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Andy Hira*

Irrational Exuberance: An Evolutionary Perspective on the Underlying Causes of the Financial Crisis

In the years leading up to the crisis, there were a number of warning signs that signalled a breakdown of basic fiduciary soundness. The following article addresses the problem of inattention to those warning signs and calls into question the commonly proposed causes of the crisis. This paper suggests that the more intangible aspects of human nature revealed by the crisis are the key to unlocking the paradoxical self-destructive behaviour behind it and thus the types of remedies that need to be considered.

The fallout from a financial crisis can endure for years, often leading to prolonged collapses in asset prices, profound declines in output and employment, and an explosion of government debt.¹ This paper examines the commonly proposed causes of the crisis and finds them wanting, which explains why normal economic policy tools have proven so ineffective up to this point. I suggest the more intangible aspects of human nature revealed by the crisis are the key to unlocking the paradoxical self-destructive behaviour behind it and thus the types of remedies that need to be considered.

Proximate causes

The official 2011 report of the US Financial Crisis Inquiry Commission (FCIC) offers perhaps the most comprehensive event-based discussion of the financial crisis.² The most prominent target of the FCIC report is the financial regulatory system, including the Federal Reserve, the Securities and Exchange Commission (SEC) and related financial regulatory agencies. Thus, its focus is not necessarily the housing bubble per se but the way the bubble worked its way through the financial system, wreaking havoc in the

areas not directly related to housing. AIG, which would find itself at the centre of the crisis, took on unfathomable levels of risk. Yet in August 2007, AIG Financial Products Group manager Joe Cassano said, “It is hard for us, without being flippant, to even see a scenario within any kind of realm of reason that would see us losing one dollar on any of these [insurance] transactions.”³ This statement was echoed by many others and is the focus of this paper: how did so many smart people miss the obvious, both to their own detriment as well as to that of others?

The FCIC report traces the roots of the collapse to what it calls a “shadow banking system” that developed primarily over the last three decades. In particular, it points not to the repackaging of mortgages and their securitisation but to regulatory problems, such as principal-agent problems, moral hazards and a basic lack of regulatory capacity. On a more fundamental level, it focuses on the breakdown of “private regulation”, such as the failure of rating agencies or the financial institutions themselves to appropriately evaluate their portfolios based on mortgage securities and derivatives. Lewis identifies as a key source of the crisis the movement of investment houses from private ownership to public companies, thus allowing them to take on huge risk without risking personal wealth.⁴ The same thing happened with the rating agencies; both Moody’s and Standard & Poor’s went public in 2000. After Moody’s went public, profits increased by 900 per cent; by 2002 it was worth more than Bear Stearns. More complex financial instruments, such as mortgage securitisation and credit default options, were naturally more attractive to rating agencies, which

* This is a highly abbreviated version of the paper. For the full paper, please contact the author.

- 1 C.M. Reinhart, K.S. Rogoff: *This Time is Different: Eight Centuries of Financial Folly*, Princeton 2009, Princeton University Press, p. 224.
- 2 Financial Crisis Inquiry Commission: *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*, Washington 2011, US GPO.

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3 W.A. Sahlman: *Management and the Financial Crisis* (“We Have Met the Enemy and He is Us...”), in: *Economics, Management, and Financial Markets*, Vol. 5, No. 4, 2010, pp. 11-53, here p. 27.

4 M. Lewis: *The Big Short: Inside the Doomsday Machine*, New York 2010, Allen Lane, pp. 257-258.

could charge higher fees for assessing them. Rating agencies were often only given one day to evaluate credit data from an investment bank. Nonetheless, from 2002 to 2007 they earned \$3.2 trillion in subprime-based mortgages assessment.⁵ The idea of creating transparency in ratings methodologies has been regularly dismissed, as it is considered proprietary knowledge.

The FCIC report claims there were a number of warning signs that accumulated in the years up to the crisis that signalled a breakdown of basic fiduciary soundness. For example, leverage ratios, i.e. the amount of committed capital to assets, increased precipitously over the period, including in commercial and real estate lending. Another obvious sign was the increasingly unsustainable rise in housing prices. Nonetheless, in Congressional testimony in March 2007, Chairman of the Federal Reserve Ben Bernanke said, “The impact on the broader economy and the financial markets of the problems in the subprime markets seems likely to be contained.”⁶ The struggle to explain such widespread blindness to the warning signs is perhaps the most interesting question to explore.

Deeper causes of the crisis

Housing as an end

Home ownership has always been part of the American dream, a symbol of middle-class attainment suggesting that a lifetime of work led to a visible reward. US policy to support home ownership for everyone, beginning with the hallowed mortgage tax credit, was overly aggressive, creating unusually high-risk mortgages. Policies dating from the Clinton years and continued throughout the Bush administration pushed the government-sponsored enterprises (GSEs, namely Fannie Mae and Freddie Mac) to extend loans to riskier borrowers, but evidently the housing bubble was present across large parts of Europe as well. The underlying assumption which fuelled this bubble is that housing provides collateral that is stable, despite the obvious periodicity of housing cycles. Evidently, allowing lenders to appraise the values of houses and tying sales commissions to the number of loan applications created serious incentive problems.⁷ In fact, financial institutions, preferring the higher interest rates on subprime mortgages, paid lenders

three to four times the fees for them that they did for prime mortgages.⁸ These led to outright fraud in a number of well-documented cases. For example, in 2002 Household Finance Corporation paid a \$484 million fine to 12 states for deceptive loans in which borrowers were led to believe they were going to be paying substantially lower interest rates.

Beyond this, a number of accounts suggest that lenders were shocked that homeowners would even consider defaulting on loans, despite the fact that their mortgages far exceeded the value of their houses after the crash. There were several well-publicised cases of wealthy individuals, quite capable of paying off the mortgages they took out, simply walking away from their houses when prices crashed.⁹ No doubt this occurred countless times with those who purchased housing for speculative purposes, i.e. to “flip it”. It appears that homeowners naively regarded housing as a stable and predictable investment, thus over-leveraging their own capital in one place. Overreliance on housing reduces savings investment vehicles and creates a construction boom which, in turn, feeds the feeling, however irrational, that prices cannot decline. The construction boom, meanwhile, feeds a secondary boom in financial markets and equities.¹⁰ Since mortgages were securitised, borrowers’ lack of collateral became less important to lenders. Ultimately, the purchasers of those securities would be the ones left holding the bag. These perverse incentives led to the development of high-risk products, such as the proliferation of adjustable-rate mortgages, mortgages with balloon payments, mortgages for which the buyer could set their own payments, and even “negative equity” mortgages in which the principal was never paid off. There were even loans referred to as “no documentation” and “no income, no job” loans.¹¹

Monetary policy

Continuing ongoing global imbalances in savings and consumption, leading to both trade and fiscal deficits, are untenable. The period 1982-2007 was called “the Great Moderation”, and US Fed Chairman Alan Greenspan was hailed as a genius for using monetary policy to supposedly tame the business cycle.¹² Tirole argues that loose monetary policy over extended periods leads to “bad behaviour” in institutions, encouraging a short-term viability maturity structure and increased leverage through a reduction in

5 E. Devine: The Collapse of an Empire? Rating Agency Reform in the Wake of the 2007 Financial Crisis, in: *Fordham Journal of Corporate and Financial Law*, Vol. 16, No. 1, 2011, pp. 177-202, here pp. 184-187.

6 A.R. Sorkin: *Too big to fail: The inside story of how Wall Street and Washington fought to save the financial system from crisis – and themselves*, New York 2009, Viking, p. 5.

7 A. Michaelson: *The Foreclosure of America: The Inside Story of the Rise and Fall of Countrywide Home Loans, the Mortgage Crisis, and the Default of the American Dream*, New York 2009, Berkley Books, pp. 324-325.

8 S.J. Rose: *Rebound: Why America Will Emerge Stronger from the Financial Crisis*, New York 2010, St. Martin’s Press, p. 35.

9 A. Michaelson, op. cit., pp. 146-147.

10 R. Frydman, M.D. Goldberg: *Beyond Mechanical Markets: Asset Price Swings, Risk, and the Role of the State*, Princeton 2011, Princeton University Press, p. 184.

11 A. Michaelson, op. cit., p. 326.

12 D. Elliot, M.N. Baily: *Telling the Narrative of the Financial Crisis: Not Just a Housing Bubble*, Brookings Institution 2009.

the cost of capital. Moreover, lower interest rates evidently reduce savings and increase the likelihood of relative price distortion and inflation.¹³

The privileged position of the US dollar seems to create different liquidity rules for US borrowing.¹⁴ The growth of the financial sector from four per cent of GDP in the mid-1970s to almost eight per cent in 2007 and the sector's steady profits were clear market indicators of success,¹⁵ justifying huge salaries based on huge returns under the assumption that those returns were benefiting all investors. Nonetheless, the steady increase in household debt from less than 80 per cent of personal income in 1993 to 130 per cent in 2006,¹⁶ combined with the huge run-up in housing prices, should have been cause for systemic alarm. Reinhart and Rogoff report that housing prices increased 100 per cent in the five years leading up to the crisis and that the value of mortgages in the US reached approximately 90 per cent of GDP by the beginning of 2008.¹⁷

Fed policy was also conflicted in its goals. On the one hand, it prioritised controlling inflation, a reflection of the scars of the 1970s, rather than asset prices. It also hoped that the continuation of low interest rates would reduce the likelihood of recession and unemployment.¹⁸ A particularly problematic aspect seems to be the inability of the Fed to look at non-economic factors, including long-term structural changes in the economy or the population. For example, from 1983 to 1999, as the baby boomers started to approach retirement age, the percentage of Americans who owned stock doubled, so that nearly half the country were investors in the stock market.¹⁹ Many had their retirement savings pooled into large mutual and/or pension funds, thus concentrating risk and leading to herd behaviour.

Ideology of deregulation amidst politicisation

Ignoring the lessons of the Great Depression, the blurring of the banking and investment sectors led to an overall decline in the level of regulation. Similarly, the blurring of risky investment activities with normal bank activities led to the spread of risk throughout the financial system. The SEC was compliant with this shift toward less regulation, agree-

ing in 2004, for example, to loosen capital reserve requirements for banks. The overall approach was to allow for self-regulation.²⁰ The shift towards deregulation could be seen worldwide, for example when UK Prime Minister Gordon Brown promised a UK business group in 2005 "not just a light touch but a limited touch".²¹

Many leading economists shared this perspective. Harvard economist Lawrence Summers, a prominent figure in both the Clinton and Obama administrations, was a key opponent of the proposal to have credit default swaps processed through a central exchange where the market mechanism could work; instead they remained an over-the-counter transaction.²² The hostility to regulation was effective both because it had ideological cover and because of the link between American politicians and campaign contributions from industry. Even in the case of government-sponsored enterprises such as Fannie Mae and Freddie Mac, millions of dollars were spent lobbying to reduce or otherwise render regulatory oversight ineffective. Fannie had a direct hand in pushing Congress to adopt the principle that its own regulator be forced to ask Congress for approval of any new regulations as well as for annual appropriations, effectively neutering any real oversight. There is evidence that the GSEs were highly inefficient. Indeed, Mavin Phaup of the CBO delivered a report in 1995 that of an estimated \$7 billion in subsidies given to the GSEs by their status, only two-thirds went to benefit homeowners. Needless to say, the report was ignored after harsh questioning of the CBO chief at a Congressional hearing.²³ Of course, one of the most ironic aspects of the whole debacle is that, despite their staunch opposition to government oversight, financial institutions were all too ready to accept government help when the crisis hit.

Globalisation constrains options

The worldwide transmission of the crisis has led many to suggest the need for more appropriate global financial regulation. The fact that interbank lending and consumer deposits and loans flow freely across borders reflects the increasingly dense intertwined nature of global financial flows. While globalisation should result in the diversification of risk, the fact is that global finance has become increas-

13 J. Tirole: Lessons from the Crisis, in: M. Dewatripont, J.-C. Rochet, J. Tirole: *Balancing the Banks: Global Lessons from the Financial Crisis*, Princeton 2010, Princeton University Press, pp. 10-77, here pp. 26-27.

14 H.M. Schwartz: *Subprime Nation: American Power, Global Capital, and the Housing Bubble*, Ithaca 2010, Cornell University Press.

15 C.M. Reinhart, K.S. Rogoff, *op. cit.*, p. 210.

16 *Ibid.*, p. 212.

17 *Ibid.*, p. 21.

18 R.G. Rajan: *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton 2010, Princeton University Press.

19 A.R. Sorkin, *op. cit.*, p. 143.

20 S. Patterson: *The Quants*, New York 2010, Crown Business, p. 201.

21 *The Guardian*: Goodies from Gordon: CBI conference, in: *The Guardian*, 29 November 2005, Found at www.guardian.co.uk/politics/2005/nov/29/business.labour, accessed 5 May 2012.

22 J. Friedman, W. Kraus: *Engineering the Financial Crisis: Systemic Risk and the Failure of Regulation*, Philadelphia 2011, University of Pennsylvania Press, p. 33.

23 G. Morgenson, J. Rosner: *Reckless Endangerment: How Out-sized Ambition, Greed, and Corruption Led to Economic Armageddon*, New York 2011, Times Books, p. 83.

ingly concentrated, with extremely large pension funds and sovereign wealth funds dominating private capital flows.

The development of emerging market funds over the last two decades, in turn, has increased alignment between the developing world and the North.²⁴ This reflects the huge concentration of income transfers to oil producing states, as well as the ubiquitous success of state capitalist firms, namely the large and growing Chinese enterprises. Ferguson notes that by the end of 2007, sovereign wealth funds controlled \$2.6 trillion of wealth, and the number continues to increase.²⁵

Large amounts of financial activity take place in grey and obscure areas, such as offshore banking. At present, there is no global commodities exchange for over-the-counter derivatives, a market that is hard to track at any level. The result is a lack of transparency, which presents an obstacle to market functioning.²⁶ In fact, it was the fear of a loss of capital that gave strength to the push for deregulation by US financial institutions. The idea was that banks needed to be freed to compete with other financial centres and that overregulation would lead to their flight, reducing the overall tax and employment base of the private sector in the US.

Faith in mathematical models

The devastating breakdown of the credit rating agencies revealed the astonishing degree to which investors worldwide depend upon the accuracy of their statements, even after scandals such as Enron. The FCIC report interestingly notes that industry believed they had worked out mathematical models with 95 per cent accuracy, even though the most basic knowledge of econometrics makes clear that there is a fundamental limitation to using historical data to predict the future.²⁷ Moreover, such models usually presume limited transaction costs, particularly in regard to the transparency of information. Thus, the efficient market hypothesis, which formed the basis of many of the new financial models, assumed that market opportunities were anomalies, closed off immediately by a plethora of profit seekers. According to the hypothesis, a company's stock market price reflected the full information about the company and its competitive position, which is hardly the case, as anyone who has read a financial statement knows.

24 J. Authers: *The Fearful Rise of Markets: A Short View of Global Bubbles and Synchronised Meltdowns*, San Francisco 2010, Financial Times Prentice Hall, p. 43.

25 N. Ferguson: *The Ascent of Money: A Financial History of the World*, New York 2008, The Penguin Press, p. 337.

26 M. Choudhry, G. Landuyt: *The Future of Finance: A New Model of Banking and Investment*, Hoboken, New York 2010, John Wiley & Sons, pp. 44-45.

27 Financial Crisis Inquiry Commission, op. cit., p. 44.

Patterson reveals many insights into how a small group of mathematically capable financiers changed the culture of Wall Street.²⁸ They saw themselves as scientists with a rare skill set which allowed them to consistently beat the market by seeing “the Truth” about how markets functioned in ways that could be modelled. Through computing power, they felt that they could find opportunities that were invisible to other investors, such as “value” stocks that were underpriced relative to performance, particularly small company stocks that did not have the same glamour appeal to large investors.²⁹

This approach, of course, ignores the fact that markets from bond trading to options and derivatives exist on the basis of different bets on the future, reflecting the unreliability of economic forecasts. The Heritage Foundation conducted a study in 1999 examining IMF forecasts for 1971-1998. During normal times, the forecasts were correct for Northern countries but not for developing ones. However, what is striking is that IMF economists consistently missed key turning points, such as the Latin American debt crisis in the 1980s and Japan's economic crisis in the 1990s. In another illustration of this, from 1979 to 2001 academics at the French business school INSEAD held a series of forecasting competitions among econometricians, allowing them to choose their own methods. They found that simple methods forecasted just as well as statistically complex ones.³⁰

Despite the failure of their models and major losses such as “Black Monday” in 1987 and the collapse of LTCM in 1998, the incredible returns that these so-called “quants” regularly posted spread the use of quantitative models throughout much of the industry. Many of the leading quants were from the renowned University of Chicago, which gave them a natural aura of genius, and the Black-Scholes option model underlying many of their presumptions was also tied to a Nobel Prize.³¹ Their models were based on probability through a normal curve, a controversial assumption. Some theorists, such as Mandelbrot, have consistently claimed that stock markets lack normality because catastrophic events can lead to much larger tails on the probability curve on both the upside and the downside. For example, one quant, Mark Rubinstein, claimed the 1987 Black Monday crash was a “27-standard deviation event” and therefore “a virtual impossibility”.³² Furthermore, Triana claims that the Black-Scholes model is quite prone to manipulation, as it requires analysts to subjectively input a volatility parameter;

28 S. Patterson, op. cit.

29 Ibid., pp. 87-88.

30 P. Triana: *Lecturing Birds on Flying: Can Mathematical Theories Destroy the Financial Markets?*, Hoboken, New York 2009, John Wiley & Sons, pp. 22-25.

31 S. Patterson, op. cit., p. 81, 263.

32 Ibid., p. 53.

this allows them to deliver the results they or their clients would like to see.³³ The new activity in derivatives that took place in the over-the-counter market was unregulated and lacked transparency, facts ignored by the quants even though they violated the basic assumptions of the efficient market hypothesis.³⁴

An underlying assumption of the carving up of credit default tranches was that securities from different parts of the country and of different quality were uncorrelated. This fatal misjudgement, discovered in the wake of the current crisis, led to the “big short” activities that netted millions for a few who foresaw the crash. The obtuse nature of instruments such as “synthetic” credit default swaps and secondary default swaps ultimately made valuation thoroughly ambiguous.³⁵ The basic fallacy was not recognising that seemingly uncorrelated assets would fall together in a crash.³⁶ Ironically, the fact that so many financial institutions had adopted quantitative modelling meant that any swing was likely to be exaggerated through imitation.³⁷

The rating agencies also put their faith in mathematical models to predict the default rates of mortgage-backed securities, eschewing the more qualitative assessments that had formed an essential component of their approach.³⁸ Aggravating this shift was that there was no real regulation of ratings agencies, including means to reduce the inherent principal-agent problem, which prompted the agencies to produce more favourable ratings, and the problems of transparency and haste that the ratings agencies faced in completing their evaluations.³⁹ Evidently, the rating agencies used very limited historical data for their evaluations, which omitted previous crashes. It appears moreover that rating agencies also suffered from the mass hypnosis of the housing boom. Jarsulic relates a 2001 incident in which a Standard & Poor’s employee asked a supervisor for the underlying data in order to rate a package of real estate assets.⁴⁰ The supervisor replied that the request was “totally unreasonable!”

Underlying psychological currents of asset bubbles

In 2007, Goldman Sachs accounted for \$20 billion of the total \$53 billion in compensation awarded to employees

in the finance industry, and CEO Lloyd Blankfein alone “earned” \$68 million. The CEO of Merrill Lynch gave one former colleague from Goldman Sachs a signing bonus of \$39.4 million and guaranteed another a golden parachute worth \$25 million.⁴¹ The argument that such levels of compensation are necessary in order to attract talent are self-fulfilling; once one company does it, all the others can justify doing the same. Compensation does not seem to be linked to a clearly identifiable set of skills or any measurable performance. The most problematic aspect, of course, is that these are public companies whose losses are shared, thus creating another set of moral hazard problems. Short-termism is reflected throughout US business culture and reinforced in a number of ways, such as rewarding management with stock options and tying CEO pay to the company’s stock price.⁴²

Many insider accounts assert that groupthink behaviour affected most of the best minds on Wall Street, creating a blindness to the possibility of a market crash, which in hindsight seems obvious. An element of greed seems to have overridden the analytical instincts of very well-trained professionals, from government regulators and financial industry veterans all the way down the supply chain to the homeowners who were offered, and willingly took on, debt that they could not possibly repay. A problem with the greed explanation is that bubbles are so ubiquitous and widespread that it is difficult to ascribe them to an “intent” to make a morally poor choice, one that is beneficial in the very short run but has tremendous downside risk. Many of the narratives suggest that at the time such decisions are made, the actors have all manner of moral justifications, such as the Countrywide marketing officer who believed that the company was spreading homeownership to an underprivileged population which had previously been ignored.⁴³

When excessive risk becomes endemic at certain periods, a system manager is necessary to avoid the build-up of risk to the point at which the economy as a whole is put at risk. In a 2007 survey, 40 per cent of American credit card holders stated that they do not pay the full amount due every month on the card they use most often. Another 29 per cent said they had no idea what the interest rate was on their card; another 30 per cent claimed (most likely mistakenly) that it was below ten per cent. A 2008 survey revealed that two-thirds of Americans do not understand how compound interest works. Similar results have been found in surveys in the UK.⁴⁴ Research on pension plans for

33 P. Triana, *op. cit.*, pp. 210-211.

34 S. Patterson, *op. cit.*, pp. 94-95.

35 S. Patterson, *op. cit.*, pp. 181, 194-195.

36 D.A. Westbrook: *Out of Crisis: Rethinking Financial Markets*, Boulder 2010, Paradigm Publishers, p. 40, 43.

37 J. Authers, *op. cit.*, p. 122.

38 J. Friedman, W. Kraus, *op. cit.*, p. 127.

39 J. Tirole, *op. cit.*, pp. 68-69.

40 M. Jarsulic: *Anatomy of a Financial Crisis: A Real Estate Bubble, Runaway Credit Markets, and Regulatory Failure*, New York 2010, Palgrave Macmillan, p. 119.

41 A.R. Sorkin, *op. cit.*, p. 4, 140.

42 J.E. Stiglitz: *Freefall: America, Free Markets, and the Sinking of the World Economy*, New York 2010, W.W. Norton & Co, p. 13.

43 A. Michaelson, *op. cit.*

44 N. Ferguson, *op. cit.*, p. 11.

which companies match workers' contributions shows that only six per cent of employees maximise these opportunities. This is exacerbated by workers' frequent changes in places of employment, indicating a systemic failure of the portability of retirement savings.⁴⁵ At a minimum, economic and financial decision-making ought to be instituted into school curricula at an early age.⁴⁶

A more fundamental problem exists globally, as Western societies are used to living beyond their means via excessive borrowing while Eastern investors, equally irrationally, are willing to fund such spending sprees even though the outcome is bound to be devastating to both parties in the long run. Indeed, there was great concern in the wake of the crisis that the flow of foreign investment, particularly into US public debt, would begin to dry up. For the moment, at least, it appears that there is no safer liquid alternative, though there are signs that the Chinese are looking to diversify by purchasing multiple assets, including companies and access to natural resources, around the globe.

Akerlof and Shiller suggest that Keynes' "animal spirits" affect economic decision-making.⁴⁷ There is a gambling instinct in all of us. The introduction of credit cards is a relatively recent development, and thus recognition of potential problems is lagging. These problems go well beyond the financial system's lack of transparency, encompassing our addiction to consumption and the illusion of having something for nothing that easy credit affords. This may speak to the deeper factors of human nature behind economic decision-making which go well beyond the herd-like behaviour seen in the financial crisis and which economic theory has yet to grapple with.

Herd-like or groupthink behaviour is a common topic in psychological literature. It is argued that evolution builds in social behaviour, because for most of our existence, survival required co-operation.⁴⁸ We can trace back the idea of justice and fairness, as well as emotions such as revenge and jealousy, to these subconscious evolutionary-based means for co-operation. In marketing, there is a phenomenon known as "cumulative advantage" or "the bestseller effect", whereby once a product starts selling, it signals desirability to other consumers, and sales gain momentum. Psychological experiments have shown that the mere as-

pect of popularity can increase the desirability of the product, as we are creatures of conformity.⁴⁹

Studies of compulsive buying find that many purchasers hardly use the items they acquire.⁵⁰ The fact that such vulnerabilities extend across the population is amply evident in the nature of advertising, which presents images of our aspirations. Brands therefore represent a package of values that represent how we would like to see ourselves and how we would like to be seen.⁵¹ Psychological research shows that we are very poor at monitoring our own feelings – in fact, monitoring seems to decrease feelings of pleasure (or pain). We are therefore very inconsistent and arbitrary in our predictions of how we are going to feel in the future based on our actions. Novel circumstances or changes in variables are poorly processed in terms of our preference priorities.⁵²

We therefore simply cannot think of individual preferences as existing in isolation; rather, preference construction has as much to do with interactive and social effects as it does with an individual's desires (which include a strong desire to be accepted and for status).⁵³ The way we think about utility should also be modified to consider not only the fact that some things we desire are intangible, but also that there is such a thing as "procedural utility", meaning that we also value the processes and conditions that lead to outcomes.⁵⁴ In sum, the classic economic model of decision-making based on an individual's expected utility is evidently reductionist. We need to work towards developing a more complex cognitive model that recognises it is not at all clear how to separate social from individual sources of motivation, such as the question of evaluating altruism. In reality, information is often lacking, risks are unclear and the situation is so complex that a simple two-dimensional model of positive and negative between two choices rarely exists.⁵⁵

45 S.J. Rose, *op. cit.*, p. 206.

46 A. Michaelson, *op. cit.*, p. 328.

47 G. Akerlof, R. Shiller: *Animal spirits: How human psychology drives the economy and why it matters for global capitalism*, Princeton 2009, Princeton University Press.

48 G. Tullock: *The Genetics of Society*, in: C.K. Rowley (ed.): *The Selected Works of Gordon Tullock*, Vol. 10, Indianapolis 2006, Liberty Fund, pp. 181-196, here p. 187.

49 M. Shermer: *The Mind of the Market: Compassionate Apes, Competitive Humans, and Other Tales from Evolutionary Economics*, New York 2008, Times Books, p. 14, 212.

50 R. Belk: *Consumption and identity*, in: A. Lewis (ed.): *The Cambridge Handbook of Psychology and Economic Behaviour*, New York 2008, Cambridge University Press, pp. 181-198, here p. 190.

51 *Ibid.*, p. 190.

52 D. Ariely, G. Loewenstein, D. Prelec: *Arbitrarily Coherent Preferences*, in: I. Brocas, J.D. Carrill (eds.): *The Psychology of Economic Decisions*, Vol. 2, *Reasons and Choices*, New York 2003, Oxford University Press, pp. 131-162, here pp. 157-159.

53 J.B. Davis: *Individuals and Identity in Economics*, New York 2011, Cambridge University Press, p. 43.

54 M. Benz: *Procedural Utility and Decision-Making Mechanisms*, in: B.S. Frey, A. Stutzer (eds.): *Economics and Psychology: A Promising New Cross-Disciplinary Field*, Cambridge, MA 2007, MIT Press, pp. 199-228.

55 C. Castelfranchi: *For a "cognitive program": explicit mental representations for Homo Oeconomicus (the case of trust)*, in: N. Dimitri, M. Basili, I. Gilboa (eds.): *Cognitive Processes and Economic Behaviour*, New York 2003, Routledge, pp. 168-208, here p. 184.

Since our cognition is related to seeking patterns, we often see causality where the events are based on random probability. Therefore, we make many common errors related to representativeness. We tend to be insensitive to prior probabilities and sample size, overestimating the expected normality of small samples and seeing patterns in random variation. We fail to consider the concept of regression, i.e. that events will return towards the mean. We also rely on a judgemental heuristic called “availability”, which stands for a number of biases such as considering more obvious instances rather than those that are less “retrievable”, the tendency to look more at the beginning and end of something than the middle, the narrow limitations on how many categories of contingencies we can imagine and the misreading of spurious correlations.⁵⁶

Similarly, we suffer from confirmation bias in that we tend to seek out and find evidence that supports our existing beliefs while ignoring evidence to the contrary.⁵⁷ Add to this the widely recognised concept of being wedded to sunk costs and loss aversion and we can begin to better discern the sources of momentum swings in markets. In this sense, one could argue that we are merely engaging in pattern recognition in order to save time. This would be a reasonable point if the events in question followed a normal curve, but in the case of stocks, as discussed above, the presumption of normality can lead to major miscalculations, as unexpected events or combinations of events render predictions pointless. Studies of expert predictions often show that random probabilities or simplistic models extrapolating on the basis of previous performance are usually superior to the predictions of professional stock analysts.⁵⁸ Given how closely stock market movements are related to the events of the day, mathematical models are merely correlational rather than robust models of causality. Perceptions of risk are therefore created at the group level as well as the individual one.⁵⁹

A deeper and more problematic aspect is the fact that we tend to see our work and our possessions as an extension

and reflection of our own identity.⁶⁰ We tend to be excessively optimistic about our own qualities. For example, psychological studies show that 90 per cent of individuals claim to be above average drivers.⁶¹ Psychologists have long noted the hubristic overconfidence that CEOs display. Shefrin relates an annual Duke University survey of corporate executives which consistently finds that most believe their stocks to be undervalued.⁶²

Leahy suggests that we have self-sustaining and mission systems

that reconfirm themselves through selective attention, recall and recognition of information consistent with schema. Because the schemata are often formed at a preoperational level of intelligence, the individual has difficulty decentering or distancing himself from his perspective and has difficulty recognising how his actions and choices have confirmed the schema.⁶³

In the case of financial exuberance, many analysts reflect a “manic” type personality that focuses only on potential gains and ignores losses. This personality type cannot handle losses and therefore is prone to taking on additional risks whenever they occur. Additionally, they seek public recognition for their successes.⁶⁴ Leahy thereby explains the conspicuous consumption of Wall Street.

The machismo culture of Wall Street revolves around the evolutionary aspects of male competition within a status hierarchy. Countless Wall Street narratives have pointed out how important the “myth of superhuman powers of the speculator” is; this myth grew particularly large in the 1980s and 1990s when “geniuses” such as Michael Milken could earn fortunes overnight through their sheer brilliance.⁶⁵ Therefore, gutsy risk-taking is a natural part of the culture that perpetuates itself through attracting similar personality types who also want to experience meteoric rises in their status. Since there is a competitive aspect to all this in regard to status hierarchies, consumption becomes insatiable.⁶⁶

56 A. Tversky, D. Kahneman: Judgment under Uncertainty: Heuristics and Biases, in: T. Connolly, H.R. Arkes, K.R. Hammond (eds.): Judgment and Decision Making: An Interdisciplinary Reader, 2nd ed., New York 2000, Cambridge University Press, pp. 35-52, here pp. 35-45.

57 M. Shermer, op. cit., p. 90.

58 D.J. Hilton: Psychology and the Financial Markets: Applications to Understanding and Remediating Irrational Decision-Making, in: I. Brocas, J.D. Carrillo (eds.): The Psychology of Economic Decisions, Vol. 1, Rationality and Well-Being, New York 2003, Oxford University Press, pp. 273-298, here p. 277.

59 E.U. Weber: Perception Matters: Psychophysics for Economists, in: I. Brocas, J.D. Carrillo (eds.): The Psychology of Economic Decisions, Vol. 2, Reasons and Choices, New York 2003, Oxford University Press, pp. 163-178, here p. 171.

60 R. Belk, op. cit., p. 183.

61 I. Brocas, J.D. Carrillo: Information and Self-Control, in: I. Brocas, J.D. Carrillo (eds.): The Psychology of Economic Decisions, Vol. 1, Rationality and Well-Being, New York 2003, Oxford University Press, pp. 89-104, here p. 90.

62 H. Shefrin: Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing, New York 2002, Oxford University Press, p. 227.

63 R. Leahy: Psychology and the economic mind: cognitive processes & conceptualization, New York 2003, Springer, p. 10.

64 Ibid., pp. 31-33, 40.

65 A. Preda: Framing Finance: The Boundaries of Markets and Modern Capitalism, Chicago 2009, University of Chicago Press, p. 207, 248.

66 R. Leahy, op. cit., p. 2.

Psychological studies show incontrovertibly that emotions have significant and measurable effects on decision-making. Under emotional distress, we tend to move towards higher risk and higher payoff options, even when such decisions do not make sense. When our self-esteem comes under fire, our emotions tend to override rational adjustments, thus potentially leading to a self-defeating cycle. When we feel rejected, we tend to feel tired and depleted and make poor decisions.⁶⁷ Similarly, we have difficulties in learning from failure. There is a natural tendency discussed in the psychological literature towards “inaction inertia” and “retroactive pessimism”. These natural emotional reactions serve as a means to reduce the pain from loss, but they also reduce reflection upon it.⁶⁸

Unquestionably, the media reflects rather than corrects these emotional swings.⁶⁹ The well-documented relationships in terms of access between Wall Street reporters and financial firms are paralleled by the same games in regard to politics. A good part of financial reporting is as much about entertainment as analysis. Few reporters or financial analysts have training in economic history, and they certainly do not present that perspective in their analysis. Therefore, we can speak of the general emotional climate in which financial analysis takes place.⁷⁰ Our tendency to view the world in utopian terms that we can create and control rather than as recurring evolutionary patterns can be seen in the ideas behind the Great Moderation and the benefits of deregulation as discussed above.

Behind all this social reinforcement are very real physical aspects related to pleasure and pain. Dopamine, which regulates our motivations, can easily be affected by feelings of gain and loss. Brain mapping demonstrates clearly that even the mere perception or cueing of reward or pain signals has physical effects. These visceral states, of course, are deeply embedded in our evolutionary instinct for survival, related to honour, procreation and dangers. Therefore, we can see that in situations of high excitability, our normal expected utility calculations can be overridden.⁷¹

67 R.F. Baumeister: *The Psychology of Irrationality: Why People Make Foolish, Self-Defeating Choices*, in: I. Brocas, J.D. Carrillo (eds.): *The Psychology of Economic Decisions*, Vol. 1, Rationality and Well-Being, New York 2003, Oxford University Press, pp. 3-16, here p. 15.

68 O.E. Tykocinski, T.S. Pittman: *The Dark Side of Opportunity: Regret, Disappointment, and the Cost of Prospects*, in: I. Brocas, J.D. Carrillo (eds.): *The Psychology of Economic Decisions*, Vol. 2, Reasons and Choices, New York 2003, Oxford University Press, pp. 179-196, here 194.

69 J. Pixley: *Emotions in Finance: Distrust and Uncertainty in Global Markets*, New York 2004, Cambridge University Press, p. 49.

70 *Ibid.*, p. 180, 201.

71 K.C. Berridge: *Irrational Pursuits: Hyper-Incentives From a Visceral Brain*, in: I. Brocas, J.D. Carrillo (eds.): *The Psychology of Economic Decisions*, Vol. 1, Rationality and Well-Being, New York 2003, Oxford University Press, pp. 17-40, here p. 23, 27, 33, 36.

Concluding remarks

In order to better manage future financial crises, therefore, our regulatory system has to reckon with these other aspects of human behaviour. The common problem of procrastination and orientation towards immediate gratification cannot simply be solved by individuals alone. We repeatedly see the inability of large numbers of people to put away adequate funds for saving. This is partly due to the obvious susceptibility to advertising cues that ramp up consumption towards unnecessary purchases and our tendency to focus on the short-term tangible gains rather than potential losses. But beyond this it bespeaks a pointed ignorance towards the fact that individual decisions collectively create costs not just for the individual but for society as a whole. Psychologists point out that our lack of recognition of these factors is also a common aspect. We tend to ignore consequences that are not “proximate” and observable, or which in the aggregate seem overwhelming. Ariely points out that this is the reason why we are much more willing to give on a personal level when we see someone in trouble, rather than into larger causes, such as a far-away famine.⁷² Nonetheless, our entire economic system, not just financial system, depends on a high level of confidence and trust in the overall fairness and transparency of transactions.⁷³

We need a governance system that seeks ways to rise above the fray, to guide rather than simply react. We need to consider systems that signal the future as well as the present costs and opportunities – ones that do not overly simplify or bias the decision-making required, including the level of unknown information, and which provide regular and apparent feedback for decisions, both on the individual and collective levels. Thaler and Sunstein call this a “nudge”, one that does not reduce individual choice but rather informs it.⁷⁴ For example, having automatic savings systems (pay garnishing) in addition to required public retirement contributions such as Social Security could help individuals and society to better prepare for the future. Since we are very much creatures of habit, we need to change cues and our expectations in order to change behaviour. We need a system that is oriented towards the collective long-term interests of financial stability, health and savings, and one that can detect the warning signs of mania in order to help us overcome the weak parts of our nature instead of feeding them.

72 D. Ariely: *The Upside of Irrationality: The Unexpected Benefits of Defying Logic at Work and at Home*, New York 2010, Harter Collins, pp. 243-244.

73 G. Akerlof, R. Shiller, *op. cit.*, p. 5.

74 R.H. Thaler, C.R. Sunstein: *Nudge: Improving Decisions About Health, Wealth, and Happiness*, 2008.