

evaluating the welfare effects of a given private choice or public policy as follows:

1. Identify the various types and subtypes of resource uses in the economy.
2. Develop formulas that relate the aggregate percentage distortion in profits yielded by the marginal resource use of each such type and subtype to various Pareto imperfections in the economy.
3. Collect existing information on, and guesstimates of, the pre-choice or pre-policy magnitude of the parameters from step 2 showing those marginal resource uses whose profit yields seem likely to be inflated.
4. Take a random sample of marginal resources uses and estimate the aggregate percentage distortion in their profit yields.
5. Estimate the distribution of the non-negative aggregate percentage profit distortions.
6. Analyze the way in which the private choice or public policy would affect (or did affect) the economy's various Pareto imperfections.
7. Estimate the allocative efficiency of the private choice or public policy by comparing the prechoice or prepolicy profit-distortion distribution with the postchoice or postpolicy profit-distortion distribution.

Professor Markovits notes, with no apparent sense of irony or humor, that a given TBLE analysis must pass its own TBLE test, resulting in an infinite regress where we conduct TBLE analyses on TBLE analyses on TBLE analyses, and so on forever (pp. 155–56).

Based on his TBLE analysis, Professor Markovits reaches a number of conclusions, including the following:

“I believe that too few resources are allocated to the production of goods other than leisure relative to the amount allocated to the production of leisure” (p. 170).

“Too few resources are allocated to unit-output-producing uses as opposed to [quality or variety] investment creation and use” (p. 170).

“Too few resources are allocated to the production of existing products through existing production processes as opposed to

[production-process-resource] execution and use” (p. 170).

“Too few resources are devoted to the production of existing products with existing technologies as opposed to the combination of [quality or variety] investment creation and use and [production-process-resource] execution and use—that is, almost certainly, economic efficiency would be increased if, without generating any allocative transaction costs, one reallocated some percentage of the resources currently devoted to [quality or variety] investment creation and use and the same percentage of the resources currently devoted to [production-process-resource] execution and use from a random sample of the marginal uses of each of these types to a random sample of unit-output-producing uses that are currently just extramarginal” (p. 170).

I could go on quoting Professor Markovits, but I am unable to provide any more insight into what he's trying to say. Unfortunately, any valuable substance that *Truth or Economics* may contain is lost in a blizzard of incomprehensible jargon.

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Midbrain Mutiny: The Picoeconomics and Neuroeconomics of Disordered Gambling: Economic Theory and Cognitive Science. By Don Ross, Carla Sharp, Rudy Vuchinich, and David Spurrett. Cambridge and London: MIT Press, Bradford, 2008. Pp. x, 301. \$38.00. ISBN 978-0-262-18265-2. JEL 2008-0806

Can economic theory inform how the brain carries out computations necessary to make economic choices? And can an understanding of the biological basis of such behavior help improve and refine economic models? These are some of the larger questions surrounding the nascent but rapidly growing field of neuroeconomics. For some, however, the goal of neuroeconomics is a practical one. For example, does the introduction of economic models of decision making help clarify issues concerning diagnosis and treatment of neurological and mental illnesses? The latter set of questions, through the case study of disordered

economists) will have difficulty understanding the weight they should attach to these findings.

The eighth and final chapter is in large part an attempt to bridge the piceconomics view of an individual's decisions as the byproduct of the game between multiple subagents, each with their own particular goals and desires, and the algorithmic and mechanistic decision-making approach of neuroeconomics. One possibility is, as the neuroscientist Greg Berns succinctly put it, "The interaction of different pools of neurons in the brain may result in phenotypic behavior that appears to be irrational, but it is possible that the rational agents are the neurons, not the person" (p. 125). Unfortunately, such pools of neurons have proved elusive. Perhaps even more troublesome, it is unclear what constitutes as proof of the existence of such neurons. To take the example of a highly influential ~~but at the same time controversial~~ study, Samuel M. McClure et al. (2004) observed distinct brain regions that responded choice sets that included only delayed rewards versus those that also included immediate rewards. This, along with other results, were interpreted as evidence for existence of separate impulsive " β -system" and a patient " δ -system." Such an interpretation has been challenged on both empirical and conceptual grounds (pp. 237–39). Ross et al., however, offer no suggestion on what would qualify as persuasive evidence for the existence of such subsystems, and sidestep the issue as an empirical one, "Evidence that they do not have direct molecular counterparts as McClure et al. suggest is *not* evidence that they don't exist (*italics original*)" (p. 238). This is disappointing as the authors, given the emphasis in the philosophy of science and their positioning of piceconomics as a serious alternative model, are well-positioned to make such an argument.

In sum, *Midbrain Mutiny* is a welcome addition to the growing literature in neuroeconomics. It will likely prove to be difficult to follow at various points for all but the most well-informed readers. Someone who is expecting a gentle introduction to the terminology and stylized facts of neuroeconomics will likely be overwhelmed by the immediate references to, among others, brain regions, neurotransmitters, and pharmacological agents. Those willing to invest the effort, however, will find a thoughtful and provocative

book that will appeal to those who are interested in seeing the real world implications of a biological understanding of economic behavior, as well as how economic theory contributes to such an understanding.

REFERENCES

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Nudge: Improving Decisions about Health, Wealth, and Happiness. By Richard H. Thaler and Cass R. Sunstein. New Haven and London: Yale University Press, 2008. Pp. x, 293. \$26.00. ISBN 978-0-300-12223-7.

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In the first chapter of *Nudge*, Thaler and Sunstein lay out two types of people: *homo economicus* and *homo sapiens*. *Homo economicus*, or "Econ" for short, is "economic man" who "chooses unflinchingly well, and thus fits within the textbook picture of human beings offered by economists" (page 6). *Homo sapiens*, or "Humans" for short, are real people who make systematic mistakes, experience temptation, have limited energy, attention, knowledge, will-power, and computational capacity. *Nudge* leads us through a summary of current research in economics, cleverly organized to highlight the differences between *Econs* and *Humans* as they make decisions in key markets central to current economics and public policy debates.

The typical *Human* who reads this book will find it interesting and enjoyable to read—a book that systematically describes and defines behaviors and summarizes current research showing