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# Animal spirits in financial economics: A review of deviations from economic rationality☆

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ABSTRACT

John Keynes made the notion of animal spirits a central part of economics in 1936. However, recent financial literature is dominated by asset pricing models based on strict economic rationality and struggles to accept the notion of animal spirits. This essay is an overview of the causes and consequences of financial market inefficiency and failure and the role of animal spirits in finance. Unlike prior literature, it combines insights and evidence from multiple fields such as finance, economics, psychology, and politics, to understand the many reasons for market failure. It then uses this understanding to develop five simple practical principles to guide regulations required to mitigate the effects of market failures. The results should be of much interest to finance scholars, money managers, business executives, and policy makers.



## 1. Introduction

Money managers, business executives, and policy makers have had major reasons to question some of their core beliefs about financial markets during the recent great recession starting in 2007–2008. Financial markets and many large financial institutions collapsed in much of the industrialized world, posing huge challenges for managers and policy makers and, in many cases, leading to public unrest over the resulting losses and austerity measures. While there is still much controversy regarding the exact causes of this economic upheaval, law-makers and policy officials all over the industrialized world have been crafting rescue plans and implementing new regulations.

This essay contends that one contributing factor for this great recession was an over-reliance on the efficiency and self-correcting nature of free-markets, and it assesses the nature and causes of market failures and inefficiencies. Traditional finance has arguably made great progress in recent decades but has mostly assumed rationality among economic agents. Consequently, this considerable progress in understanding financial markets and economic systems still leaves many critical gaps. While the economist John Keynes made the notion of animal spirits acceptable in economics in 1936, the mainstream financial literature is still struggling to accept that notion in spite of many notable attempts (Kahnemann, 2011; Shiller, 2005). Indeed, in spite of the recent Noble Prize in Economics awarded for exploring and documenting the psychological biases in economic decision-making, the mainstream finance literature has been so slow to recognize these biases that one can safely accuse it of ignoring this aspect of the literature (Kahneman, 2003). This essay reviews why and when these rationality assumptions of mainstream finance may fail and lead to market inefficiencies and failures. Finally, it develops five simple practical principles to guide regulation designed to mitigate the consequences of these market failures.

This essay makes an important contribution to our understanding of the reasons for market failures and how to mitigate their consequences. First, while it is not a comprehensive literature review, its review of the reasons for market failures is more integrated and comprehensive than prior such reviews that have generally focused on a few limited causes of such market failure. In contrast, this essay combines contributions from multiple fields (e.g., finance, economics, psychology, statistics, and politics) to provide a more comprehensive review of the nature of market failures. Second, using the nature of market failures as a guide, this essay develops a set of simple and practical regulatory principles. Thus, this essay should be of much interest to scholars, money managers, business executives, and policy-makers.

## 2. Recent financial market failures

1989 was a landmark year. The Berlin Wall as a symbol of the Soviet empire fell and, in the same year Japanese economic growth and the stock market also peaked. The Soviet empire was the prime exhibit in the almost exactly a century long experiment with central economic planning that started with the Congress of Europe in 1889. Both the Soviet empire and the Japanese economy were heavily dependent on centrally planned industrial policy (e.g., Aggarwal, 1999c). Both had failed by the end of 1989, setting in motion a global move away from central planning and industrial policy towards market-driven economic

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systems. In 1989 people in the west declared that socialism had lost and capitalism had clearly triumphed.

However, the belief in the unfettered success of free markets has been short lived, with some contending that in its success lay the seeds of its failure. A short two decades later, 2008 seems to have marked another pivotal point. This was the year when financial markets experienced a global meltdown followed in short order by the great recession with negative or declining economic growth rates and rising unemployment in the industrialized countries. Between 1989 and 2008, the world's economies had almost uniformly moved away from central economic planning steadily to ever decreasing government regulation of financial markets. However, when equity markets bottomed out in March 2009, major US and global indices had lost more than half of their value compared with their highs in 2007. Further, in this recession there seemed no place to hide as almost all financial asset classes suffered significant declines. Consequently, many asset management firms were in survival mode and many other such firms went out of business. What can we learn from this upheaval in financial markets?

It is now clear that a combination of many factors came together to cause the "perfect storm" of 2008 (Aggarwal, 2008). First, after the 1989 triumph of capitalism, there was a strong belief in deregulation and free markets. Second, buttressed by this belief in self-correcting free markets, there was too long an era of expansionist monetary policy with negative real interest rates, especially after 2003, fueling excessive consumer lending by banks especially in housing. Third, there was a huge expansion of derivatives trading that interconnected all major financial firms as "counterparties" with "notional" amounts in the *trillions* of dollars and no disclosure of counter-parties. It also turns out that there was no real understanding of the often unrealistic valuation models used to assess these derivative positions and attempts to regulate this proliferation of derivatives were unsuccessful until after the crash.

Fourth, were very high levels of mostly *upside* executive compensation with little downsides for poor performance. Indeed, managers were being paid like owners without the significant downside risks faced by owners. For example, at AIG Financial Products, just before the crash executive compensation was between 33 and 46% of the unit's *revenue* (not profits)! Similar compensation arrangements were common among other Wall Street firms. For example, in 2007, the top fifty money managers earned an average of $558 million each, and total Wall Street bonuses exceeded $33 billion with profits at financial firms making an ever larger share of all US corporate profits. Fifth, was moral hazard, i.e., we led executives to believe that if things go well, they get huge bonuses, but if things tank, we will bail you out. In effect, Uncle Sam basically offered the senior executives of large banks and companies the following coin toss proposal: Heads, you get $10 from me; and tails, I give you a dollar. How many of these free coin tosses would you like? So, Wall Street and corporate executives had huge incentives to use extremely high leverage – other people's money (OPM) – a phrase that even sounds like "Opium," with a similar effect on its users. Ironically, by rescuing large banks and companies to mitigate the effects of the great recession, we have created significant moral hazard for the future. Also, there is now enlarged system-wide risk. Our financial system is now even more dominated by large banks and more highly interconnected, especially due to inter-company over-the-counter derivatives and inter-bank lending.

Indeed, while there may be many specific contributing factors, one major factor in the negative events of 2008 seems to be that the free-market deregulatory pendulum seems to have swung too far. It seems that an over-reliance on the self-correcting nature of free markets may have played an important part in the financial meltdown and the subsequent recession. Markets turned out to be less than perfect and were not as self-correcting as had been assumed. The "rational economic man" foundation of financial markets widely prevalent in the early part of the 21st century left little or no room for the "animal spirits" documented decades earlier by Lord Maynard Keynes (Keynes, 1936). It seems we have had financial crises ever since we have had financial markets (Kindleberger, 1978; Lo, 2012). However, the 2008 financial crises fundamentally transformed Wall Street and is potentially still reshaping our financial markets as politicians all over the world hastily passed new financial regulations such as the massive Dodd-Frank financial reform bill in the US.

The 2008 crash of the financial markets have also highlighted a deteriorating distribution of income and a shrinking of the middle class in the industrial countries resulting primarily from advances in technology and globalization. As we dig ourselves out of the great recession, it is clear that a completely deregulated free-market system is not perfect and we need a system to tame the animal spirits in financial markets. However, capitalism (our golden goose) has always had financial crises (e.g., Reinhart & Rogoff, 2009) and the best system can only strike a prudent balance between the risks of too much regulation (that kills the golden goose) versus too little regulation (the golden goose gets too fat and has a heart attack). What is the case for animal spirits and non-rational behavior in financial markets?

## 3. Factors limiting market efficiency

The very existence of profitable business firms is primary evidence of market inefficiency. Under perfect competition, profits are driven to zero. However, corporations are constantly seeking positive NPV projects and thus, must seek and operate in imperfect markets where there is limited competition. Opportunities for extra-ordinary profits arise in such markets due to costly and asymmetric information, agency costs, deadweight frictional costs, non-rational economic behavior, and barriers to entry. Further, because of many financial frictions, business firms cannot and do not respond immediately and efficiently to pricing signals and macroeconomic shocks, resulting in business cycles and other temporal fluctuations (Schumpeter, 1939).

Assessments of the future are a central fact in finance (distinguishing it from accounting). One of the major challenges facing human assessment of the future is the accurate estimates of risk and uncertainty. Keynes (1936) was careful to distinguish between the two with risk as a situation where the future outcomes can be enumerated and probabilities assigned to each outcome, versus uncertainty where no probabilities can be assigned to these future outcomes. When so little is known about the future that even future outcomes cannot even be enumerated, the situation can be said to be one of ignorance. Naturally, the ease or costs of acquisition of relevant information plays an important part in our assessments of the future. However, as explained below, our ability to do financial analysis based on the assessment of the future may also be limited by a number of psychological and emotional factors.

Information useful for running a business and making a profit is costly and asymmetrically distributed, acting as an important barrier to entry (Akerlof, 1970). Further, agency costs arise when firms are managed by non-owner agents and these agents maximize their own utility rather than the value of the business and the wealth of the owners. Given the need to balance monitoring costs with gains in incentive alignment, there are always some residual agency costs. On an economy-wide basis, agency problems hamper economic growth as they distort capital allocation as corporate insiders are inefficiently incentivized. Agency problems can be partially mitigated through appropriate legal constraints and incentive contracts designed to align agent and owner interests more closely. However, the nature of the political economy in a country and agency problems in corporations may reinforce each other, compromising the quality of both corporate and societal governance. Finally, there are many deadweight frictions that prevent markets from being perfect. Examples of these deadweight frictions include many and varied transaction's costs that limit arbitrage and other forces for market self-correction.

Generally speaking, deviations from perfect markets can be attributed to four major categories of economic phenomenon. First are demand shocks that arise from macro-economic developments which do not

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