

Mind over money - The behavioural revolution in finance



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With the emergence of market capitalism, a new society and a new concept of man were born. But people are not as hyper-rational and self-centered as many economists argue. Since the 1980s, behavioral research has shown that human intuition and behavior are often flawed, and that foolish swings in public sentiment at times distort financial markets and the macroeconomy. I comment on the origins of behavioral finance, its methods, key findings, strengths, weaknesses, and impact. Whether unwise citizens on occasion ought to be nudged into choices that decision experts think are better for them, is not a question that science can answer but that should be left to open and democratic debate.

¹ Article based on lecture at Lecture at Aula Rector Dhanis, University of Antwerp, Belgium, December 12, 2017. I thank the University of Antwerp, the National Bank of Belgium, and Marc De Geyter for their kind invitation. I am also indebted to Frank Lierman for encouraging me to write this essay, and to Richard and Inese Driehaus for financial support. Lastly, I want to express thanks to all my past instructors at the University of Antwerp, especially, Professors Wim Moesen and Paul De Meester.



Nearly 250 years ago, industrial civilization began. It was not an isolated event, but tied to the spreading of a liberal, skeptical, rationalist way of thinking during the Renaissance and the Protestant Reformation. Later, after the French Revolution, it was coupled with the democratization of society and the rise of the middle-class as the leading power in the state. A new type of social order, submerged in the economy, commenced. The values and beliefs of man were cast in a different mold. Every individual had to earn an income to obtain the necessities of life. That need as well as the lure of profit were the material incentives on which modern global capitalism with its system of markets continues to rest.

Whilst earlier economic systems such as feudalism or mercantilism had been organized to serve power and glory (Pirenne, 1936; De Roover, 1963), it was only around the time that Adam Smith wrote his *Wealth of Nations* that labor and land morphed into tradeable commodities. From that point forward, they were freely bought and sold—as if they were merchandise that was purposely manufactured for sale. Also, commodity markets were no longer a secondary outlet for leftover production of self-sufficient households. Instead, people's incomes were more and more derived from sales, and sales determined production (Polanyi, 1944). Learned observers of society, including a new class of academic “economists,” resolved that human nature was shaped by self-interest, outshining other motives such as craftsmanship, valor, moral duty or common decency. Human existence was entrusted to the logic of the market. An economic sphere, distinct and commanding, came into existence.

Also, from then on, reason was regarded as a suitable instrument to guide man on his life journey. Jeremy Bentham (1789) developed an explicitly [utilitarian](#) theory of human nature. People were moved by a desire for happiness, he argued, and ethically they also should seek maximum contentment:

“Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do. On the one hand the standard of right and wrong, on the other the chain of causes and effects, are fastened to their throne. They govern us in all we do, in all we say, in all we think.”

In proposing that man's well-being narrowly hinges on what happens to him personally, Bentham went beyond Smith. Self-regard was important in human affairs but so were empathy, public spirit and virtue, Smith had argued.² Many think that the widely-shared belief that self-interest is a singularly powerful motive plays a role in its own confirmation, and that the assumption has spawned a norm of self-interest. At least in Western culture, it would seem that there is wisdom in the rational pursuit of one's self-interest. To do anything else goes against people's expectations (Miller, 1999).³

² Consider, for instance, the opening sentence of Smith's *Theory of Moral Sentiments*: “How selfish so ever man may be supposed there are evidently some principles in his nature which interest him in the fortunes of others and render their happiness important to him, though he derives nothing from it except the pleasure of seeing it.”

³ In his 2005 Tanner Lecture, Marshall Sahlins, an eminent anthropologist, says that the idea of natural self-interest is a characteristically Western illusion of human nature that goes back to Thucydides and to Thomas Hobbes, the author of *Leviathan* and the first translator of Thucydides into English. “Humans are constituted, for better or for worse, within society, and variously so in different societies,” Sahlins argues. He also quotes Clifford Geertz who maintained that “there is no such thing as human nature independent of culture.”



Economists' portrayal of the individual as a self-centered rational utility-maximizer, i.e., methodological individualism, can be traced back to the marginalist analysis of the 1870s, spread afterward by Alfred Marshall (1890); to the later redefinition of economics by Lionel Robbins (1932) as the science of choice; and to Gary Becker's dabblings in things sociological, particularly, his account of social and family interactions. Inspired by Paul Samuelson, many economists almost made abstract deductive theory an end in itself.⁴

Regardless of its analytical merits, everyday people may treat the motive of rational material gain as a natural law and try to live up to the normative ideal of *homo economicus*. But are they in general capable of rational action? Or is it more accurate to conclude that many individuals are not astute utility- and value-maximizers with sound foresight and calculation skills? That real-life people thoroughly fall short on these criteria? Even so, that their irrationality is orderly?⁵

Historically, the questions may be framed as a debate between Friedrich von Hayek (aided by various authors already mentioned) and John Maynard Keynes (perhaps assisted by Gunnar Myrdal and Herbert Simon). Behavioral finance agrees with Keynes, and says that findings must be based on facts. It submits that the good judgment of the average person is limited; that actual behavior depends on a changeable mixture of habit, impulse and intelligence; and that widespread, self-reinforcing misconceptions shape sentiment in financial markets, cause speculative bubbles, and distort the macroeconomy.

Or, to formulate the argument slightly differently, the inner logic of the behavioral approach starts by asking how autonomous agents cope with a radically uncertain future. Next, it details faulty patterns in agents' judgments and choices, such as inertia, confirmation bias, hindsight bias, and overconfidence. Lastly, it interprets aggregate economic and financial performance in terms of these erroneous patterns, labeled "animal spirits" (Akerlof and Shiller, 2009).

A notable moment in the modern-day academic dispute about the wisdom of economic agents and financial markets occurred when Richard Thaler and I used all available data from the U.S. stock market, going back to 1925, to provide evidence of predictable asset price reversals. The findings were in line with a psychological theory first set forth by Amos Tversky and Daniel Kahneman, that the brain is hard-wired to rely on shortcuts (labeled "heuristics"), and that intuitive judgment by similarity to easily recognizable stereotypes ("the representativeness heuristic") means that people's prognoses frequently overplay, even sensationalize, transient news stories and unfounded impressions that are only faintly related to the quantity to be predicted.

⁴ Indeed, noting how anthropology challenged the concept of economic man, Frank Knight (1941) retorted that "economics .. as a science of principles, is not, primarily, a descriptive science in the empirical sense at all." Likewise, economic theorists often assert that good model building depends on a method of successive approximations and that, in order to reach generalizations about the real world and to make better predictions, they may gain from simple assumptions. Hence, they willingly sacrifice descriptive realism. (In a nutshell, the battle cry of neoclassical orthodoxy is Giordano Bruno's "se non e vero, e bene trovato.") Metaphysical propositions are not without content, it is also said, if they express a point of view and guide conduct.

⁵ Mainstream economists deem an action to be "rational" so long as it satisfies four conditions. It cannot contradict (i) expected utility maximization, (ii) risk aversion (so that a certain outcome is subjectively worth more than the mathematical expectation of the same amount, e.g., a certain gain of \$3,200 is preferred to an 80% chance of gaining \$4,000), (iii) rational expectations, i.e., predictions of what will happen in the future may be off but are not *predictably* false, and (iv) rational Bayesian learning, i.e., when new information comes along, predicted likelihoods are accurately updated according to Bayes rule.



Imprudent exaggerations tend to provoke U-turns, of course, and that is why, consonant with contrarian investing, we anticipated that extreme five-year past loser stocks would later top past winners.⁶

The long-term reversals ---apparent proof of investor overreaction to favorable or unfavorable changes in corporate business prospects--- were our most astounding result, but we also noted, without much comment, intermediate-term price momentum and rather sudden momentum reversals. Each new fact suggested recurrent and wide discrepancies between “the state of the market” and “the state of the economy,” i.e., between price and value. Other people's errors may be an opportunity for profit even as they create risk. All told, we found that measures of investor sentiment could be beneficial in portfolio selection and timing decisions.

More importantly, the results weakened Hayek's (1945) imperative idea that “we must look at the price system as ... a mechanism for communicating information if we want to understand its real function ... The most significant fact about this system 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.” Outlining society's economic problem as a question of judicious coordination and wise resource allocation, Hayek had found the answer in the spontaneous order of the market, with prices as highly dependable information signals. Thaler and I cast doubt upon this fundamental notion.

Plainly, if intuition is fragile, and if basic investment and statistical principles are not learned from everyday experience, people are not always the most effective stewards of their own welfare. The practical dilemma looks to be most severe when individuals face choices with highly uncertain, long-term consequences; when there is no quick feedback; and when people, deficient in self-control, are impetuous, short-sighted, and given to false optimism. It is significant that these conditions often apply to consumption, saving and investment decisions but also matter for many other choices (e.g., eating, drinking and smoking habits) that have an effect on health and overall well-being.

For all these reasons, Thaler and Cass Sunstein wrote *Nudge* (2008). These authors advocate a series of “libertarian paternalistic” public policies that channel individuals into beneficial choices or behaviors that recognized experts think are “best” for them, but people remain free to opt out and go their own way. Policy interventions, and various types of choice architecture that impact the decision process, may be most constructive when the competitive market process fails to counteract or amplifies human weaknesses, for instance, when bankers seduce consumers with zero percent APR introductory credit card offers, or when food companies add high-fructose corn syrup to soft-drinks.

The downside of the administrative state is that there appears to be no upper limit to its steadfast expansion. In any case, many people now blame “third way” technocracy, headquartered in remote capital cities, for income stagnation, social malaise, and everlasting war. We are facing a crisis of trust and authority (De Bondt, 2016). There is less appetite for rule-by-experts and more demand for rule-by-the-people.

⁶ The average gap in performance often lasts as long as five years and is in the order of 3% to 8% per year, depending on how the portfolios are put together, and what market or time period is considered. For a comprehensive review of the evidence on speculative bubbles and the advantages of value investing, see De Bondt (2018).



All over the West, the public's patience is wearing thin, certainly with an elite that by all accounts "benefited from the period leading up to the financial crisis, did not pay for the damage that was done, and keeps on getting richer day by day."⁷

It is essential to draw a distinction between the purely scientific contribution of behavioral finance and the support of prolific authors ---such as Sunstein or my dear friend, Richard Thaler--- for identifiable public policies. Thus, I deviate from Mervyn King who states, in an otherwise admirable book (2016, p. 133), that "the danger in the assumption ... that people are intrinsically irrational is that it leads to the view that government should intervene to correct 'biases' in individual decisions or to 'nudge' them toward optimal outcomes." When Thaler and Sunstein decided to veer towards more government regulation, they knowingly entered a long-standing political debate. They crossed the Rubicon, so-to-speak. In saying so, I do not offer a personal judgment on whether they are "right" or "wrong." My point, opposing King, is merely that the policies sponsored by Thaler and Sunstein do not inherently derive from behavioral research. For instance, many studies find that experts of all kinds, just like amateurs, are regularly and predictably wrong.⁸

How can we explain, recognize and alleviate flawed behavior or reasoning? What are its exact causes and consequences? A complete answer --in so far as we have answers-- would require a review of several decades of academic research.⁹ I refer the interested reader to Kahneman's magnum opus (2011) or, an easier read, to Rolf Dobelli's (2013) *The Art of Thinking Clearly*. Dobelli lists ninety-nine missteps in judgment and choice. The errors are either cognitive, emotional or social-psychological in nature. They have to do with problems of attention, categorization, and valuation. Kahneman's work is structured around the notion of *dual processing*, i.e., a dichotomy between two modes of thought, loosely defined as reason and emotion. "System 1" is fast, intuitive and often unconscious. "System 2" is slow, deliberative and logical. Different biases are connected to each type of processing.

⁷ It may well be that the democratic deficit, the fading American dream, and the financialization the economy (Feroohar, 2016) are indistinguishable in the public mind, and that this helps to explain the remarkable success of Thomas Piketty's *Capitalism in the Twenty-First Century* (2014).

There is an interesting parallel with the 1930s. The financial and social instability at that time led Peter Drucker, the legendary management consultant, to write *The End of Economic Man* (1939). Drucker advised that society be saved by subordinating economic growth to "noneconomic aims, such as full employment" since "impoverishment ... is a far lesser evil than the... collapse of freedom and liberties." With hindsight, Drucker's counsel was respected, at least until the 1970s. But, after Reagan and Thatcher ascended to power, the new "Washington consensus" (of globalization, privatization, deregulation and less taxes) became a turning point. In 2016, we may have reached one more turning point with Brexit and the arrival of President Donald Trump.

⁸ See, e.g., my 1991 study of the poor quality and overconfidence shown by economists' 7- and 13-month forecasts of the Standard & Poor's (S&P) index. King also laments overconfidence and moans that "economics has encouraged ways of thinking that made crises more probable ... No one can easily predict an unknowable future, and economists are no exception" (2016, p. 3).

⁹ Walter Lippmann (1922), an American journalist and political commentator, was among the first to study stereotypes and mental frames, and to outline their significance for public opinion.



Much current psychological research attempts to understand the workings of the brain. But, whereas the brain is individual, the mind is mainly collective. Shared *mental frames* shape the way we view the world.¹⁰ They allow communication. Frames are precious because they are often crucial in decision-making. If you want to understand the confusing behavior of your boss or spouse, an effective step is to try to discover how they judge what they are doing.

Even if commonsensically irrelevant, ostensibly minor variations in frames –whether the glass is presented as half-full or as half-empty-- can have major effects. For instance, depending on the benchmark, a gain can be felt as a loss, or vice versa.¹¹ But losses are notoriously difficult to accept, and the regret and blame attached to a potential future loss may push us toward conformism or alter what we do in other ways. Counterfactuals count because many different scenarios can be imagined. Keynes (1936) wrote famously how “worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally.”

The special assumptions of *prospect theory*, a key behavioral model, are that in choices under risk (i) people evaluate outcomes relative to benchmarks; (ii) losses weigh heavier than equivalent gains; (iii) chances are experienced in non-linear fashion so that the perceptual contrast between 99% and 100% (certainty), and between 1% and 0% (no chance), is much greater than between, say, 41% and 42%. (People love the security of absolute certainty.) Prospect theory indicates that one-and-the-same person, at the same point in time, may well be risk-averse for gains and risk-loving for losses. This can easily lead to the enthusiastic selection of objectively inferior portfolios.¹²

Let me bring this lecture to a close with a crisp discussion of the strengths and weaknesses of the behavioral approach.¹³ To repeat, whereas neoclassical finance amounts to a mostly analytical and strictly logical examination of the core, eternal functions of finance --such as making payments, saving and investing, managing risk, and valuation (Crane et al., 1995) -- behavioral finance monitors how financial decisions come about in practice: What do people do, and how do they do it? The question is essential because psychology teaches us that *decision processes shape decision outcomes*.

¹⁰ Blaise Pascal said that “there are truths on this side of the Pyrenees which are falsehoods on the other.” Between cultures, mental frames differ not only because of variations in content but also because of different cognitive styles. For instance, Nisbett and Masuda (2003) detect “marked differences in the cognitive processes of East Asians and Westerners... [including] categorization, causal attribution, reliance on rules, use of logic, and preference for dialectical understanding of events... differences derive... [from] differences in what is attended to... There is a causal chain running from social structure to social practice to attention and perception to cognition.”

¹¹ In a year that the S&P index rises 20%, an active investor who earns 17% (i.e., 3% worse than the index) may feel disappointed because she did not keep up with market performance. In a year that the S&P index falls 20%, an investor who earns -17% (i.e., 3% better than the index) may also feel disappointed because her portfolio fell in total value. Of course, traders can pick out diverse reference points, e.g., the investor who earned +17% may console herself by concentrating on the mathematically correct fact that +17% is much greater than zero, therefore a big one-year gain in the value of her portfolio, not a loss relative to a passive strategy that would have delivered +20%. This psychological process, experienced either ex ante or ex post, is called *mental accounting*. Evidently, “spin” like this is a valuable tool for investment advisers.

¹² In this context, Kahneman speaks of the “myth” of risk attitudes, for example, related to personality. The central problem with individual risk tolerance, he says, is that “there is no such thing.”

¹³ The next few paragraphs go over arguments discussed at greater length in De Bondt (2010).

Manifestly, the significance of this remark extends beyond finance. That is why the “behavioral revolution” has reached other parts of economics, as well as the study of accounting, law, medicine, sociology, public policy, and more.

Behavioral finance has been a *productive* paradigm. For example, as previously stated, it has changed investment management by spotting new facts such as the pricing of sentiment (“the value factor”). Behavioral finance is also *pragmatic*; it aims to help people to make better choices. Consider, e.g., how Shlomo Benartzi and Thaler (2004) have developed the *Save More Tomorrow* program that relies on defaults to overcome short-termism, inertia and loss aversion, thereby helping workers to set more money aside for retirement. The trick is to let employees pre-commit a fraction of their future pay raises to savings. Finally, behavioral finance is disciplined. It means triangulation, i.e., the synthesis of archival, survey and experimental data, observations from other social sciences, and traditional modeling.

What are the weak points of behavioral finance? One problem is that a solid understanding of psychological/brain mechanisms is not enough to allow us to interpret human action. Man is a social-historical creation. Philosophers sometimes compare man's conduct to that of a stage actor. People enact roles. Their self-image, motives, and outlook are shaped by what seems appropriate and is expected in society.

Second, behavioral finance has to be more cautious in its definition of error. Take, e.g., adventurism. Investors, entrepreneurs and top managers in the U.S. tend towards unrealistic optimism, but what causes wishful thinking? Is it context-specific? Does it stem from personal success? Or is it part of the American character? Also, the chief concern of most economists is efficiency. There are other protected values with full normative status, however, such as fairness, equality before the law, sustainability and so on. Some persons will categorically reject all trade-offs between these principles and money. Is that “wrong,” is it a strictly personal choice, or is it a matter to be discussed by moralists (Morson and Schapiro, 2017)?

Finally, there is a deceptive, mistaken disconnect between the loud rhetoric of irrationality and the reality that many people lead a good life in many corners of the globe. Behavioral research does not paint a full picture, it seems. The reason is that currently it has too little to say about the role of technology and organization. Why are we collectively so strong, yet as individuals so weak? Why (and how) does institutional rationality transcend individual rationality? Henri Frédéric Amiel, the 19th century Swiss philosopher, reflected: “L’expérience de chaque homme se recommence. Seules les institutions deviennent plus sages.”¹⁴

Organization is key since the quality of our lives depend more than ever on market and non-market networks, e.g., we sell 99% of what we produce and we buy 99% of what we consume, but a second key factor is technology. The motto of the 1933 Chicago World’s Fair offers a perfect summary: “Science finds, industry applies, man conforms.”

Donald Norman (1993) explains why technological artifacts make us smart. One explanation is that artifacts embody knowledge and greatly extend man's cognitive capabilities. Also, coupled with labor specialization, technology allows efficient collective action. (For instance, engineers make decisions in relation to electricity,

¹⁴ Thus, the behavioral emphasis on pervasive foolishness --in times gone by, Tversky liked to say, half seriously, that psychologists much prefer natural stupidity to artificial intelligence-- does not inevitably contradict the historical rationalization of society examined by, among others, Georg Wilhelm Friedrich Hegel, Max Weber, Jürgen Habermas, and James Coleman (1993). But, whereas finance orthodoxy locates rationality first and foremost in individual agents, behavioral finance finds traces of intelligence in tradition, routines, organizations, networks, and markets. The role of reason in history and economic organization is a favorite topic of Hayek whose insights (1948) remain highly stimulating.



water and communication systems that millions are incapable to make for themselves.) Lastly, technology often allows for cheap and limitless replication.

Smart technology is human-centered. In the short run, this requires good design. Over longer periods, it is the outcome of trial and error. That in modern society the balance between individual and collective forces has shifted as much as it has is disturbing. We lament that man must “conform,” that personal freedom is constrained, e.g., when large corporations control our choice options. Yet, it may be for good purpose. We can never overlook that individual rationality is limited. Technology, law, as well as customs and conventions coordinate society while lessening the individual need to think. This leads me back to a ritual cry for further behavioral research. What is wanted is more “financial ergonomics,” a fresh, innovative field of engineering that develops or mends financial products, services and networks according to human needs and that optimizes well-being and overall system performance, all at the same time.

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