Marshall Poe
Welcome to the New Books Network.

Hello, everybody. This is Marshall Poe. I'm the editor of the New Books Network and this is an episode in the Princeton University Press Ideas Podcast brought to you by our friends at Princeton University Press and the New Books Network. And today I am very pleased to say we have Stephen Foerster on the show and we'll be talking about his book that he co-authored with Andrew Lo, *In Pursuit of the Perfect Portfolio: The Stories, Voices, and Key Insights of the Pioneers Who Shaped the Way We Invest*. It's out from Princeton University press in August. Yes, it's out this month in August, so that's great. Steve, welcome to the show.

Stephen Foerster
Pleasure to be here, Marshall.

Marshall Poe
Could you begin the interview by telling us a few words about yourself?

Stephen Foerster
Sure, I'm a finance professor at the Ivey Business School at Western University in London, Ontario Canada, and for our American listeners, London, Ontario, is roughly between Buffalo and Detroit.

I'm a Canadian. I got my PhD from University of Pennsylvania's Wharton School, and later chartered financial analyst designation. I do research and teach in the area of capital markets and investments.

Marshall Poe
I find that very interesting. I have a number of friends who started their careers as people that work in finance and then became academics and then I have friends who were academics and then went into finance. One of the things I'd like to say about the book, and as a historian I think I can say this with some assurances, that this is a particularly modern issue, how to invest your assets because now we have assets. I mean, I told you in the pre-interview, I study the 16th and 17th century and then very few people had assets. There were no asset classes. People didn't really have to worry about these kinds of things. I say have to worry, get to worry about these kinds of things because retirement was not an issue nor were the kind of complexities that are involved in managing your assets. I have assets and I pay someone like you or my friend to manage them and I have a little bit of experience with it but now it's kind of entered popular culture because so many Americans have 401ks or some sort of retirement instrument. I think I can say with some assurance that the pension has gone by the way of the dodo, at least as in the United States, I don't know about Canada.

But so, it's a very timely book and I'm sure the listeners will be interested in what you have to say. Also, I should say, as I am duty-bound to do, we are not giving financial advice.

Stephen Foerster
Absolutely, absolutely not.

Marshall Poe
So don't take any of this to the bank or anywhere else. All right. Why did you write the book and what were you hoping to accomplish with it?

Stephen Foerster
Sure. It's been a long process. This goes back about a decade. The original reason was I had a sabbatical coming up and was looking for an idea of something to do during my sabbatical. The last

time I had a year off of teaching, I wrote a textbook and that was okay, not too exciting to write a textbook. So I had this idea to write something that would be more practical and I thought that by looking at how academics and practitioner research contributed to this search for the perfect portfolio might be great topic. So that was sort of the genesis and shortly afterwards I reached out to my co-author Andrew Lo we had known each other for a long time, since the mid-80s. In fact, I was a PhD student at Wharton in the very first PhD course that Andrew taught. So that was a real pleasure and we stayed in touch over the years.

And I pitched the idea to him and he immediately thought it was a great idea and got on board. So what we really hope to accomplish is I think a number of things. One is really telling a story of what we call Modern Portfolio Theory and really what that refers to is really just a framework for investing and its really the foundation of what we now think of as almost the entire investment industry as we know it. And back to your perspective on assets and the fact that we now have assets to worry about and retirements to plan for, that was another objective that we hope to accomplish is to inform investors about their own portfolios and hopefully they'll be in a better position to manage their own portfolios after reading the book.

Marshall Poe
Yes, the whole idea of a portfolio is a kind of modern invention and I didn't really realize that I had one until I talked to people that manage my money. I'd also say, in a kind of editorial way, that many of us who have assets are in a very weird position in the sense that we invest, in various instruments, equities, or land or gold or whatever class it is, but usually we don't know anything about these things. And, you know, for example, I'm sure that I'm invested in a hundred American or International companies, but I don't know anything about those companies. So the amount of trust that we put in the people who design the portfolio theory is incredible. They're a very important group of people.

Stephen Foerster
And that's a great perspective and that's really where Modern Portfolio Theory brought us from this whole notion of just trusting your broker to pick a number of stocks that appear to be hot stocks versus coming up with a systematic way to think about a portfolio and to think about expected return and risk, and that's really the key.

Marshall Poe
Yeah, yeah. That is the key, and we will get to that in a second. How long did it take you to put the book together and how did you approach the research and the interview process? One question that I had is how did you get all these people to talk to you? Because they are sometimes hard to get.

Stephen Foerster
Those are great questions. So as I mentioned, it was a 10-year process. Now, we, Andrew and I, haven't devoted our entire past ten years to this book, so it's been sort of on and off. But it started back in 2012 and really the door opener was securing an interview with Harry Markowitz, who was really the founder of Modern Portfolio Theory.

How did we get access to these luminaries? Well, I can tell you, it's not easy for people like myself even to just pick up the phone or know where to even email these people, but that's where having a well-respected and well-connected co-author in Andrew Lo, that's where that helps. Andrew, knew all these people personally, but more than that- and I, the only person I really got to know before writing the book was Jeremy Siegel because he was one of my professors at Wharton, but all the others, a few of them I might have bumped into at conferences. In fact, I think my first conversation with Harry Markowitz was at a conference, this was back in 2011, I think it was 2012 was when he asked me, “What was the direction to the washroom?” So that was the extent of my contact with him. But Andrew not only knew these people, but they knew Andrew and they respected him and so that just opened up doors.

Marshall Poe

Yeah that is a great opportunity and thanks to Andrew for that. Yeah. Because they were obviously very forthcoming in your interviews, it shows in the book. It's hard to generalize, but what can you say about these luminaries in general? What did they have in common? And then what differentiates them? And we'll get to the individuals in a second.

Stephen Foerster

Sure, I think what they all had in common is brilliant minds. These are exceptionally brilliant people in different ways and if we look at our interviewees, seven of them are academics, six of which have Nobel prizes in economics and the three practitioners, two of them have PhDs and the other one who didn't, Jack Bogle, who passed away in 2019 as you probably know, was the founder of Vanguard and developed the first mutual fund to offer index funds. So these were just people with brilliant minds who had a knack of looking at the world in a certain way. So that certainly was a common feature.

What was interesting, a couple of themes that I think were some common features, it was very fascinating for us to see how many any of them faced setbacks or near setbacks that they were to overcome. For example, Bill Sharpe who went on to get a Nobel prize in economics, he was in grade school in California and he failed grade 4 and the primary reason why he failed grade 4 was studying for a math test in the days when you had to know the times tables and remember times tables? Yeah, he knew the times table up to 10 times 10 but didn't realize the test was going to be up to 12 times 12 and because of that, he failed grade 4. I mean it's just hard to imagine these days but that wasn't the only failure he had. His most famous paper which he developed, what's known as the capital asset pricing model, which is really a bedrock for how we think about the risk of firms, he sent it out for publication and the process, the academic process is you get a referee, a so-called blind referee, who you don't know who it is. The paper was rejected and the reason was that according to the referee, the assumptions that Sharpe was using were so preposterous that all the subsequent conclusions were uninteresting. So that was kind of feedback that that he got.

So that was a failure. There were a number of failures for Bill Sharpe. Jack Bogle, this original index fund that he came up with was via an initial public offering and he expected to raise a hundred fifty million dollars for this first index fund. And it was a total failure, it became known as Bogle’s folly. It attracted only 11.3 million dollars. So the advisors said “Do you want to just throw in the towel at this point?” and he did. So there are just a couple of examples of some of the failures.

Another interesting theme was the role that serendipity played in terms of how these luminaries came to make their mark. Going back to Harry Markowitz, and this is something that I think every doctoral student can relate to, he was struggling to find a topic for his dissertation.

So he went to see his advisor to see if he could bounce some ideas off of him. And his advisor was busy at the time, and so Harry was waiting in the anteroom, and struck up a conversation with another person who was waiting in the anteroom who turned out to be a stockbroker. And as they were chatting, the stockbroker said, why don't you do your dissertation on the stock market? And Harry knew nothing about the stock market. He brought this idea to his supervisor and that's how it got started. And according to Harry Markowitz, this was the best advice a broker had ever given to him.

Another example of serendipity, Bill Sharpe started writing his thesis in the area that doesn't sound too exciting to many of us, the area called transfer pricing. The way companies price goods that are used by different divisions within a company and he thought he had a pretty good thesis and he thought he was about halfway through and he went to an expert in the field and they said, sorry, I don't think you have a thesis here. I think you're going to have to start all over on something else and so he was very depressed with that. And again, went to a supervisor and said, what am I going to do now? And the supervisor said, well, just recently there was this seminar by this this fella Harry Markowitz. He's now at the Rand corporation which Bill Sharpe had some affiliation with, why don't I introduce you, and we'll see if something's there and again the rest is history. So case after case just the serendipity, it was amazing.

Marshall Poe
I particularly liked what you said about setbacks because I have a CV or a resume and I've looked at a lot of CVs and resumes or well, let me just concentrate on my own, when I look at my own CV or resume, the only thing I think is "that is not the whole story. That is the farthest thing from the whole story."

Stephen Foerster
Absolutely. Yeah, things can come together at the end but the path. Yeah, yeah.

Marshall Poe
You can't really find Marshall Poe in my resume or CV, he's not really there.

So let's talk a little bit about these individuals, and the first one we'll talk about is obviously Markowitz, and I'd heard of him before I've done digging on this myself. Markowitz was kind of an amazing character and he's credited with inventing, I think, Modern Portfolio, Theory. Can you talk a little bit about what you learned from him?

Stephen Foerster
Sure, sure. So his "aha moment" when he had this topic, looking at the stock market and the perspective that he was taking what was actually one from what's known as operations research and linear programming. So this was where he was trying to fit these kind of models to see if there was some kind of way to optimize looking at investing in stocks and since he had no background in investing, he was given a reading list of books to look through that would help them understand the whole investment world as of the 1950s.

One of the books was a classic by John Burr Williams called The Theory of Investment Value. And it was a really important book and really the precursor to a lot of concepts that we know today and that are still important. But as Markowitz was reading this book, some of the assumptions that Williams was making didn't seem to make sense because they didn't take into account how individual stocks moved relative to one another. And so if you didn't take into account this whole notion of how stocks move relative to one another, then as Markowitz read it, the logical conclusion of Williams was that you should only invest in one stock and that's the one stock that will give you the highest expected return and that didn't make sense to Markowitz.

And so he searched around in the University of Chicago library and found a book on mathematical probability to try to see what was the mathematics behind looking at the relationship among securities assets as they have their returns throughout time.

And what he found was, this really important mathematical concept called covariance or correlation and that takes into account how securities move up and down relative to one another and this was really the “aha moment” because it then occurred to Markowitz that what's really important is we shouldn't be looking at investing in that one stock that we think is going to do really well, but look at a portfolio of stocks and pick that portfolio that collectively as we would invest in in this portfolio of securities, either has the highest expected return for a given level of risk or the least amount of risk for a given level of expected return.

And so that's where Markowitz was the first to really develop the mathematics behind this to show what is sort of a common saying that we shouldn't put all our eggs in one basket. And in fact, apparently, as Bill Sharpe tells the story, at one point a reporter came up to Markowitz and said, did you really get a Nobel Prize for saying that we shouldn't put all our eggs in one basket? And Markowitz’s reply was “yes.” And then he walked away and the reporter was quite bewildered that that’s how they were giving out Nobel prizes.

So anyway, that was the big contribution of Markowitz to get us to think systematically about the importance of diversification. We talked about a free lunch and the notion that there's no free lunch, Markowitz actually showed that there is a free lunch in the sense of by forming a portfolio of stocks, we can we can get to a point where we are either higher expected return without taking on more risk or lowering our risk for that particular level of expected return. So that was the major contribution of Markowitz.

Marshall Poe
I think many listeners who listen to the New Books Network will understand this notion of covariance or positive, or negative correlation. So, for example, it's generally the case that when equities go way down, gold goes way up because people look for a different class of assets, I don't know. Is that still generally true when equities go down gold goes up?

Stephen Foerster
We could we could spend another whole podcast on that.

Marshall Poe
We’re not going to answer that question, never mind.

Stephen Foerster
I’ll give you my favorite answer in class and it’s: it depends. So we’ll leave it at that.

Marshall Poe
Right, that’s great. So let’s leave it at that. We’re not giving financial advice. So let's go on to Bill Sharpe. What did you learn from him?

Stephen Foerster
20:43 Yeah. So Bill Sharpe really picked up where Harry Markowitz left off and Harry Markowitz became the de facto supervisor of Bill Sharpe’s thesis and so Bill Sharpe took Markowitz’s model and then really enhanced and expanded on it. So Markowitz was simply looking at warming portfolios, among all risky assets and Bill Sharpe added one important wrinkle, and that’s what if you could not only consider in your portfolio risky assets, but consider as well one riskless asset?

So think of it as a treasury bill, or a treasury bond. And if we could combine that with risky portfolios, what would be the implications of that? And in fact, what Bill Sharpe was able to show, again mathematically and conclusively, was that among all the risky assets that Harry Markowitz said that we could consider and would be the ones that were so-called efficient portfolios to consider, Bill Sharpe said that there's one of those risky portfolios that everybody would want to hold and we call that the market portfolio. And this is really the genesis as well on the whole notion of index funds, which are trying to replicate investing in the market. So Markowitz started with risky portfolios and Bill Sharpe said there's one risky portfolio and that's the market portfolio and what he was able to show then is that if that's the case, then no one would want to hold anything except that market portfolio. And so his model, his famous model known as the capital asset pricing model, then takes the step to try to look at how do we price each individual security that's part of that overall market portfolio? And that's where he came up with, though he didn't give it this name, but it became known as the beta of a stock, the riskiness of the stock not in and of its own, but relative to the market. And so, what Sharpe was able to show, is that the only risk that matters is the risk relative to the market. So, in other words, it doesn't matter how risky a stock is, if you were to only own that stock because according to the capital asset pricing model, you shouldn't only one stock you should own a whole portfolio, the market portfolio and therefore, how these assets are priced should only depend on the market risk.

Marshall Poe
This is why the person that manages my money, actually, it's a company, is constantly telling me, “three to four percent, Marshall. That's all you should ever expect. Three to four percent.”

Stephen Foerster
Well, depending on your asset mix, that is very reasonable.

Marshall Poe
Well, let's move on to Gene Fama. What did you learn from him?

Stephen Foerster
So, Gene Fama is an amazing individual who has consistently put out important seminal pieces of research in each of the last, I think five or six decades. So he's just an amazing, amazing researcher. Most of his research focuses on empirical studies of stock prices.

And in fact, some of his early research looked at empirically testing Bill Sharpe’s capital asset pricing model and Fama’s early research provided support for the capital asset pricing model. So that was that was quite important in terms of its findings. What's interesting about Fama is that as he investigates and gets new data and has new ways of searching and testing, he is willing to change his mind. And years after providing support for the capital asset pricing model and Bill Sharpe’s key risk measure known as known as beta, he actually uncovered some research to suggest that, actually, we need to go beyond just focusing on the market portfolio. That's not the whole story. There are other factors that drive stock prices, rather than just looking at the market and the two key additional factors that Fama and his frequent co-author Ken French uncovered were looking at the importance of so-called value stocks versus growth stocks. And also looking at the importance of the performance of small, stocks versus large stocks. And so taking into account, these new factors, he concluded in in a well-known interview with the *New York Times*, that beta is dead. And so, basically, while Fama early on supported this capital asset pricing model, he later helped to effectively kill the capital asset pricing model, although it’s been debatable whether the capital asset pricing model is really dead or not.

The other thing that that Fama is really known for, is he coined this term, the efficient markets hypothesis and the efficient market hypothesis says that basically, what you see is what you get. Prices fully and immediately reflect all relevant information. So this is sort of the quintessential Chicago perspective on markets, that they are very efficient. And so that’s one of the things that he’s known for.

The key takeaway, I think, from our interviews with Fama was we came away with the market portfolio is still a very important portfolio to have as part of your investments, but you might want to consider so-called value stocks and smaller stocks, and perhaps tilting toward those.

Marshall Poe
This reminds me of another bit of financial advice about investing that I got and that is from somebody I know who works in the industry and he said in order to beat the stock market, you have to know something that somebody else doesn't know and you have to be sure that everybody else is going to find out about it. And that's really hard.

Stephen Foerster
Absolutely, absolutely that. That's, that's good advice.

Marshall Poe
Good luck with that. Yeah. So let's move on to Jack Bogle. What did you learn from him?

Stephen Foerster
So Jack Bogle, actually, he used as sort of a play on words, Gene Fama's "efficient market hypothesis" and coined the term "cost matters hypothesis."

So for Bogle, in order for you to be successful, the key for him was to keep your cost down and the most efficient way to keep your costs down is to invest in a low-cost Index Fund such as what Vanguard started. And so that's really one of the main takeaways from Jack Bogle. The other was something that has been referred to as masterly inactivity, if you've heard of that phrase, it can apply to different things. In the context of investing, it means we have a tendency to do something.

If there is perhaps a dip in the market or there's some kind of economic news, our knee-jerk reaction might be, oh gosh, I've got to get out of stocks. I've got to liquidate my portfolio and Jack's, one of his favorite phrases was, if somebody tells you, if your broker tells you you've got to do something, then your reaction should be, don't do something, just stand there.

And so that's his key advice, basically. Just not reacting to the markets, investing in index funds, and do so in a low-cost way.

Marshall Poe
Yeah. And this is why again, more common sense financial wisdom, from the people that manage my money, and that is they tell me not to watch the stock market. Don't look at it because you're likely to want to do something.

Stephen Foerster
I think that's great advice, and I think if you have an app, get rid of that app.

Marshall Poe
Yeah, it's the opposite of a, you know, they have these apps now that will help you with mindfulness and things like that. It's the opposite. It's an anxiety app.

Stephen Foerster
Exactly. There should be an app that when you go to open it up, it should perhaps say "sorry, you're only allowed to open this once a year, so come back in 173 days."

Marshall Poe
That's right. So let's move on to Myron Scholes. What did Myron Scholes teach you?

Stephen Foerster
So Myron Scholes is the co-creator, along with the late Fischer Black, of what's known as the Black-Scholes option pricing model. And in fact it's also known as the Black-Scholes-Merton option pricing model and we'll talk about Bob Merton perhaps next. Options are a form of derivative securities. For example, if I buy a call option on a stock, I have the option to buy that stock, perhaps in the next 3 months, let's say, at a particular price. So if the stock goes up above this particular price known as the strike price or the exercise price, then I gain on the upside. If it doesn't reach that that particular threshold, then I lose whatever I invested.

And what Black and Scholes did was solve what had been this long-standing conundrum of how to price these call options. And so they came up with this mathematical formula, which was actually based on a heat equation that was developed in a physics context and they created this particular formula to solve this problem. But their contribution really extended way beyond this particular perhaps arcane formula.

Their contribution really helped to develop this whole derivatives market which has been used perhaps for good and not-so-good purposes. The good purposes in terms of risk management and not-so-good perhaps excessive speculation. But they really helped us in terms of in terms of this whole notion of risk management and I think that was the big takeaway from our discussions with Myron Scholes is that to get us thinking about our perfect portfolio, we should be thinking we should be thinking beyond expected returns and think about risk.

And risk can be two-sided. There's the downside risk and then there's the upside risk, the so-called tail risks. And so, what you want to do is to try to decrease the amount of downside risk you have in your portfolio and potentially increase the upside risk in your portfolio.

Marshall Poe
Yeah, it's very interesting because these instruments really expand the time horizon of portfolios and therefore they kind of indemnify people in a way when you have the ability to buy a stock at a certain price or sell it at a certain price, that always makes me feel very comfortable. So, you mentioned Bob Merton, let’s go on to him.

Stephen Foerster
Yeah. So what's interesting is that at the same time Black and Scholes were working on this race to develop a formula for or the pricing of call options, Bob Merton was doing the same. And so it was almost like a friendly rivalry. And they were both at the same institution and so you didn't necessarily tell the other party everything that you were working on. But you did share some ideas.

And in fact, one of the big breakthroughs that Black and Scholes had in terms of the development of their model came from Bob Merton. They were having this discussion. It was about how do you model and what role does risk play in terms of these modeling. And Black and Scholes were looking at it in one particular way and Bob Martin said, no, that can't be right. And based on some research that he had been doing, he looked at it in a particular way and apparently he called Myron and Scholes one weekend and said, “well you know what? You and Black are right, but you're right for the wrong reason. Here's the wrong reason.” And so this was a key piece to the Black-Scholes option pricing model. So that's why unfortunately, Fischer Black passed away, but Myron Scholes and Bob Merton were co-recipients in the same year of the Nobel prize in economics.

So, what we take away from Bob Merton is a way of thinking about your portfolio and what that perfect portfolio really would be would be. One that, if in an ideal world, you had enough assets that you could invest them in some kind of risk-free instrument. So that the income that you could derive from that risk-free instrument would provide you with all of the income that you desire in, let's say, post-retirement. That would be your perfect portfolio.

And the closest thing that we have to that is what's known as tips or treasury inflation protected securities issued by issued by the government. So, this is where we should be thinking about starting with a riskless portfolio and then only taking on risk such as investing in bonds and stocks to the extent that you need that in terms of your portfolio goals.

Marshall Poe
We're almost talking about wisdom now, life wisdom. Because what you ultimately need is enough. You know, that's what you need. You have to decide how much enough is. That's your first step. So optimizing and maximizing and this other stuff, that way madness lies. You need to concentrate on enough. So, all right, let's move on to Marty Leibowitz. What did you learn from him?

Stephen Foerster
So Marty had an interesting background in terms of where he started. He was actually working in a rug manufacturer I call it "rugs to riches" is really where he came from. He ended up through some contacts with his father-in-law at Salomon Brothers, which at the time was a Wall Street firm known for its trading in bonds. Leibowitz had a mathematical background, a PhD in the area and actually teamed up with his father-in-law to write a classic book on helping us to understand bonds called *Inside the Yield Book*.

The Yield Book at the time was a big thick telephone-like book, if listeners can picture what a telephone book looks like.

Marshall Poe
I don't think my kids know what that is.

Stephen Foerster
Well, it was a big thick book, let's put it that way. You could look up the price of a bond based on things like it's yield and it's coupon. And actually an interesting story in terms of how Leibowitz made his mark at Solomon Brothers, at the time I think it was the Late 1960s, early 1970s and interest rates unexpectedly increased to the point that interest rates were higher than you could look up in this yield book.

And where Leibowitz made his mark, he had a desk on the trading floor at Solomon Brothers and he had access to an IBM time-sharing computer and he was able to create what was really the first yield calculator. There's another term we would use in Excel spreadsheets now and so he became popular that way. So his contribution is really I think twofold: one is to help us to think about the portfolio to contain assets beyond equities and in particular to think about bonds. He was really able to show how important and ways to think about the riskiness of bonds. The other contribution and a key takeaway from our discussions with Marty: he borrowed a phrase from Cliff Asness who is the co-founder of AQR, a hedge fund, and the term is Dragon risk. And this refers to, perhaps you as a historian might recognize, the old maps that were developed, and the mapmakers, if they, if there was a part of the globe that hadn't been explored, they would sometimes, put dragons there, I don't know. I don't know what's beyond this but there are dragons. So, watch out. And so Leibowitz's message was really be aware of dragon risk, invest to the comfort of the amount of risk that you're taking on and don't take on more risk than you're comfortable with.

Marshall Poe
Yeah. This is a very good point, as well. And as a historian, you know, when I hear people in finance talk about no risk assets, I just want to say, there is no such thing. It's always at risk. It may be very low, but it's always at risk. I tip my hat to that. Let's move on to Bob Shiller, he's a pretty well-known figure. I've actually talked to him. What did you learn from him?

Stephen Foerster
So what's interesting is and I think fascinating is that Bob Shiller was the recipient of the Nobel Prize at the same time that Fama received the Nobel Prize as well as another academic, Lars Hanson who was known for developing econometric techniques. But Fama and Schiller are really two ends of a spectrum in terms of how they view markets, with Fama viewing markets as being very efficient and Schiller, being a so-called behavioral economist and really helping us to understand and be mindful of miss-pricings that can occur in markets.

And his seminal work, which was very controversial at the time, was showing that if we look at the movement in stock prices, which should be reflective of expected cash flows, such as the dividends that you're going to receive. He was able to show that stock prices were much too volatile to be justified by the subsequent changes in dividends, suggesting that markets are not always efficient. So this was really a controversial area but helped us to expand our thinking beyond this whole notion of efficient markets. Fama and Shiller have had tremendous debates over this whole notion of bubbles: do bubbles exist? And I think Shiller tells the story of Fama referring to bubbles as "that nefarious term." He doesn't even want to say the word bubbles because he doesn't believe in bubbles.

Another important contribution that Bob Shiller has made a long with his co-author of the time, John Campbell, was coming up with a metric to give us a sense of whether markets be it US markets or European markets are overvalued or undervalued.

And it became known as the CAPE model, an acronym standing for cyclically adjusted price earnings models. Basically looking at how much at a particular point in time, how much are investors willing to pay for stocks in aggregate relative to some normalized measure of their earnings?

So when markets might be overvalued, would be in a case when this cape index or this cape measure is very much higher than what we would tend to see historically. And in fact, what Bob Shiller has been saying, I think for quite a number of years, is that where this cape measure is now in the US and in other countries is actually at a historically high level. So he would be more cautious and say that we should consider looking at globally investing where that Cape index might be lower.

Marshall Poe
I find all of this fascinating. I have a friend who is a money manager, who manages about three billion dollars. I don't know how he sleeps at night, because it's other people's money, but he does. And one of the things he's always on about is precisely this, that you see companies with equities that have tremendous evaluations, but they have crappy cash flow. They don't pay dividends and to him, anything beyond the dividend is speculation. Like, the measure of a company is the dividend it will pay you.

Stephen Foerster

Well and you're absolutely right. And here with Shiller we were talking about a measure of the market as a whole but we can bring it down to the individual stock level and get a sense of when a stock may or may not be overvalued.

Marshall Poe
Yeah, I don't know the ins and outs of this but he has basically built a career by saying that sentence, that the dividend should tell you almost everything you need to know about the company. Good for him. So let's move on to Charlie Ellis. I have not heard of Ellis, so can you tell us a little bit about him?

Stephen Foerster
Yeah. So Charlie Ellis has been referred to as the wisest man on Wall Street. He's a very thoughtful individual. He started a very successful consulting firm known as Greenwich Associates. His real claim to fame was an article he wrote in the 1970s that really caused professionals in the industry to question this whole active investing approach that was very common. And so the timing was actually perfect with Jack Bogle and Jack Bogle picked up on some of the work that Ellis had done as a great example of why index investing really, really paid off, and the article that he wrote in 1975, and it eventually became a book, was called *Winning the Loser's Game*.

And the analogy here is one to tennis and actually was inspired by a book by a colorful individual Simon Ramo called *Extraordinary Tennis for the Ordinary Tennis Player*.

The whole premise of the book is that if you and I are amateur tennis players, then we shouldn't play the game thinking that we are professionals and experts because we'll end up losing. We will have too many unforced errors. We will just be making all kinds of mistakes. So as amateurs, the game of tennis that you should be playing is not to win but rather to not lose.

So just play a very conservative game. Let the opponent make the unforced errors and Ellis thought that this was a tremendous analogy for the investment industry. As individuals we shouldn't try to act like the professionals because we're not professionals. And so therefore, the key implication was that you should consider passive investing rather than active investing, or investing in index funds. And so, Ellis was really the first insider to sort of raise the flag and say, hey, you know, as an industry, we might have this all wrong and we should be considering alternative ways that will help our clients, our investors, do better.

Marshall Poe
I find this very wise and it's more or less the philosophy that I have been taught and that is precisely that if you find yourself picking stocks you have made a mistake. There's something that's deeply gone. It's gone totally south because you don't know about these companies. And so the idea that you can somehow predict what's going to happen with them is lunacy. So I think Charlie Ellis is the wisest man on Wall Street. And so, finally, Jeremy Siegel. What did you learn from him?

Stephen Foerster
So I think we can sum it up with the title of his book, a best-seller, *Stocks for the Long Run*. Jeremy was really known for looking systematically and carefully at the performance of stocks relative to bonds and treasury bills and gold and currencies to show that over a very long period, and we're talking a century plus, and in particular in the US context, stocks continued to perform consistently well, providing great returns relative to the risk exposure. And what was fascinating that we learn from Siegel is that in fact, while certainly over a short period, let's say it's a year or a month, stocks are much more volatile than let's say investing in government bonds. As you extend that horizon out

to 10 years, 20 years, 30 years, in fact, investing in stocks can be potentially less risky than investing in other asset classes, such as bonds. So he's a big proponent that within our perfect portfolio we should certainly make sure that it has a lot of equities to the extent that we are prepared to take on equity risk.

Marshall Poe
I find this very appealing as well. I have owned five houses in my life, for good or ill. And so I know a little bit about the real estate market. And so when I hear people say that they're going to buy a house in order to make money because housing prices always go up relative to everything else, I'm like, no! When you do the numbers, they go up about what you would expect them to go up.

Stephen Foerster
Yeah, absolutely. And actually Bob Shiller was one around 2006, to raise the alarm of the US real estate market.

Marshall Poe
There is so much speculation in the real estate market. I don't really understand it. It's a very curious market because if you do the numbers, housing prices go up essentially the way all the other assets go up. There are some major areas, I guess I would say, or periods in which you do see this kind of Schiller-esque irrational exuberance and those are always dangerous, but I'd also say it has to do with the fact that a house is something you live in. So, was there anything else about these luminaries that really surprised you?

Stephen Foerster
What's fascinating is that while Bill Sharpe put all of the importance on this market portfolio, Harry Markowitz didn't really see anything special about the market portfolio. He was all about risk and return trade-offs, but nothing special about the about the market portfolio itself. So that was surprising.

I think the way that Fama has adapted over the years is somewhat surprising. Again, being initially a big defender of the capital asset pricing model and then some would argue he killed the capital asset pricing model but a true believer in scientific method and focusing on the evidence.

One other thing in Andrew's conversation with Jack Bogle that was surprising, was that in an endowment fund that Jack oversaw he actually advocated for putting some gold in that portfolio. So somebody who invented the mutual Index Fund actually was advocating for a bit of gold, so that was surprising.

Marshall Poe
Yeah, so we're coming up to the end of our interview and I wondered if you could tell listeners what you think the perfect portfolio is and how they can build their own. Again, we are not giving financial advice here, but go ahead.

Stephen Foerster
Sure, absolutely. So, first of all, I'll give my answer that I think I gave you earlier. It depends.

The analogy we use, it's sort of a health analogy, you know? How do I stay healthy might be the question and the answer isn't one dimensional. It might be, well, you need to exercise, you need to diet, there could be medications, nutritional supplements and so it's not one size fits all when it comes to being healthy. And the same goes for investing. What we do in our book is after we focus on the wisdom of each of the luminaries, in our last chapter, we try to put everything all together. And so what we come up with are a number of principles that I think, regardless of what your portfolio is going to look like, there are a number of things that you need to do.

For example, to know what your goals are. We talked about this a little bit earlier, starting with your current and your future goals. You have to come up with some kind of investment philosophy and that's where we leave it to the readers because Fama and Schiller, for example, have very different investment philosophies. But you've got to develop a particular investment philosophy. You have to decide what kind of assets are you prepared to own? And you have to have some kind of sense of what the current environment looks like. We actually in the book, we present a very simple questionnaire, a four questions self-assessment. We also on our website, which is the same name as as the book, it's a bit of a mouthful: In Pursuit of the Perfect Portfolio.com. Listeners can go to that site and do a simple test that puts you in a particular category and the test simply asks, are you willing to take on a lot of risk or not a lot of risk? Do you have a lot of income or not a lot of income? Do you tend to spend a lot or not? Do you assess that we are in an expansion or recession? Then by answering those four questions then that can give you a path to the perfect portfolio. Again not giving financial advice, but for example, if you very risk averse and you tend to spend a lot, but you don't have a lot of income and it's in a recession, then the path to the perfect portfolio is you need help. You need to see a financial advisor.

And you've got to work through some ways to spend less or earn more or have a rethink in terms of what your assessment and tolerance for risk is going to be. So the perfect portfolio really comes out from all of this self-assessment and the perfect portfolio, then going back to what your goals are, really depends on what kind of return do you need to achieve those goals. So, going back to your comment that that your advisor tells you should only expect three percent, let's say. That will then determine what kind of mix of assets you need to hold the mix between let's say equity and and bonds.

Marshall Poe
You won't be surprised to learn that I'm pretty deep in bonds.

Stephen Foerster
Absolutely and that's not necessarily a bad thing as well. So that's where your perfect portfolio is going to differ from someone else based on all of these different factors that we talked about. So again, the short answer is it depends but you want to think about it in a systematic way and we hope our book gives listeners and readers a framework for a way to develop an investment philosophy and a process that will hopefully put you on a path to you perfect portfolio.

Marshall Poe
Yeah, I really liked what you said because the very first step at least in my experience is this self-assessment and you really have to understand yourself well and be totally honest with yourself about the kind of person you are and what you expect. It is not the place for fantasies about what you might do. You have to go on historical data about the kind of person you have been. And that will give you a pretty good guide. That's hard work. We have these crazy aspirations. Like I'm gonna retire in the Caribbean but I've never been to the Caribbean, and I don't know anything about the Caribbean, but I hear other people talk about it and I think it's great, and I'm going there. Well, you're not going there.

So you really need to do some hard work and kind of understand exactly what you need, what is enough for you. Of course, this has changed over time. And so the question is, how has the perfect portfolio evolved over time? Because I can imagine, again, as a historian, you know, we're kind of past the stage, it was which investors well, people such as myself, I'm not really an investor, but I have assets. I don't pick stocks. There was a time when, I don’t know, my great-grandfather might have done this. But we don’t do that anymore.

So are their historical trends in the way the portfolio is configured now?

Stephen Foerster
Yeah absolutely. And I think going back to some of the luminaries we talked about with Harry Markowitz, the perfect portfolio was just something that was diversified.

When Bill Sharpe came along, then the perfect portfolio, was this market portfolio, just buy everything in proportion to its market value. With Gene Fama, it’s more nuanced than that. You still want to be diversified. The market portfolio is important but we may want to look for value stocks which over the long run, not necessarily in the last 10 years, even, but over the longer run have done better than so-called growth stocks and small stocks have outperformed a large stock. So it's really something that evolves and so it's important to be aware of these evolutions. And actually my co-author Andrew Lo wrote a very important book a few years ago called *Adaptive Markets* and really I think that's the theme that he tried to do in his book and his theory, the adaptive markets hypothesis was to say the efficient market hypothesis that Fama came up with, it may not be wrong per se but it may be incomplete.

And so we have to look at look at things really from an ecological lens or an evolutionary biology lends for how markets adapt. What are expected returns at one point in time may be different in a different kind of environment. And so the perfect portfolio, we expect will continue to evolve.

Marshall Poe
I think that's exactly right. I mean, one change that I have seen in my lifetime, although I didn’t pay attention, I’m told it is true. You know it used to be the case when people invested in stocks, at least I think it did, is that dividends were an extraordinarily important part of the upside but now I think in many people's portfolios its equity growth. They're not interested in month to month or quarter to quarter or year to year returns and that's a huge change. Because you’re not seeing any of that money until you sell the stock. And wrapping your mind around that is kind of difficult.

Well, Steve, I want to say that it has been a pleasure to talk to you. We've been talking to Steve Foerester about his *book In Pursuit of the Perfect Portfolio: The Stories, Voices, and Key Insights of Pioneers Who Shape the Way We Invest* (and I invest), co-authored with Andrew Lo, who we didn’t get to talk to today, unfortunately. The book is out from Princeton University press right now, August 2021. Steve, thanks so much for being on the show.

Stephen Foerster
It has been a pleasure, Marshall.