

Finance, psychology, economics and the design of successful institutions

Nathan Berg*

Cecil and Ida Green Assistant Professor of Economics, University of Texas-Dallas, USA

Research Scientist, Max Planck Institute for Human Development-Berlin, Germany

Abstract: The theory of rational efficient markets dominated financial economics three decades ago. In recent years, however, psychology-inspired behavioral finance has overshadowed it. Both critics and proponents of the use of psychology in economics and finance base their positions on the premise that psychology primarily deals with human fallibility, systematic mistakes and biased judgment (Kahneman, Slovic and Tversky, 1982). The association of psychology with pathology seems to imply that normative behavioral economics and the design of successful institutions must focus on a benevolent paternalism aimed at saving individuals from themselves. This paper, in contrast, discusses how simple psychological processes frequently, but not always, function well in their respective environments. Using the concept of ecological rationality and the key findings of psychology in economics, three lessons for designing successful institutions are proposed.

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* *Berg:* University of Texas at Dallas, School of Social Sciences, nberg@utdallas.edu, and Center for Adaptive Behavior and Cognition, Max Planck Institute for Human Development, Berlin. Berg thanks the organizers of the Shanghai Forum 2005: Economic Globalization and the Choice of Asia.

Introduction

Three decades ago, financial economics was dominated by efficient market theory. One leading finance researcher claimed that the efficiency of financial markets was the best established fact in economics (Jensen, 1978). Today, the most influential intellectual movement in financial economics is behavioral finance, the application of psychological theory and its empirical findings from laboratory experiments with human subjects to economic and financial decision making.

The ascendancy of behavioral economics can be seen in academic citation indexes, the fact that the 2003 Nobel Prize in economics was awarded to a psychologist, the 2001 and 2003 Bates Clark awards going to behavioral economists, and recent feature stories in on behavioral economics and behavioral finance in *The Economist*, *The Wall Street Journal*, *The New York Times*, and *Fortune*.

Efficient market theory makes two sharp predictions. First, market prices equal to intrinsic value. In other words, financial assets have an objective value based on economic fundamentals, expected cash flows and their level of risk (measured in various units). The second prediction is informational efficiency-- that prices adjust rapidly to the arrival of new information and therefore, because news arrives randomly, past price changes do not predict future price changes.

The prediction that market price equals intrinsic value was refuted by Lee, Shleifer, and Thaler (1991) (and later by many others) who showed that closed-end and open-end funds with identical portfolios do not closely track one another. Closed-end funds usually trade at a discount to their open-end counterparts, but sometimes trade at sizable premiums. Two baskets of claims on an identical set of future cash flows can, in the real world, have distinct market prices, violating the so-called Law of One Price.

A second demonstration of the failure of the Law of One Price is the behavior of the market prices of so-called Siamese Twin stocks such as Royal Dutch Shell, formed in 1907 from the merger of Royal Dutch Petroleum and Shell Transport (Froot and Dabora, 1999). Although shares of Royal Dutch, which trade primarily in the U.S. and the Netherlands, and Shell, which trade primarily in the U.K., represent claims on the same set of underlying cashflows (on a 60:40

basis), their market prices deviate widely—by as much as 35 percent—from the expected ratio. Taxes and differential transactions costs such as foreign exchange fluctuations do not explain fluctuation in the ratio of market prices.

Perhaps the biggest empirical blow to efficient market theory was the stock crash of Monday, October 19, 1987. There is still debate about its causes, but most observers agree that the sharp price drop of 23 percent (in U.S. equity indexes) was not an adjustment in response to newly arrived information. It now appears that it was more a case of Keynesian animal spirits, a social psychological phenomenon, than a measured response to changes in the fundamental economic environment. Subsequent studies of over- and under-reactions have uncovered long-term under-reaction and short-term over-reaction (Schleifer, 2000), two forms of price-change predictability that seriously challenge the second basic tenant of efficient market theory.

A crucial debate has emerged in the wake of the sea change in assumptions commonly used in financial economics, which brings me to the main question: If finance is to rely on psychology to *describe* how financial markets work, then what does psychology imply, if anything, about how they *ought* to work?

Normative behavioral economics?

Leading behavioral economists and workers in the field of behavioral finance initially went to pains to emphasize that their research agenda was purely descriptive. In Thaler's *Quasi-rational Economics* and even in Kahneman's 2003 Nobel address, for example, those authors rely on the metaphor of the optical illusion. The claim is that, just as the discovery of optical illusions do not challenge the physics based upon which engineers design airplanes and rockets, so too, the discovery of behavioral anomalies such as over-confidence and the failure of the efficient market hypothesis should not change the normative authority of standard theories of choice such as expected utility maximization, the Markowitz portfolio choice model (which yields beta as a measure of risk), or pricing models such as Black Scholes based on fundamentals of risk and return.

The problem with the metaphor of the optical illusion is that expected utility theory and fundamental valuation models do not enjoy any obvious objective

status. It is true that they respect internal consistency axioms. But there is no sense in which normative decision theory refers to physical units that correspond to objective phenomena. Why should efficient market theory and highly rationalistic decision making models such as expected utility maximization be the taught to MBA students as the “right” way to behave? Why should they be used to design trading rules, the regulatory framework, and distribution of rights, when trying to grow new financial markets in a region such as China?

Paternalism (Does psychology imply ideology?)

Psychology implies ideology? No. Both advocates and critics of the use of psychology in economics and finance base their respective arguments on the premise that psychology’s focus is how humans make mistakes and, implicitly, that psychology is a collection of theories that justify governments strategizing to control the choices individuals make. Thaler and Sunstein (2003), for example, argue in favor of changing legal defaults in policy areas such as organ donation, the right to sue for punitive damages, and retirement savings. They argue that there is no neutral or purely *a*-paternalistic policy, since preferences are reference-point dependent and therefore inevitably influenced by starting points. Their argument leads to a case for so-called anti-anti-paternalism, or Libertarian paternalism, in which choice is not coerced because of opt-out provisions, although governments exploit known psychological tendencies to influence the pattern of choice. Critics of the use of psychology in economics apply similar arguments to reject psychology as an ideologically motivated device for generating new arguments in favor of paternalism.

In fact, both points of view are based on selective samples from the field of psychology. The association of neoclassical economics with *laissez faire* policies and psychology with paternalism does not hold up. Counterexamples abound. Hayek (1945, 1952), for example, bases opposition to the welfare state and big government on explicitly psychological arguments that unmistakably depart from neoclassical methodology. Similarly, Stiglitz (1994) uses neoclassical arguments to describe market failures that motivate substantial roles for governments to play in managing competition and economic growth.

Simple often is better

Psychological work on decision-making that takes place at our labs in Berlin, at the Center for Adaptive Behavior and Cognition (ABC) at the Max Planck Institute for Human Development, provides another set of arguments that tends to favor individualism, although not always. For example, normative decision-making theory usually teaches that the more you know the better off you are. Game theorists have discovered exceptions to this. Even in non-strategic, straightforward fact-based comparison tasks, the meaning of information and the validity of the “more is better” principle are unclear. For example, in a task comparing the populations of two German cities, the ABC group found that American students perform better than German students do. The reason is that the cities to be compared, which are drawn from a list of all German cities with populations of 100,000 or more, are universally recognized by German students, but only partially recognized by American students. In this task, because the ignorant American’s recognition of a city correlates with its true size, ignorance is a kind of knowledge.

Ask a German student whether Essen or Frankfurt has a larger population and he or she typically has no idea, performing with an accuracy rate of chance level. But ask an American, and he or she correctly picks Frankfurt because it is more commonly recognized. In fact, the populations of the two are within a few percentage points of each other.

The “ignorance is knowledge” phenomenon works in the other direction as well. Ask an American student whether San Antonio or San Diego has a larger population, and he or she typically has no idea. In fact, they are ranked next to each other in the latest city-size rankings. Non-Americans usually have no problem, however, correctly choosing San Diego as the larger city. The trick does not always work, however, as infrequently encountered cities such as Indianapolis sometimes have populations substantially larger than well-known cities such as Las Vegas and Boston.

The point is that rather than arguing over logic axioms, as do those in finance who debate efficient market hypothesis, we should adopt a context-specific approach to measuring the performance of particular decision rules. My own work has demonstrated the impossibility of valuing different sources of

information in terms of abstract criteria divorced from the payoffs and costs particular to each historical and institutional context. Some generalizations are, however, possible. It must be. The ecological rationality perspective proposed here is not an argument for relativism. It is an evidence-based case for respecting the multiplicity of ecologically specific behaviors and institutions that are known to perform well within their contexts rather than axiomatically asserting the superiority of one over another.

China's rapid growth defies the orthodoxy of North American economics

One reason researchers are fascinated by the economic performance of China is that it demonstrates the very real possibility for alternative policy approaches, which depart from the orthodox design of institutions taught in North American economics, to flourish. Common sense in North American economics has it that necessary institutional ingredients for economic growth include the following: strong constitutional guarantees of private property, a high degree of independence of the monetary authority, representative democracy, and generally minimal state intervention. Recent experience of China demonstrates that, no matter how valid a recipe for growth that list of ingredients may be (at least in some contexts), there clearly exist alternative high-growth paths formed under alternative institutional conditions.

Given the multiplicity of high-growth paths and the unavailability of axiomatic generalizations that hold across all contexts, does it follow that anything goes? No. In fact, the findings of psychology and economics have coalesced enough to suggest specific guidelines for designing institutions, with the goal of expanding financial markets, fostering success for entrepreneurs, nurturing the well-being of society, and promoting economic growth.

Three lessons of psychology for the design of effective financial market institutions

By "institution," I refer to laws, regulatory agencies, common business practices, and culture-specific social norms.

Lesson 1: Keep it simple for consumers, firms and citizens

Individual actions, whether it is my family at the grocery store or managers of multi-national conglomerates, do not typically reflect high-dimensional optimization. That means, among other things, that behavior does not respond continuously to small changes in the external environment. Behavior tends to be static within bounds and then jump discretely once threshold conditions are met. The framing of decisions, the default rules, and degree of uncertainty about outcomes and processes all influence the choices individuals make.

A good example of how Lesson 1 may be applied is the principle of absolute temporal precedence in patent disputes. In cases where two patent applicants claim to have been first, some U.S. judges have attempted to weigh many factors, allocate ownership on a percentage basis, or take on additional considerations that, while apparently desirable in shedding more light on the question of who actually was first, have the unintended effect of encouraging patent disputes and making patent ownership less certain. Thus, critics of the U.S. system (Epstien, 1995) argue that judges should disregard all information except for whose application arrives first. The simple rule does not take into account who actually was first to invent the patented idea, only whose application arrived first. Trading privileges with simple rules for remedies in case of violations are to be preferred over regulatory policies that give regulators a high degree of discretion and consequently imply a high degree of uncertainty about the costs and benefits of different forms of trading behavior.

Lesson 2: Penalize cheaters -- not to discourage cheating, but to encourage cooperation

It may seem logically equivalent, but it is not. The goal of imposing high costs on cheaters so that they choose not to cheat is not the same as imposing highly visible costs on cheaters so that those currently cooperating continue to do so. Behavioral studies have found in many cultures and in across many contexts that the most common attitude toward cooperation is so-called conditional reciprocity. If I am a conditional reciprocator, that means I cooperate (i.e., behave pro-socially, following laws, paying taxes, trying earnestly to play by the given rules of the game) so long as I believe that most others cooperate. The policy implications are far reaching. The key implication is that the perception of widespread cooperation or rule-following is an indispensable public good. Insofar

as participants in any system can see clearly that those who violate the rules of the game are few in number and are punished rather severely, conditional reciprocators currently behaving well will continue to do so.

The principle of reciprocity is a distinct argument for transparency from those based on informational efficiency. If informational efficiency is the goal, then accounting rules that force disclosure such as Sarbanes Oxley and insider traders such as Martha Stewart are both providing mechanisms that bring more private information into publicly observed prices. Neither argument is relevant in a behavioral finance framework, where the goal of accounting rules and punishment for insiders should be aimed at preserving the shared perception that the system runs fairly according to rules by which defectors are punished. This brings market liquidity, lowers transaction prices, and creates incentives for the providers of financial services to innovate and bring new products to market.

Lesson 3: Maximally simple institutions are not the goal, either

Perhaps the simplest way for the government to manage a market is to not regulate it at all, or to give a single individual complete discretion in assigning rights and settling disputes. But simplicity, while typically a virtue from an individual decision-making perspective, is not necessarily a virtue for an institution. Complexity that slows down the institution by dispersing power widely promotes stability. For example, the U.S. Constitution makes it very difficult for sweeping changes to Federal Law to occur quickly. Its built-in inefficiency is widely known by all participants and tends to reduce uncertainty about the legal environment over timeframes of 5 or even 10 years. Of course, complexity and inefficiency have costs, too. But the information-dispersing, stability-enhancing properties of complex institutions must be credited. It is not that an institutions effect must be optimal in order for it to endure. It simply must be good enough, and difficult enough to change, to withstand shocks and provide for much-needed stability that encourages productive risk-taking in other domains.

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