

Bađsđi, Erdem; Berns, Gregory; Prella, Claas; Shiller, Robert; Tuckett, David

## Conference Paper

# The psychology of financial crises 2009

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## The Global Economy

# The Psychology of Financial Crises 2009

### The Challenges

The mainstream economists' account of financial crises – based on rational expectations, maximization of stable utility functions, information shocks – is currently called into question as it failed to predict the present global crisis ex ante and even to explain certain relevant aspects of it ex post. A new approach to understand the mechanisms of financial crises is based on recent research in psychology and neuroscience.



This research portrays people's financial decisions as the outcome of emotional reactions to ambiguity and uncertainty, swings of confidence and trust due to "animal spirits", herd behaviour and other social interactions, shifts in moral responsibility due to changes in social norms, and other mental, social and anthropological forces. What are the circumstances under which the economic or psychological approaches are likely to be dominant? How should policy makers, bankers and investors be made aware of these circumstances?

What are the implications of the psychological approach, alongside the traditional economic one, for investment strategies, financial practices, and financial regulation? What are the implications for risk-management practices by business? How should our financial instruments and institutions be redesigned on the basis of these insights?

### **The Dot-com Bubble: NASDAQ Composite Index 1994-2004**



Source: Wikipedia





## **Proposed Solutions**

### **Erdem Başçı**

*Deputy Governor, Central Bank of Turkey*

#### ***Dealing with multiple equilibria under psychological shocks***

Large price fluctuations observed in financial markets are sometimes seen as deviations from a fundamental economic equilibrium. This panel is about the role of psychological factors that may contribute to such deviations.

I would like to approach the same problem from a slightly different angle. There is an often ignored possibility of having more than one stable equilibrium in a financial market. Then the observed large price fluctuations may also be attributed to the market price travelling from one economic equilibrium to the other.

To have multiple equilibria in a Walrasian general equilibrium model would not be surprising. In fact with heterogeneous agents and low substitutability among some commodities, uniqueness of a market equilibrium is an exception rather than the norm.

The paper by Basci and Saglam (2008) “On roots of housing bubbles” shows that having three equilibrium rental price rather than one is quite likely in the market for housing services. Two of these three prices are stable and one is unstable. Therefore, in face of a large shock, there is a possibility for the system to move from a high price equilibrium to a low price equilibrium and vice versa.

Dynamic rational expectations models are also very much prone to multiple equilibria. The possibility of rational bubbles is one example.

The presence of more than one equilibria in an economy makes the role of psychological factors like “animal spirits”, “beliefs” and “sunspots” more interesting. Since such behavioral shocks could indeed determine and change where the economy would eventually settle down.

Likewise policy and institutional analysis becomes more interesting in economies prone to multiple equilibria. What policies could take us away from the undesired equilibria? Which institutional changes would eliminate multiplicity of equilibria and make the desired outcome the only stable equilibrium?

A better understanding of the interactions between occasional irrational actions of economic agents and the resulting movement between different rational equilibrium points is essential in designing, communicating and implementing institutions and policies.

### **Gregory Berns**

*Professor of Neuroeconomics, Emory University; Director of the Center for Neuropolicy*

#### ***Psychological biases originate in the brain***

Financial crises are caused by the way in which individuals’ brains react to information. Because the brain is an information machine that runs on a biological platform, we can understand where psychological biases originate and create tools to counteract the most financially damaging ones. In particular, three types of biases have been described from a brain-perspective that may contribute to financial crises.

#### **Temporal myopia**

Every animal, from insects to humans, places disproportionate importance on short-term gains over long-term ones. This hyperbolic discounting leads to a preference for immediate profits



over long-term investment as well as preference reversals. Neuroimaging has shown that the brain contains at least two decision making systems with vastly different time constants: an immediate gratification system based in dopamine, and a long-range system based in the frontal lobe. Simple solutions to promote long-range investment include tools that allow the frontal lobes to guide decision-making, such as framing information to draw attention to longer timescales and deemphasizing quarterly earnings.

### **Diminishing marginal returns and risk aversion**

Everything that is perceived in the brain is a result of an electrochemical reaction. Basic laws of chemistry tell us that every chemical reaction has a maximal rate. Although financial value can be calculated in many different ways, ultimately our perception of value is governed by its conversion into neurotransmitter release. This chemical reaction is fundamentally why utility functions are concave over gains and consequently why most individuals tend to be risk averse.

### **Social influence**

Recent neuroimaging data has shown that the opinions of other people very quickly alter internal valuation and perception systems of the brain. For markets to operate efficiently, individuals should aggregate information and make individual judgments. Neurodata suggests that the brain incorporates other people's opinions as if it were its own. This leads to conditions in which markets may lead to either panic buying or selling. Tools to insulate individual valuations from market valuations may avoid the conflation of the individual with the herd and avert panics.

### **Claas Prella**

*Kiel Institute for the World Economy*

### ***Impose stronger regulation on financial markets***

Although the benefits of capitalism are undeniable, the widespread belief that the government should intervene as few as possible into the development of markets might be misleading. While such a kind of policy might be optimal for a theoretical economy with fully rational people who act only on the basis of economic motives, it neglects the massive "irrational" swings of markets due to psychological effects. The necessity of setting strict rules can be of special importance for the trading of complex financial instruments, the impact of which on financial markets can hardly be overseen by anyone.

### ***Expand credit flows to the level that would prevail at full employment***

One of the main problems during a financial crisis is the loss of confidence of investors which can easily lead to a downward spiral and especially to a credit crunch, as lenders do not trust that they will be paid back. The government should have the goal to lift credit flows to the level that would have prevailed without a crisis instead of just ensuring the solvency of the systemic relevant agents. This is necessary to restore both the confidence of investors and the smooth functioning of the financial market which is required in order to make other policy measures work properly.

### ***Establish indices for the extent of irrationality in financial markets***

This "extent of irrationality" could be published in form of one or several indices, which should include sentiment data (raised by questionnaires) as well as measures calculated indirectly from market data (for example prices relative to fundamental data). Explicitly providing such



indices and caring for their public awareness could help to give investors a more realistic background on the state of the economy and thus dampen fluctuations on financial markets.

### ***Establish more sustainable incentive schemes***

A direct approach which could reduce the extent of irrational decisions by bankers is to establish more sustainable incentive schemes. For example, when a price bubble arises, even a reasonable banker who is sure that a certain asset is overvalued, might feel forced to invest into it, because he will lose his job or at least ruin his bonus if his relative performance falls below the average even in the short-run. More long-term oriented incentive schemes could also prevent mistakes that result from decision taking of bankers under panic.

### ***Build more heterogeneous groups for (investment) decisions***

In a homogeneous group, feelings like exuberance or fear which bias the decisions in a certain direction, are more likely to dominate. This effect is even magnified by the fact, that the opinion of a group after debating is usually more extreme than the average opinion of its members, which is widely recognized in behavioural science. In particular, it is often claimed that there should be more women in responsible positions, as women tend to be more cautious than men and thus could contribute to more balanced decisions. However, this argument does not only apply to the sex but can be generalized to other factors like age, cultural or scientific background, etc.

## **Robert Shiller**

*Professor of Economics, Yale University*

### ***Subprime solution: How today's global financial crisis happened and what to do about it***

#### **Democratize finance**

Proposals to help repair the financial crisis and promote democratization of finance (from Robert Shiller, Subprime solution: How today's global financial crisis happened and what to do about it, Princeton, September 2008):

- Develop a new information infrastructure
  - comprehensive financial advice
  - new financial watchdog
  - default-option financial planning
  - improved financial disclosure
  - improved financial databases
  - new system of economic units of measurement
- Fundamentally expand financial markets to cover more risks that really matter
  - real estate risk markets
  - long-term claims on incomes
  - GDP and trills
- Develop new retail financial products
  - continuous workout mortgages
  - home equity insurance
  - livelihood insurance



## David Tuckett

*Professor of Psychoanalysis, University College London*

The solutions proposed for discussion below rest on a set of theories collectively termed “emotional finance” which views the current crisis as a complex outcome of human engineered developments in the financial system which have increased co-ordination and collective action problems to make it inherently unstable. Emotional finance finds unhelpful the utilitarian distinction between rational and irrational; arguing like Adam Smith that sentiments determine goals and like Herbert Simon that most decisions we want to study are necessarily boundedly rational within the context of the cognitive, emotional and social-political situations in which they take place. Emotional finance agents are considered to use their imagination, gut feelings and various available heuristics to take actions rationally but with less than fully anticipated consequences, depending on several aspects of context. One factor impacting how fully consequences are imagined when what appear exceptional opportunities are presented is the capacity an agent has “really” to anticipate experiences like disappointment and so to be willing to forego short term excitement for fear of longer term pain – bearing in mind that imagined and actual experience appear to produce similar brain chemistry events when studied using magnetic resonance imaging techniques. From the viewpoint of emotional finance changing the context in which decisions are made alters the subjective experience of time and the emotional meaning of thoughts with significant consequences. Finally, many behaviours in financial markets (quarterly reporting, concrete applications of risk formulae, tracking error as a basis for mandates, daily checking of fund performance, etc.) are conceived as frequently driven by attempts to remove inherently irremovable conflicts produced by emotional responses to uncertainty.

### ***1. Create a new system of prudential regulation built on an initial process of collective recognition about what has happened in every major institution.***

A significant problem in asset price bubbles is (1) the excitement and satisfactions to be had from the short-term gains from participating and (2) the reluctance of institutions and individuals to be left out and so to suffer (pain) by comparison with rivals – both powerfully underwritten by neurobiological as well as psychological processes. No one wants to leave the dance and those who wait it out often lose their jobs. When the dance is over, those who led it are sacked (or merged or bankrupted) and the risk is the responsibility goes with them. Both during the boom and after there is a collective action problem in which feeling responsible and the willingness to say “not now” or “no” is “split off” somewhere else. Those who try are ignored, mocked or shunned. Future regulation will not work if it repeats a “Tom and Jerry” cartoon “splitting” structure or imposes a modern version of the Versailles treaty seeking damages. Along the lines of the South African “Truth and Reconciliation” process all major institutions need to be required by current regulators to take part in the investigation of what happened and the drawing of conclusions about what to do. We need to make a major effort to produce and file written findings and to take steps to ensure the record is part of future education and governance – for trust and pension funds, asset management institutions, financial consultants, banks, regulators, treasury departments, etc. The aim is not to discover the culprits but to seek to reach a consensus about the need for collective action to maintain defined long-term financial stability at least among key institutions within the political and financial network.

### ***2. Create a central bank (or similar) unit specifically charged with seeking out and investigating potential investment bubbles and making regular public reports about them, which could provide an empirical basis for additional powers to be given to central banks to prevent widespread asset price bubbles.***

In excited markets there is often no incentive to take the painful action of saying “no” or to do the necessary research to draw the conclusion “not for us now” – if everyone else is doing it. A public and sophisticated research body mandated to discover unusual pricing activity and to make regular reports could start to counter this lack by analysing in depth and detail and



making public the basis of whatever “cover stories” about innovation are beginning to create sufficient excitement to suggest a bubble is starting – in the past these included the notion of the Internet Super Highway, the idea house prices always rise, or that new business models for banks could make them massively more profitable and safe through the securitisation of default risk. Future innovations are unknown unknowns but will include opportunities in emerging markets, etc. Asset trading data could be systematically analysed by authorities and indices (such as the Case-Shiller index for houses prices) should be developed. (Note that just as Shiller warned presciently about irrational exuberance over the Internet and then about house prices, bankers at JP Morgan did not extend the Credit Default Swap schemes they developed to the mortgage markets because (a) they did not feel there was enough past data to model the risks and (b) could not think how to deal with the problem of super senior debt. JP Morgan staff desisted and in consequence profits performed poorly against other banks who did not.)

**3. Give central banks the additional responsibility to achieve adequate financial stability and so the additional powers to demand changes in capital ratios, loan characteristics etc., during potential asset price inflations but recognising that sometimes such action will be unpopular and may stifle some innovation and so needs to start from a base of consensual support.**

Innovation is the life blood of humanity. At the same time human survival depends on early-enough adaption to painful feedback. If we accept that the past crisis shows that the market could not discipline the spread of innovation at an acceptable cost then central banks need the power to identify key weaknesses in financial networks so to have powers to obtain information and take actions whenever practices appear to be creating systemic risk or key institutions become “too big” for the system to be safe. As an additional idea perhaps central banks (or some other group) should have effective veto power over the spread beyond certain limits of certain types of financial innovation whose utility is unproven. (As occurs, for example, in the medical/pharmaceutical industry).

**4. Begin a much more active process of questioning the current basis of asset management and take active steps to question the validity of short-term relative benchmark performance data and to destroy the myth the pursuit of phantastic financial performance is a tenable basis for sound investment – especially for trustees, pension funds, etc.**

The search for exceptional performance in the banking sector was fuelled by the rising multiples paid by fund managers impressed by innovative approaches to a hitherto stagnant sector. The “league table” marketing of asset managers on the basis of their capacity to provide “exceptional” performance and then the whole incentive structure of the industry creates an ongoing risk that managers find stories which tend to over emphasise gains and underestimate risk. To address this issue the industry needs to be drawn into a discussion of collective actions to mitigate the problem – based on making all advertising much more transparent and also reviewing what is a reasonable basis for manager and asset class selection and the whole system of fiduciary responsibility. (Relative return benchmarking should be restricted; or at least different performance evaluation monies mandated – for example, by trustees.) The incentive for the industry is that past disgrace has weakened their client base.

**5. Make fundamental changes in economics.**

The neoclassical economic paradigm has had interesting things to tell us about how markets might work but is clearly misleading as regards how financial markets do work – particularly in regard to the influence of the subjective impact of time on agent decisions, oversimplified notions of rationality and agency as well as of social or group effects. With the notable exception of some colleagues it is still unclear how far the paradigm is accepted as flawed – for financial markets. Certainly, significant efforts need to be taken by stakeholders to tackle vested interests in economic research and intellectual institutions and to prioritise developing a new genuinely interdisciplinary paradigm for the economics of financial markets which makes sense to those who work in them in all the different structural positions they inhabit. We need





to update the core education and professional training of investment professionals to take account of how markets actually work (Business Schools and CFA Institute exams, etc.) and actually suppress the teaching of current theories except within a wider framework free of disciplinary imperialism!