful, course for finance as a subject. Finally, having looked at the challenge ahead, I turn to more immediate business and explain how I plan to cover the vast ground of behavioural finance research. Section 1.5 gives a taster of some of the areas in finance where a behavioural approach has been most fruitful, but the field is rapidly expanding to give a behavioural perspective on the whole subject of finance. Section 1.6 outlines the rest of the structure of the book and indicates how I structure the huge body of scholarship in this field.

1.2 Finance Theory as an Engine not a Camera

We can see the emergence of behavioural finance as reflecting a broader tension in economic analysis between those who regard assumptions as simply tools to generate accurate predictions and those who worry that unless our theory reflects an underlying economic and social reality it may lead us into great error (see MacKenzie, 2006 from which my discussion derives).

The definitive statement of MacKenzie’s view is Milton Friedman’s essay ‘The Methodology of Positive Economics’ in which he states,

A hypothesis is important if it ‘explains’ much by little . . . if it abstracts from the mass of complex and detailed circumstances and permits valid predictions on the basis of them alone. To be important, therefore, a hypothesis must be descriptively false in its assumptions

(Friedman 1953, p.14).

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This has long been the orthodoxy amongst economic theorists. But from its initial proclamation there has been doubt about its validity even amongst Friedman's peers of Nobel Prize-winning economists. Thus Paul Samuelson expressed concern in his speech accepting the third Nobel Prize awarded in Economics. He argued in response to Friedman's doctrine that it was

fundamentally wrong that unrealism in the sense of factual inaccuracy even to a tolerable degree of approximation is anything other than a demerit for a theory or a hypothesis . . . Some inaccuracies are worse than others, but that is only to say some sins against empirical science are worse than others, not that sin is a merit

(Samuelson 1963, p.223).

MacKenzie (2006) points to another problem of trying to construct a theory that explains the observed stylized facts about trading in financial markets. Usually we see data taken from financial markets as a way of refuting received theory, be that behavioural or standard theory. But what if investment practice reflects a dominant or widely accepted theoretical model such that traded prices reflect that model's insights? What if traders have the Black–Scholes formula for option pricing embedded into the spreadsheets they use for issuing quotes? Then a finding that the pricing of traded option prices is consistent with the Black–Scholes equation is not surprising. Similarly the rapid growth of 'value investment' strategies and mutual funds specializing in such strategies makes evaluating 'buy losers/sell winners' (De Bondt & Thaler 1985) strategies hard to evaluate. This problem arises because finance theory is often an 'engine' for financial innovation and the refinement of new trading strategies as opposed to simply being a 'camera' which captures the complexity of real financial markets in miniature. So acceptance of behavioural perspectives on financial markets may change the data on which those models are subsequently tested.

Major apparent falsifications of existing models can lead practitioners into a search for more adequate theorizations of their trading position's value. MacKenzie (2006, p.33) discusses how the 1987 Crash resulted in a movement away from the Black–Scholes formulation of how derivatives are priced as a volatility skew or 'smile' emerged. The implosion of equity values at the start of this century may have induced such an openness to new theoretical ideas. Behavioural perspectives offer one new possible source of competitive advantage through the insights gained by a novel theorization of how markets operate.

Before rushing to compete, or replace, standard finance models based on Friedmanite unrealistic assumptions, with behavioural assumptions derived from what we know about how investors actually choose between alternatives, a word of caution is worthwhile. Hayek points out the very 'scientific' nature of our economic reasoning, based on conjectures and their potential refutability by data, may not be entirely a safe point of departure. Economics as a distinct branch of social enquiry dates back to an age when the various areas and types of study were far more loosely defined. So terms like 'moral science' and 'political economy' abounded and laying claim to a 'scientific' approach to economic problems was not seen as something to be aspired to. It is only in the nineteenth century that the idea that valuable research was 'scientific' in nature took hold. Hayek warns (1945, p.14):

The methods which scientists or men fascinated with natural science have so often tried to force on social sciences were not necessarily those that scientists followed in their own field, but rather those that they believed they employed. This is not necessarily the same thing.

Hayek points out a very important difference between how scientific research proceeds and what we might require of a successful interpretation of economic and social phenomena, for example trading in an asset to determine its price.

The world in which Science is interested is not that of our given sensations. Its aim is to produce a new organization of all our experience of the external world, and in doing so it has not only to remodel our concepts, but also get away from the sense qualities and replace them by a different classification of events

(Hayek 1955, p.23).

For the physical sciences it is incredibly useful to detach what is happening from what we perceive or sense as happening. Hayek states the method of the physical sciences as follows (1955, p.22):

What men know or think about the external world or about themselves, their concepts and even their subjective qualities of their sense perceptions are to Science never ultimate reality, data to be accepted. Its concern is not what men think about the world, but what they ought to think.

This dismissal of the importance of the sensation of trading and interacting with others trading the same asset poses a real problem for a behavioural theory of asset pricing. But more importantly it may simply be that any coherent theory of behaviour in financial markets would face very similar problems. For Hayek the correct object of study of a 'social science' like finance is a far larger domain than most scientists show any interest in. He states (1955, p.24):

The question here is not how far man's picture of the external world fits the facts, but how by his actions, determined by his views and concepts he possesses, man builds up another world of which the individual becomes a part. And by 'the views and concepts people hold' we do not mean merely their knowledge of external nature. We mean all the knowledge and belief about themselves, about other people, and the external world, in short everything that determines their actions, including science itself.

In such a broader mission for gaining an understanding of financial markets the marriage of psychological insights and financial modelling may yet prove especially fruitful.

1.2.1 *Rational Fools or Folly of Wisdom?*

The very desirability of rationality as a human characteristic has not always been in doubt. Jensen (1998) contrasts what he calls the REMM (resourceful evaluative maximizing model) of human behaviour which characterizes economics at its best with the 'social victim model' of a more sociological tradition. The REMM model assumes humans:

- care/evaluate;
- have unlimited wants;
- maximize their well-being;
- are resourceful and creative in seeking out their best interest.

In the social victim model of human behaviour, which Jensen beliefs characterizes the approach of sociologists, actions are largely constrained/determined by social class, family background or genetic make-up.

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Hayek has observed that the beauty of the price allocation mechanism lies in its ability to aggregate information about tastes and desires, which no government official could ever dream to possess. He praises the market allocation system as follows:

The most significant fact about the market process is the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action

(Hayek 1945, p.86).

Hence far from feeling the need to rescue investors from the rough and tumble of financial markets, we should in many ways rejoice that the market requires much less mental agility than competing allocative mechanisms.

If individual investors can fall victim to optimism how much more likely is it that politicians, basking in the glories of office, will equally be exposed to optimism if not hubris. So the behavioural approach does not give blanket support for ‘big government’ interventions to correct investors’ mistakes, but it does suggest a role for education in reducing the worst excesses of investor bias, narrow ‘framing’ and speculative frenzy. It is to facilitate this learning process that the current textbook has been written. I also reflect on a form of ‘liberal paternalism’ which seeks to structure the way choices are made to favour some choices over others, i.e. not to smoke or to remember that even though you are young you will (hopefully) retire one day and need a pension (Sunstein 2005, Sunstein & Thaler 2003a,b).

If the liberal REMM characterization of human behaviour underpins much economic analysis it is important to be aware of its weaknesses before proceeding to exploit its strengths. A clear weakness of the REMM model is that it gives little role to the intentional or meaningful nature of conduct in many human behaviours. Action is driven by immediate perceived social gain rather than some moral or social ideal, which the person executing the action seeks to attain.

This sort of reasoning displays its most grotesque aspect in extremist sociobiologists’ views of how we evolve. Elster (1984) points out that while natural selection explains the emergence of favourable mutations, via the greater progeny of those subject to a beneficial chance mutation, it cannot explain strategies based on either waiting or indirect advantage.

Since natural selection is spawning an imperfect tribe it is not clear that the correct way to develop an understanding of humanity is through a gradually refined ‘scientific’ understanding. As Rousseau warned back in 1754:

The best use one can make of Philosophy is to have it destroy the evils it has given birth to . . . It is true we would not know anything then, but we would agree upon that in good faith, and in our search for truth we would have taken all the steps backwards from error to ignorance.

In this spirit, an understanding of some of the most prominent aspects of behavioural finance may make us more aware of the fragility of our understanding of financial decisions. By doing so we may hope to retrace a path backwards from arrogant errors made by earlier academics towards a more modest assessment regarding our ignorance concerning financial matters.

Any rational act reflects both the beliefs and desires of those undertaking it. Hence a judgement concerning the rationality of the act requires some consistency in the beliefs and desires it is based upon (Elster 1986). David Hume pointed out that reason is a good slave, but a poor master, and it would be a tedious individual who sought to rationalize his or her every desire. Indeed, economists have typically been very keen to draw a veil over any discussion of consumer or investor preferences (Stigler & Becker 1977). Nevertheless one may perceive that certain actions motivated by greed or spite are suggestive of irrational, or at least unattractive, desires. Further, in some situations being

rational may be self-defeating. To calculate when to perform a spontaneous act of kindness or generosity for a loved one seems to be missing the point. If I concentrate on not stuttering or blushing when I meet someone I find attractive I may simply make the problem worse. The benefits of intuition cannot be reaped in a calculative manner.

Differentiating irrationality from action based on false beliefs is always difficult. Invading a hostile country in the belief that it harbours weapons of mass destruction may seem irrational after the event. But it may have seemed a quite rational act at the time given the (now proved false) intelligence regarding that hostile nation's military capability (Elster 1989).

1.3 Rebuilding on New Foundations

The construct of 'economic man' embedded in traditional finance incorporates at least (see Rabin 2002, p.600) the following assumptions:

- Investors have well-defined stable preferences, even if those preferences themselves are never explained or challenged.
- Investors base their preferences between choices on expected outcomes (not changes in expected outcomes).
- Investors maximize their own (or their families') well-being, or 'utility'.
- Investors discount expected payoffs by geometrically increasing amounts to obtain their present value. So one pound, or one euro, paid next year is worth $1/(1+r)$, where r is the annual discount rate, and a pound or euro, in two years' time is worth $1/(1+r)^2$ and so on.

The primary interests that motivate behavioural researchers are reflected in the structure of this book. After an initial focus on asset pricing the text moves forward to consider problems in corporate finance. In a final section, more recent applications of behavioural insights within the professional life of lawyers and accountants are considered.

The behavioural tradition enriches our understanding by incorporating at least three elements of psychological insight into financial decisions:

- The presence of biases in investors' decision making. For example, optimism, conservatism in adapting one's judgement to contradictory evidence and 'overreaction' to exciting, but rare, events.
- The use of mental 'frames' to simplify complex decisions or learning 'heuristics' to characterize and simplify data used in decision making.
- The presence of time inconsistency in choice, inducing a need to distinguish between the 'planner' and 'doer' of some proposed course of action.

In doing this finance scholars have often drawn on prior experimental evidence from the field of cognitive psychology. Only an exceptional polymath could claim understanding of both finance and cognitive psychology. So we are fortunate that many of the relevant seminal contributions of psychologists to our understanding of financial decisions are drawn together in various collected readings (Gilovich *et al.* 2002, Kahneman *et al.* 1982, Kahneman & Tversky 2000, Lichtenstein & Slovic 2006, Shafir 2004, Slovic 2000). I will draw heavily on these sources below.

It is cautionary to recall that:

The economist may attempt to ignore psychology, but it is sheer impossibility for him to ignore human nature If the economist borrows his conception of man from the psychologist, his constructive work may have some chance of remaining purely economic in character. But if he

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does not, he will not thereby avoid psychology. Rather, he will force himself to make his own, and it will be bad psychology

(Clark 1918).²

So one objective in this text is to present behavioural finance models in the context of psychological research which supports those models' adoption in favour of the standard finance model.

1.3.1 *Reasoned Emotion: The Case of Phineas Gage*

Phineas Gage, a work gang supervisor on the railways in 1848, suffered a horrific injury that drove a metal bar through his brain. Miraculously Gage survived and appeared capable of movement, speech, reason, much as before. His doctor, John Harlow, was stunned that Gage had seemingly made a complete recovery. But later it was clear Gage had changed. The savage blow to his brain, which literally blew parts out, had altered him from being a natural leader of men in a hazardous environment into a foul-mouthed quarrelsome brawler. He lost his job and died of seizures at 38 years old. The awful brain injury Gage had suffered obviously left his reason intact but had fundamentally changed his emotional state and hence his personality for the worse. Could it be that the part of the brain which controls our emotions interacts in some fundamental way with that with which we reason? Therefore, impaired, or dysfunctional, emotional well-being damages our ability to reason.

This very argument is advanced by Antonio Damasio, a professor of neuroscience, in his book *Descartes' Error*, from which this horrific story is taken. Damasio and his wife and academic colleague, Hannah, suspected Gage's illness might point the way towards a neurological link between brain functions associated with reason and those usually associated with emotion. While Gage's skull had been exhumed and preserved his brain tissue was lost to his grave. And so Damasio began to look for brain-damaged patients exhibiting loss of emotional control in his practice as a neurosurgeon.

By chance a successful businessman (Damasio calls him 'Elliot'), who was having problems after having a fairly large, but non-malignant, tumour removed from the area behind the bridge of his nose, was referred to him. As with Phineas Gage, the frontal lobe of his brain was damaged by the crushing induced by the growing tumour. Elliot also had been dismissed by his employer due to his inability to focus on required tasks and function independently of others. Unlike Gage he remained well-spoken, polite and even eerily calm as he watched his personal and professional life implode. Damasio (2006, p.45) comments 'Elliot's predicament was to know but not to feel'. Trying to understand this from his professional perspective, Damasio states:

The brain is not one big lump of neurons doing the same thing wherever they are. The structures destroyed in both Gage and Elliot happened to be those necessary for reasoning to culminate in decision making.

So both Elliot and Phineas Gage could successfully complete the calculus necessary to live a successful life, but something stopped them acting on that calculation. It appeared good reason wasn't enough to induce good, or appropriate, acts. Something else was missing.

Damasio's search to understand the dysfunctional behaviour of his patients with frontal lobe injuries led him to formulate his somatic market hypothesis. This thesis argued that emotion 'marked

certain aspects of a decision context, or certain outcomes that could be envisaged as following from the decision'. He states (2006, p.xiii):

Emotion had a role to play in intuition, the sort of rapid cognitive process in which we come to a particular conclusion without being aware of the particular cognitive steps.

Such speedy decisions may be commonplace on the trading floor or in the pressure cooker environment of negotiating a big acquisition. If this be the case then too prissy a distinction between reason and emotion in financial decisions may have little scientific support.

1.3.2 What Can Psychologists Bring to Finance?

While finance has been built out of the building blocks of neoclassical economic theory, psychology has undergone a period of tumultuous change. Ledoux (1996) describes how the post-war dominance of behaviourism and the later emergence of cognitive science tended to abstract from academic psychology's interest in why people do what they do as opposed to what they choose or how they activate the choice they make. The conscious mind and unconscious drivers or motivations or intrinsic meanings were relegated to the status of the unscientific and perhaps unknowable. At each stage psychology has been keen to differentiate mental process and neurological function. Ultimately the area of artificial intelligence has studied human cognition without recourse to the brain as an organ at all. Ledoux (1996, p.40) casts doubt on the wisdom of dividing up the process of cognition and mental and even physical responses to choices faced in this way. He states:

Emotions do not evolve as conscious feelings. They evolve as behavioral and physiological specializations, bodily responses controlled by the brain, which allowed ancestral organisms to survive in hostile environments and procreate. If the biological machine of emotion, but not cognition, crucially includes the body, then the kind of machine needed to run emotion is different from the kind needed to run cognition.

In fast-moving financial markets, where fortunes and careers can be swiftly made or lost, such an integration of emotion cognition and physical response is likely to be key to understanding the full picture of how and why decisions are made.

1.4 Challenging the Classical Assumptions of Finance

Traditional finance models incorporate many of the standard classical assumptions of textbook economics including:

- The presence of many buyers and sellers without the ability to influence the prices of assets.
- Investors form their expectations based on full use of available information. This implies that no information currently available to investors can be used to improve their forecast of future price or valuation metrics used in implying price.
- A minimal amount of market 'frictions' distorting the message sent by price regarding the relative willingness of investors to supply or demand the asset.

The second assumption has given rise to a whole new area of research into the 'market micro-structure' of financial markets. This literature illustrates how the very process of discovering price can

induce arbitrage opportunities. The field of behavioural finance largely focuses on the first two assumptions of atomistic investors and their rational expectations.

The corpus of work exploring such deviations from classical assumptions is now so voluminous that a number of books (Barberis & Thaler 2003, Shefrin 2002, Thaler 1992³) and several review articles (Daniel *et al.* 2002, Thaler 1999) explore various aspects of the insights it offers. A number of collections of readings by leading researchers in the field also gather together key contributions (De Bondt 2005, Thaler 1993). Other sources review the broader field of behavioural economics (Camerer, Lowenstein & Rabin 2004, Hogarth & Reder 1986, Rabin 1998, 2002). I draw extensively on these sources in writing this text. My hope is that this book will quickly lead the reader to a number of these works.

The scale and scope of contributions by those working within the behavioural field is now quite breathtaking. These contributions to our understanding of behaviour in financial markets include:

- The simultaneous presence of continuance of stock returns, or underreaction to past events, and longer term reversals of ‘extreme’ price movements or overreaction to extreme past events.
- The fact that equity, as a source finance, offers a rate of return to investors way above that which seems commensurate with its risk characteristics.
- The fact that, although most mergers yield a poor return to investors in the bidding firm, their popularity seems never to fade.
- The clear bias present in investment advice offered by analysts, in the form of forecasts of earnings and recommendations whether to buy/sell or hold on to a company’s shares.
- The recurring pattern of the stock-market bubble/frenzy and the subsequent spectacular bust in its wake, the October 1989 crash and the late 1990s’ dot.com boom in technology stocks being recent illustrations of this pattern.

In reality there can now be few areas in finance in which behavioural researchers have not been active: in the examination of share issues, initial public offerings, mutual fund performance, bond pricing and international finance and many more.

This proliferation in the application of behavioural insights is the natural result of the development of a behavioural tradition from a mode of critique into a part of ‘normal science’ (Rabin 2002, p.659). As this maturation occurs, it may be useful to see how fairly traditional economic modelling methods can be applied to an understanding of behavioural biases/heuristics in finance.

For this very reason the current text focuses on the presentation of formal theoretical models and emphasizes their implications for investor behaviour. Empirical papers, with all their qualifications and complex econometric methods, are treated in a more cursory manner at the end of each chapter. I also frequently cross-refer to James Montier’s text *Behavioural Finance: Insights into Irrational Minds and Markets* (2006).

So this text seeks to explain the basic insights of what is now ‘a moderate agnostic approach to studying financial markets’ (Thaler 1999, p.12). But this approach should not be taken to imply that there are unambiguous implications of taking a behavioural approach, or a party line which pervades researchers in that field. A belief that recognizing investors ‘make mistakes’ could be used to justify government intervention may explain the initial aggression of traditional finance scholars to the behavioural approach to financial decision making. But this ignores the possibility that the state itself may aggregate cognitive biases to which its electorate are subject (Kuran & Sunstein 2000).

It may be a particularly apt time to learn such lessons as we gain a critical distance from the millennium boom, which saw stock-market values in the United States increase fivefold during 1996–2000, while market indices in the United Kingdom doubled (see Figure 1.2 in Shiller 2005, p.4). The subsequent halving in stock-market values around the world may give us pause

for thought on the frailty of investors' judgements. More recently the 'credit crunch' and subsequent bank bailout of late 2008 reminds us that risk can be poorly assessed or simply just not heeded at all.

1.5 Modelling Behavioural Aspects of Finance

As laboured above, this text skims over a huge literature on behavioural finance. Each advance/research paper has its own peculiarities or peccadilloes, as well as drawing from and feeding into a general theme of research. As students it is useful to focus on broad themes as opposed to unique or idiosyncratic insights of particular contributions. What is quirky or offbeat now may become the orthodoxy later. But first the student needs to understand the orthodox approach, if only to be able to critique and reject it at a later date. For this reason I have made some choices regarding what to present to students reading this text. My book is largely theory driven in its approach and this has been quite a conscious strategy on my part. One reason for this is the presence of many excellent books focusing on the empirical evidence regarding decision biases and seeming deviations from rationality. One such book, mentioned above, is *Behavioural Finance: Insights into Irrational Minds and Markets* (Montier, 2006). James has been kind enough to comment and help me with my own book. So I often cross-reference his text in the 'Illustration and structure' section, at the start of each chapter, where the weakness of my own book is compensated by the strength of his.

In studying the large, complex, literature on behavioural finance at least two contrasting modelling strategies can be identified:

- *Representative agent models.* In this class of models the investment behaviour with a particular type of preference or bias is investigated sometimes under different states of the world (e.g. good and bad market outcomes). All investors are the same and their ability to learn, correct for, certain weaknesses in their decision-making process is studied.
- *Noise trader models.* In these forms of models, two types of investors, informed and uninformed, or smart and dumb traders, meet each other in financial markets. The cognitive errors/bias of the uninformed are policed by the ever-vigilant informed traders and an equilibrium price–quantity outcome results.

This text focuses, at least in its second part on asset pricing, on the latter type of models. Noise trader models follow Hayek in stressing the role of trade in propagating, punishing and hopefully correcting error and bias in asset pricing. As such they emphasize the wisdom of the market over the insight of the individual. This choice allows me to maintain a common modelling structure, which I apply repeatedly to a series of asset market anomalies in the first part. These include the phenomena of:

- optimism;
- asymmetric attitudes to gains and losses (Barberis *et al.* 2001);
- momentum (Barberis & Shleifer 2003);
- overreaction and underreaction to news, especially about company earnings (Daniel *et al.* 1998, Hong & Stein 1999);
- herding (Froot *et al.* 1992).

This limited selection of all-time great papers, which share common theoretical, noise trader, frameworks, allows me to simplify notation and more easily cross-reference or compare and contrast

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papers. But it is a selection and as such offers a partial, perhaps prejudiced, view to the student. To ameliorate this I try and signpost some of the most obvious gaps in the understanding offered in the main body of each chapter.

1.6 The Structure of the Book

Behavioural finance is currently in the process of rewriting pretty much all that we know about how financial markets work and how investors make decisions. So every contribution is partial and selective. This introductory text focuses on three distinct, but interrelated, areas:

- *Asset pricing*, this is the traditional core of finance and little of the rest makes much sense unless we have a coherent pricing theory for financial assets.
- *Corporate finance*, this takes place within the ‘black box’ of the corporation and exposes the individual actors who set outputs and subsequently prices.
- *Professional life*, where many of you are hopefully heading, or may currently be gainfully employed.

Within each subtopic too I need to limit my scope, so as not to burden the reader of an introductory text. Topics covered in the book are as follows:

- *Noise traders in financial markets*. In Chapter 6 I give some of the basic mechanics of noise trader models as a way of seeing trading, which I draw heavily upon in this book.
- *Optimism/Overconfidence*. Chapter 7 examines the impact on asset pricing of perhaps the most obvious and gross bias in human cognition. It also gives an opportunity to revisit and build upon the noise trader framework emphasized throughout the book.
- *Prospect theory in asset pricing*. Chapter 8 looks at one of the classic contributions to behavioural finance and gives a flavour of how it is being used in contemporary asset pricing modelling.
- *Overreaction*. Chapter 9 looks at one of the classic applications of behavioural finance to what we see in real markets that results from the idea that investors overweight recent information compared to long-term trends in data. A noise trader framework is once more adopted here.
- *Momentum*. Chapter 10 discusses spotting and profitably using trends in security prices. Simple versions of the efficient market hypothesis suggest such trends should simply not exist, but a behavioural perspective suggests such trends may persist and gives some guide to their possible structure.
- *Herding*. Chapter 11 examines the impact of pressures towards conformity in trading on asset pricing. Once again a noise trader framework is adopted here allowing you to gain confidence in using this approach.
- *Insider trading*. Chapter 12 recognizes that not all traders are equal. How do noise traders become subject to ‘noise’ while their ‘smart’ opponents, the informed, are not? In this chapter the noise trader framework is made endogenous and the rewards to becoming informed are characterized. The noise trader approach is further developed and motivation for its use provided.
- *The equity premium*. Chapter 13 uses the prospect theory framework developed in Chapter 8 to explain one of the classic stumbling blocks of standard theory in explaining observed asset prices. Why are equity returns so high, given that they do not seem that much more risky compared to bonds?

The corporate finance treatment of this book is narrower than that afforded the asset pricing literature. So my selection here is even more brutal and open to criticism than in the asset pricing section. So the sparse coverage includes:

- *Incorporation*. In Chapter 14 I argue that the process of incorporation masks the coalition of competing individual interests that motivate a company's decisions. Standard finance has gone within the 'black box' of the corporation using agency theory. Behavioural finance is adding new insights and generating new testable hypotheses in this area too.
- *The market for information*. Chapter 15 focuses on the flow of information between investors and managers, often via analysts employed to research companies or sectors.
- *The dividend decision*. Chapter 16 revisits the return of value to shareholders. Since the return of cash to shareholders gives shares an economic value to shareholders, how the dividend decision is made and how that decision is reflected in prices is central to both asset pricing and how the company is managed to generate shareholder value.
- *Entrepreneurship*. In Chapter 17 I ask where companies come from, who starts them and what are the personal characteristics that allow them to do so.

Omissions here are particularly easy to spot, mergers, initial public offerings, etc. In a final section I consider how you might use the material studied in this book. I give a very brief taste of the implications of a behavioural perspective on professional life for:

- *Analysts*. Chapter 18 looks at the challenges they face in doing a good job and how they should be regulated. In doing this I pass from a positive usage of the behavioural approach towards a normative usage to suggest how a market subject to 'noise' about asset value should be regulated.
- *Accounting*. Chapter 19 asks how the value and implementation of mark-to-market/'fair value' accounting might be affected by the presence of noise traders in the market. Once again I go beyond stating how behavioural bias will impact on markets towards saying how these effects should be controlled by regulatory authorities and professional bodies.

But before launching on this wide array of topics I must tell you some basic principles of the behavioural approach to finance. I do this in the remainder of this first part of the book. In doing this I revisit some of the most basic building blocks of finance. So please be patient, often the biggest problem in our thinking is what we take as given, or beyond all question. The foundational issues I discuss are:

- Expected utility as a measure of investor well-being (Chapter 2).
- Our attitude to the future, relative to present, rewards or how we discount future pay-offs arising from our investments (Chapter 3).
- How we learn to invest well and whether we manage to do so (Chapter 4).
- What we know about major disruptions in financial markets in our history and what we can learn from that history for the future (Chapter 5).

I encourage every reader and teacher to cover these chapters thoroughly, unless the reader is fairly sophisticated (in which case Shefrin (2005) may be a more attractive choice of textbook to study). For the remainder of the material, Chapters 6 to 10 give a basic coverage of the behavioural approach as it relates to asset pricing at least. In a one-semester course this might be more than enough ground to cover. But there is always more to know and often more interesting stuff than I highlight in this introductory treatment. I can only hope my book encourages readers to greater insights than I have been able to offer here.

Appendix: A Financial Tsunami

Since at least August 2007 I have been completing this book as a ‘financial tsunami’ (Alan Greenspan in evidence to the US Senate in October 2008) unfolds. This gives me hope that my readers may be more open to a new approach to financial modelling. In a case study on this book’s webpage I consider how a behavioural perspective might help us understand the current financial (and resulting ‘real’ economy) crisis and how it may also give pointers towards credible policy responses.

Notes

1. Or the late great Amos Tversky, of Stanford University, whose death in 1996 was surely the only barrier to him sharing the Nobel Prize with Kahneman and Smith. See http://nobelprize.org/nobel_prizes/economics/laureates/2002/index.html.
2. Werner De Bondt, a pioneer researcher, maintains an excellent webpage that gives an introduction to such issues. Professor De Bondt has kept on pioneering and written many interesting papers since his most famous one with Richard Thaler in 1985.
3. Thaler’s classic anomalies series in the *Journal of Economic Perspectives* has now run into a second series and is certainly a great starting point for those interested in the field, see <http://gsbwww.uchicago.edu/fac/richard.thaler/research/Anomalies.htm>.

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