

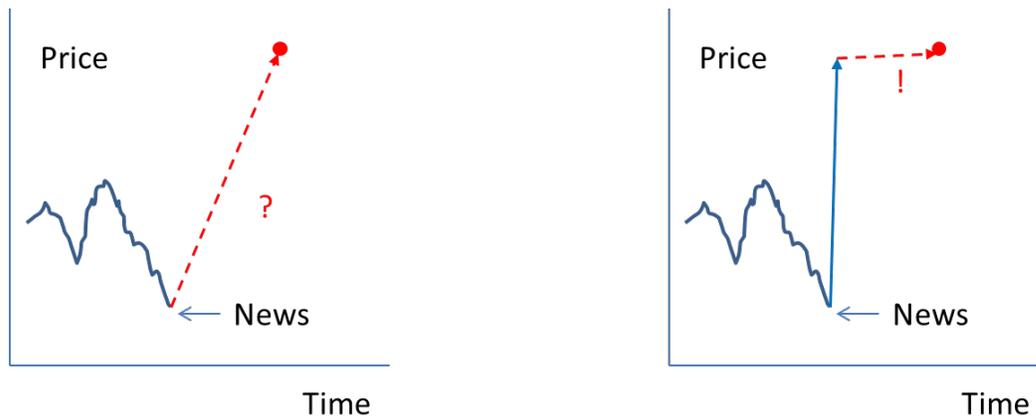
Eugene Fama: Efficient markets, risk premiums, and the Nobel Prize

John H. Cochrane¹

In 1970, Gene Fama defined a market to be “informationally efficient” if prices at each moment incorporate available information about future values.

A market in which prices always ‘fully reflect’ available information is called ‘efficient.’” - Fama (1970)

If there is a signal that future values will be high, competitive traders will try to buy. They bid prices up, until prices reflect the new information, as I have indicated in the little picture. “Efficient markets” just says that prices in a competitive asset market should not be predictable.



“Efficient markets” is not a complex theory. Think Darwin, not Einstein. Efficiency is a simple principle, like evolution by natural selection, which organizes and gives purpose to a vast empirical project.

That empirical work is not easy. The efficient market hypothesis has many subtle implications, most of them counterintuitive to practitioners, especially those who are selling you something.

For example, efficiency implies that trading rules -- “buy when the market went up yesterday”-- should not work. The surprising result is that, when examined scientifically, trading rules, technical systems, market newsletters, and so on have essentially no power beyond that of luck to forecast stock prices. This is not a

¹ Professor of Finance, University of Chicago Booth School of Business, Hoover Institution, Cato Institute, and NBER. <http://faculty.chicagobooth.edu/john.cochrane/>. Remarks presented at “The Work Behind the Prize” symposium at the University of Chicago, November 4 2013. Video here: <http://youtu.be/-7CnFC6iUSo>

theorem, an axiom, a philosophy, or a religion: it is an empirical prediction that could easily have come out the other way, and sometimes does.

Efficiency implies that professional managers should do no better than monkeys with darts. This prediction too bears out in the data. It too could have come out the other way. It should have come out the other way! In any other field of human endeavor, seasoned professionals systematically outperform amateurs. But other fields are not as ruthlessly competitive as financial markets.

43 years later, “efficiency” remains contentious.

Some of that contention reflects a simple misunderstanding of what social scientists do. What about Warren Buffet? What about Joe here, who predicted the market crash in his blog? Well, “data” is not the plural of “anecdote.” These are no more useful questions to social science than “how did Grandpa get to be so old even though he smokes” is to medicine. Empirical finance looks at all the managers, and all their predictions, tries to separate luck from ex-ante measures of skill, and collects clean data.

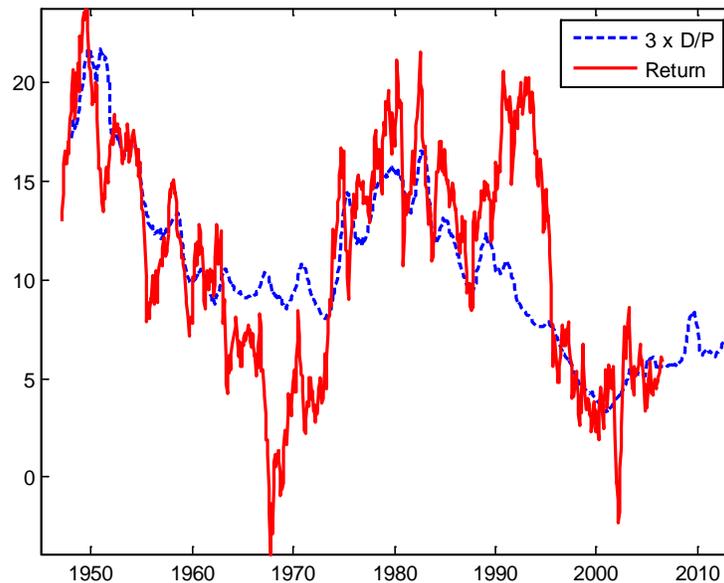
Another part of that contention reflects simple ignorance of the definition of informational “efficiency.” Every field of scholarly research develops a technical terminology, often appropriating common words. But people who don’t know those definitions can say and write nonsense about the academic work.

An *informationally*-efficient market can suffer *economically inefficient* runs and crashes -- so long as those crashes are not predictable. An informationally efficient market can have very badly regulated banks. People who say “the crash proves markets are inefficient” or “efficient market finance is junk, you did not foresee the crash” just don’t know what the word “efficiency” means. The main prediction of efficient markets is exactly that price movements should be unpredictable! Steady profits without risk would be a clear rejection.

I once told a reporter that I thought markets were pretty “efficient.” He quoted me as saying that markets are “self-regulating.” Sadly, even famous academics say things like this all the time.

There is a fascinating story here, worth study by historians and philosophers of science and its rhetoric. What would have happened had Gene used another word? What if he had called it the “reflective” markets hypothesis, that prices “reflect” information? Would we still be arguing at all?

Starting in the mid 1970s, Gene started looking at long-run return forecasts. Lo and behold, you can forecast stock returns at long horizons.



The blue line is the ratio of dividends to prices. Think of it as prices upside down. It goes down in the big price booms, such as the 1960s and 1990s, and goes up in the big busts such as the 1970s. It also wiggles with business cycles. You see the astounding volatility of stock valuations, which Bob Shiller shares the Nobel Prize for pointing out.

The red line is the average return for the 7 *following* years. So, times of high prices, relative to dividends are reliably followed by 7 years of low returns. Times of low prices are reliably followed by high returns. This pattern is pervasive across markets – stocks, bonds, foreign exchange, real estate.

Even more surprising are the dogs that don't bark: Times of high prices are not followed by higher dividends, earnings or profits.

Does this fact imply that markets are inefficient? No. Gene's 1970 article emphasized that you *can* get better returns, by shouldering more risk, and the reward for bearing risk can vary over time and across assets, and that's how he interprets these facts. [Properly *discounted* prices should be unpredictable.]

The theory only has empirical content, however, within the context of a more specific model of market equilibrium,... Fama (1970)

For example, in December 2008, prices fell and expected stock returns rose. In this view, typical investors answered: "Yes, I see it's a bit of a buying opportunity. But stocks are still risky, and the economy is falling to pieces. I just can't take risks right now. I'm selling." Many university endowments did just that.

The facts still imply a huge revision of our world view: Business-cycle related variations in the risk premium, rather than variation in expected cashflows, account entirely for the volatility of stock valuations. This view changes everything we do in finance and related fields from accounting to macroeconomics.

There is another possibility: perhaps people were irrationally optimistic in the booms, and irrationally pessimistic in the busts.

And a third more recent challenge: perhaps the institutional mechanics of financial intermediation cause variation in the risk premium. When leveraged hedge funds lose money, they sell. If not enough buyers are around, prices fall.

These views agree on the facts so far. So how do we tell them apart? Answer: we need “models of market equilibrium.” We are not here to tell stories. We need economic models, psychological models, or institutional models, that tie price fluctuations to more facts, in a non-tautological way. And, that is exactly what a generation of researchers like myself spend a lot of its time doing.

Financial economics is a live field, asking all sorts of interesting and important questions. Is the finance industry too large or too small? Why do people continue to pay active managers so much? What accounts for the monstrous amount of trading? How is it, exactly, that information becomes reflected in prices through the trading process? Do millisecond traders help or hurt? How prevalent are runs? Are banks regulated correctly? The ideas, facts and empirical methods of informational efficiency continue to guide these important investigations.

Gene’s bottom line is always: Look at the facts. Collect the data. Test the theory. Every time we look, the world surprises us totally. And it will again.