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Are Markets Efficient?

(light piano music)

Hal Weitzman: Many economists view financial markets as efficient, with prices incorporating all information about future values. Behavioral economists say that model simply doesn't reflect how markets actually work. So are markets efficient?

Welcome to *The Big Question*, the monthly video series from Chicago Booth Review. I'm Hal Weitzman and I'm joined by an expert panel.

Eugene Fama is the Robert R. McCormick Distinguished Service Professor of Finance at Chicago Booth. Well-known for his empirical analysis of asset prices and for developing the efficient market hypothesis, he was the joint recipient of the 2013 Nobel Prize in Economic Science. And Richard Thaler is the Charles R. Walgreen Distinguished Service Professor of Behavioral Science and Economics at Chicago Booth. He's director of Booth's Center for Decision Research and coauthor of the bestseller, *Nudge*. His most recent book is *Misbehaving: The Making of Behavioral Economics*.

Panel, welcome to *The Big Question*. Gene Fama, let me start with you. You came up with the efficient market hypothesis, so tell us briefly, what is it?

Eugene F. Fama: Well, it's a very simple statement that prices reflect all available information. Testing the hypothesis turns out to be more difficult, but it's a simple hypothesis in principle.

Hal Weitzman: OK, Richard Thaler, do you agree that market prices reflect all available information?

Richard H. Thaler: Well. Like Gene says, it's easier to say than to test, and I like to distinguish two aspects of it. One is whether you can beat the market. That's the one most people are most interested in, and the other is whether prices are correct. So if prices reflect all information, then they should land on the right price, and we can separate those two questions because they're different.

Hal Weitzman: OK, but the basic premise about the containing information is something you don't agree with then, it sounds like?

Richard H. Thaler: It's almost impossible to test that hypothesis. Except through the two questions that I've asked: Can you beat the market and are prices right?

Hal Weitzman: OK, is that right, Gene Fama? If you say that prices reflect all available information, it necessarily means that a price is right at any particular point in time?

Eugene F. Fama: That's the statement of the hypothesis, but it's a model. It's not completely true. No models are completely true. They're approximations to the world, the question is, for what purposes are they a good approximation? As far as I'm concerned, they're a good approximation from almost every purpose.

I don't know any investors who shouldn't be able, if markets are efficient, for example, and there are all kinds of test with respect to the response of prices to specific kinds of information, in which the hypothesis that prices adjust quickly to information looks very good. There are others where that looks less good. So it's a model. It's not entirely always true, but it's a good working model for most practical uses.

Hal Weitzman: OK, is that right, is it a good working model?

Richard H. Thaler: Well, again, I think for the first part, can you beat the market? I think Gene and I are in virtually complete agreement, which is that's a good working hypothesis for any investor.

Hal Weitzman: Does that mean you should assume, any individual investor should assume that markets are efficient?

Eugene F. Fama: Behave as if, would be the way you put it.

Hal Weitzman: Well, behave as if.

Richard H. Thaler: Well, yeah, certainly, there's evidence going back to the thesis of Mike Jensen who was, I guess, I mean, one of Gene's first students, who was around at the same time, who did a thesis on whether mutual funds, on average, beat their benchmarks. And after you account for their fees, they don't. That was in the '60s, It's been updated a zillion times. You can quibble about exactly how to do it, but that's approximately true.

So. Just investing based on fees is not a dumb thing to do, regardless of the nuances that Gene and I might get into.

Hal Weitzman: OK, but you talked earlier about, in some cases, the model works. In other cases, it works less well. In your book, Richard Thaler, you talk about the 1987 crash, Black Monday, and you give that as an example of how prices are not right. The efficient markets don't really work. You say, "If prices are too variable, they're in some

sense wrong. It's hard to argue the price at the close trading on Thursday, October 15, and the price at the close of trading the following Monday, more than 25 percent lower, can both be rational measures of intrinsic value, given the absence of news." But isn't the idea that efficient markets are supposed to be unpredictable?

Richard H. Thaler: Yes, but unpredictable doesn't mean rational. I have a two-year-old granddaughter who runs around like crazy, and I defy anyone to use a rational model to predict what she's gonna do next. So she will be unpredictable, but her behavior isn't well captured by a model of maximizing anything other than whatever she calls fun.

Hal Weitzman: So does the market behave in the same way as your granddaughter?

Richard H. Thaler: Well, sometimes. I don't think anyone thinks that the value of the world economy fell 25 percent that day. Nothing happened.

Hal Weitzman: So if markets were efficient, there would be a certain bounded level of volatility? So if—

Richard H. Thaler: Well, in the absence . . . It's not a day when World War III was declared.

Eugene F. Fama: But it was a time where people were talking about perhaps an oncoming recession, which turned out not to happen. So in hindsight, this was a big mistake, but it needn't have been. So in hindsight, every price is wrong.

Richard H. Thaler: Yeah.

Eugene F. Fama: That's 20/20 hindsight.

Richard H. Thaler: That's 20/20 hindsight, but what I would say is merely the big fluctuations that entire week. Two of the biggest up days in history occurred that week, and three of the biggest down days, and nothing was happening other than the fact that people were talking about how markets were going up and down like crazy all over the world. So that's one . . . indirect way that we can measure market efficiency. (coughs) This was essentially the approach that was pioneered by [Yale's] Bob Shiller, who Gene shared the Nobel Prize with, and his argument was prices fluctuate too much to be explained by a rational process.

Hal Weitzman: Right, and Gene Fama, is that right? There's a certain level at which prices just fluctuate too much?

Eugene F. Fama: Well, there's a test for that, and the test says that when we look at longer periods of time, the variants of the price changes should not grow like the

length of the time period if there is all of this temporary variation in prices that's not rational. And, in fact, that test does not indicate that there's temporary variation in prices, so you gotta kind of come up with a different test.

Shiller's model was based on the proposition that there's no variation through time in expected returns, but we know there is a ton of variation in expected returns. So that kind of branch of testing, people lost interest in because you really can't come to any conclusions.

A straight test of whether there's temporary variation in prices says, "No, there isn't. You can't identify it." And another test which would be: Is there too much variation in expected returns to be attributed to rational behavior? Well, now you have to define what you mean by that, and that's terribly difficult.

Hal Weitzman: But is your augment then that investors are constantly changing the view of the expected future value of the shares?

Eugene F. Fama: My view is that risk aversion moves dramatically through time. In particular, it's very high during bad periods and it's lower during good periods, and that affects the pricing of assets and then the expected returns you expect.

Hal Weitzman: And so, every time there's a stock market crash, people come to you, are they, "Rubbish, the idea of efficient markets," and point to this massive volatility and say, "Doesn't that prove that efficient markets are wrong?" And then—

Eugene F. Fama: Doesn't prove that at all.

Hal Weitzman: What it proves is what? Is that risk changes a lot very quickly?

Eugene F. Fama: Well, the information changes a lot through time.

Hal Weitzman: Dick Thaler, let me turn to you. Bubbles. Gene Fama famously does not allow use of the word *bubble*, but I'm gonna use it. Do bubbles exist? How do we define bubbles?

Richard H. Thaler: Well, I think it's hard to say. I'm gonna present two examples. One which is, I think, more convincing than the other. The first one is I have graph that I think you'll show the viewers. Iit was produced by Gene's son-in-law, John Cochrane, and it's a graph of house prices over a very long period of time in the US. And what it shows is that, for a long period of time, house prices were roughly 20 times rental prices. And then starting around 2000, they go up. Depending on which measure you use, they go up a lot or they go up a really lot, and then they go back down after the financial crisis.

Now, I'm not . . . I can't use this graph to convince Gene that markets are inefficient.

Eugene F. Fama: True. Because the graph stops too soon.

Richard H. Thaler: Well, yeah, but, you know, we're not gonna live long enough to—

Eugene F. Fama: No, no, no, I mean, if you continue the graph, it goes back to the peak.

Richard H. Thaler: Well, but—

Eugene F. Fama: So, what's the bubble, the down, the up, the subsequent down—

Richard H. Thaler: Well, OK. So once again, we're in agreement, which is that studying data like this, it's impossible to know for sure whether something's a bubble. There are hints in that graph that prices seem to have diverged from a level that had existed for a very long time. They went up and then they went down. Was this because of irrational exuberance? Alan Greenspan's phrase?

What we do know is that in the markets like Vegas and Scottsdale and South Florida, where prices were going up the most, expectations of future price appreciation were also the highest, and that could be rational, but I'm skeptical of that. And of course, in hindsight, it was wrong.

But let me present another example, which is amusing at least. Have I told you about this one? The Cuba fund?

Eugene F. Fama: No. No.

Richard H. Thaler: OK, this is good. So, there's a closed-end mutual fund that happens to have the ticker symbol, CUBA. Now, closed-end funds have been studied for many years. They're a special kind of mutual funds where the shares trade in markets, and the price of the shares can deviate from the value of the assets that they own.

So this particular fund, although it has the ticker symbol CUBA, of course, cannot invest in Cuba. A, that would be illegal and B, there are no securities. So its holdings of Cuba are zero, and for many years, it traded it at a discount of about 10 to 15 percent of net asset value, meaning that you could buy a hundred dollars worth of their assets for $85 to $90, which is a good bargain.

Then, if we look at the chart, all of a sudden, one day, the price skyrockets, and it sells for a 70 percent premium. And you could probably guess what happened. That was the day that President Obama announced his intention to relax relations with Cuba. So a bunch of securities you could buy for $90 on one day, it cost you $170 the next day.

Now, that I call a bubble. And unlike the first case, where Gene and I could argue forever as to whether those home prices were rational or irrational, I'm pretty sure Gene doesn't think that it would be smart to pay $170 for a hundred dollars worth of cruise-ship lines and Mexican companies, and all through this period, there was no change in the value of their assets. So it's not like the market was anticipating some boom in the Caribbean. This is just a mistake.

Hal Weitzman: OK, Gene Fama, this is an anomaly, but it's also a bubble in your terminology.

Eugene F. Fama: Well, it's a one-day bubble.

Richard H. Thaler: No, no! It goes up and then it takes a year—

Eugene F. Fama: To come back.

Richard H. Thaler: To come back.

Eugene F. Fama: Well, it drops most of that 170 there.

Richard H. Thaler: Well, I mean, a few months later, it's still—

Eugene F. Fama: Anyway, it's an anecdote not—

Richard H. Thaler: Well, yeah.

Eugene F. Fama: There's a difference between anecdotes and evidence.

Richard H. Thaler: OK, so. As, you know, I have lots of these anecdotes, like my paper with Owen [Lamont of Harvard] on Palm and 3Com.

Eugene F. Fama: That, oh, OK, that one, right.

Richard H. Thaler: And so. When . . . this was an example where a part of a company was worth more than the whole company.

Eugene F. Fama: That can happen, but.

Richard H. Thaler: Yeah, but.

Eugene F. Fama: 'Cause the rest of the company can be unprofitable.

Richard H. Thaler: Yeah, but the rest of the company was actually the only profitable part in this case.

(indistinct crosstalk)

Hal Weitzman: I should say for more details on that case, people can read your book, *Misbehaving*.

Richard H. Thaler: Correct.

Hal Weitzman: But the point here is you think—

Eugene F. Fama: I don't deny that. I don't deny that there exist anecdotes where there are problems. I don't deny that, it's just, for example, for bubbles, I want a systematic way of identifying them. In my view, it's a simple proposition. You have to be able to predict that there is some ending to it, and all the tests that people have done trying to do that, they can't do it. So statistically, people have not come up with a way of identifying bubbles. I think that there's a lot of identification of bubbles based on 20/20 hindsight, and it's very easy to do in that situation.

For example, irrational exuberance, which, that was Shiller that takes credit for that, which if you actually date the time, the market goes up more afterward, it never goes back to that point. So irrational exuberance never went away, if that's what it was.

Richard H. Thaler: So, this is where we are, and why do I bring up amusing anecdotes, which I agree this is. It's a speck. And when Owen Lamont and I presented our paper in the finance workshop, presenting another one of these anecdotes, Gene and I got into a discussion of icebergs, and Gene's point was that, like, this is the iceberg. Yeah, that I can go find these cute little anecdotes—

Hal Weitzman: This is the whole problem.

Richard H. Thaler: And OK, little stuff can go wrong. My argument is, and there's no way to prove which one of us is right, is look, these are the few cases where we can test whether the price and intrinsic value are the same. And, you know, it shouldn't be that a small, unprofitable part of a company is worth more than the entire company where the rest is profitable. It shouldn't be true that shares of the CUBA fund are selling at a 70 percent premium.

Now, you know, I go to these and say, "Look, if the market can't get this right . . . "

Eugene F. Fama: But there are other examples of cases where you can't test it. For example, parimutuel markets are a good example. You can test where they are. They're good predictors of eventual outcomes and they tend to be very good.

Richard H. Thaler: Well, they're very good, although there's something called the favorite-longshot bias. So if you go to the racetrack—you shouldn't bet because they take 17 percent—but if you do, you wanna bet on favorites, because like a hundred to

one longshot will win one race out of 400. So the prices are correlated, and the deviations aren't enough to beat the 17 percent spread, but there are some anomalies.

Hal Weitzman: I just wanna press you there for a second. How do you define the bubbles then?

Richard H. Thaler: Well. I would say, bubbles are when prices exceed a rational valuation of the securities being traded.

Eugene F. Fama: That's great, but what's the test of that?

Richard H. Thaler: Well, the only tests that are clean are these anecdotes, like closed-end funds, where we know the value of the assets and we know the price and we can see that they're different.

For something like the real-estate market, we only have a suspicion and we can't prove it. Although, I have some ideas I'm working on with one of our golf buddies to figure out how to predict when a bubble's gonna end.

Hal Weitzman: OK, sounds like a good reason to play more golf, but to go back to the iceberg for a second, if financial markets are inefficient, and you're saying that there's more that we haven't see, that's the point of the iceberg example, where are the biggest inefficiencies?

Richard H. Thaler: Well, again, it depends on which definition we're using. So where are you most likely to be able to beat the market? Smaller firms, less-developed countries —although, even there, the advantage that active managers have is relatively small.

Eugene F. Fama: But there are other, those, to me, seem like, that one you'd have to test whether that actually worked. We have tested that. That one doesn't work.

But things that are more systematically tested that are indications of some degree of market inefficiency are, for example, the accountants have long established that the adjustment of announcements to earnings is very quick, but not complete. It takes a few more days before there's complete adjustment, not enough to make any profits on, but so what? It's still a slower adjustment, so that's an indication that the market's not completely efficient.

The whole process, the whole momentum phenomenon gives me problems. It could be risk, but if it's risk, it changes much too quickly for me to capture it in any asset-pricing model. So that one gives me the biggest problems of all. So the point is not that markets are efficient. You know they're not. That's just the model. The question is, how inefficient are they? I tend to give more weight to systematic things like failure to

adjust completely to earnings announcements or momentum than to anecdotes which, to me, seem less . . . they're fine, but they're just little things popping up. They're curiosity items rather than evidence.

Hal Weitzman: But Dick Thaler highlighted one area where you do agree, which is about the value premium, that low price stocks tend to do better.

Eugene F. Fama: That one's unresolvable.

Hal Weitzman: But you both have different explanations why that's the case, so can you give your explanation and tell me what your evidence—

Eugene F. Fama: Well, my explanation is that value stocks are just riskier than gross stocks. Initially, the people who thought that wasn't true thought that there was an arbitrage opportunity in value versus growth, that if you went long value and short growth, you'd get a portfolio at a very low variance and a high return. It turned out that wasn't true. If you went long one and short the other, you gotta a net that had a very high variance.

So it looked, smelled, and tasted like a risk factor, but you can't really establish that unless you can tell me why this source of variance carries a different price per unit than other sources of variance, because that's what you're into as soon as you deviate from the basic capital asset pricing model, that you're really seeing different sources of variances carry different prices of per unit of variance.

The Fama-French three-factor model is kinda the first one to put that into operation, and 20 years have passed, and people have been trying for 20 years to identify whether that's due to some taste factor or something people are trying to hedge against. And, although, I have a vested interest in saying, "Good, somebody's identified what hedges against," I don't really find it convincing, the arguments on either side. So I think that's just an open issue at this point. That's why I said that it's just basically unresolvable at least as far as the test will.

Richard H. Thaler: So I pretty much agree with that. Gene and Ken have gone now to a five-factor model where—

Eugene F. Fama: We're still working on it. Maybe four, maybe five.

Richard H. Thaler: OK, but.

Hal Weitzman: You could add momentum and go six.

Richard H. Thaler: Yeah, there you go. You know, in my view, there was one rational model of stock price, and that was the capital asset pricing model. And I think in a

world of rational investors, the CAPM would be true.

Eugene F. Fama: No, that's false, but.

Richard H. Thaler: That's what I think.

Eugene F. Fama: (chuckles) There's no multiperiod model that ever leads to the CAPM.

Richard H. Thaler: Well, in any case, it's certainly not true.

Eugene F. Fama: That's true.

Richard H. Thaler: And we have these other factors, like size and value and narrow profitability and investment. Now. I've looked hard to find the way in which value stocks are riskier than growth stocks and I have been unable to find them. I agree with Gene that betting on that spread is a very risky activity. Any hedge fund that did that would've gone out of business in the late 1990s. But that doesn't mean that the explanation for the abnormal returns is due to risk. Nobody can prove that.

Hal Weitzman: So what is your explanation?

Richard H. Thaler: I think that value firms look scary. And they get a premium for that.

Eugene F. Fama: There's another story that has . . . they don't have to look scary. It's just people don't like 'em. And economists don't argue about taste. So value stocks tend to be lower-performing companies who have few investment opportunities and aren't very profitable. And maybe people just don't like those. So that story, to me, has more appeal than a mispricing story because mispricing, at least in the standard economic framework, should eventually correct itself and it shouldn't keep repeating, whereas tastes can go on forever.

Richard H. Thaler: Well, but. So I would disagree with that.

Eugene F. Fama: Which part?

Richard H. Thaler: So I don't think you can call it taste.

Eugene F. Fama: Oh no, I'm not saying I can call it that. I'm saying that appeals to me more.

Richard H. Thaler: Suppose you say you like $20 bills. And you're willing to take four $20s for a hundred. Now, that's taste. Now, I'm gonna make a lot of money.

Eugene F. Fama: That's an arbitrage.

Richard H. Thaler: Yeah, well—

Eugene F. Fama: There's an arbitrage here.

Richard H. Thaler: But the question is, if the people who dislike value stocks and that's just taste and it's wrong.

Eugene F. Fama: It's not wrong. Remember now, we're economists. You're a behaviorist. That's even worse. So you don't comment on people's tastes.

Richard H. Thaler: Yeah, I do when they say that they like four 20s, better than a hundred.

Eugene F. Fama: That's an arbitrage. That's different.

Richard H. Thaler: Well.

Eugene F. Fama: Suppose I tell you I like apples better than oranges.

Richard H. Thaler: Then that's taste.

Eugene F. Fama: OK.

Richard H. Thaler: So—

Eugene F. Fama: That's value stock to a gross stock. I'm not arguing for it, I'm just saying it's a possibility.

Richard H. Thaler: Well. But, look. We're both affiliated with asset management firms and both of our firms invest, at least partially, in small value stocks. Now, we're hoping to earn high returns and do, so.

Eugene F. Fama: Well, sometimes, but not—

Richard H. Thaler: Yeah, sometimes—not all the time or it wouldn't work. If we're buying those stocks because people don't like them, we're only gonna make money if they change their mind.

Eugene F. Fama: Some, some people.

Richard H. Thaler: Or some people change their mind. And so that's why the taste argument. I mean, I think you're more behavioral than me now.

Eugene F. Fama: I'm an economist; economics is behavior. There's no doubt about it.

Hal Weitzman: Thaler, isn't that your point? That all economics should be behavior—

Eugene F. Fama: No, but there's a difference.

Richard H. Thaler: (laughing) Why couldn't we have stopped just there?

Eugene F. Fama: No, no, no, wait. There is a difference because yours is irrational behavior; mine is just behavior.

Richard H. Thaler: Oh, no, I hate the word rational.

Eugene F. Fama: Oh, good.

Richard H. Thaler: The distinction I make is whether behavior is predictable for a rational model.

Eugene F. Fama: OK.

Richard H. Thaler: And I'm willing to include behavior that is not predicted by a rational model.

Eugene F. Fama: Oh, OK, no, I would agree with that.

Richard H. Thaler: And look, I think, at the end of my book, I call for what I call evidence-based economics, and I think that's what Gene does and has always done.

There's no way . . . the point I was making about the five-factor model or the three-factor model is there's no way you can derive that from some axiomatic first principles.

Eugene F. Fama: No, you can't. It falls in the context of Merton's model, but you have not identified the relevant state variables that would give rise to it, and I think it's actually more complicated than that, that no one of these is really associated with a state variable. They're all linear combinations of multiple state variables combined in different ways.

Richard H. Thaler: Right.

Eugene F. Fama: Which makes the problem very difficult to unravel.

Richard H. Thaler: But the way in which you and I are the same is we're both interested in understanding the world.

Eugene F. Fama: Right.

Richard H. Thaler: And, you know, I have some prurient interests in things like the CUBA fund. But you know, at the main level, I think we would both like to know what

caused housing prices to go up so fast and then back down?

Eugene F. Fama: And then back up again.

Richard H. Thaler: Well, yeah, certainly, part of the way up (coughs) not exactly in the same places. And if those prices were wrong in some sense, then it would be good to know.

Eugene F. Fama: Absolutely. Total agreement on that.

Richard H. Thaler: And so if I were the chair of the Fed or in charge of Freddie and Fannie, if I saw places like Vegas and Scottsdale were in the 1990s, I would be raising lending requirements. You could borrow at . . . well, there were the, you know, liar loans, but you could borrow at very low interest rates and very low down payments into what looks like a pretty pricey market. So . . .

Hal Weitzman: So you're saying policy makers should use bubbles as a way to step in and intervene?

Richard H. Thaler: But very gently. It's not that I think that policy makers know what's gonna happen, but if they see what looks disturbing, they can lean against the wind a little bit, and that's as far as I would go. Something we certainly both agree about is—

Eugene F. Fama: No, not on that one.

Richard H. Thaler: No, no! I'm gonna say something I think we both agree about is that we . . . stock markets, good or bad, are the best thing we got going. So nobody's devised a way of allocating resources that's better.

Eugene F. Fama: Than markets in general.

Richard H. Thaler: Than markets in general. We're in total agreement about that.

Eugene F. Fama: There's disagreement about whether policy makers ever get it right, though.

(laughter)

Hal Weitzman: Well, it sounds like you're asking policy makers to step into the market that you just said was—

Eugene F. Fama: Yeah, right, they all most surely will do more harm than good.

Richard H. Thaler: Yeah, well . . . The argument that whether the policy makers ever get it right, I think—

Eugene F. Fama: Now, that's a little strained, but on balance, whether they cause more harm than good.

Richard H. Thaler: Yeah, but if they listened to us—

Eugene F. Fama: No, no, then they'd surely cause more harm than good.

(Thaler chuckling)

Hal Weitzman: Gene Fama, you said earlier you're a behavioral economist. Has your thinking been shaped by the sort of behavioral science that Dick Thaler has pioneered?

Eugene F. Fama: No, but.

Hal Weitzman: Was the three-factor model a response to some of the work that Dick —

Eugene F. Fama: No, absolutely not. It was a response to the data, basically. It's what we call an empirical asset pricing model. It has this vague connection to Merton's model, but it was really empirically inspired. Those were factors that were screaming at us from the data, basically, and we put them in there, and got a lot of credit for it, but it really was kind of an obvious thing to do. And it's had a 20-year run, so we can't complain about that. That's as long as the run that CAPM had, so we can't really complain. But . . .

Hal Weitzman: To your mind, has behavioral science, what impact has it had on economics?

Eugene F. Fama: Oh, I think there are, phew, every economics department is into it to some extent or another, right?

Richard H. Thaler: Yeah.

Eugene F. Fama: It's still kind of, what I'd call curiosity items rather than, in other words . . . 20 years ago I made this criticism of behavioral finance that it was really just a branch of efficient markets because all they were was complaining about us, so I was like probably the most important behavioral finance person because without me, there was no behavioral finance.

Richard H. Thaler: You were the reference point, yeah.

Eugene F. Fama: I'm the guy to criticize. I still think that that's true. There is no behavioral asset pricing model that can be tested front to back.

Richard H. Thaler: Well, there's no asset pricing model.

Eugene F. Fama: Whoa, that's a really nihilistic point of view, though.

Richard H. Thaler: Well . . .

Hal Weitzman: But you have said, Dick Thaler—

Richard H. Thaler: No theoretical one.

Hal Weitzman: You've said that you refer to the, I mean, the efficient market hypothesis remains the kind of, the standard to, to which your work is directed.

Richard H. Thaler: Yeah, that's true of all economic models. So you know, expected utility theory is the right way to make decisions under uncertainty. People don't. In my managerial decision-making class, I give them rules at the end of class, and one is: Ignore some costs. Assume everyone else doesn't. And that's kind of my philosophy of life.

I believe the rational model and I think a lot of people screw it up, and that we can build richer models and models with a better predictive power if we include the way people actually behave as a oppose to the way fictional creatures that are—

Hal Weitzman: The so-called Econs.

Richard H. Thaler: The Econs that are as smart as [Chicago Booth's] Kevin Murphy and have no self-control problems. I don't know anybody like that.

Hal Weitzman: But one of the criticisms that's made sometimes of you is that what you're pointing out is essentially anomalies, like the CUBA fund, and there is no overarching theory which other people can then try to reject. Do you need a theory? Will there be a theory?

Richard H. Thaler: No, there won't. Well, there won't be a new overarching theory. We've got one. It just happens to be wrong.

Eugene F. Fama: Like all theories, but.

Richard H. Thaler: Yeah, so. And so, it's not gonna be like the Copernican revolution, where having the earth in the middle was clearly wrong, and having the sun in the middle was right. It's not gonna be like that. It's gonna be more like engineering. So physics, in its pure form, with lots of assumptions, doesn't build good bridges. You need engineering. And that's what the behavioral approach to economics is. And I don't think it's really all that different than what Gene does.

Hal Weitzman: Is this really an academic debate? You said at the beginning that you essentially agree about investing strategy, what regular investors should do. So is this a debate that really affects the typical investor, retail investor? Gene Fama?

Eugene F. Fama: Um. I don't think, I mean, I think when [Princeton's Daniel] Kahneman was asked after he got the Nobel Prize, how should investors behave? He basically said they should buy index funds. That seems to be the model. But then they come from it from a different perspective because since they think everybody's irrational, the only way to make them rational is to tell 'em what to do. That's possibly rational, whereas I think the rational thing to do because prices reflect available information, pretty much, is to be a passive investor.

But my complaint about lots of the stuff that falls under behavioral finance, and this is not a complaint of him, I always say that he is very, he knows the psychology aspect of stuff and he's always oriented toward that, but he has lots of, there are lots of acolytes of behavioral finance who are pure data dredgers. All they're doing is out there looking for anomalies. They have no connection to anything in psychology. If you look at a behavioral finance NBER thing, it will be populated with those kinds of papers that are pure data dredging looking for anomalies. And that's, I think, I don't know, I think I'd cut them off the program (chuckling) if I were you.

Richard H. Thaler: Well, I'll agree to that if we can cut the theory dredging.

Hal Weitzman: But what about this idea that this may be just an academic debate, doesn't really affect individual investors. Or indeed, as you said earlier, both of you are involved with money-management firms that seem profitable, so someone would say, Well, you're coming at it from completely different perspective, you're able to make money, basically with the same strategy, as you pointed out, what is the big disagreement here?

Richard H. Thaler: Well, the strategies aren't exactly the same, and David Booth is a better marketer than anybody at Fuller & Thaler. But no, I think, if there's nonacademic point about this, it's whether things like, let's say the rise of technology stocks, and in Gene's honor, I won't refer to it as a bubble, whether that was a misallocation of resources and—

Eugene F. Fama: In hindsight, it was. In foresight, not necessarily.

Richard H. Thaler: In hindsight, it was. And if the rise and fall of technology stocks was a bubble—

Eugene F. Fama: Internet stocks, you mean, not—

Richard H. thaler: Yeah, essentially internet stocks. Although, even companies likes Sysco were—

Eugene F. Fama: The technology stocks are still a good fraction of the market.

Richard H. Thaler: So if prices can be off, you know, Fischer Black said he defined an efficient market as prices within a factor of two.

Eugene F. Fama: Well, Fischer said lots of crazy things, though.

(panelists laughter)

Richard H. Thaler: So that's my definition of market efficiency and, you know, I have a Chicago Nobel Prize winner I'm resting on. And if that's right . . . during those days, a lot of our MBA students were quitting after their first year to go out and make their billion, and most of them didn't.

And the same is true for the housing market. And so I think these are important questions that are not just academic disputes, and they'll be very important in trying to understand the way the global economy works.

Now, I'm not saying we can recognize them when they're happening, although I'm working on that, but I do think that we can have a pretty good hunch, and that solving that . . . a bubble-detection committee would be highly useful if it were reliable, and we're not there yet, and just saying it's impossible, I think—

Eugene F. Fama: I'm not saying it's impossible, I'm just saying (mumbles).

Richard H. Thaler: Then, we can agree on: it's hard to tell except for my cute anecdotes like CUBA.

Eugene F. Fama: In general, it would be very useful to know to what extent all economic outcomes are due to rational or irrational into place. We don't really know that. I don't think. So that's not just a, that would improve everybody's lives. More understanding is better than less understanding.

Hal Weitzman: OK, well, on that note, our time is up. This has been a fascinating discussion, and maybe we can do it again when you have come out with your bubble research.

(Fama laughing)

Richard H. Thaler: Look forward to that.

Hal Weitzman: Look forward to that.

Our thanks to our panel, Eugene Fama and Richard Thaler. For more research, analysis, and commentary, visit us online at review.chicagobooth.edu and join us again next time for another *The Big Question*.

Goodbye.

(light piano melody)

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