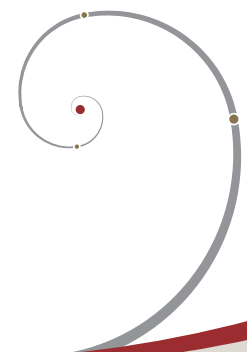


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**Ideas That Changed the Theory
and Practice of Investing,
A Conversation with
Eugene F. Fama, PhD**



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Ideas That Changed the Theory and Practice of Investing

A Conversation with Eugene F. Fama, Ph.D.

Known as “the father of the efficient markets hypothesis,” Eugene F. Fama is among the most prolific and widely cited economists, scholars, and financial researchers in the world. Over the past 45 years, Dr. Fama’s groundbreaking ideas have reached far beyond academia as his theoretical and empirical studies of asset pricing and portfolio theory have changed the way market participants—both professionals and individual investors—think about and practice finance and investing.



Eugene F. Fama, Ph.D.

Dr. Fama earned his undergraduate degree in Romance languages from Tufts University in 1960 and his M.B.A. and Ph.D. in economics and finance from The University of Chicago in 1963 and 1964, respectively. His doctoral dissertation, “The Behavior of Stock Market Prices,” which found that the movements of stock prices are not predictable, was published in 1965. Rewritten into a less technical version for the *Financial Analysts Journal* later that year, “Random Walks in Stock Market Prices” notably coined the term “efficient markets” and helped to popularize the idea of random walks. While still a graduate student, Dr. Fama was named assistant professor of finance at The University of Chicago Graduate School of Business in 1963. He has spent his entire teaching career at the school, becoming a full professor in 1968 and serving as the Robert R. McCormick Distinguished Service Professor of Finance since 1993. In 1982, Dr. Fama joined the board of directors of Dimensional Fund Advisors, an investment firm founded on his innovative theories. He continues to serve as a board member of DFA as well as a member of DFA’s investment strategy committee and consultant for the firm’s fixed income and value strategies.

The author of more than 100 articles for professional journals, Dr. Fama also has published two books: *The Theory of Finance* (1972), co-authored with Merton H. Miller; and *Foundations of Finance: Portfolio Decisions and Securities Prices* (1976). His writing has been recognized with awards including the Jensen Prize from the *Journal of Financial Economics* in 2001 and 2006 and the Smith-Breedon award for the best paper in the *Journal of Finance* in 1992. In 2007, Dr. Fama was named the first recipient of the Morgan Stanley–American Finance Association Award for Excellence in Finance; in 2005, he was the inaugural winner of the

Deutsche Bank Prize in Financial Economics. His other awards include the Chicago Mercantile Exchange Fred Arditti Innovation Award (2007) and the Nicholas Molodovsky Award from the CFA Institute (2006) for outstanding contributions to the investment profession. The first elected fellow of the American Finance Association, Dr. Fama has been awarded honorary doctorates by the University of Rochester, DePaul University, Catholic University of Leuven in Belgium, and Tufts University.

In March 2008, Dr. Fama spoke with members of the *Journal of Investment Consulting’s* Editorial Advisory Board about the genesis of his efficient markets hypothesis, active versus passive management, and his thoughts on the role of personal preference, or taste, in an efficient market. Joining the discussion were Edward Baker, the *Journal’s* editor-in-chief, of The Cambridge Strategy, London and San Francisco; Mark Anson of Nuveen Investments, Chicago; Roger Edelen of University of California, Davis; Ronald Kahn of Barclays Global Investors, San Francisco; and Meir Statman of Santa Clara University, California. This interview is the seventh in the *Journal’s* Masters Series, which presents topical discussions with leading experts and visionaries in finance, economics, and investments.

Ed Baker: Gene, I think you’ve had a chance to review the topics we hope to cover with you today. Why don’t we just start at the beginning and ask you to give us some background on the major factors that shaped your career and what you regard as your major achievement and biggest disappointment?

Eugene Fama: My early career was shaped a great deal by Merton Miller¹ and Harry Roberts² and by the topics that interested them and a few others when I was a graduate student at The University of Chicago. After that, I think it was serendipity. I followed several different paths, and many of them turned out to be successful. How exactly, I couldn’t really explain.

Meir Statman: Was your early work on random walks (1965)³ in any way motivated by the claims of those on Wall Street that they could beat the market?

Eugene Fama: No, I attribute it to the advent of computers. In the early 1960s, the first computers had been

introduced. People like Harry Roberts, who were basically statisticians, were interested in using them, and some of the most readily available data were stock-market data. Most of this work centered around the University of Chicago and the Massachusetts Institute of Technology, where people were groping at the general idea of what you would expect to see in stock prices if the market were working properly. In other words, they were looking at the idea of an efficient market. However, they didn't have any clear concept of what an efficient market was.

Back when I was an undergraduate at Tufts, I had worked for a professor who had a stock market forecasting service. I was very good at devising techniques for predicting past data. The professor, who was a very smart statistician, always had me set aside a holdout sample.⁴ The forecasting never worked on the holdout sample, and that made me suspicious of the whole process. Then when I went to Chicago, people were talking about what it meant to say that the market was working properly. The first proposition was the random walk model, which turned out to be a little bit off the mark. So basically, I went to Merton Miller with four thesis topics. I had two children by that time and was anxious to graduate, and he suggested that I pursue the one involving the behavior of stock prices. That's where the story started.

Meir Statman: When your thesis was published in the *Journal of Business* in 1965, did you hear any reaction from practitioners, or was it quiet?

Eugene Fama: No, there was considerable reaction. Reaction these days is much faster than it was then, so response to the work I've done with Ken French,⁵ for example, has been much faster among practitioners than the reaction to my paper back in 1965. It took a long time for the idea of passive funds to penetrate.

Roger Edelen: As your career has progressed, have you perceived any kind of paradigm shift or fundamental change in your views with respect to how you look at things, or do you think it's more of a continuum?

Eugene Fama: I think it's more of a continuum. When I started, asset pricing theory, or the theory of risk–return, really didn't exist. It was the mid-1960s before [William] Sharpe (1964) and [John] Lintner (1965) came along with the capital asset pricing model, and it took another ten years before multifactor models took hold. So we didn't really have a good way to think about risk and return when I started. Putting together risk and return stories with the efficient markets theory gave rise to the whole area of asset pricing, which now has grown into a huge area. My views have evolved along with the evolution of work on risk and return, but my view on market efficiency hasn't changed.

Meir Statman: If I could follow up on that, we actually had asset pricing models all along. We had asset pricing models for automobiles, for watches, for houses, for example. Why is the market for securities seen as entirely different? To clarify, in a more recent paper (Fama and French 2007) you

brought back those considerations that are different from risk. In particular, you mentioned social responsibility and tastes, or preferences. Why in the beginning was the focus entirely on risk, which still may be the only legitimate factor in the eyes of many?

Eugene Fama: Taste always has been important in economics. Basically, economics is taste on one side and opportunity on the other. If you go back to Fama and Miller (1972) or any of the other early work, basically it says that people invest in order to consume. We never took into account the possibility that investment itself could be a consumption good. Fama and French (2007) said that you have to allow for the possibility that people have tastes for particular securities. Social responsibility is one example of a preference. There's nothing irrational about that. It's just an expression of taste.

Meir Statman: I don't argue that there's anything irrational about it, but I wonder what it does to the concept of market efficiency. After all, when we see two car models selling at different prices, we don't say the market is not efficient. We say there are features, some of them rational and some of them taste-related, such as status or social responsibility.

Eugene Fama: I think taste is just another enhancement, another dimension above and beyond risk that one might have to take into account in explaining prices. I don't think of that as an inefficiency. I might say to an investor: "You want a socially responsible product. Okay, but the implications are going to be that, if large numbers of investors want socially responsible investing, expected returns for socially responsible securities will probably be lower than for other securities." And the investor looks at it and says: "Yes, that's fine. I'm willing to pay that price."

Ron Kahn: Are you saying that you're not going to be able to find firms that basically have the same cash flows but aren't viewed as socially responsible?

Eugene Fama: That's a good example. Take two firms with exactly the same cash flows; one is socially responsible, and the other isn't. If you have investors who want socially responsible products, the prices on the socially responsible ones are going to be higher, and the expected returns are going to be lower.

Meir Statman: In your 1965 paper in *Financial Analysts Journal*, I believe you defined an efficient market as one where price is equal to fundamental value, or intrinsic value, and you defined value as strictly the present value of dividends, or the expected cash flow. It had nothing to do with factors such as social responsibility, to take this example. By that definition, the market where social responsibility is priced cannot really be efficient, is that right?

Eugene Fama: Not if you're defining it that way, no. I can look at risk and return and say that the price of risk depends on taste. That's true. So I say, "Okay, but risk isn't the only thing that counts." Maybe, just as an example, social responsibility also counts. Well, that's going to affect pricing. That's perfectly rational. There's nothing wrong with that. Intrinsic

value is going to have to take that into account. I'm still saying that price equals intrinsic value is a definition of market efficiency. It's just refining the concept of what intrinsic value is.

Ron Kahn: Going back to our example of two assets with the same cash flows, where one is socially responsible and one isn't, doesn't that then allow for riskless returns?

Eugene Fama: Yes, that's true. If there are investors who look at the two securities and say they don't care about social responsibility, they're going to push the price back in the other direction, and that's going to mitigate some of the price effects of social responsibility.

Meir Statman: That idea originated in behavioral finance, and it's been around since before your work with Ken French. That seems to be a shift that both you and Ken have made, and I welcome it. I think that it is just a question of how different it is from what was accepted before. I don't think that idea would have been accepted by Merton Miller.

Eugene Fama: Oh, I think Merton would have had to agree. We're talking price theory here. That's all we're really talking about. So there's another dimension to an asset that has to be taken into account. He couldn't argue with that. No economist could argue with that.

Mark Anson: Is this the way you also see behavioral finance?

Eugene Fama: Much of behavioral finance is about irrational behavior. What we've been talking about up to here is rational behavior.

Ed Baker: Another factor that complicates these socially responsible investing features relative to risk is their lack of homogeneity. You can model risk more easily as a homogeneous characteristic to which everyone responds. I guess that doesn't eliminate your perspective as being wrong. It just makes any attempt to model it or capture it in a framework more difficult.

Eugene Fama: It's very complicated. It may be a reality, but you're absolutely right. I mean, model-wise, it's kind of a horror story. You're opening up a big box, and a huge amount of stuff could pop out of it.

Roger Edelen: One way of possibly interpreting all of this would be that in your earlier work, you never said that there wasn't an expansion of the model, is that right? You were just saying that if we start with the notion of basic risk and cash flows, we have this model, but other dimensions could be out there.

Eugene Fama: Right. If you go back to the first statement of what market efficiency meant, it wasn't in my doctoral thesis. It was in a review paper I wrote in 1970 in the *Journal of Finance*, and even that had some mistakes in it. It wasn't until *Foundations of Finance* in 1976 that I arrived at one clear statement of it.⁶ Basically, it said that you have to put aside intrinsic value. You've got a basic communication problem here. You have to tell me what you mean by intrinsic value, and then we can work from there to decide whether the market sets price equal to intrinsic value. The model for intrinsic value is totally aside, totally separate from that.

Roger Edelen: So you never said that the model excluded factors such as taste or social consciousness?

Eugene Fama: No. But Meir's right. My thinking was restricted in those days to the thinking of, basically, Irving Fisher.⁷

Ed Baker: But there were attempts to generalize the framework, were there not? That is, there were attempts to make utility of consumption a starting point of the theory. However, somehow that never caught on. I guess it was just too difficult to do anything meaningful?

Eugene Fama: That's the way Fama and French (1993) phrase the whole thing. That is, it's all driven by the utility of consumption, but it didn't say that investment itself could be a consumption good.

Ed Baker: So that's the subtlety there?

Eugene Fama: Right.

Roger Edelen: One follow-up on the question of asset pricing, going beyond the securities markets and cutting to the chase in housing markets: I guess there are securities on mortgages, but overall it's a nonsecuritized market. What is your view of market efficiency with respect to these pure assets as opposed to securities?

Eugene Fama: I would think housing has to be a very efficient market, in the sense that people commit large amounts of their current and future expected wealth to a home purchase. For most people who own houses, it's by far their major asset. They take that purchase very seriously, doing lots of investigation into information such as comparable prices and the like. I would think that market works very well.

Roger Edelen: In the context of behavioral factors that might be more on the irrational side, one could argue that if a purchase is really major, these factors would dominate decision making. However, it sounds like you would take the opposite viewpoint and say that people are actually more careful in cases like this?

Eugene Fama: I think that in this case, they're probably very careful. One of the major shortcomings of finance is that there isn't really any very good real estate research, because the data are so difficult to get. Work on securities markets, where you have quoted information on prices, gains, whatever, is much more advanced than that on real estate markets.

Meir Statman: If you look at the current situation, where we've of course had quite a decline in the housing market, would you say that this is just a matter of the economy heading into a recession, or of people's changes in taste? What happened to cause such a run-up in prices and now this decline?

Eugene Fama: That's an interesting question. When the prices were running up toward their peaks, real interest rates were very close to zero. When real interest rates get very close to zero, prices can do almost anything. So the real question is what in the world would push real interest rates to zero? I don't know the answer to that.

Mark Anson: It's called the Fed.

Eugene Fama: Well, we could spend two hours on that one.

Meir Statman: It's probably not that real interest rates were close to zero at one point, because people should anticipate that they won't stay that way forever. In fact, that's what happened. People who jumped in the real estate market must be regretting it at the moment. Is that just something they couldn't see?

Eugene Fama: Maybe they're regretting it. I don't know. I suspect people regret many things after the fact. I don't know that a decline in housing prices like this has ever happened before. This is not a normal kind of event.

Mark Anson: To follow up on that point, I think the consensus now is that we're in a recession. It could be brief, it could be slight, but have you ever seen housing prices decline this rapidly before? What does that say about real estate as an asset class? Is it so inefficient that it's not priced appropriately?

Eugene Fama: No, I've never seen a decline like this. The real question is why haven't real estate prices been more variable in the past?

Ed Baker: I disagree. If you look outside the United States, you'll definitely see property markets where you have much more rapid price adjustments, Hong Kong being a prime example.

Eugene Fama: I think the commercial property market here in the United States is quite variable. You can't be sure because data are difficult to get, but rental rates for commercial properties appear to vary dramatically.

Ed Baker: Yes, that's certainly true, but I think it's true of residential property in Hong Kong as well.

Roger Edelen: What's your view of commodities as part of an investment portfolio?

Eugene Fama: I don't see them. I don't know what they produce. Where do you expect to get a return?

Meir Statman: Well, obviously people hold them as part of a portfolio. Take gold, for example. I imagine people expect capital appreciation to provide the return, rather than dividends.

Eugene Fama: Right. But who are the natural buyers and sellers? And do the natural sellers of risk want to be short or long? That's the whole issue. There's an ancient theory of commodity prices, but it all hinges on who's going to be the net buyer and who's going to be the net seller. Who's trying to lay off the risk, and who's going to assume the risk?

Meir Statman: That's an interesting question, because there's no anchor. Typically, dividends would serve as an anchor so that prices cannot go beyond a level that is reasonable relative to the cash flows you can expect. For gold, it must really just be a matter of the eye of the beholder.

Eugene Fama: Not really. Again, there are risks in commodity prices, and there are people who use commodities as input. The question is do they want to lay off that risk, or do they want to bear it?

Ed Baker: But certainly there are demand–supply dynamics driving the pricing. So one could speculate on that, but

then that becomes more a matter of active management, rather than an attempt to earn a risk premium.

Roger Edelen: To the question of whether commodities should be a natural long portion of a typical investor's portfolio, it sounds like your answer is "probably not."

Eugene Fama: Yes, probably not, but I don't have enough information to really tell. That's a complicated economic question about who is bearing the risk, and who is willing to pay for bearing the risk.

Ed Baker: Somehow we've not managed to finish the first question on our list yet. We haven't gotten you to confess your biggest mistake and/or disappointment.

Eugene Fama: I can't remember. I don't dwell on them. Maybe that's a good knack, not to be able to remember your biggest mistakes.

Ed Baker: I think it's a human characteristic.

Meir Statman: And good for presidential candidates.

Ed Baker: Well, I'll ask another question then. When I was a student, I really enjoyed *The Theory of Finance*, the textbook you wrote with Merton Miller in 1972. I wondered why it was not more widely used, and why you have never come out with further editions.

Mark Anson: Some of us on this call still have that book on our bookshelves.

Eugene Fama: It's very simple. I think that book sold maybe 5,000 copies. It was much quoted and never purchased. If you look on eBay and ever see it, it sells for a very high price. One thousand dollars is not uncommon.

Ron Kahn: It may not be on Mark's shelf much longer.

Ed Baker: Why do you think it did not become more popular?

Eugene Fama: Because it's too difficult.

Ed Baker: It certainly is more mathematically rigorous.

Eugene Fama: Yes, more rigorous. It's unbelievable that we wrote that as a textbook for a first course in finance to be taken by students who would never take another finance course.

Ed Baker: I thought your discussion of stable distributions was especially forward-looking, but again, that's a topic that somehow got lost in the shuffle of time. Why do you think that is?

Eugene Fama: Well, because basically the evidence says that—and Benoît Mandelbrot⁸ has spent his life pushing this—all probabilities or real outcomes are fat-tailed,⁹ but stable distributions say something more specific. They say that as you add these things up, the distribution doesn't change; it remains the same stable type. When you look at stock returns over longer periods and you add them up, they look a little more normal than they do over shorter periods. You wouldn't expect that with stable distributions. So people lost interest, and I think they've lost interest to too great an extent. Many of the market tragedies that you see are the result of extreme events in the markets that people take to be unusual but that really aren't that unusual.

Ed Baker: They become complacent with their assumptions of normal distributions.

Eugene Fama: Right. So there's almost no interest at this point.

Ed Baker: I think interest may be coming back in that area. The hedge fund world has certainly showed very clearly that nonnormal distributions are a matter of course, at least as far as hedge funds are concerned.

Eugene Fama: Once you become levered, it becomes much more important, right?

Roger Edelen: The banking industry and those looking at the distribution of housing prices probably are scratching their heads about the same issue right now.

Meir Statman: It seems like the hedge fund industry didn't really get the point of fat tails because they got themselves in trouble. Perhaps you could take it from there and speak about the hedge fund business. It seems like it's a booming business with great demand. Do you think hedge funds provide real value, or is it also a matter of just satisfying some tastes that have nothing to do with returns?

Eugene Fama: I know you like the taste story, Meir, and that's fine. But here's my take on active investing. Before costs, it's a zero-sum game. Let's take a simple example. Suppose everybody is an active investor, and there are no passive investors. Then you know that, if there are some active winners, there have to be active losers. In aggregate, there are neither winners nor losers. In the actual situation, you have some passive investing, but one can't claim that active investors gain at the expense of passive investors because the evidence says passive investors basically get the returns they sign up for. That means again that the active investors who win have to win at the expense of other active investors. So before fees and expenses, active investing is a zero-sum game. After fees and expenses, active investing is a negative-sum game.

Ed Baker: But that's in aggregate.

Meir Statman: So why do people play?

Eugene Fama: That's a good question that I've never been able to answer.

Mark Anson: Do you think there are skillful active managers?

Eugene Fama: Possibly. However, there are also active managers who are systematically bad. There have to be, in order to make up for the ones that are systematically good. On average, they have to come out to zero.

Meir Statman: The question of why people play has to be a puzzle, given that you've already talked about your opinion of the taste theory. Then again, it seems that taste also could be an answer to the question, that is, people play because they enjoy playing.

Eugene Fama: If they enjoy the play, would they pull their money out very quickly when things go bad?

Meir Statman: Maybe, if they get the point that they are losing. I think that most investors don't even adjust for the market. They think that if the market goes up, it is their

genius rather than the market. So even the idea of basic adjusted returns, where you subtract the market, is foreign to most investors, it seems.

Ed Baker: You do see that kind of withdrawal behavior among hedge fund investors, though.

Eugene Fama: They pull out very quickly when returns go bad. Even if faced with the reality that most of the variability of returns is just chance, they still move quickly. If we're all driven by taste, you wouldn't expect that.

Ron Kahn: What do you think of the trend among academics to focus on market inefficiency, and then many of them go into the active management business?

Eugene Fama: Yes, the lure of the 2 and 20.¹⁰ It's hard to turn down. What would be really fascinating would be a study that examines the performance of academics versus that of nonacademics in the hedge fund industry.

Meir Statman: What would be your hypothesis?

Eugene Fama: I think the academics are probably worse. From personal experience, I know some academics who have gone into the hedge fund business based on statistical phenomena that, in my opinion, were marginal at best. They were going to lever that up, but that doesn't make it any less marginal. They were betting on something happening that had happened on average in the past but without much statistical reliability. So the chance that these people get blown away is rather high.

Roger Edelen: From the investment consulting point of view, do you think there's a reasonable amount of effort spent trying to identify that ex-ante?

Eugene Fama: There's no evidence that anybody can pick a good active manager, as far as I can see. Ken French and I (2008) are finishing a study of the mutual fund industry where active managers as a whole basically hold the market, and investors lose by the amount of fees and expenses they pay, almost right on the money. If you look at persistence, there's a bit of persistence, but it depends on how you measure it, and it's very short-lived. If you try to do a general study where you take account of the fact that there are so many funds out there that lots of them are bound to win or lose by chance—we've constructed a way to do that, too—then you find no evidence at all that there are any winners out there.

Meir asked a good question: Why do people continue to play? This is where I think behavioral finance has a lot to say about individual behavior that's irrational. I'd never deny that. I can't argue with the studies that have been done on individual behavior. They're typically well done. There's lots of evidence that individuals behave irrationally much of the time. The implications of that for market prices, though, are more difficult to ascertain.

Meir Statman: What do you think is the line between irrational behavior and a matter of taste? For example, if I buy a Rolex for \$10,000 rather than a Timex for \$50, I would call that a matter of taste, because I'm getting pleasure out of the beauty and status that the Rolex conveys. Do you see a distinction between the two at all?

Eugene Fama: Empirically, would I ever be able to tell? Yes, I suppose I would if I asked, “Are you buying into this active mutual fund because you think there’s prestige associated with buying an active manager, or do you actually think you’ll have higher returns?” If the investor says prestige, then I’ll think it’s taste. If he says higher returns, then I’ll tell him that he should do a lot of reading, because on average he’s not going to get anything for what he’s paying. You’re buying something that you’re not getting any value from, and it’s costing you something. However, we couldn’t resolve the issue if we didn’t ask that question.

Ed Baker: I think in a way it’s easier to make the distinction with the example of Rolex versus Timex because people think there’s an inherent value in things, or a resale value. Certainly with eBay, there are people who will pay \$1,000 for your finance textbook. So there’s obviously a scarcity value that people attribute to it.

Mark Anson: And that’s certainly not irrational.

Roger Edelen: You made the distinction between putting an irrational label on an individual as opposed to the pricing effects of that behavior in aggregate. To me, that gets at the notion of liquidity. If there’s ample supply counteracting the “irrational” subset, then it’s not going to make its appearance in prices. Do you think there are some asset markets where the supply offsetting the “irrational” forces is inadequate, so you actually do see price distortions, but you could think of it as providing liquidity to the irrationals?

Eugene Fama: I think you may be mixing two concepts. I don’t see where liquidity has anything to do with any of that.

Roger Edelen: I’m thinking of the basic concept of the informed trader versus noise trader. When noise traders [those who make trading decisions without the use of fundamental information] come into the market, they push the price, and informed traders [those who have fundamental information] trade against it. The informed traders basically are providing liquidity to the noise traders, but there is a price distortion.

Eugene Fama: That’s a theory of liquidity, but my problem has always been finding those informed traders. I’ve never been able to identify them.

Ed Baker: One place where you can see those distortions is in panic-selling moments, when everyone wants to sell and there are limited buyers. You could argue that then there are moments where prices go further than they reasonably should.

Meir Statman: There’s generally a problem with volume. Many people have commented that trading by itself is a puzzle in a world where people are rational. Surely the kind of volume that we see is puzzling. Is that simply another facet of the behavior of irrational investors?

Eugene Fama: I’m not sure, but I do agree that we don’t understand trading. The statistics now are getting a bit more distorted. Ken French recently wrote a paper (2008) on the cost of active trading that basically documented the huge increase in trading that has taken place. Much of it is due

to hedge funds, churning and churning and churning. Rational or irrational? Well, it’s very cheap now to make a trade. The other part of it—the actual total amount spent on trading as a portion of aggregate stock market capitalization—hasn’t changed very much over the past twenty-five years or so, according to his paper. I have no explanation for volume, unfortunately.

Ed Baker: Changing the focus a little and looking forward, what do you think are some of the major questions we will be confronting as we roll forward?

Eugene Fama: There’s been a ton of work done on asset pricing, risk, measurement of risk, and measurement of the relationship between expected return and risk, but it hasn’t been all that satisfying. For example, if we knew more, the Fama-French three-factor model¹¹ would not have had such a large impact, because it’s a pure empirical asset pricing model. We concocted that model to cover what we observed. It’s used among academics; it’s used everywhere. That’s a comment on the fact that more formal theories developed to explain risk and return just haven’t worked that well. An empirically generated theory such as the Fama-French model seems to do better than the theoretically constructed paradigms. Now when people do tests of risk and return, if they do as well as the Fama-French three-factor model, or even come close, they proclaim victory. I think that’s the big challenge of the future: to find better ways to measure risk and the information that’s coming out of the risk–return story.

Meir Statman: Do you think that size, or market capitalization, and book-to-market ratio [i.e., growth versus value] indeed are measures of risk, or do you think they might possibly be matters of taste?

Eugene Fama: They might be matters of taste. It could just be that people like growth stocks and dislike value stocks. If it turns out that people just like growth stocks and dislike value stocks, then that’s taste.

Ed Baker: Do you think further work will be done with asset models? You’ve recently introduced your momentum factor. Do you think that’s just the first of new factors that might be identified, or has that subject been exhausted?

Eugene Fama: That’s again in the vein of something totally empirical. We have probably 20,000 finance researchers and academics out there, maybe more. They’re all spinning the same two tapes, *Center for Research in Security Prices (CRSP)* and Compustat. They’re going to come up with everything that’s in the data, whether it’s there by chance or whether it’s a systematic risk story. My hope is that momentum turns out to be the one thing that looks robust at the time but in fact is a purely chance phenomenon. If you want to characterize past returns, adding a momentum factor will help you, because we know it was there in the past. Adding a momentum factor to your empirical description of the sources of return—calling it an asset pricing model is to glorify it—or to your return attribution model may be a better way to put it, will definitely help to enhance that model.

Ed Baker: You think going forward that may not be the case? Is that what I hear you saying?

Eugene Fama: I'm hoping it isn't. I look to the Fama-French three-factor model. First you have the market—every asset pricing model says you need the market. Then you have the size factor—well, we can tell different stories about that one. Then you have the value/growth factor—and we can tell different stories about that. Then if you add the fourth factor—the momentum factor—you can tell really different stories about that, some rational and some irrational. The momentum factor gives me more difficulty because the population turns over too quickly. It discourages me to think that the risk characteristics of securities are changing so rapidly, because that makes things rather difficult empirically.

Ed Baker: But if taste factors are driving these identifiable factors, couldn't you expect a certain amount of transfer?

Eugene Fama: I can tell a taste story for value versus growth. I may be able to tell a taste story for small cap versus large cap.

Ed Baker: Why not momentum? Don't people like stocks that are moving up?

Eugene Fama: They like stocks that are moving up if they were there when they started to move.

Ed Baker: But investors do show a tendency to chase such things.

Eugene Fama: They do. The question is why are they doing that?

Ed Baker: Taste.

Eugene Fama: Again, we should stop them and ask them. Are you investing in these stocks because you like them, or do you think they're going to continue to go up?

Ed Baker: Of course, they'll say the latter.

Meir Statman: I remember that Merton Miller had very little patience with studying the behavior of individuals—and even professionals. He said just show me that in the prices. It sounds like your view may be a bit different?

Eugene Fama: Merton basically was saying what I said earlier. That is, maybe a lot of the behavior at the individual level is irrational, but it doesn't have any particular implications about whether prices are irrational. I think that's what he was trying to emphasize. You can't make that leap. Just because individual behavior is irrational, to jump from there to say that prices are irrational is a leap that must be documented with empirical support.

Meir Statman: In my time in the profession, which is almost as long as yours, there was a point at which it seemed that we had solved everything. We had the capital asset pricing model (CAPM), we had market efficiency. Now it seems like everything is in tatters. Would you comment on that?

Eugene Fama: There was a topic on your list that asked why academics seem to be focusing on market inefficiencies, or the tatters as you called it. I think there's just increased demand for it. Academics, like everyone else, respond to demand. There's a great deal of demand for anomalies. It's basically a way for the popular press and active managers

to justify what they're doing. If people find anomalies in the market, they can make jumps to say therefore active management can work. People want to do that because there's big money to be made.

Meir Statman: It's not just anomalies. We had a beautiful model in the CAPM that started with individuals and rational choices and went to asset pricing. Now instead we have an empirical model, which you introduced, that does the job, but evidently even you don't find it beautiful. I think the same applies to, say, mean variance. Surely Harry Markowitz¹² would say that people don't follow his rules to form portfolios, and so on. It seems like there's a disconnect between reality and theory. Theory is, as you say very frankly, I don't know—too many questions and too few answers.

Eugene Fama: At the peak of euphoria in research on finance in the early 1970s, about the time the Fama and MacBeth (1973) paper was published, until then, and including that paper, the CAPM looked rather good, and market efficiency looked rather good. However, then things on the asset pricing side started to fall apart. In my view, people are spending inordinate amounts of time on consumption-based asset pricing, and it hasn't yielded anything. Some of the best brains in the business have spent their lives on that, and empirically it hasn't amounted to anything. The other theories? It turned out that the CAPM never really worked. We had just never looked at it carefully enough. So we have more uncertainty now about what it means to say something is risky and how you measure the relation between risk and expected return. In the process, however, we've learned a great deal about how prices actually behave. We're just much more uncertain about how to interpret it.

Meir Statman: At Dimensional Fund Advisors, I think they now place a good deal of emphasis on educating advisors and helping them to educate individual investors. But we don't really see that in academic work. When you look at studies of the behavior of investors, it's still not work that is respected in the top journals. Do you think that's the way it should be, that it's just a matter of time?

Eugene Fama: No, I think the people who work on studying the behavior of individuals get a positive hearing. The work that's been done has been well received, I think, by the journals.

Ed Baker: Moving to another topic if we could, the area of regulation in capital markets certainly has seen a huge shift toward excess in the face of some of the issues we've had. What are your thoughts about that?

Eugene Fama: That's a very difficult question. It's very difficult to say what is excessive, because a world in which there is no fraud is impossible. I know that people spend a lot of time trying to measure the costs and benefits of regulation, but I don't know how you answer that question in a convincing way. I think Sarbanes-Oxley probably went too far, but I don't know how to document that.

Ed Baker: Do you think that's an area where academics should put some more effort?

Eugene Fama: Yes, definitely.

Ed Baker: And why aren't they, do you think?

Eugene Fama: Because it's such a difficult topic.

Measuring costs and benefits is just so difficult.

Ed Baker: But perhaps that is a future area of very fruitful work on someone's part?

Eugene Fama: I would think so, yes.

Meir Statman: Some insight into that comes from a comparison of regulations among different countries and the effects of different cultures on financial markets. For example, a recent paper entitled "Trusting the Stock Market" (Guiso, Sapienza, and Zingales forthcoming) found that places where people trust one another are also places where people are more likely to invest in the stock market. Do you see that as a promising avenue?

Eugene Fama: Indeed, I think that type of research is very promising. Explaining the kinds of situations—cultural, institutional, and so on—that give rise to more successful economic outcomes—what question could be more important than that? It's hard to think of one.

Ed Baker: What about the area of international investing generally? How would you suggest people should think about that? Should they be thinking globally, or is it still appropriate to think of international as a separate part of their investment portfolio?

Eugene Fama: Your portfolio always has to be viewed as a whole. If we never had wars or conflicts, the answer would be simple. What do boundaries mean if everything is integrated economically? The only problem with international investing in the past has been that returns for local investors were different from returns for foreign investors, because of the intervention of major events such as wars. In a war, investors of the enemy automatically get expropriated. They never get their investments back, and nobody cares. If you look at international investing during wars, there have been major losses that don't show up in the data we typically use to measure the benefits of international investing, because that's all post-1973. The same is true for countries that experience financial distress. Those kinds of events never make it into the data. A government tells foreign investors that they can't repatriate their gains for who knows how long. That's a cost to foreigners not borne by locals. It gives rise to some amount of home bias in investing. It's not irrational to take into account the possibility of this kind of expropriation. And it's not as if it's unusual. In the past twenty years, many countries have imposed capital control—Spain, Great Britain, France—and that's without even getting into emerging markets, where it's a fairly frequent occurrence.

Meir Statman: Home bias changes depending on the relative returns. I think home bias generally has declined during the last ten years, as foreign markets have performed better than the U.S. markets.

Eugene Fama: That's true. It's also that the frequency of major events, at least in Asian markets, has gone down. But even differential taxation can have an effect.

Ed Baker: And that's a constantly changing playing field, so it's hard to hedge that.

Eugene Fama: Europeans probably never pay taxes on dividend income. They just don't file tax returns in most European countries. But if Europeans invest in the United States, they are subject to a withholding tax, while U.S. investors aren't. So differential taxation on foreign investment will have an effect.

Roger Edelen: Speaking about an investor's overall portfolio and returning to the topic of housing, you said that housing is such a very large part of most investors' actual portfolio. Do you see that as—and I don't want to use the term market inefficiency here in the same sense that we've been using it before—but is that an opportunity for financial engineers to try to provide some vehicle for investors to mitigate that enormous part of their portfolio? Say, for example, housing futures?

Eugene Fama: Those have not done very well. There are things like reverse mortgages, for example. I don't know why it took so long for those to come about. That seems like a normal progression. In the past, older people had to move out of their houses in order to get their capital back, and now they can just take a reverse mortgage and stay where they've always been.

Roger Edelen: I'm thinking more of people in their mid-thirties, with huge exposure to this one asset. I've always thought of that as inefficient in a statistical sense. Why haven't financial markets come up with a product to mitigate this?

Eugene Fama: Right, because they're holding it in a leveraged form. I think the reality was that the variation in housing prices in the past was not high enough to make it worthwhile. You could lean on that fact to explain why you could ever get an 80-percent mortgage. It's got to be that the loss of 20 percent was an unusual event.

Roger Edelen: So, in other words, even if you're highly levered, it's not necessarily that much risk.

Meir Statman: Do you have one more moment to say something about fundamental indexes?

Eugene Fama: Fundamental indexing is a triumph of marketing over new ideas.

Roger Edelen: So marketing over economics is what you're saying?

Eugene Fama: No, there's just nothing new there.

Meir Statman: But we in finance tend to underestimate marketing.

Eugene Fama: But I don't.

Ed Baker: And most of the other practitioners don't either.


Ed Baker: Unfortunately, Gene, I think we've used up our time with you. Is there any final comment you'd like to leave us with, or a word of inspiration?

Eugene Fama: Actually, I was waiting for you to ask me about my thoughts on portable alpha, because I had an answer prepared.

Ed Baker: Okay, what are your thoughts on portable alpha?

Eugene Fama: It's very simple. Since alpha is equal to zero, it's very light, and that makes it portable.

Ed Baker: What a note to end on! It was very nice talking with you, Gene. Thank you for your time.

Eugene Fama: Thank you also. 

ENDNOTES

- ¹ Merton H. Miller (1923–2000), winner of the Nobel Memorial Prize in Economics in 1990 (with Harry M. Markowitz and William F. Sharpe) for “pioneering work in the theory of financial economics,” served as Dr. Fama’s doctoral advisor at The University of Chicago Graduate School of Business.
- ² Harry V. Roberts (1923–2004) was a professor of statistics and quality management at The University of Chicago Graduate School of Business. An early proponent of computers, Dr. Roberts joined the UC faculty in 1949 and taught until 1995; he received the university’s Norman Maclean Faculty Award in 1997 for his contributions to teaching and the student experience on campus.
- ³ Dr. Fama’s Ph.D. thesis (1964), which concluded that stock prices follow a random walk, was published by the *Journal of Business* (1965a) under the title, “The Behavior of Stock Market Prices.” A simplified version of the article, entitled “Random Walks in Stock Market Prices,” subsequently appeared in *Financial Analysts Journal* (1965b) and *Institutional Investor* in 1968.
- ⁴ Statisticians often divide their data into in-sample portions, which are used to develop a forecasting model, and holdout portions, which are used to test the model’s predictive ability.
- ⁵ Kenneth R. French (1954–) is the Carl E. and Catherine M. Heidt Professor of Finance at the Tuck School of Business, Dartmouth College. For more than twenty years, he and Dr. Fama have worked jointly on asset pricing studies, co-authoring more than thirty papers.
- ⁶ The efficient market theory holds that a stock is always correctly priced because all of the public information about the stock is promptly and fully reflected in its market price.
- ⁷ Irving Fisher (1867–1947), who in 1891 was granted the first Ph.D. in economics at Yale University, was one of the first to subject macroeconomic data to statistical analysis. The main focus of Fisher’s work was monetary economics, including the behavior of interest rates and inflation.
- ⁸ Benoît Mandelbrot (1924–), Sterling Professor of Mathematical Sciences Emeritus at Yale University, is best known as the father of fractal geometry, which has been described as one of the major developments in twentieth-century mathematics. In a 1963 paper, he suggested that asset returns should be modeled with stable Paretian distributions rather than with the normal distributions assumed in the random-walk hypothesis.
- ⁹ In a normal bell-shaped distribution of portfolio returns, the majority of returns can be found in the “bell,” which centers around the weighted average return for the entire market. The ends, or tails, of the curve represent returns that are either extremely bad (left) or extremely good (right). Larger than normal tails are called “fat tails,” indicating more data on the extremes than expected. Fat tails indicate that extreme market moves were more likely than would be predicted by normal distributions.
- ¹⁰ In addition to a percentage of assets under management, hedge funds typically charge a percentage of their profits. The standard fee

arrangement is known as “2 and 20” i.e., a charge of 2 percent of assets under management plus 20 percent of profits above a predetermined benchmark, such as the London Interbank Offering Rate (LIBOR).

- ¹¹ While the capital asset pricing model (CAPM) relies on a single factor—beta (risk)—to compare excess portfolio returns with excess returns of the market as a whole, Fama and French (1993) added two other factors to CAPM: market capitalization (size) and book-to-market ratio (value). The resultant three-factor model was based on their observations that small-cap stocks and those with high book-to-market ratios historically tended to perform better than the market as a whole.
- ¹² Harry M. Markowitz (1927–), an economist at the Rady School of Management at the University of California, San Diego, is best known for his pioneering work in modern portfolio theory, studying the effects of asset risk, correlation, and diversification on expected investment portfolio returns. In 1990, he shared the Nobel Memorial Prize in Economics with Merton Miller and William Sharpe.

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