REFORMING INVESTOR PROTECTION REGULATION:
THE IMPACT OF COGNITIVE BIASES

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Abstract

A large body of empirical and experimental literature provides convincing evidence of the complexity of individual and institutional investor behaviour in market environments. This complexity raises serious questions regarding the effectiveness of current systems of investor protection regulation, which are largely based on the rational investor model. This chapter considers the whole spectrum of cognitive biases that affect investor decision-making and the impact of investor behaviour on market welfare. It also highlights the failure of current systems of investor protection regulation to devise techniques capable to counter the distorting impact of cognitive biases. In order to enhance the credibility of the behavioural critique, the chapter proposes a realistic and workable framework for reform, which, if implemented, would lead to effective debiasing.

1. Introduction

The current regulatory framework governing the workings of financial markets in the US, the EU, and, of course, the UK is largely based on the rational investor model. As a result, regulatory rulebooks view the operation of financial markets as the collective outcome of rational investor decisions. The same rulebooks assume that well-informed and educated investors always make optimal resource allocation and wealth maximization decisions, if they are protected from market manipulation and fraud and from financial intermediaries’ conflicts of interest. However, regulatory adherence to the rational investor model ignores overwhelming empirical and experimental evidence in favour of the view that financial markets are complex evolutionary and dynamic systems encompassing both rational and irrational behaviour and individuals participating in them are subject to bounded rationality and bounded self-control. Only recently and with some reluctance, the UK’s Financial Services Authority (FSA) has moved to examine the influence of neuro-psychological situations on individuals’ decision-making that affect their financial capability. Therefore, one of the most important challenges facing regulators of financial markets is finding ways to incorporate into the current model of investor protection regulation an understanding of the actual complexity of

1 Hommes & Wagener 2008.
individual and institutional investor behaviour and devise remedies to counter the impact of cognitive biases.

The behavioural critique of financial market regulation utilizes the findings of Behavioural Decision Theory (BDT). A comprehensive exposition of BDT would describe it as the interdisciplinary intellectual movement that incorporates theories of decision-making\(^3\) that have their roots in: (a) the branch of cognitive psychology that is called psychology of judgement and choice, pioneered by two leading psychologists Daniel Kahneman and Amos Tversky\(^4\) and (b) experimental economics,\(^5\) a term that is mostly used to describe the laboratory tests of economic theory doctrines and the findings of those tests.

A number of empirical studies undertaken by psychology of judgement and choice scholars have documented the strong impact of cognitive processes (heuristics) and cognitive biases on individuals’ decision-making. As Kahneman and Tversky (1974)\(^6\) observed in a paper that described the heuristics of representativeness,\(^7\) availability\(^8\) and anchoring\(^9\):

\[\text{P}eople \text{ rely on a limited number of heuristic principles, which reduce the}\]
\[\text{complex tasks of assessing probabilities and predicting values to simpler}\]
\[\text{judgmental operations. In general, these heuristics are quite useful, but sometimes}\]
\[\text{they lead to severe and systematic errors.}\]

Cognitive biases are the results of the use of heuristics, when they lead to: (a) ‘systematic errors in estimates of known quantities and statistical facts’ and (b) systematic departures of intuitive judgments from the principles of probability theory. Some of the most important cognitive biases are: mental accounting,\(^10\)

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\(^3\) For extensive analysis see Rachlinski 2000, pp. 739-740.

\(^4\) Representative publications include: Tversky & Kahneman 1974, Kahneman & Tversky 1979, Tversky & Kahneman 1986.


\(^6\) Kahneman & Tversky 1974; Harvey 1998.

\(^7\) The representativeness heuristic is used by individuals to evaluate probability. Much of the time, representativeness is a helpful heuristic, but it can generate some severe biases.

\(^8\) The availability heuristic controls estimates of the frequency or probability of events, which are judged by the ease with which instances of such events come to mind. In other words, the availability heuristic is an assessment of accessibility.

\(^9\) Anchoring refers to the process by which an individual decision maker gravitates to a reference point that she subsequently uses as an initial condition for arriving at a final decision. Experimental evidence shows that people anchor too much on the initial value, e.g. on prevailing current interest rates or stock prices, and subsequent adjustment is often insufficient.

\(^10\) Mental accounting is called the process people adopt to formulate financial problems for themselves. Mental accounting can be very important for making financial decisions, because, according to Prospect Theory, \(\nu\) is nonlinear, and thus, individuals may infer the wrong conclusions from an accurate set of data. On the importance of mental accounting for budgeting and making other decisions regarding the allocation of financial resources see Thaler 1999a.
overconfidence, loss-aversion,\textsuperscript{11} anchoring, and the framing effect.\textsuperscript{12} Of course, the most recent example of the influence of behavioural factors on market developments is the massive credit expansion of the past decade,\textsuperscript{13} the resulting bubble in housing prices in the US and UK, the subsequent subprime mortgage crisis,\textsuperscript{14} and the global credit crunch. However, an analysis of the causes of the global credit crisis and of possible remedies is outside of the ambit of this chapter as it would have to involve a lengthy discussion of issues of systemic stability and of optimal structure of the global financial services industry.\textsuperscript{15}

Arguably, the remedy that is invariably proposed to address the distorting impact of cognitive biases is more paternalistic regulation, which aims to counter the undesirable results of such biases (debiasing). It has been argued that the preference for more regulation in response to the findings of BDT shown by academics, regulators, and policy makers reflects nothing more than their own psychological biases.\textsuperscript{16} Yet, the proper function of regulation,\textsuperscript{17} when it serves a debiasing role, is significantly different than older forms of paternalistic regulation and requires the use of innovative techniques.\textsuperscript{18} This new approach to paternalistic regulation which directs and educates the subject of regulation without eliminating choice and without affecting the decisions of the more sophisticated, less ‘behaviourally challenged, players has been best described, in two separate papers, by Professors Thaler and Sunstein,\textsuperscript{19} and Camerer, Issacharoff, Lowenstein et al.\textsuperscript{20} Conscious of the undesirable and restrictive effects that regulation brings, these scholars have striven to devise a form of ‘light touch’ paternalistic regulation, which they respectively call libertarian paternalism and asymmetric paternalism. However, the term that is most commonly used to describe this form of paternalistic regulation is soft paternalism.

This chapter proposes a number of critical regulatory reforms to counter the undesirable effects of cognitive biases adopting the aforementioned path of soft paternalism. Relevant recommendations touch on four areas of investor protection regulation: provision of investment advice, investment promotions, mandatory disclosure, and asset management. In most of these areas, retail investors, policy-

\textsuperscript{11} Successive experimental studies have identified a deep seated loss aversion by individuals, which goes much beyond conventional risk aversion, and conflicts with rational choice assumptions about individuals’ decision-making. This cognitive bias was first identified by Kahneman & Tversky 1979; Tversky & Kahneman 1991.

\textsuperscript{12} The framing effect refers to the influence over decisions ascribed to the way a problem is presented to the decision maker.

\textsuperscript{13} Avgouleas 2009; Schwarcz 2007.

\textsuperscript{14} Schwarcz 2008.

\textsuperscript{15} For such a discussion see Avgouleas 2009.

\textsuperscript{16} Hirshleifer 2008.

\textsuperscript{17} For the general uses of regulation see Ogus 1994 and Ogus 2006.

\textsuperscript{18} Ogus 2005.

\textsuperscript{19} Thaler & Sunstein 2003.

\textsuperscript{20} Camerer, Issacharoff & Loewenstein 2003.
makers, and regulators, may not rely on the corrective role professionals’ investment activities.

Suggested measures comprise: (a) reform of investor categorization systems and increase of recognized investor classes, (b) attendant increase in the prescribed frames for investor disclosure and the volume of information reaching various investor classes, (c) introduction of properly framed (‘edited’) investment contracts, and (d) the mandatory use of long-term performance targets for pension fund managers. Although paternalistic in their nature, the above measures do not seriously restrict choice of investments and of investment and trading strategies for both unsophisticated and professional market actors.

This chapter is divided in five sections. The first section is the present introduction. The second section provides an overview of the most important findings of behavioural finance, which underscore the role of cognitive biases and other neuro-system limitations (e.g., bounded rationality) on investor behavior. It also highlights the inability of the current model of investor protection regulation to redress the distorting impact of cognitive biases. The third section debates the merits of soft paternalism in the context of financial markets. The fourth section highlights the need to devise regulatory remedies to redress the distorting impact of cognitive biases on investor and market welfare. It also explains why the inconsistent nature of investor biases precludes any calls for a wholesale regulatory reform. In this context, it provides a number of suggestions for reform in four areas of investor protection regulation. The fifth section brings the different strands of the present discussion to a comprehensive conclusion.

2. Investor Protection Regulation and Behavioural Finance

2.1. The Rational Choice Foundations of Investor Protection Regulation

Any comprehensive description of investor protection regulation would divide it into: (a) market conduct regulation: rules prohibiting market abuse (insider dealing and market manipulation) and securities fraud, which, in effect, protect the integrity of the market and the interests of public investors, (b) conduct of business regulation: rules that regulate the way investment intermediaries provide investment advice, asset management, and trade matching and execution services to their clients, as well as the way they conduct investment promotions, and (c) disclosure regulation: the disclosure obligations of publicly traded companies (mandatory disclosure rules).

In all of the above areas, regulation strives to protect rational investors through the provision of information, the regulation of conflicts of interests, and the prohibition of market misconduct. Regulation does not take into account in any of the above areas the behavioural elements of market actors’ decision-making.

The rational investor model has deep roots in the most common systems of investor protection regulation. It was the underlying rationale of the enhanced
issuer disclosure obligations imposed by the US New Deal Statutes, the first comprehensive national system of rules governing securities markets. In addition, it has been ever since the underlying rationale of all major legislation dealing with the workings of financial markets. Leading examples constitute the US Sarbanes Oxley Act and recent EU legislation regulating securities markets.

The advent of Efficient Market Hypothesis (EMH), an intellectual child of rational choice theory, further strengthened the argument in favour of the rational investor model as the foundation of securities regulation. This, however, does not mean that scholars supporting the EMH approach to securities regulation were also in favour of regulation. In fact, most legal scholars embracing the EMH have been steadfastly hostile to very central pieces of investor protection regulation.

The assumptions of EMH have been subjected to a fierce critique by behavioural finance scholars who use and uphold the findings of BDT as a means of interpretation of certain market phenomena. Behavioural finance studies provide strong evidence of the impact on investor decision-making of cognitive biases, bounded rationality, and professionals’ tendency to herd, when noise traders are active in the market. Thus, the designers of investor protection regulation may no longer ignore the findings of those studies. The next paragraph provides a comprehensive outline of the most pertinent to the present discussion of the assumptions of behavioural finance.

2.2. Principles of Behavioural Finance

The fundamental assumption of rational choice theory about financial markets is that markets move only on the basis of rational expectations. Namely, asset prices are set by rational investors. EMH, as the brainchild of rational choice theory, assumes that market prices reflect equal fundamental value and change because of new information. Thus, in an efficient market no investment strategy can yield average returns higher than the risk assumed (‘there is no free lunch’) and no trader can consistently outperform the market or accurately predict future price levels, as new information is instantly absorbed by market prices. Another EMH assumption is that markets are efficient and transaction costs relatively low, giving

26 Friedman 1953, pp. 3-43.
27 For the theoretical foundations of the EMH see Samuelson 1965; Mandelbrot 1966.
28 Chicago Professor Eugene Fama has contributed the empirical foundations of EMH, Fama 1970; Fama 1991.
‘professionally-informed traders’ the opportunity to quickly observe and exploit through arbitrage trading any price deviations from fundamental value, as this would create an opportunity to profit from such discrepancy. The result of arbitrage trading is that prices reach a new equilibrium, which reflects more accurately the traded asset’s value and corrects any mis-pricings.29

Behavioural finance challenges most of the assumptions of EMH.30 The main tenets of behavioural finance are that: (a) certain market phenomena called anomalies or puzzles may not be explained by the EMH, whereas the use of psychology can provide convincing explanations and (b) the corrective influence of arbitrage trading is limited due to a number of restrictions.

Starting from the second point, convincing evidence has been offered indicating that arbitrage trading may not have the strong corrective role ascribed to it by EMH scholars, because, it is not a cost-free but a risky activity.32 If we assume two kinds of investors in the market: (a) rational speculators or arbitrageurs who trade on the basis of information and (b) quasi-rational investors,33 called noise traders, then, it follows that a number of investors act on imperfect information.34 Thus, they cause prices to deviate from their equilibrium values. However, as EMH proponents accurately counter, the actions of noise traders alone are ‘insufficient to result in inefficient market prices’. Any price inefficiencies created by noise trading will be exploited by arbitrageurs (so-called ‘smart money’). Three additional elements are required: (a) the biases exhibited by noise traders must be consistent;35 if they are not, most economists would agree that, in a world of heterogeneous biases as much as beliefs, some individuals’ biases will cancel out those of others;36 (b) the effect of such biases must be so strong as to ‘blind’ arbitrage traders to the obvious profit opportunities because of prevalent ‘price inaccuracies’; for instance, hedge funds not only have available to invest very large pools of funds, but also they search on a continuous basis for profit opportunities on a global scale; (c) arbitrage is limited by other financial or regulatory restrictions.

As regards the first argument, sometimes, ‘a single bias extends across most noise traders’, and thus not only there is no cancelling out of different biases, but also the impact of a single bias, such as overconfidence, is exacerbated leading to a price spike or a bubble.37 It is accurately argued that a ‘sharp increase in the participation of individual investors’ in trading activity that moves prices toward

34 Shleifer & Summers 1990.
35 See Gilson & Kraakman 2003, pp. 725, 733.
36 Ibid.
one direction, as is the case with asset market bubbles, ‘is a powerful indication that they share a common bias’. 38

In addition, the agency relationship that governs the actions of fund managers and other professional investors (so-called ‘separation of brains from capital’) 39 often places limits to arbitrage. Career concerns closely linked to the need to show short-term profits that are at least comparable with those of competitors force fund managers to herd. As a result, they forego arbitrage opportunities. Namely, noise traders force professional investors to herd in order to post short-term gains. 40

Finally, arbitrage is often subject to regulatory restrictions on short-sales, and considerable transaction costs, for example high costs of stock-lending. Considering the corrective influence on the market of short sales, 41 regulatory and transaction cost restrictions sharply reduce their volume and thus their effectiveness.

The so-called Royal Dutch Shell and Closed-End Funds puzzles constitute strong evidence of the limited impact of arbitrage, due to noise trading. In addition, a number of other market puzzles discussed below provide a clear exposition of the impact of cognitive biases on the workings of financial markets.

(i) Royal Dutch Shell

The pricing of the shares of the Royal Dutch/Shell Group has been one of the first market phenomena used by behavioural finance scholars to show the limitations of the EMH. 42 Royal Dutch Shell is the result of the 1907 merger of Royal Dutch Petroleum and Shell Transport, which were independently incorporated in, respectively, the Netherlands and England. The merger of the two companies’ assets was agreed on a 60-40 basis. Roughly, this ratio remained the basis for the division of cash flows between the two segments of Royal Dutch Shell until 2005. The legacy companies maintained separate listings and Royal Dutch traded primarily in the United States, where it was part of the Standard & Poor’s 500 Index (S&P 500) and the Netherlands, and Shell has traded primarily in London, where it has been a major constituent of the Financial Times Stock Exchange Index (FTSE 100). According to the EMH model, the shares of the two components of this company should have traded at a 60-40 ratio, following exchange rate adjustments. Yet, the history of the price movement of the stocks shows a consistent deviation of over thirty five percent (35%) from the expected ratio. Even when explanations, such as taxes and transaction costs, are taken into account, this very wide disparity cannot be explained but by reference to noise trading, clearly illustrating the limits of arbitrage.

38 Gilson & Kraakman 2003, pp. 733.
40 See Nofsinger & Sias 1999.
41 On the effect of short-selling on correcting price inefficiencies see Macey et al., 1989; Dechow et al. 2001.
(ii) Closed-end funds

Arguments concerning the inability of arbitrage to correct pricing inaccuracies are lent additional credibility by the widely observed mis-pricing of the shares/units of closed-end funds. Unlike open-end funds, closed-end funds issue a fixed number of shares/units. Thus, the rational way to find a price for their shares is to divide the net value of the fund’s total assets (NAV) by the number of shares outstanding. Yet the average closed-end fund seems to trade at ten percent (10%) discount or premium over NAV. Lee, Shleifer, and Thaler have suggested that some of the individual investors who are the primary owners of closed-end funds are noise traders, exhibiting irrational swings in their expectations about future fund returns. Sometimes they are too optimistic, while, at other times, they are too pessimistic. Sentiment changes affect fund share prices explaining thus the difference between share prices and NAV. This view has been received with serious skepticism by EMH scholars, who have offered a number of rational choice explanations to this puzzle. These include arguments about the impact of transaction costs (redemption expenses), expectations about future fund manager performance (agency costs), and tax liabilities. While, these arguments may explain why funds usually sell at discount, they do not say why sometimes funds sell at substantial premia or why discounts tend to vary on a weekly basis. Furthermore, the noise trader argument provides a powerful explanation of why it is possible to sell new closed-end funds at a premium encouraging the establishment of closed-end funds at times of investor exuberance and why when a closed-end fund is liquidated the share price converges towards NAV. In the latter case, investors no longer have to worry about shifts in noise trader sentiment and they cease demanding discounted prices over NAV to compensate for this risk.

(iii) Equity premium

Another market phenomenon that has not been adequately explained by EMH scholars is the equity premium puzzle. This is the premium that US equities belonging to the S&P index have enjoyed over risk-free Treasury Bills in the

43 Barberis & Thaler 2002, p. 41.
45 See Barberis & Thaler 2002, p. 41.
46 In fact, Lee, Shleifer & Thaler found that there is a strong co-movement in the prices of closed-end funds, which is a powerful indication that noise trader risk is systematic. See footnote 44 above. See Barberis, Shleifer & Wurgler 2001.
past seven decades and was first observed by Mehra and Prescott (1985).\textsuperscript{47} Thaler and Benartzi have offered a purely behavioural explanation to the \textit{equity premium puzzle}.\textsuperscript{48} They have suggested that it is attributable to \textit{prospect theory} related \textit{loss aversion}, which, in this case, is ‘myopic’, since even investors with long-term horizons appear to be pre-occupied with short-term gains and losses. Subsequent papers have speculated that the premium may be owed to a combination of \textit{loss-aversion} and another prospect theory concept: \textit{narrow framing}.\textsuperscript{49} Namely, ‘even if investors have many forms of wealth, both financial and non-financial, they still get utility from changes in the value of the specific component of their wealth made up by their financial holdings’.\textsuperscript{50} As a result, they overvalue the disutility (regret) derived from realizing a loss over a specific asset. Therefore, individuals’ susceptibility to \textit{loss aversion} and the use of \textit{narrow framing} delay the disposal of losing shares for as long as possible creating an equity premium.\textsuperscript{51}

(iv) Volatility

Robert Shiller first showed that aggregate stock prices appear to move much more than can be justified by changes in intrinsic value, as measured by the present discounted value of future dividends.\textsuperscript{52} Another study conducted by LeRoy and Porter used a similar analysis for the bond market.\textsuperscript{53} These studies revealed significant volatility in both the stock and bond markets. Shiller attributed fluctuations in actual prices greater than those implied by changes in the fundamental variables as being the result of fads or waves of optimistic or pessimistic market sentiment. Despite the controversy created by Shiller’s article,\textsuperscript{54} subsequent research seems to confirm most of his initial assumptions. In this respect, the behavioural explanation offered for the \textit{volatility puzzle} is as follows: (a) investors believe, due to the influence of \textit{representativeness} (especially of \textit{the law of small numbers}),\textsuperscript{55} that the mean dividend growth rate is more variable than it actually is; they are also overconfident about the value of their private information\textsuperscript{56} and (b) investor preferences, especially the degree...
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of loss aversion, differs on the basis of prior gains and losses. Thus, in the event of good prior gains, investors become less loss averse.57

(v) Dividend Policy

While leading economists have shown that, in an efficient market with no taxes, dividend policy is irrelevant,58 actually companies keep distributing cash dividends. Even worse, they do so while they could make their taxpaying shareholders better off by repurchasing shares instead, since dividend gains have historically been taxed at a higher rate.59 The behavioural explanations offered for this anomaly are mainly based on the work of Shefrin and Statman.60 Their explanation focuses on: (a) the role dividends can play in facilitating individuals’ self-control, e.g., ‘consume the dividend, but don’t touch the portfolio capital’, (b) the prospect theory concept of mental accounting: ‘by designating an explicit dividend payment, firms make it easier for investors to segregate gains from losses and hence to increase their utility,’ and (c) regret, namely, people’s tendency to feel stronger regret for actions of commission rather than actions of omission. Thus, by paying dividend firms help investors to avoid regretting the sale of a stock, which has subsequently appreciated, in order to finance consumption. Their consumption needs can be financed by the dividend payment enabling them to retain the stock.

2.3. Investor Herding and Asset Market Bubbles

Arguably, bubbles constitute one of the market phenomena the occurrence of which shakes to its foundations the view that markets move in a rational way.61 In addition, they are a very potent enemy of both market efficiency and investor welfare. When the bubble eventually bursts investor losses are often devastating and, in the absence of fraud, not recoverable.

Stock market bubbles are, often, attributed to investors’ ‘irrational exuberance’, ‘speculative mania’ or ‘mob psychology’, which are regarded as a form of ‘mass hysteria’ that constitutes ‘an occasional deviation from rational behaviour’.62 A characteristic example constitutes an anecdotal quote by a London banker used to

58 This argument is the second part of the famous Modigliani-Miller theorem. See Modigliani & Miller 1958.
59 For an analytical discussion of the answers offered to this puzzle by behavioural finance see Barberis & Thaler 2002, pp. 49-52.
60 Shefrin & Statman 1984.
61 See on stock market over-reaction DeBondt & Thaler, 1985; DeBondt & Thaler 1997.
justify his participation in the third subscription to the highly overvalued South Sea Company stock in 1720: ‘When the rest of the world are mad, we must imitate them in some measure’.\textsuperscript{63} This statement could also describe the speculative ‘frenzy’ that occupied most quarters of global stock markets during the stock market bubble of the nineteen nineties, which mostly revolved around the stock of new technology (dotcom) companies. While Enron, WorldCom and the other companies involved in the US corporate scandals inflated profits using fraudulent means,\textsuperscript{64} most dotcom companies never claimed profit. Investors seemed to believe that technological innovation and a rapidly growing market would allow companies that would enter first the relevant industries to produce strong future profits despite ever accumulating present losses.\textsuperscript{65} This belief seems to the rational observer unsustainable, yet it acquired such a strong grip on investor views as to lead to the creation of the \emph{bubble} of the nineteen nineties (1990s), in the course of which the market price of new technology companies with very few assets and mountains of debt reached stratospheric levels.

Convincing explanations about stock market bubbles may be derived from the psychology of judgment and choice, especially when considering the operation of the \emph{availability heuristic} and the impact of the cognitive biases such as \emph{overconfidence}.\textsuperscript{66} As mentioned above, behavioural economics has shown that individuals exhibit a deep-seated bias toward optimism in predicting future events.\textsuperscript{67} \emph{Overconfidence} is also a bias that the use of Internet trading has exacerbated among individual investors.\textsuperscript{68} In a rising stock market individuals embrace ‘irrational’ beliefs that the price rises will continue indefinitely.\textsuperscript{69} Institutional investors seem also susceptible to overconfidence. Accordingly, as the market soared in the mid-nineteen nineties, investors came to assume that this pattern would continue indefinitely and kept buying overvalued stocks.\textsuperscript{70}

Behavioural causes were also at the root of the housing market \emph{bubbles} in the US and the UK whose damaging consequences have been acutely felt by individuals and the financial system in both countries. It has been frequently observed that individuals in retail credit markets exhibit a marked inability to take rational choice decisions.\textsuperscript{71} This view was strongly vindicated by the behaviour of prime and sub-prime borrowers during the credit expansion decade of 1997-2007 and their role in the formation of a housing market \emph{bubble} during the same period. US and UK mortgage borrowers \emph{anchored} to the prevailing environment of low interest rates and easy access to credit and \emph{overconfident} that rising house prices will last forever, rushed to jump on the property bandwagon, playing the ‘momentum game’ with

\begin{footnotesize}
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\item\textsuperscript{63} Cited in Carswell 1960, p. 161.
\item\textsuperscript{64} On the US corporate scandals of Enron, WorldCom etc. see Avgouleas 2005, chs. 3-4.
\item\textsuperscript{65} Gordon 2003, p. 1.
\item\textsuperscript{66} Shiller 2000.
\item\textsuperscript{67} Weinstein 1980.
\item\textsuperscript{68} Barber & Odean 2001, p. 46.
\item\textsuperscript{69} Shiller 2000.
\item\textsuperscript{70} Coffee 2004, p. 325.
\item\textsuperscript{71} See Sunstein 2006; Bar-Gill 2004.
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\end{footnotesize}
the property market. However, in doing so they took no account of whether their borrowings were truly affordable based on their earnings in what is a strong evidence of the influence of cognitive biases such as mental accounting.

The above do not mean that bubbles have no transaction cost explanations. A very convincing one is that herding which leads to the creation of bubbles is investors’ reasonable response to bounded rationality and information asymmetries. Individuals conscious of the limitations of information they possess will try, under conditions of complexity and uncertainty, either to use heuristic rules or to observe the actions of persons, which are presumed to be better informed, and if possible to free-ride on the investment decisions of such persons. In other words, they will follow those who appear to be informed traders.

Yet, institutional investors’ role in the creation of asset market bubbles might be better explained by socio-psychological factors. Institutional investors’ money, including hedge funds, is today managed by expert individuals, who allocate, as agents, the money of their principals: the fund’s investors. Principal-agent interests, as in most agency relationships, are not perfectly aligned and sometimes diverge considerably. Fund managers must show that their performance is equal or better than the rest of the market. Performance affects bonus payments and the managers’ tenure in the job. Accordingly, individuals who act for institutions are very likely to herd.

Strong evidence of the very pervasive, and destructive, presence of herding in asset markets is offered by institutional investors’ participation in structured credit markets in the past decade and their role in the subsequent collapse of those markets, one of the causes of the global credit crisis. In what is a classic illustration of herding behaviour, institutional investors flocked the markets for structured credit products. In fact, their increasing exposure in those markets took place inspite of investors’ marked inability to price most of those products or understand the risks involved. Yet, instead of conducting diligent calculations of the value of structured credit products or eschewing them altogether, as would be expected by rational market actors, who cannot properly quantify the risk and return relationship embedded in a financial product, the overwhelming majority of

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72 Bainbridge 2000, p. 1038.
73 See on investor over-reaction Daniel, Hirshleifer & Subrahmanyam 1998.
74 An excellent recent analysis of the socio-psychological factors that lead to herding is Hirshleifer & Teoh 2008, pp. 19-41.
75 Chevalier & Ellison 1999.
76 See Gompers & Metrick 2001; Wermers1999; Scharfstein & Stein 1990; for an overview Hirshleifer & Teoh 2003.
77 On the role of institutional investors’ synchronized exodus from the structured credit markets to the collapse of that market and the drying up of global availability of liquidity see IMF 2008. For an extensive analysis of the behavioural elements of institutional investor conduct during the recent credit crisis see Avgouleas 2009.
institutional investors choose to place excessive and irrational reliance on credit ratings. The fact that credit ratings were often unsuitable for the purpose used by fund managers: product valuation, did not seem to have a bearing on their decision to over-invest in the securitized debt markets. This striking phenomenon must have significantly weakened any arguments about professional investors’ ability and inclination to act as rational (contrarian) arbitrage traders.

However, apart from restrictions on short-sales or trading on credit, which might as well harm market efficiency, no other direct limitation could be placed by law on institutional investor trading that would not unnecessarily restrict investor choice. Therefore, any regulatory intervention has to indirectly engineer a shift of fund managers’ focus away from short-term gains without dictating trading policies. I set out such a proposal in section four.

2.4. Bounded Rationality and Disclosure

Disclosure regulations in financial markets prescribe the form and extent of risk disclosure to buyers of financial products or relate to mandatory disclosure obligations of securities issuers. The underlying rationale of disclosure regulations is that appropriately informed investors make rational use of available information to adopt investment decisions that enable them to maximize profit and even protect themselves against market abuse or fraud. This rationale has been one of the fundamental premises of the modern system of securities regulation from the US New Deal Statutes to the Market Abuse Directive, and the EC Prospectus and Transparency Directives.

However, it has been observed by many commentators that risk disclosure may often not work, at least, for retail investors for a variety of reasons, which include bounded rationality and the discussed, in a subsequent paragraph, framing effect. A characteristic example of the failure of risk disclosure to achieve the desired outcomes is the way prime and sub-prime borrowers in the US ‘rushed’ into the ‘honey trap’ set by excessive availability of credit. These borrowers often failed to understand the risks their mortgage indebtedness involved, in spite, in some cases, of adequate and accurate risk disclosure.

Furthermore, issuers of securities to the public comply with their disclosure obligations by issuing very lengthy documents containing vast amounts of information on an ad hoc (when they go public or seek to obtain a stock exchange listing) or a periodic basis (once they have gone public). These documents, called either prospectuses or disclosure forms, present issuer related information in a prescribed mode both in terms of forms and content. As a result, he actual welfare effect of the heavy volume of information that reaches the markets through mandatory disclosure rules has been questioned on many grounds.

78 Ibid.
80 See above footnote 23.
81 Schwarcz 2008.
82 Stigler 1964; Easterbrook & Fischel 1984.
The notion that the sound operation of financial markets is ensured through the disclosure of a heavy volume of information by issuers of investments does not sit well with investors’ bounded rationality. The term essentially means that individuals have limited ability to process information, since they possess ‘limited computational skills and seriously flawed memories’. Therefore, it is paradoxical to expect boundedly rational individuals to process information contained in issuers lengthy disclosure documents and base their investment decisions on them. As a result, a new framework must be devised that would supplement and overhaul the regulatory process of mandatory disclosure.

3. Is Paternalistic Regulation the Right Response to Cognitive Biases?

3.1. BDT and Paternalistic Regulation

The use of BDT in the analysis of legal systems is, often, viewed with much skepticism and has created deep divisions, especially among law and economics scholars. Relevant responses range from full or critical endorsement to reasoned or doctrinal rejection. Much of the bitterness of these divisions stems from the fact that the standard Behavioural Law and Economics (BLE) response to the findings of BDT involves calls for more paternalistic regulation to help individuals (and to some extent organisations) to overcome the detrimental impact of cognitive biases. A partial explanation of calls for more regulation is that early BLE exaggerated the normative implications of the findings of the psychology of judgement and choice. As Professor Rachlinski notes, the psychology of judgment and choice does not support abandoning individual judgment in every instance in which people rely on a misleading heuristic. Individuals may be able to learn better decision-making strategies or delegate their choices to those who have. Therefore, mere evidence of cognitive biases may not ‘support implementing a constraint on individual choice.’

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83 Bounded rationality was first discussed as a potential determining factor in decision-making by Herbert Simon, the 1978 Nobel Prize in economics. See Simon 1955; Simon 1978.
85 See Rachlinski 2003.
87 Kelman 1998.
88 For an excellent analysis of the desirable uses of paternalistic regulation see Ogus 2005.
89 e.g., Hanson & Kysar 1999.
90 Mitchell 2002, p. 70.
91 Rachlinski 2003, pp. 1166-68.
92 Ibid.
As mentioned earlier, Professors Thaler and Sunstein have proposed an alternative form of paternalism, called Libertarian Paternalism. Their paper suggested that the detrimental effects of cognitive biases provide sufficient justification for the imposition of soft regulation, such as ‘default rules’, in defined contexts, where a strategic choice of default options could maximize social welfare. A similar form of soft paternalism has been adopted by other behavioural economics scholars, who have suggested that regulatory responses to cognitive biases should target the ‘behaviourally challenged’ without restricting considerably choice or affecting the decisions of rational actors. They call this form of regulation: Asymmetric Paternalism, noting that ‘regulation is asymmetrically paternalistic, if it creates large benefits for those who make errors, while imposing little or no harm on those who are fully rational’.

3.2. The Perils of Soft Paternalism

While the approach of soft paternalism in identifying proper remedies to counter the detrimental impact of cognitive biases on individuals has strong merits in specific contexts, on a more general level, BDT does not support the unconditional introduction of stricter and more inclusive regulation. On the contrary, to some extent the findings of BDT seem to favour free competitive markets over formal regulation. This view is not only supported by the findings of experimental economics in respect of individuals’ capacity to learn from costly errors, but also by the psychology of judgement and choice.

First, the agents (politicians and regulators), who are called to implement protective legislation, are subject to cognitive biases themselves and nothing can ensure that the rules they will draft and the way they will enforce them will be free from the influence of such biases. Secondly, the principals (individual voters), who will be called to legitimize such measures, may be challenged more strongly by the effects of such biases when they take decisions in the sphere of political rather than in the sphere of economic life. At the very least, within the former the effect of biases will be more common and persistent. It seems that to individual voters ‘the cost of a mistake in choosing a candidate is trivial because he is unlikely to affect the result of any election.’ Whereas, individuals seem to bear directly some of the cost of economic mistakes they make because of cognitive biases.

Furthermore, Edward Glaeser, a Harvard economist, has explained that soft paternalism presents a number of other disadvantages: (a) ‘it can cause bad decisions just as easily as hard paternalism’, (b) it can lead to abuses more often than hard paternalism, because it is more attractive, allowing the building of wider public support, (c) it ‘can build dislike or even hatred of subgroups of the population’, (d)

93 See Thaler & Sunstein 2003.
94 See Camerer, et al.
95 Glaeser 2006; C. Camerer, 2006.
96 Zingales 2004, pp. 31-32.
it can lead to hard paternalism, and (e) it complements government persuasion re-

ferring the powers of the state bureaucracy.98

The regulatory measures suggested in section four have taken fully into
account Glaeser’s arguments. Thus, they are very focused and low scale,
necessitating minimal involvement by regulatory bureaucracies. Once the suggested
regulatory framework is in place. They are also capable, by design, to be attached to
an existing system of public monitoring, minimizing implementation costs to
regulated firms and eliminating the scope for abuse and discrimination.

4. Evolutionary Investor Protection Regulation: A Framework for
Reform

4.1. The Behavioural Case for Reform

4.1.1. There is No Case for Wholesale Reform

Attempts to introduce elements of behaviouralism in the analysis of securities
regulation99 have so far been very successful in explaining what is wrong with
theories of rationality on which most of fundamental tenets of investor protection
regulation are based. They have, however, been very cautious,100 or inconsistent in
their normative suggestions. In addition, even cautious proposals for reform have
encountered reasoned opposition.101

There are some very good arguments explaining why the findings of BDT
cannot, while they remain at a development stage, support a wholesale reform of
the current system of investor protection regulation. Consider, for instance, the
endowment effect.102 This refers to how ex ante possession appears to affect valuation
decisions. While the endowment effect was originally the province of prospect theorists
in economics and psychology,103 legal scholars soon recognized its relevance. The
existence of significant endowment effects may have important implications for both
our positive understanding of legal rules and the optimal design of such rules.104
However, the endowment effect is made more intriguing by the fact that it appears to
be a very context-dependent phenomenon. In particular, the effect appears most
pronounced in situations where the entitlement in question has few market

98 Glaeser 2006, pp. 149-156.
99 Prentice 2001; Cunningham 2002.
100 Langevoort 2002.
102 For a review of the literature see Horowitz & McConnell 2002.
103 Kahneman, Knetsch & Thaler 1990.
104 See Camerer & Talley 2007, p. 1631.
substitutes;\textsuperscript{105} when it has significant use as well as exchange value;\textsuperscript{106} and when subjects believe their entitlement was the result of merit rather than luck.\textsuperscript{107} By contrast, there is little evidence of the \textit{endowment effect} playing any role in agency relationship contexts.\textsuperscript{108} As a result, it is highly unlikely that fund managers acting for retail or institutional investors allocating their assets will feel emotional attachment of any kind to specific bundles of securities or financial assets and require an unreasonably high price to dispose of them. Therefore, it is very doubtful whether the \textit{endowment effect} plays a significant role in the context of financial markets, where stocks, bonds, and other investments are normally nothing more than an easily substitutable asset/means used to store value, and agents (fund managers) take many asset allocation decisions for their principals (individual and other institutional investors).

Two other cognitive biases that lead to contradictory conclusions in the context of financial markets are \textit{overconfidence} and \textit{loss-aversion}. \textit{Overconfidence} is a very persistent bias to which both retail and professional investors are very susceptible; thus, it is very likely that any regulatory intervention to counter it would have no practical results.\textsuperscript{109} In addition, it may be a good countervailing bias to \textit{loss aversion}. In turn, loss aversion may be a good antidote to \textit{overconfidence}, since it leads investors to trade less adopting a more long-term outlook. Empirical research shows that those who trade most in financial markets earn lower returns than less active traders.\textsuperscript{110} Thus, in the context of financial markets, loss aversion may prove a welfare enhancing bias.

Behavioural analysis must also offer a convincing answer as regards the effect of rational learning on individuals’ (including investors) decision-making.\textsuperscript{111} Arguably, views on the effect of learning differ significantly. Some scholars suggest that, despite the fact that a few individuals are capable of learning from past experiences, most still take a long time to do so or never learn ‘their lesson’.\textsuperscript{112} Nonetheless, for a number of biases investor education and not the adoption of new regulation may be the most appropriate remedy and the field where investment market regulators should place increased importance.

\textbf{4.1.2. Evolutionary Regulation: Targeted Reform,}

For all of the above reasons this chapter’s reform proposals adopt an evolutionary approach to regulatory reform suggesting incremental change. As described in the next two paragraphs, this chapter’s proposals focus on the regulation of investment

\textsuperscript{105} Shogren \textit{et al.} 1994.
\textsuperscript{106} See Kahneman, Knetsch & Thaler 1990. In fact, most experimental evidence suggests that the \textit{endowment effect} is not present when the underlying right is solely or principally a store of value.
\textsuperscript{107} Loewenstein & Issacharoff 1994.
\textsuperscript{108} Arlen, M. Spitzer & Talley 2002, p. 5.
\textsuperscript{109} Prentice 2001.
\textsuperscript{110} Odean & Barber 2002.
\textsuperscript{111} For a summary of relevant studies in a more general context see Mitchell 2002, p. 35-40.
\textsuperscript{112} Korobkin & Ulen 2000, p. 1071.
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advertisements/investment promotions, provision of investment advice, asset management, and issuer disclosure. In the above areas, debiasing may not occur through further investor education, delegation of the task of choosing investments to professionals, or through mere improvement of the quality of disclosed information.

Furthermore, investment professionals, though they are normally subject to much less severe biases, may not be fully trusted to protect their principals’ interests for three reasons. The first reason is conflicts of interest. These are evident both in the case of investment advice and in the field of asset management, where professionals may offer self-serving investment recommendations or follow harmful to their investor/principals short-term investment strategies in order to protect their own interests. The second reason is behavioural biases within organizations, which inevitably affect institutional investors. The third reason is that investment professionals may feel tempted to manipulate investor biases for their gain instead of trying to protect them from the detrimental impact of such biases. Thus, regulatory intervention is needed to allow investors to rely on their own devices to adopt the best decision through optimal framing of marketing material and properly structured (even through the use of rules of default), investment contracts, and create incentives that would align the interests of investment professionals with those of their principals incentivizing them to pursue long-term and thus welfare enhancing investment strategies.

Finally, the remedies suggested seek to bring debiasing through law without producing confusion or misperception or violating individuals’ autonomy. Moreover, because of their limited scale, and targeted nature they do not constitute overshooting. The above attributes have been held by Jolls and Sunstein to be the determining criteria of any successful debiasing through law efforts.

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113 In general, investment sophistication and expertise may modify the use of heuristics and thus the results of attendant biases, see Jolls, Sunstein & Thaler 1998, p. 1486, and Avgouleas 2005, pp. 464-465.


115 Langevoort 1996.

116 ‘[W]e define debiasing of boundedly rational actors as using techniques that intervene in and alter the situation that produces the boundedly rational behavior, without operating on the degree of motivation or effort an actor brings to the task. Debiasing through law is then the use of legal rules to achieve such debiasing of boundedly rational actors’ See Jolls & Sunstein 2005, p. 10.

4.2. **Investment Advice, Investment Promotions, Issuer Disclosure, and Investor Cognitive Boundaries**

In the field of investment advice and investment promotions, it seems plausible that individual investor classification systems should become more pluralistic allowing for a larger number of investor categories. Such increase would better reflect the fact that there is a serious heterogeneity within the investor body and that, depending on their investment sophistication and expertise, individual investors are susceptible to cognitive biases to a different degree.\(^{118}\) Accordingly, the suggested division is based on the dual assumption that experts normally avoid many (but not all) of the cognitive errors of lay investors and that within the general group of lay investors wider classification is possible based on their investment experience, track record, education, financial resources, and even psychological preferences.\(^{119}\)

The identification of biases in the investment decisions of individuals and of institutions, in order to allow for more pluralistic investor categorization, would require a lengthy and large-scale study by psychologists, economists, and regulators of investor choices and of their trading behaviour. Serious objections have been raised as to whether such categorization is at all possible, due to difficulties in identifying and separating expert from non-expert investors.\(^{120}\) However, given that most investors follow specific trading patterns, certain objective characteristics of trading and investment habits can emerge without serious difficulty. In addition, this gigantic exercise may be less costly than it appears at first glance, since the data that needs to be collected is already at the disposal of investment firms. Finally, its processing could be conducted without revealing individuals' identities, protecting thus individual investor privacy.

The suggested increase of investor classes recognized in disclosure and conduct of business regulation would not necessarily place a significant new burden on financial services firms, at least in the UK and the EU, for two reasons. First, already the Markets in Financial Instruments Directive 2004 (MiFID) and the FSA’s conduct of business regulations (COB Rules) separate investors into retail clients, professional clients, and eligible counterparties.\(^{121}\) Although the third group concerns exclusively financial institutions, the other two are not as clear-cut as they seem. There is a class of individual investors, who based on their investment experience may be categorized as professional clients, enjoying thus a lower level of protection.\(^{122}\) Secondly, computerization, amortization, and increased sophistication

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\(^{118}\) Rachlinski 2006, pp. 216-224. The assumption that non-expert individuals are subject to identical cognitive biases is one of the major weaknesses of early BLE literature and is not endorsed here.

\(^{119}\) As Professor Cunningham suggests, individual investors may have their psychological profile taken and their psychological attitude to risk identified and recorded in the context of suitability tests which are already carried out by broker-dealers in compliance with existing conduct of business regulations. Cunningham 2002, pp. 33-37.

\(^{120}\) See Choi and Pritchard 2003, pp. 66-68.


\(^{122}\) MiFID, Anex II.ii.1.
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on the part of compliance professionals would help investment firms to comply with new rules at an imperceptible expense inspite the initial costs that measures such as the narrow categorisation of investors would entail.

Furthermore, expanding investor categorization seems to be the only immediate remedy in the case of mandatory disclosure. Since disclosure ‘may not protect investors if cognitive biases prevent them from rationally incorporating the information disclosed into their investment decisions’, the limitations of bounded rationality should be resolved through the adoption of other strategies. Thus, a good debiasing technique would be increased pluralism (fragmentation) of investor classes and appropriate modification of the format and volume of information addressed to each class of investors in the context of provision of investment advice, investment promotions and issuer disclosure. Namely, firms instead of producing single format disclosure prospectuses or one set of other disclosure or marketing documents would have to produce several in varied formats depending on the kind of investor each document is addressed to. Of course, all classes of investors should have access to all documents.

Securities issuers and investment services firms, involved in the placement and marketing of secondary offers of shares or distribution of high de-nomination bonds, are very familiar with this format in the disclosure and marketing material used for such placements. Usually, where such placements are strictly addressed to professional/institutional investors, securities issuers and their investment bank agents produce, though they have no obligation to do so, short form prospectuses, which contain all necessary information to enable investors to make an informed judgment.

4.2.1. Framing and Investor Choice

Framing can materially influence investors’ decisions. Namely, investors may purchase a financial product, whose risks have been fully disclosed, not on the basis of their risk and return analysis, but on how relevant risks and returns are presented. To give a simple example, individuals have been shown to dislike loss much more than they like gains. Thus, it is very likely that people’s choice of a risky investment product with high returns depends on how the risk embedded in the product is presented in the advice offered by an investment intermediary or in the marketing (promotional) literature, e.g., in terms of potentially reduced gains or of losses. However, such presentation does not necessarily violate COB Rules of fair description and disclosure for documentary financial promotions and product disclosure. Therefore, through appropriate framing investment firms may present a true and fair picture of the risk of the product and still manipulate investors’ choice.

123 Choi & Pritchard 2003, pp. 4, 22-23.
To counter the framing effect, regulators’ rulebooks such as the FSA’s COB Rules should take into account the impact of relevant cognitive biases and mandate detailed rules dealing with the presentation of investment information and the structure of investment contracts. The use of experiments can help the regulator to provide optimal guidelines about framing certain financial contracts, namely, presentation of such contracts’ risks and returns.

Finally, framing can influence the decision to save. Thus, appropriate editing of retail investment and savings contracts could even be combined with appropriate rules of default to direct investors to counter the effects of bounded self-control and direct investors towards the most welfare enhancing solutions, especially in the context of retirement savings.

### 4.3. Investment Management Contracts and Fund Manager Herding

Professional investors’ career concerns and reputational pay off motivating herding behaviour often are inextricably linked with the issue of comparative performance, namely, by the desire to perform ‘no worse than their major institutional rivals.’ Fund managers attract investor funds and maximize their management fees on the basis of their short term, usually quarterly, performance giving professional money managers a strong incentive to ‘herd’. Selling an overvalued company, as Enron was, may only have a beneficial effect on the manager’s performance, if the rest of the market holds similar views regarding the specific company’s value and start selling the securities causing a drop in the price. If this does not happen, because, for instance, of tainted research reports that ‘hype’ the company, then insightful fund managers, who have expended resources to acquire new information and properly assess it, will find themselves underperforming their rivals and possibly looking for a new job.

It follows that stricter and predominantly long-term performance measures, inserted by pension fund trustees in the asset management contracts they conclude with their investment management company, would be an effective remedy to check the propensity of fund managers to herd. Accordingly, pension regulations must compel pension fund trustees to do so. Faced with such a requirement, professional investors would not feel obliged to assume excessive risk to offset eventual short-term losses, in order to, inter alia, avoid reputational risks associated with their failure to meet short-term performance targets. Moreover, long-term performance benchmarks dis-incentivize frequent trading. This would allow investors to reap the benefits of reduced transaction costs and higher returns that long-term investment policies can bring.

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125 Thaler and Benartzi 2004.
128 Scharfstein & Stein 1990; Chevalier & Ellikson 1999.
129 See on the incentives that a string of losses creates for fund managers to assume excessive risk Langevoort 1996, p. 643.
Finally, altering the way investment management firms’ performance is measured would also bring, by default, profound changes in trading patterns, as they would have no fear that a sudden fall or rise in the market would diminish their short-term gains and put the client mandate and their job in danger. Therefore, the suggested introduction of long-term performance criteria would indirectly provide a welcome stabilizing mechanism to domestic and international financial markets.

5. Conclusion

The debate over the actual impact of BDT on investor protection regulation is far from having reached a definite conclusion. Arguably, the initial assault of BLE on the Winter Palace\textsuperscript{130} of rational choice theory, within the ‘empire’ of law and economics, was not very successful, due to its maximalist approach. Furthermore, the absence of a unified theory explaining cognitive biases and the lack of internal coherence in the normative propositions made by BDT scholars are bound to undermine any calls for radical law reform. Change will come through evolution and osmosis between rational choice theory doctrines and the more pragmatic views of BDT.

A characteristic example is the field of investor protection regulation. While behavioural finance has offered convincing explanations about the impact of biases on investor behaviour and asset prices, its findings do not, at present, support wholesale intervention in the current model of investor protection regulation. On the other hand, BDT does provide strong support for targeted and incremental regulatory intervention. In this context, it has been argued that conduct of business rules dealing with the provision of investment advice and investment promotions as well as mandatory disclosure rules should prescribe widely differentiated formats and volume with respect to information disclosure to investors. The criterion for such differentiation should be a sufficiently pluralistic system of investor categorisation. In addition, the effect of framing on investment decisions made by individual investors should be countered by means of carefully prepared wording and layouts for similar groups of investment contracts. Finally, as regards the regulation of asset management services, fund managers’ herding should be checked through the mandatory insertion into pension funds’ constitutional documents of provisions obliging their trustees to choose investment managers and

\textsuperscript{130} The most graphic depiction of the historical events, which led to the unsuccessful 1905 revolution in Russia and the attack on Czar’s Winter Palace, is Sergei Eizenstein’s ‘Battleship Potemkin’ (1925), one of the masterpieces of world cinematography. ‘Battleship Potemkin’, initially, a ‘silent’ film, was dressed with a score from Shostakovich's Tenth and Eleventh Symphonies in 1976. Anthony Ogus is a great admirer of Shostakovich and a connoisseur of his symphonic works.
evaluate fund manager quality through the exclusive use of long-term performance criteria. This policy would force fund managers to shift their focus away from non-welfare enhancing short-term performance strategies that encourage herding behaviour and lead to asset market bubbles.

None of the policy recommendations discussed here is interventionist to an unacceptable degree: they do not seriously restrict individual investors’ or fund managers’ choice of investments nor do they affect the investment decisions of rational investors. They also enhance investor and market welfare without placing an excessive burden on financial services firms.
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