

## Letter to the Editor: Luck versus Skill and the Analogy to Astronomy

September 9, 2008

The following is in response to our article two weeks ago, [The New Ptolemains](#), by C. Thomas Howard.

Dear Editor:

Professor Howard began his most recent letter with a purported analogy to the history of astronomy. He was suggesting that neo-classical financial theory, like Ptolemaic astronomy in the sixteenth century, is antiquated, and that he has produced observational evidence that will lead to a revolution in financial thought. He is not the first to attempt this analogy; Jeremy Siegel used it in attempting a rhetorical argument for fundamental indexing in a 2006 [op-ed piece](#) in the *Wall Street Journal*.

I am likely one of very few trained historians of science who read your journal (though I know two others who have worked in investments). I hope that by pointing out the flaws in Professor Howard's historical analogy, I may put the rest of his argument in perspective.

It is not true, as Professor Howard asserts, that up to the time of Copernicus, astronomers added epicycle upon epicycle to account for new discoveries in the motions of the planets. The observable motions of the planets were well understood in the sixteenth century. Ptolemaic theory accounted for them quite well without the stacking epicycle upon epicycle to arrive at a desired degree of precision would have been a kind of Fourier analysis before Fourier. You could, indeed, use Ptolemy's theory today with a degree of accuracy suitable for backyard planet-gazing if you updated some parameters. Copernicus, however, had strong metaphysical and esthetic reasons for considering the heliocentric theory, despite the violence it seemed to do to the physics of the time. Moreover, in one way, Copernicus was trying to hew closer to the principles of ancient Greek astronomy than Ptolemy himself. A few years ago, a historian found that Copernicus actually used more epicycles in total than did Ptolemy. Furthermore, the telescope was not initially used for making precision observations of the paths of the planets. When systematic telescopic observations were begun around 1609 by Galileo and Harriot, they revealed sights that were incompatible with Aristotelian physics, thus further undermining the theoretical foundation of Ptolemaic astronomy in ways that Copernicus could not have anticipated.



If we must draw an analogy to financial theory from the history of science, perhaps we might consider physics instead of astronomy. When I was an undergraduate astronomy major, I was taught Newtonian mechanics, although hardly any educated person in the latter half of the twentieth century believed that this was the sum total of all our knowledge of physics. I hope that Professor Howard would not wish today's mechanical engineers to be taught only that Newton was "wrong," and to have their physics education left at that, or that somehow the design of bridges and office towers should be based on quantum mechanics.

The ideas of market efficiency and the Capital Asset Pricing Model remain theories of great elegance and explanatory power, and most criticisms of them have been based on misapprehensions of what the theories actually stipulate. Moreover, it is hardly revolutionary to find evidence of their limitations. Research into these limitations began shortly after their promulgation, as Professor Howard knows, since he refers to research into anomalies dating from the 1970s. We may as well recall, among other studies, Fisher Black's early paper on the Value Line effect.

I could say more about the substance of Professor Howard's case, but I have gone on long enough. My intention is only to redirect the argument to the substance without the distraction of self-aggrandizing claims of fomenting a revolution.

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