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ECON-252-08: FINANCIAL MARKETS (2008)

Lecture 9 - Guest Lecture by David Swensen [February 13, 2008]

Chapter 1. Introduction: Changing Institutional Portfolio Management [00:00:00]

Professor David Swensen: Let me start out by putting what I think is a relatively controversial proposition on the table and that's that this investment management business, when stripped down to its bare essentials, is really quite simple. Now, why do I say that? Well, I think if we took the group here today and divided you up into smaller groups of four, or five, or six and asked you to talk about what's really important in managing a portfolio that has a very long time horizon, I think that almost all the groups would come to very similar conclusions. If you're investing with a long time horizon, having an equity bias makes sense; stocks go up in the long run. Bob Shiller's friend, Jeremy Siegel, wrote a book that has the very simple title, *Stocks For The Long Run*. Well, the book is assigned; you all know it.

The other thing that I think would come out of the discussions is that diversification is important. Anybody whose read a basic finance text, as a matter of fact, I think anybody who thinks about investments in a common sense fashion knows that diversification is an important fundamental tenet of portfolio management. As a matter of fact, Harry Markowitz called diversification a "free lunch." We spend all our time in intro. econ. figuring out there is no such thing as a free lunch but Markowitz tells us that diversification is a free lunch. For any given level of return, you can reduce — For any given level of risk, you can increase the return; sounds pretty good. That's pretty simple, right? Two tenets, an equity bias for portfolios with a long time horizon and diversification.

Bob mentioned in his introduction that I showed up at Yale in 1985, after having spent six years on Wall Street, and I was totally unencumbered by any portfolio management experience. I thought that was pretty neat. Here I was, back at Yale, with a billion dollar portfolio — it seemed like a lot of money at the time — no portfolio management experience. What do I do? Well, one of the things I think is a sensible thing to do in life is look around at what others are doing, so I looked at what colleges and universities had done in terms of asset allocation. Turns out that 50% of endowment assets in the mid-1980s were invested in common stocks, 40% of endowment assets were in U.S. bonds and U.S. cash, and 10% in a smattering of alternatives. Well, I looked at that and I thought, this doesn't really make a lot of sense. You have half of your assets in one single asset class: U.S. common stocks. You've got another 40% of your assets in U.S. bonds and cash. So 90% of your portfolio is in domestic marketable securities and only 10% is invested in things like real estate or venture capital or private equity — hardly enough to make a difference in terms of the portfolios returns. Unencumbered by, I guess, the conventional wisdom, we started out at Yale on a path that I think is — fundamentally that changed the way that institutions manage portfolios.

Chapter 2. Asset Allocation: The Power of Diversification [00:03:59]

A few years ago, I wrote a book called *Pioneering Portfolio Management*. The reason you could put an audacious title like *Pioneering Portfolio Management* on the cover of the book was that we moved away from this traditional model with 50% in stocks and 40% in bonds and cash to something that was much more equity-oriented and much more diversified. What I'd like to do today is talk to you about how it is that we moved from this old model to what it is that today many institutions call the Yale model. The way that I would like to talk about this journey that we took is by looking at the tools that we have available to us as investors — these tools are the same tools that we have whether we're operating as individual investors or institutional investors — and describe how we employ those tools at Yale and how they led us to the portfolio that we have today. Those three tools are asset allocation, market timing, and security selection.

The first, asset allocation, basically deals with which assets you have in your portfolio and in which proportion you hold each of those assets. The second, market timing, deals with short-term deviations from the long-term asset allocations that you establish. And the third, securities selection, speaks to how it is you manage each of your individual asset classes. Are you going to hold the market portfolio, index your assets, match the markets results? Or are you going to manage each individual asset class actively, trying to beat the market and generate risk-adjusted excess returns?

Let's start out with the first: asset allocation. I think it's pretty widely known that asset allocation is far and away the most important tool that we have available to us as investors. As a matter of fact, it's so widely believed that asset allocation is the most important tool that I think some people have come to the conclusion that it's some sort of law of finance that asset allocation is the most important tool. It turns out that it's not a financial law that asset allocation takes center stage; it really is more a description of how it is that we behave.

Yale actually has a lot more than the billion dollars that we started with in 1985. I think the estimate sheet that I got yesterday morning said that we've got about \$22.5 billion dollars; so that's been a nice run. If I went back to my office after speaking with you this morning and took Yale's \$22.5 billion dollars and put all of it into Google stock, asset allocation would have very little to say about what Yale's returns would be. As a matter of fact, security selection would absolutely dominate the results. The idiosyncratic behavior of Google stock from the time that we purchase it to the time that we sell it would define Yale's returns. Alternatively, if I went back to the office and took Yale's \$22.5 billion dollars and decided that I was going to day trade bond futures, security selection wouldn't have anything to say about the returns; asset allocation wouldn't have anything to say about the returns. The returns would be attributable solely to my ability to market time the bond futures market.

Now, I'm not going to do either one of those things. I'm not going to put Yale's entire portfolio in Google stock, I'm not going to go back and take Yale's entire portfolio to day-trade bond futures; in part, because it would be bad for me personally. I think I would be fired as soon as people found out what it was that I was doing with the portfolio and, overwhelmingly more important, it would be bad for the University. It's not a rational thing to do. What will happen is that Yale will continue to hold a relatively well-diversified portfolio as defined by the range of asset classes in which it invests. When you look at each of those individual asset classes — domestic equities, foreign equities, bonds, real assets, absolute return and private equity — each of those individual asset classes is going to be relatively well-diversified in terms of exposures to individual positions or individual securities. Because that's true, then asset allocation ends up being the overwhelmingly important determinant of the University's results. Because we hold relatively stable, relatively well-diversified portfolios, security selection turns out not to be an important determinant of returns for most investors and market timing turns out not to be an important determinant of returns. The last man standing is asset allocation and that tends to drive both institutional returns and individual returns.

Roger Ibbotson, who is a colleague of Bob Shiller's and mine at the School of Management, has done a fair amount of work, studying the relative importance of these sources of returns. He's come to the conclusion that over 90% of the variability of returns in institutional portfolios is attributable to asset allocation and that's the number that I think most people hear cited when they are looking at Roger Ibbotson's work. I think one of the more interesting and even simpler concepts that comes out of his study is that more than 100% of returns are defined by asset allocation. Now, how can that be true? How can asset allocation be responsible for more than 100% of investment returns? Well, it can only be true if security selection and market timing detract from institutional returns or individual returns in the aggregate. Of course, if think about it, as a community, the investment community is going to lose from security selection decisions.

If security selection is a zero-sum game, the amount by which the winner wins equals the amount by which the loser loses — winners and losers being defined by performance after a security selection that has been

made — well, that sounds like a zero-sum game. But then, if you take into account that you create market impact when you trade, that you pay commissions when you trade and you frequently pay advisors substantial amounts of money — whether they're mutual fund managers or institutional fund managers — there's this leakage from the system that causes the active results for the community as a whole to be negative. Absolutely the same thing is true on the market timing front. I mean, to the extent that you're making these short-term bets against your long-term policy, it requires trading and trading is expensive. It's very expensive when you take into account not only the direct costs, but also the costs that you pay advisors to help you make these decisions. So, it's not surprising that asset allocation explains more than 100% of returns and that, for the community as a whole, market timing and security selection are costly and lower the community's aggregate investment returns.

It's a little bit of a digression, but one of the things that I've witnessed over the past twenty years is that the leakage of the — the leakage from the system in terms of the returns that go to the owners of capital — leakage has increased enormously. Think about the advent of hedge funds — twenty or twenty-five years ago, hedge funds were a blip on the radar screen. Today, they're a very important part of the fund's management framework. Well, those hedge funds charge enormously more than what a standard manage or marketable securities firm charges. Well, that leakage — that 1.5% or 2% that you pay your hedge fund manager — plus the 20% of profits really reduces the amount of return that's available for the owners of capital.

This idea that the difference between the returns that you would get if you took your asset allocation, implemented passively, and the actual results that the active investors get — the gap between those two numbers — is becoming larger and larger over time, generating more and more returns for the provider of investment management services and lower and lower returns for those that are hiring those external advisors. To get back on track, let's look at the basic underpinnings to this notion that asset allocation is at the center of the investor's decision-making process.

There are two points that we talked about — the hypothetical points that came out of the small group discussions that I suggested we might think about at the beginning of this talk. First, in terms of equity bias. Now, we're going to go back to Roger Ibbotson at the School of Management. He did some path breaking work in terms of describing capital markets returns over reasonably long periods of time. I guess you've already looked at *Stocks for the Long Run*; you've seen 200 years worth of data. Roger Ibbotson's data goes back to 1925 and these are the actual numbers we used when we first started doing our mean-variance optimization in our simulations, trying to come to conclusions about what the appropriate allocations would be for Yale's portfolio. I'm sure you're familiar with the drill — you put a dollar into various asset classes, in this case, at the end of 1925 and hold those asset classes for, in this case, eighty-one years; the numbers go through the end of 2006. As you put a dollar in treasury bills, you end up with a nineteen multiple; that sounds pretty good. You get nineteen times your money over eighty-one years, but then if you take into account the inflation consumes a multiple of eleven and you're an institution like Yale that consumes only, after inflation returns, putting your money into treasury bills really didn't get you very much.

Suppose you step out in the risk spectrum and put a dollar into the bond market. Over that eighty-one year period you would have gotten a multiple of seventy-two. Well, now we're talking some real after inflation returns that can be used. But, when you move from lending money to the government — either short-term with bills or longer term with bonds — to investing in the equity market, there's a stunning difference in terms of the returns. Just by putting money into a broadly diversified portfolio of stocks you would have gotten 3,077 times your money. If you would have stepped further out of the risk spectrum and put your money into a portfolio of small stocks you would have gotten 15,922 times your money. So, ownership of stocks absolutely crushes buying bonds — almost 16,000 times your money or more than 3,000 times your money in the stock market as opposed to 72 times your money or 19 times your money in the bond market or the bill market.

Chapter 3. Balancing the Equity Bias into Sensible Diversification [00:16:44]

It almost makes you wonder whether this diversification thing makes any sense. I mean, why would you do that? Why would you put any of your assets in bonds if stocks are going to give you 16,000 times your money? That bond multiple of 72 is just a drag on returns — what's the point? This question, particularly in the late 1980s, was very important to me personally because we were trying to put together a sensible portfolio for Yale and if that sensible portfolio just involved identifying the high-risk asset class and putting all your assets into, let's say, small stocks, it wouldn't take the investment committee very long to figure out that they didn't need to pay me to do that; they could do that on their own. And if they didn't need to pay me, then I wouldn't have any income to put food on the table for my wife and children. So, there had to be more to it than just identifying the high-risk asset class and putting your assets there and letting it rip.

I went back and took a closer look at Roger Ibbotson's data and there are lots of examples that will illustrate this point, but the most dramatic occurs around the crash in October 1929. For every dollar that you had in small stocks at the peak of the market, by the end of 1929, you lost 54% of your money. By the end of 1930, you lost another 38% of your money; by the end of 1931, you lost another 50%; and by the end of — by June of 1932, you lost another 32%. So, for every dollar that you had at the peak, at the trough you had \$.10 left. At some point, when your dollars were turning into dimes, you'd say, forget this, this is ridiculous, it doesn't make any sense for me to own these risky small-cap stocks. And you would sell your small stocks and put your money where? Either in treasury bonds or treasury bills. And of course, that's what the overwhelming portion of the investment community did in the 1930s, and in the 1940s, and in the 1950s.

As long as there was a memory of the searing experience that people had in the equity markets around the time of the great crash, people reacted to it by saying, avoid this risky asset, it doesn't make any sense for a fiduciary or for an individual to own these risky things called stocks. As a matter of fact, I was looking at some of the contemporary literature, the popular literature, and there was an article in the *Saturday Evening Post* that basically said, you shouldn't call stocks securities — that was a ridiculous thing to call them; they should be called insecurities because they were so risky. Of course, this attitude came at exactly the wrong time. If you put a dollar into small stocks in June of 1932, by the end of 2006, you would have had 159,000 times your money. Just at the point of maximum opportunity people were at the point of maximum bearishness about the equity markets.

The take-aways are that an equity bias is an absolutely sensible underpinning for investors with long time horizons but that diversification is important. You have to limit your exposure to risky asset classes to a level that allows you to sustain those positions even in the face of terribly adverse market conditions.

Chapter 4. The Emotional Pitfalls of Market Timing [00:20:48]

Let's move to the second point: market timing. I actually have a quotation here. A few months ago, some former students of mine — former colleagues of mine — gave this very nice party at the Yale Club. I used to teach a big lecture class when I first got to Yale in the late 1980s and my last lecture always involved taking Keynes's *General Theory*, and quoting from what I think is Keynes — is one of the most wonderful writers about issues surrounding investment management. This particular copy was pretty dog-eared; as a matter of fact, it was a paperback copy and I think it was in about eight or ten different pieces and the people that threw this party remembered that, so they gave me it at this celebration. It made me wonder if they were trying to tell that I should retire; it felt like a retirement party. I feel like I'm way too young to retire. But as a gift, they gave me a first edition of Keynes's *General Theory*.

I was coming back to New Haven on the train afterwards and I came across this quote. Keynes wrote that, "The idea of wholesale shifts is for various reasons impracticable and indeed undesirable. Most of those who attempt to sell too late and buy too late and do both too often, incurring heavy expenses and developing too unsettled and speculative state of mind." He's absolutely right. I wrote my first book — I already talked about that, *Pioneering Portfolio Management* — that deals with the challenges that face institutional investors. Subsequently, I wrote a book called *Unconventional Success* that deals with individual investors. In

Unconventional Success, I did a study of individual behavior in their mutual fund purchases and sales around the collapse of the Internet bubble in March of 2000. What I did was I took the ten best-performing Internet funds and looked at the returns from 1997 to 2002. Now this is, I think, a surprising starting point. If you look at the ten best-performing Internet funds from 1997 to 2002, the time-weighted return is 1.5% per year positive, so the funds went way up and then they went way down. But it's positive 1.5% per year, time-weighted — that's the number that you see in the prospectus or the number that you see in the advertisements — so you say, what's the big deal, no harm no foul. Well, there's another way to look at returns — those are the dollar-weighted returns — and the dollar-weighted returns actually do a better job of describing the experience of the group of investors that participated in these funds.

Dollar-weighted obviously takes into account when the cash flows come in and when they go out. When you do the dollar-weighted returns, you find out that there was \$13.7 billion invested in these funds and the investors lost \$9.9 billion out of the 13.7 that they committed; so, 72% of the money that was invested in these funds was lost. Because of the way that we deal with taxes and mutual funds, you can get a tax bill for gains that were realized by the investment manager turning over the portfolio even though you might not have held the shares during the period when the gains were realized. So, in addition to losing \$9.9 billion, there were capital gains' distributions of \$3.3 billion dollars representing about 24% of the money that was invested. So, adding insult to injury, you lost 72% of the money and then you got a tax bill for 24% of the amount that had been put in; not a very happy experience.

After I wrote the book, Morningstar did a much more comprehensive study of every single one of the equity categories that they follow. There were seventeen categories of equity mutual funds and they compared the dollar-weighted to the time-weighted returns. In every one of those seventeen categories, the dollar-weighted returns were less than the time-weighted returns. Well, how does that happen? The same way that these investors and the Internet tech funds lost their money. They bought after the funds had gone up and they sold after they had gone down. When you buy high and sell low it's really hard to generate returns, even if you do it with great enthusiasm and great volume. The Morningstar study is incredibly damning in terms of the market timing abilities of individual investors.

Systematically, investors are buying after things have gone up, selling after they've gone down, and the problem is most severe in those funds that show the greatest volatility. The gap in what Morningstar calls the "conservative allocation fund" is .3% per year. Now, that's not a huge number but, obviously, when you're hoping to beat the market by a point or two, losing by .3% per year because of your market timing inability is a bad thing. But if you look at the tech fund category, the difference between the dollar-weighted and the time-weighted returns — this is over a ten-year period — is 13.4% per annum; that's stunning. Compound that 13.4% over ten years and there's just an enormous gap between those mutual fund numbers that are in the prospectus and in the advertisement — the time-weighted returns and the dollar-weighted returns that talk about the actual experience of the investment community. I'm not just going to pick on individual investors, I'm going to pick on institutional investors too. One of the studies that I did for my first book, *Pioneering Portfolio Management*, looked at the behavior of endowments and foundations around the crash in October 1987. I used to talk about the crash in October 1987 without explaining what it was and I do still teach a seminar in the economics department in the Fall. I started talking about what happened in October 1987 and I looked around the room and I realized that I think the students were three or four years old in 1987 and weren't yet reading *The Wall Street Journal*.

So, just to give you a little bit of context, the crash was really an extraordinary event. According to my calculations it was a twenty-five standard deviation event. One standard deviation happens one draw out of three, two standard deviations one out of twenty, three standard deviations is one out of one hundred. An eight standard deviation event happens once out of every six trillion trials. You can't come up with a number to describe the twenty-five standard deviation event; it's just too large a number, I think, for any of us to really comprehend. In essence, this collapse in stock prices — the one-day collapse in stock prices — I think

in the U.S. the price was, depending on which index you were looking at, were down 21-22% in a single day. Interestingly, most major markets around the world were off by a similar magnitude. This one-day collapse in stock prices was a virtual impossibility. Of course, this was just a change in stock prices; it wasn't related to any fundamental change in the economy or any fundamental change in corporate prospects. It was just a financial event.

If stock prices went down — by the way, bond prices went up. When people were selling stocks, money had to go somewhere. Well, it went into the bond market. There was a huge rally in treasury bonds on October 19, 1987. So, stocks were cheaper and bonds were more expensive. Well, what do you do? You buy what's cheap and sell what's expensive. But what did endowments and foundations do? Well, if you look at the annual reports of their asset allocation, in June of 1987, their equity allocation was higher than it had been for fifteen years. The '70s were a terrible time to invest in stocks, a bull market had started in 1982. We were five years into this bull market and people were getting excited about the fact that stocks were going up and equity allocations were at a fifteen-year high. Of course, the money had to come from somewhere, so bond allocations were at a fifteen-year low.

Fast forward to June 30, 1988 and stock allocations had dropped and, not only had they dropped, they dropped by more than the decline in stock prices associated with this collapse in October 19, 1987. Bond allocations had increased by more than could be explained by the increase in bond prices over the course of the year. The only conclusion that you could draw is these supposedly sophisticated institutional investors sold stocks in November and December and January because they were fearful and they bought bonds in October, November, and December — maybe because they were fearful or maybe because they were greedy. Emotion ruled the decisions, not rational economic calculus. The costs were huge — not just the immediate costs in terms of the move from stocks to bonds. It took these institutions until 1993 — a full six years — to get their bond allocation back down to where it had been prior to the crash in October 1987. And this is in the context of one of the greatest bull markets ever. You certainly have to measure the bull market, from 1982 to 2000 and some people would say that 2000 was just a blip and we're still in this bull market. But regardless of how you measure it, for a full half-dozen years, in the midst of this bull market, colleges and universities were over-allocated to fixed income relative to where they had been in June of 1987.

The take-away is to avoid market timing. The underlying driving force behind market timing decisions seems to be emotional — fear, greed, chasing performance — buying something after it has gone up, disappointment, and sales after something has declined. As opposed to rationally stepping up when something appears relatively attractive and overweighting and then leaning against the wind by selling something that's performed well.

Chapter 5. Survivorship and Backfill Biases in Security Selection [00:32:58]

Final source of returns — security selection. We've already talked about how security selection is a zero-sum game. The only way that somebody can overweight Ford Motor Company in the market is to have somebody have a counter position where they underweight Ford Motor Company; only one of those is going to be right. It's measured by subsequent performance in the amount by which the winner wins equals the amount by which the loser loses, but it costs a lot to play the game. As a matter of fact, it costs an increasing amount to play the game when you look at the fees that are paid to investment managers and hedge funds. So, after taking into account the market impact, and the commissions, and the fees, this zero-sum game becomes a negative-sum game.

When you look at the returns for institutions, you see exactly what it is that you'd expect. Here's ten years worth of data from the Frank Russell Corporation, the benchmark Wilshire 5000. For the ten years ended June 30, 2005, it returned 9.9% per year and then the average return for the actively managed equity fund was 9.6% per year, so we're back to that thirty basis points. Maybe on average institutions lose thirty basis points, but it's kind of Lake Wobegon, where we all believe that we're better than average, so we're going to

overcome that thirty basis points — that's not such a big hurdle. There's a very important phenomenon that you need to take into account when you look at these histories of returns that are generated by active managers. This is true whether you look at the universe of the mutual fund managers that we might have available to us as individuals or whether it's institutional data, such as those that I just cited; that concept is survivorship bias.

The only numbers that appear for the trailing ten years are numbers that are associated with firms that are still in business. There were probably a number of firms that, over that ten-year period, went out of business. Now, which firms do you think went out of business? Not the ones that are producing great results. The problem is even more severe when you're looking at mutual funds because there's kind of a cynical game that mutual fund management companies play. If they have an underperforming fund, sometimes they allow it to die a dignified death; although, that doesn't happen very often. What they usually do is they take the underperforming fund and they merge it with one that has a better track record. All of a sudden the underperforming fund's record disappears and the assets are in a fund that has a better record — a record that you can actually market. Then when we look at the statistics, all we see are a lot of assets in the fund that performed well and the underperforming fund that was merged out of existence isn't there anymore.

How important is this survivorship bias? If you look at the Frank Russell data — and I just cited ten-year returns ending June 30, 2005, so that period started in 1996 — well, in 1996 there were 307 managers that reported returns. By the time 2005 rolled around, there were only 177 managers that reported returns, so 130 managers disappeared. Now, more than 130 managers failed because, in addition to survivorship bias, there's something called backfill bias. That's when a new manager appears subsequent to the beginning of the ten-year period; they'll put not only the new numbers in, but they'll take the history of the new manager and put that history into the database. Which direction is that going to move the numbers? Well, that's going to inflate the numbers too because the only managers that kind of raise their hand and say, hey I've got this interesting new approach to managing domestic equities — or whatever the asset class is — are the ones that have succeeded.

You've got survivorship bias taking out bad records and then you've got backfill bias adding good records. They both cause the universe of active management returns to appear to be better than the reality because there's a lot in there that doesn't have anything to do with the average experience of, in this case, an institutional investor. Sometimes the numbers can be pretty dramatic; I mean, 2000 was a year of great flux in the markets because that's when the Internet bubble burst. If you looked at the domestic equity return — the average return that was posted in 2000 — it was -3.1% . Then if you fast forward to 2005 and look at the average return that was posted for 2000, it was $+1.2\%$. So, the combination of survivorship bias and backfill bias for that one year made 4.3 percentage points difference. As reported contemporaneously in 2000, the number was -3.1% but if you look at the number reported for 2005, because bad records had disappeared and good records had been added, all of a sudden the average experience for that year went up to $+1.2\%$. This is incredibly important because, when you look at this number that we started out with, saying the benchmark was 9.9 but net of fees the managers on average only lost thirty basis points — or $.3\%$ — you'd say, well that's a game I don't mind playing. Then if you adjust for survivorship bias, you end up concluding that the deficit wasn't $.3\%$ but the deficit was actually 2% .

In a world where, if you could win by a percentage point or two relative to the market, to have the average be minus two full percentage points is pretty daunting. That's the kind of issue with survivorship bias and backfill bias in the relatively established asset class of domestic equities. The problem is even more severe when you look at something that's relatively new, like the hedge fund world. Now, why is that? Well, if hedge funds first became mainstream maybe fifteen years ago, then what are you looking at in terms of history? The only history that you would have had fifteen years ago would have been those funds that produced great returns, so it's all identified after the fact. At least in the domestic equity world you've got a

pretty stable base that you were looking at ten years ago, so the survivorship bias and the backfill bias would be much, much more of a problem in the hedge fund world.

Burt Malkiel who wrote a book called *A Random Walk Down Wall Street*, which if it's not on your reading list you ought to pick up and take a look at because it's really fun to read but it's also extremely insightful, took a look at survivorship bias and backfill bias in the hedge fund world. He looked at a group of hedge funds that numbered 331 in 1996 and by 2004, eight years later, 75% of them had disappeared. Looking at this particular group, he estimated survivorship bias to be 4.4% per year and backfill bias to be 7.3% per year. So, we're talking about a group of funds that in aggregate probably produced somewhere in the low teens returns and he's got 11.7% per year combined survivorship bias and backfill bias. Roger Ibbotson took a look at a larger group of funds — 3,500 — funds over a ten-year period and found survivorship bias at 2.9% per year and backfill bias at 4.6% per year.

So, huge amounts of institutional funds and individual funds are going into this hedge fund world. You look at the returns that are reported for hedge funds in aggregate — they're generally 12%, 13%, 14% per year for the last five or ten years. In the case of Burt Malkiel's data, more than 11% per year and in the case of Roger Ibbotson's data, between 7% and 8% per year of those returns can be explained either by backfill bias or survivorship bias. If you subtract those numbers from the reported numbers, the returns that the investors that were actually investing in the funds that are defined as part of the universe at the time are low, maybe mid-single digits — far less than people would expect for the amount of risk that they're taking to be exposed to this particular group of active managers.

Chapter 6. Finding Value Investing Opportunities as an Active Manager [00:43:17]

The final point that I want to make with respect to security selection actually is a little bit different. It has to do with the degree of opportunity. This is once you've decided that you're going to be an active manager and try and pursue market beating strategies, how do you decide where it is that you want to spend your time and energy? Now, I think it's logical that if you're going to try and beat the markets, you'd want to beat the markets where the opportunity was greatest. Where's the opportunity greatest? The opportunity's greatest where assets are least efficiently priced. How do you figure out where things are least efficiently priced? Well unfortunately, financial economists don't have any direct measures of market efficiency, but I think there's a story that you can tell about groups of active manager returns that will help point you toward those asset classes that are least efficiently priced.

If an asset class has constituents that are efficiently priced, then it's very hard to generate excess returns. As a matter of fact, if things were perfectly efficiently priced, there wouldn't be any opportunity to generate excess returns and if you make active bets — if you make bets against the market — then whether you win or lose has to do with luck. How are managers going to behave in an asset class where things are efficiently priced? Well, they're not going to make big bets, right? If they do make big bets maybe they get lucky once, or twice, or three times, but ultimately their luck is going to run out. And when their luck runs out, they'll post bad results and get fired.

How do you stay in business? You stay in business by looking a lot like the market. What market might be efficiently priced? The bond markets, in general, and the high-quality bonds in particular are probably easiest to value. It's all about math. The government bond, you don't have to worry about default. Generally, you don't have to worry about optionality or call provisions and so it's math. You're given coupon payments every six months and then, when the bond matures, you get your money back. So there's not a lot of room in the government bond market or other high-quality bond markets to generate excess returns.

How about the other end of the spectrum? The other end of the spectrum is a market that is very hard to define. As a matter of fact, there might not even be a benchmark against which you can measure results and you'd think about the venture capital world. How do you hug the market in the venture capital world? You can't; it's very idiosyncratic. If you're doing early-stage venture investing, you're backing entrepreneurs and

ideas and they're operating out of their garage. I mean, this romantic notion of what goes on in Silicon Valley actually still holds true in a lot of cases but there's absolutely no way, as a venture capital investor, you could index the venture capital market. If you look at the behavior of groups of active managers and the dispersion of returns, I think it gives you some idea of what the efficiency is with which assets in these individual assets classes are priced.

Just as I foreshadowed, if you look at the difference between the first and third quartile in the bond market — these are active returns over a ten-year period, again ending June 30, 2005 — and the fixed income market, the difference between first and third quartile is a half a percent per annum. That's an incredibly tight distribution of returns. Half of the returns are within a spread of a half-percent. Then as you move out to the equity markets where it's harder to price things as efficiently — large-cap stocks — there are two-fold percentage points, first to third quartile. Small-cap stocks are tougher to price than large-cap stocks, so there's a 4.7% differential, first to third quartile. The hedge fund world is 7.1% first to third quartile, real estate 9.3% per annum, leveraged buyouts 13.7% per annum — this is over a ten-year period, so now we're starting to talk about some pretty significant dispersion. Of course, in the venture capital world, the least efficiently priced of all, there's a 43.2% differential between the top quartile and the bottom quartile.

If I'm going to be active in terms of managing my portfolio, should I spend my time and energy trying to beat the bond market? Where even if you can find somebody who's going to be a first quartile manager, there's almost no difference between the first quartile return and the third quartile return. Or should I spend my time and energy trying to find the top quartile bond, top quartile real estate manager, or buyout manager, or venture capital manager? I think the answer is pretty obvious. You want to spend your time and energy pursuing the most inefficiently priced asset classes because there's an enormous reward for identifying the top quartile venture capitalist and almost no reward for being in the top quartile of the high-quality bond universe.

Chapter 7. Yale's Portfolio and Results [00:49:02]

The overall conclusions are that, with respect to asset allocation, you want to create an equity-oriented diversified portfolio. With regard to market timing, you don't want to do it. And with respect to securities selection, you want to consider your skills and you want to consider the efficiency of markets when you're making your decisions as to whether or not to pursue passive management or active management. Where did this lead us in terms of Yale's portfolio? Our current portfolio has 11% allocated to domestic equities, 15% to foreign equities, and 4% to bonds, so traditional marketable securities account for 30% of assets. The absolute return portfolio, which is a group of hedge funds that strive to produce fundamentally uncorrelated returns, accounts for 23% of assets; our real assets portfolio, which includes timber, oil and gas, and real estate, amounts to 28% of the portfolio; and private equity, which includes venture capital and leveraged buyouts, is 19% of assets. So, 70% of the portfolio is in absolute return, real assets, private equity, alternatives — broadly defined.

If you take this portfolio and apply the tests that we articulated at the outset of the lecture today — equity orientation and diversification — the portfolio is clearly equity-oriented; 96% of assets are invested in some type of vehicle that we would expect to generate equity-like returns over reasonably long periods of time. In terms of diversification, there are half a dozen asset classes with weights that range between 4% and 28%. So, if you just came down and took a look at that and compared it to 50% in domestic stocks, 40% in domestic bonds and cash, and 10% in a smattering of alternatives, you'd say that this is really a much, much better diversified portfolio than the one with which we started. The results have been okay. Over the past twenty years, we've generated 15.6% per annum return, but that headline number obviously has a lot to do with the equity orientation of the portfolio but doesn't describe the importance of the diversification. We've had no down years since 1987 — 1987 that was the crash in October that I talked about earlier. In that year, we were early on in terms of diversifying the portfolio — we'd only been working on that program for two years — and even so, the negative return was less than 1%, so it was a modest negative return.

Probably a more important test of the portfolio was what happened around the collapse of the Internet bubble in 2000. In the year ending June 30, 2001 and 2002, returns for institutional investors were on average negative in both of those years and actually in every year since 1987 Yale has had positive returns. The equity orientation drove the returns but the diversification allowed us to deliver those returns in a stable fashion, which is incredibly important for an institution like Yale that requires a steady supply of funds to finance its operations. When I started in 1985, the distribution to the operating budget was \$45 million. That represented 10% of revenues and that was the lowest level for the entire century — the entire twentieth century — 10% of revenues. The amount that we're spending for the year ending June 30, 2008 is \$843 million — that represents 37% of revenues — and we're projecting expenditures for the following year of \$1.15 billion.

The results have been really quite extraordinary. My favorite way to measure the results is actually to compare what Yale achieved with what we would have had if we would have just experienced average returns over the past twenty years. The difference between the average return for colleges and universities and Yale's returns has added \$14.4 billion dollars to the University's coffers. Whether you measure it in terms of dollars of value added or in terms of returns, Yale has the best record among colleges and universities for the past two decades. So with that, I'd be happy to take any questions that you might have.

Chapter 8. Questions on New Investments, Remaining Bullish, and Time Horizons [00:54:48]

Student: [inaudible]

Professor David Swensen: The question is, if a group of Yalies started a hedge fund, what would they have to do to convince me to invest in them? One of the things that we've done over the years has been open-minded about backing groups that don't have traditional investment credentials. If you went to a corporate pension plan or a state pension manager, they'd have a very bureaucratic process — probably a fifty or hundred page questionnaire that you had to fill out, you'd have to deal with consultants, and you'd have to have ten years or five years worth of audited performance statistics. We tend to think that that's not the richest pond within which we should fish. We think that the more interesting investment opportunities are kind of outside of the mainstream with more entrepreneurial firms and ones that might have less traditional backgrounds.

That said, we just don't take flyers on people that we think have interesting resumes; we want to have a demonstrated ability to operate in the markets that the investment management firm is suggesting that we back. I would say, part of what we look at are hard quantitative factors, but probably more important than the numbers are the soft qualitative attributes. It's almost like what you looked for in a Boy Scout or a Girl Scout. You want people of high integrity. You want people of unimpeachable character. You want people that are smart, incredibly hard-working. And in the investment world, you want somebody who's really obsessed with the markets — somebody who doesn't define winning by getting as rich as they possibly can because, if that's their goal, there are all sorts of things that they can do to get rich that don't have anything to do with generating investment returns.

We want people who are maniacally focused on beating the markets, generating superior investment returns. That's an incredibly important distinction because, think about it, if what you want to do is get rich, you can put together a reasonable investment record and then raise staggering amounts of money. Size is the enemy of performance. So that staggering amount of money then impairs the fund managers' ability to continue generating excellent returns, but they can stay in business and collect the fees that they get for having this huge pile of money. The type of manager we're looking for is somebody who strives to generate excellent returns and they'll frequently raise modest amounts of money and close to new investors, measuring their success by beating the market not by generating huge flows of fees for themselves. It's a combination of looking at kind of objective attributes and subjective characteristics and finding people who ultimately will be good partners for the University.

Student: How has Yale's endowment dealt with the falling house prices? You said, if we invest in real estate [inaudible]

Professor David Swensen: The question is how we've dealt with decline in housing prices. We don't have really much of any direct exposure to homebuilders or to the housing industry. Most of our real estate exposure is institutional — acquisitions of office buildings — largely in major markets — central business districts. So, you'd find Yale with interests in office buildings in New York, Washington D.C., Chicago, San Francisco, Los Angeles, some in secondary markets as well, but predominantly in large metropolitan downtown areas. There are also some hotel investments, retail properties, smattering of industrial properties — not a lot of exposure to individual houses. The only way that we would get that occasionally would be through some sort of lot-financing activities, but that's not something that I've generally liked.

I don't think the housing industry, in general, is a good place to be because of its, sometimes, violent cyclicality. We did have a large, short position in subprime mortgage-backed securities, which has paid off enormously for the University and really helped protect assets in the past nine months or a year. I think that, generally speaking — and Bob Shiller can speak to this with a lot more authority than I can — this bubble was not something that should have surprised people. I thought the University positioned itself well to take advantage of this really not surprising collapse in housing prices.

Isn't that market timing? I mean, it all depends on your perspective. I think market timing, as I've defined it, has to do with short-term deviations from your long-term policy targets. I mentioned that our domestic equity target was 11%. If I came to the office next week and decided domestic stocks were too high — I want to move that target down to 8% — in the way that I've described market timing, that would be a market timing move and we're very careful not to do that. We establish these targets, we review them once a year, we don't make changes in many years, they're quite stable, and when we do move them we don't move them by a lot. That doesn't mean that we don't manage the portfolio actively. So, if we see areas that are particularly interesting, we're more than happy to deploy capital to take advantage of what we think are cheap assets or expensive assets.

We made a big bet against Internet stocks in 1999 and 2000 that was very profitable for the University. As I mentioned, there was a big bet that credit spreads, both in mortgages and in corporates, were way too narrow in the past couple of years and that — we thought that if they were priced rationally those spreads would widen and we put ourselves in a position to profit from that. Today, we're looking at opportunities in distressed securities. A lot of these loans that were made in 2005 and 2006 and early in 2007 were made at very, very narrow spreads and there are opportunities out there to buy bank loans, which are at the very top of the capital structure, that we believe will be money good for prices in the '80s. If it turns out that they're money good, you get your interest and you get \$1 for every \$.85 that you invested in a few years. If markets offer us opportunities, we're more than happy to take advantage of them. So, we will make valuation bets. We'll look at things — sectors — say they're cheap or expensive and exploit the opportunity; but at least in terms of how I define market timing, it wouldn't be included in that — it wouldn't be included in that definition.

Student: [inaudible]

Professor David Swensen: The first question is, what's the beta of the Yale portfolio? That's not a way that we really think about it, but I do believe that the risk level of the University's portfolio is really quite low in statistical terms — much lower than the risk level that you'd have if you had a traditional portfolio dominated by marketable securities. The reason it's low is that we do have, what I think is, superior diversification and that really lowers the University's risk. A lot of people look at Yale's portfolio and say, oh it's risky because you've got venture capital and you've got timber — we have all these things that you might believe are individually risky, but part of the magic of diversification is if you've got things that are

individually risky but they're not well correlated one to another, the overall portfolio risk level is quite low. I believe that we have quite a low risk portfolio.

The second part of the question dealt with the changes in our exposure to foreign assets and that's an area that we've been very interested in. Our foreign exposure is not limited to the marketable security exposure, which I cited as being 15% of the fund, but there's foreign exposure in real estate, there's foreign exposure in leverage buyouts, there's foreign exposure in venture capital. It's something that permeates the portfolio and, I think, provides really interesting investment opportunities because a lot of the foreign markets are less efficiently priced than those that you find in the U.S. And I think the fact that our foreign investments are generally denominated in currencies other than the dollar is also attractive — a good diversifying tool for the university.

Student: [inaudible]

Professor David Swensen: The question was whether we were looking to take more short positions as the economy appears to be moving into recession and I guess the second part of the question was how do you remain bullish in this kind of environment. I think the best answer to that is a quote from one of my contemporaries, who I think is one of the best investment managers out there. A guy named Seth Klarman, who works at a fund in Boston called Baupost, said that what he does is worries top-down and invests bottom-up. I read *The Wall Street Journal* every morning and I worry about the credit crisis, and I worry about credit cards, and I worry about auto loans, and I worry about corporate loans, and I worry about the solvency of the banking system, and then I go to work and I try and find the best opportunities that I possibly can. So, the worrying top-down helps because you don't want to put yourself in a position where you're going to get hurt by some adverse macro, sectoral circumstance, but there's no way that you can take \$22.5 billion dollars and be in the markets when they're attractive and out of the markets when they're not attractive. So you just say, okay fine, this is the macro circumstance that we're dealing with and we're going to do absolutely the best job we can identifying individual, specific, bottom-up opportunities to deploy the funds.

Student: [inaudible]

Professor David Swensen: Well, I think one of the questions — -the question is how can you successfully invest in a market where, I guess, people say you might catch a falling knife. You buy something that's down 30% but it's got another 50% to go and I think it just has to do with time horizon. Particularly if you have a value orientation, you tend to buy things early. If you bought them with a good, sound, fundamental investment case and prices are down from where you made your purchase, have enough dry powder so that you can purchase some more at the now lower price but have enough confidence in your thesis to be able to hold the position through the decline and wait for the markets to recognize the value that you identified.

I think one of the most pervasive problems in the financial markets is investment with too short a time horizon. The fact that people look at quarterly returns of mutual funds is incredibly dysfunctional. I mean, there's no way that you can expect somebody quarter in and quarter out or month in and month out to produce superior returns. There just aren't pricing anomalies that are significant that are going to resolve themselves in a matter of months or weeks and so it's a silly game to play. By extending your time horizon to three years, or four years, or five years, it opens up a whole host of investment opportunities that aren't available to people that are playing this silly, short-term game. So, it's not a big deal to buy something at a price that you think is attractive, have it go down 20, or 30, or 40%; that ought to be almost a positive thing because you get a chance to add to the position of even lower prices, as long as you're ultimately right that sometime in the three-, or four-, or five-year time horizon you have your investment thesis proves out and you're ultimately able to exit the position at a profit.

Student: [inaudible]

Professor David Swensen: The question is about housing indexes. I'll defer those to Bob Shiller — I couldn't answer a question like that in front of him. Great, thank you very much.

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