



Investing and Spending: The Twin Challenges of University Endowment Management

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● An endowment is a promise of vigorous immortality. Spending from an endowment must be at a sufficient rate to achieve something of significance in the near term, yet low enough to continue in real terms forever.

● Endowments cannot achieve vigorous immortality without taking risk because the riskless rate of return is simply too low to deliver both vigor and immortality. Universities have to face the inevitability of risk squarely and acknowledge that there are going to be downsides, when the endowment is going to shrink.

● Despite massive losses during the 2008-09 fiscal year, in the long-run returns for large endowments managed under the modern endowment model have exceeded all other relevant benchmarks.

● The hardest lesson of the financial crisis is that institutions need to plan for and build in flexibility for when problems arise. Adjusting spending gradually only prolongs the agony. Cost reduction contingency plans prepared in advance serve to rein in typically overoptimistic planning scenarios, and help universities identify the level of risk that they can live with.

Investing and Spending: The Twin Challenges of University Endowment Management

JOHN CAMPBELL, HARVARD UNIVERSITY

Universities are among the few institutions that conform to the notion of infinitely-lived investors, which are a common fiction among academic economists. That is indeed the appropriate timeframe for thinking about university endowments, since universities at least aspire to exist forever. John Campbell, Morton L. and Carole S. Olshan Professor of Economics at Harvard University, served on the board of the Harvard Management Company from 2004 to 2011. He details Harvard's endowment management model, starting with the inevitable need to take on risk to generate returns that support both vigorous current spending and immortality. Campbell explains the underlying justification for the modern endowment model, which continues to be based on pursuit of the equity premium but has shifted from attempts at timing the market to policy-based investing. Campbell draws three fundamental lessons from the financial crisis, concerning diversification, liquidity, and the need for increased flexibility and planning on the part of universities. Excerpts of Campbell's remarks at the Forum's June 2011 Aspen Symposium are reprinted here.

I'd like to start by asking a couple of very basic questions: What is an endowment? What is the purpose of an endowment? These questions frame the basic problem that universities struggle with and that I will address today.

An endowment is a promise of *vigorous immortality*. What does that mean? "Immortality" is the promise to donors that money given to the endowment will, in a certain sense, live forever, so that the donor's impact can be sustained into the indefinite future. One way to think about that promise is that spending will occur at a rate that can be continued in real terms—that is, adjusting for inflation—forever. Of course, endowments do take risk, so the promise is not that the spending will be literally the same forever; simply that, on average, it will be the same forever.

Now you could get unlucky, in which case bad things happen and the real spending would

have to go down in the future, but you're just as likely to get lucky and have your gift make an impact in the future that is greater than what you started with. Also, sometimes we might, in fact, shade that a little bit, and aim to spend a little bit less so that we can get some growth. But to keep this simple, I'm just going to say: Spending that can, on average, be sustained in real terms forever—that's the immortality piece of an endowment. And that is the implicit—and sometimes very explicit—contract with donors. That is why they give money.

What do I mean by "vigor"? I mean that the spending has to be at a sufficient rate to achieve something in the near term as well as in the very long term. This is obviously important for donors. Donors don't want to give, say, a \$100 million gift if the spending that results is a relatively trivial \$1 million a year. They're going to think that they're not seeing very much impact from

their \$100 million. So, spending needs to be large enough to make a visible impact. This is also very important to the university community, and to faculty who want to see spending happen, and to politicians who claim that we're not spending enough, we're hoarding our wealth. And finally, the public also wants to see results.

An endowment promises that these two conditions can be met, that we can have both immortality and vigor. The challenge is that to get immortality, you cannot spend more than the expected real return on the endowment. That is the amount that can be taken out and spent without running down the endowment. On the other hand, vigor requires spending enough. Let's call that, say, 5 percent per year. The question, then, is whether the real rate of return on the endowment can equal or exceed 5 percent.

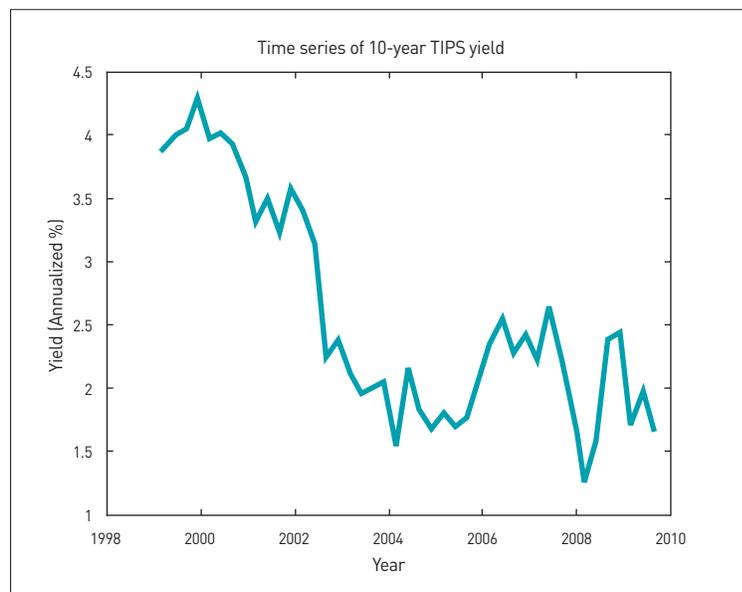
Figure 1 is a very sobering picture. It shows the TIPS yield, the yield on Treasury Inflation Protected Securities. Think of this as the safe long-term real interest rate. It's not literally forever because the longest maturity TIPS are 30 years. But it is a long-term real interest rate, and it gives you a sense of the real return you can expect to earn if you invest without risk. You're just going to get an inflation-adjusted coupon from the government. You can clip that coupon and spend it. TIPS are a safe investment.

What's their rate of return? Well, back at the tail end of the technology boom in the late 1990s, when the world was mesmerized by the performance of the NASDAQ, there was this extraordinary investment opportunity available (which nobody paid attention to except a few academic economists), with a completely safe real rate of return of about 4 percent. That got awfully close to vigorous immortality.

The problem is that real yields have collapsed in the decade since then, and it's happened worldwide. In the last five to seven years, the long-term real interest rate has bounced around, but it's something like 1.5, 2 percent now. So if you invest without risk, that's what you're going to get, 1.5 percent. And if you buy shorter-term safe investments, U.S. Treasury bills, you're going to do even worse today: you're going to get zero percent real return.

The very simple point is that you cannot achieve vigorous immortality without taking risk in this environment because the riskless rate is simply too low to deliver both immortality and vigor. So, endowment managers are going to have to take risk to fulfill the endowment's promise. By the very definition of risk, even if this works on average—because your expected return is higher because of the risk you take—it is not going to work in every state of the world. Risk means that there is a downside scenario.

Figure 1: TIPS Yield 1999-2009



The Inevitability of Risk

Universities have to face the inevitability of risk squarely and acknowledge there are going to be downsides, when the endowment is going to shrink in real terms. It's inevitable. And universities must plan for that eventuality and try to increase their flexibility.

It's helpful to express the relationships governing endowment management in a simple form: The sustainable spending rate on an endowment, which is the amount spent as a fraction of the market value of the endowment, must equal the expected return in order to achieve immortality, as shown in Figure 2.

What is the expected return? It's the riskless rate plus whatever risk premium you earn for being willing to take risk. And what is the risk premium? You can think of that as the risk taken times the reward gotten per unit of risk, or the reward-to-risk ratio. This is also called the Sharpe Ratio after Stanford's Bill Sharpe.

Figure 2. The Inevitability of Risk

- Simple math relates risk and spending:
 - Sustainable spending rate = Expected return
 - Expected return = Riskless rate + Risk premium
 - Risk premium = Risk x Reward/risk ratio
- Rearranging,

$$\text{Risk} = \frac{\text{Spending rate} - \text{Riskless rate}}{\text{Reward/risk ratio}}$$

If we rearrange the terms, as shown in Figure 2, you can see that the risk the university has to live with is going to be the spending rate minus the riskless interest rate divided by the reward-to-risk ratio.

I should note that by “risk” I mean the standard deviation of the endowment return. So if you’re in a world where the endowment return is normally distributed in a nice, well-behaved bell shape, and if the standard deviation is 20 percent, that would mean that one-third of the time you’ll be outside the range plus or minus 20 percent around the mean. That means that there’s a one-sixth chance of having a return in the left tail that’s worse than 20-percent down. Of course, we may not be in a world of well-behaved normal distributions, but nonetheless, standard deviation is still a meaningful first measure of risk, and that’s what I’m talking about here.

What’s going to drive up the risk you have to live with? Well, if the riskless rate is very low, that’s going to mean higher risk, other things being equal. And if the spending rate is high, that’s going to mean higher risk, other things being equal.

On the other hand, if you can get a good, high reward-to-risk ratio, then that will reduce the risk you have to take for any given amount you want to spend. For example, plug in some back-of-the-envelope numbers: If you want a spending rate of 5 percent and the riskless rate is zero (as is the short-term riskless rate now), then if you can get a reward-to-risk ratio of .25, that will imply 20-percent risk.

Now, if you can improve the reward-to-risk ratio and get it up from .25 to, say, .4, then with the same spending rate and riskless rate of interest, you can cut your risk from 20 percent to 12.5 percent—and that’s much more comfortable. Or if you wish, you could use that benefit to increase your spending rate to 8 percent, which would then be consistent with the 20-percent risk.

This exercise illustrates why endowment management is very much about squeezing as much juice as possible out of the risky asset markets to get the highest possible ratio of reward to risk.

That raises the question of where to get the reward, and what reasonable numbers would be for a reward-to-risk ratio. What is a reasonable target? Well, I didn’t pick these numbers out of thin air. They are in the right ballpark from the point of view of Harvard Management Company: .25 is what you might get from a traditional plain-vanilla investment portfolio of domestic stocks and bonds, and .4 is a little bit higher than what you might expect to get from a diversified endowment model portfolio across many asset classes. Note that these are *beliefs*, not facts, about the opportunities available in the market.

Large endowments generally have used several basic tenets to generate rewards for risk. The first two are very traditional:

Number one, the most obvious source of reward for risk is the equity premium, the expected excess return on stocks over cash. And number two, traditionally, many endowments went in and out of the market in an attempt to time the market. That was regarded as a legitimate activity for an endowment. But that’s very difficult to get right, and there are well-known examples of getting it dead wrong. Likewise, the results of these traditional approaches were not always happy. Poor market timing is very, very destructive. High-profile examples of getting it wrong led to the notion that endowment managers should be very cautious about attempting to time the market, and instead should discipline themselves by having a policy portfolio that they try to stick to, and which they adjust only in a very gradual and thoughtful manner.

The Modern Endowment Model

The shift to the current endowment model occurred in the 1980s and retained the first tenet of endowment management, regarding the equity premium, but scratched the second tenet, the effort to time the market. The cornerstone of the new model, as developed at Yale, Harvard, and other large institutions, is the idea of asset class diversification. The point of that is simply that you can improve the reward-to-risk ratio if you can find more asset classes that carry a risk premium but that are not perfectly correlated with one another.

Asset Class Diversification

Imagine starting from a traditional, plain-vanilla portfolio of 60-percent domestic stocks, 40-percent domestic bonds, and then start adding things that have risk premia but are not highly correlated. International stocks and bonds might come first—that’s pretty obvious—and then private equity, real assets, commodities, real estate, timberland, and agricultural land perhaps. Then you can also think about active strategies designed in a way to have low correlation with the stock market. That’s the promise of absolute return strategies, that they have a low correlation. But one of the lessons of the financial crisis is that while correlations may be low on average, they’re not always low. And so this is not always going to work. But the basic principle makes a lot of sense and continues to make a lot of sense, in my view.

Let me show you how the policy portfolio at Harvard has evolved over the last 20 years. Again, this notion of a policy portfolio is intended as a discipline device to prevent the endowment managers or the trustees—whoever is ultimately in charge—from panicking and pulling everything out of the market at the wrong moment. Figure 3 starts back in the early 1990s, when Jack Meyer took over Harvard Management, and goes up to the present day.

Figure 3 shows the division of Harvard's policy portfolio into four very big buckets—equity, which includes private equity; fixed income; real assets, such as commodities, timberland, and real estate; and absolute return. You can see that both equity and fixed income have fallen over the years. The decline in equity was concentrated in the late 1990s, when there was a shift into real assets and absolute return. Note that absolute return is not really an asset class—it is a name for a set of active investment strategies. These actively invested assets could be redistributed among the other classes. If we did that, then very roughly the split would be about 40 percent equity-like, 40 percent real assets, and 20 percent fixed income. But that is going to shift around depending on the particular managers and what they're doing at any particular point in time. The decline in fixed income comes more recently, during the financial crisis, and to some degree reflects a view that bonds are the last over-valued asset class.

Figure 4 shows another way to look at the changes in Harvard's portfolio over time.

The policy portfolio is divided in a different way in Figure 4. The dark blue line is what I call “plain vanilla”—by which I mean only domestic stocks and domestic bonds. The black line, international, includes the same types of assets—stocks and bonds, publicly traded equity and fixed income—but international. The light blue line, which I call exotic, is everything else—private equity, real estate, commodities, timberland, and absolute return.

This figure very clearly illustrates the nature of the shift away from plain vanilla, which in the early 1990s was 55 percent of the portfolio, whereas today it's just 15 percent of the portfolio. The international piece has remained fairly constant on average over time, but note that this is the international version of the plain-vanilla assets. So the ratio of the international to the domestic has gone way up. In the early 1990s, the international was less than half the domestic; today it's more than the domestic. And the exotic share has grown enormously. But all of this is well known; I'm not telling you anything you don't already know. What I'd like to show you, though, is the justification that underlies this approach.

The analysis shown in Figure 5 goes back to 2004.

Every year HMC produces a set of capital market assumptions based on a number of factors—historical analysis, talking to consultants, discussion with the board, all of that kind of thing. These are assumptions and beliefs about the risks and returns of asset classes. They are not objective reality; they show a set of beliefs about the risks and returns of asset classes. I choose 2004 because I want to show you the beliefs that drove the changes that followed. We ought to be able to make

Figure 3: Harvard Policy Portfolio

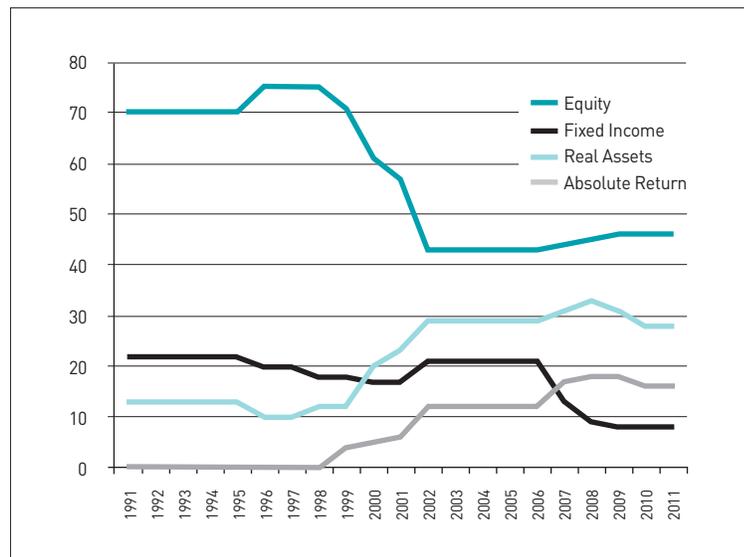
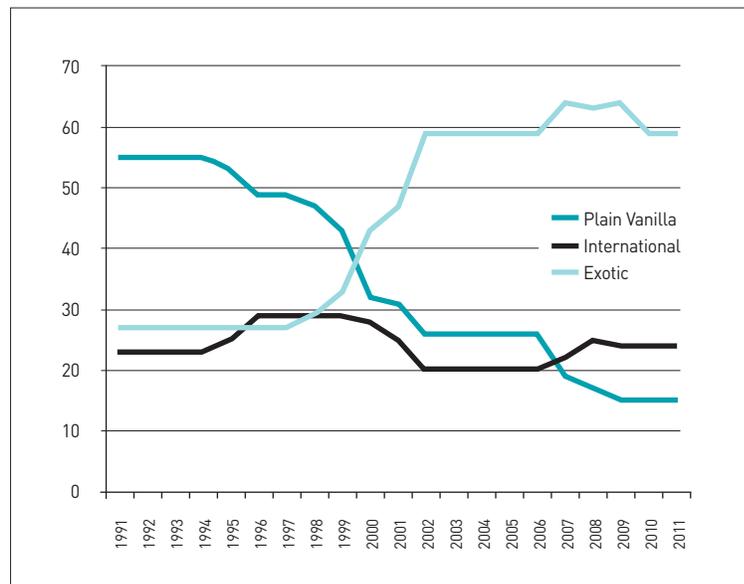


Figure 4: Harvard Policy Portfolio



sense of the change in light of the beliefs.

Figure 5 is one way to illustrate these beliefs. The horizontal axis is the standard deviation of each asset class—what I've been calling risk—but note that that's on a stand-alone basis, asset class by asset class. The vertical axis is the expected excess return over cash.

I've drawn a straight line through the domestic equity market. The slope of that line is the reward to risk ratio for stocks, which is 0.25, from my earlier example. This is exactly what HMC assumed in 2004 for the domestic stock market.

Each diamond in the figure is a particular asset class. You would think that all these exotic things that Harvard is

investing in ought to be high up and to the left—they should be high-return, low-risk things, right? Well, some things do look like that. You look at this chart and you want to shout “Timber!” because it’s modest risk and very high return. And indeed, timber has been a major piece of Harvard’s investment strategy in recent years.

Timber looks very attractive on this stand-alone basis. But other things don’t. Look at commodities—very risky, but with a low risk premium. Why would you buy commodities? It’s not clear from this chart. The answer is, this is the wrong chart to be looking at. This is a trick. This is the measure of risk on a stand-alone basis. It would be relevant if you were considering putting the whole endowment into just commodities or just timber or just private equity. But of course you’re not. You’re going to blend all that in to the portfolio.

Figure 6 is the better chart to use if you have a plain vanilla portfolio—60 percent domestic equity, 40 percent domestic

bonds—as the starting point, and the question is how best to add in just a little bit of one of these exotic asset classes. The relevant measure of risk in that situation is the beta or regression coefficient of the asset class onto that portfolio. That’s the measure of the marginal risk of adding just a bit of the asset classes in the chart.

The risk premium is still the risk premium, but in Figure 6 the line is drawn through the plain vanilla portfolio—the 60/40 portfolio—and you can see that all the assets except domestic equity are above the line, which means that they are attractive; they add something compared to sticking with the plain vanilla portfolio. That is, relative to their risk, all the exotic asset classes are contributing something.

Look at commodities now. Commodities have a small but positive risk premium, and in 2004 Harvard believed that commodities would be uncorrelated with stocks and bonds and thus if they put just a small amount into commodities, they would get a risk premium for no risk. Obviously, as the portfolio loads up on commodities this analysis has to be re-done to reflect the portfolio as it is. Over time, then, you’ll run out of the desire to move into commodities. But this shows why you would begin the process of going away from plain vanilla into all of these asset classes. It’s a graphical representation of the thinking that underlies the notion of asset class diversification for the endowment model.

Beyond asset class diversification, the modern endowment model also includes several other ways to improve the ratio of reward to risk.

Strategic Asset Allocation

I’ve done academic work on the idea of strategic asset allocation. That’s the notion that when you do this analysis of risk, if you’re managing an endowment, you really should consider the risks not to the short-term, year-by-year value of the endowment, but rather the risks to the level of sustainable spending, because that after all is what an endowment is all about—sustainable spending.

The level of spending is the spending rate times the value of the endowment, which is the same as the expected return times the value of the endowment. So if you can find assets that go up when expected returns fall, then the risk to the value of the endowment will be offset by the risk to the expected return. And the two will work against each other and reduce the risk that feeds through to your spending level.

What might such assets be? A classic example would be a bond. Bond prices go up when interest rates fall. So if interest rates go down, that means your expected return in the future is lower, but your endowment is worth more because the bonds you hold just went up. So bonds work this way, and

Figure 5: Harvard Investment Beliefs (1)

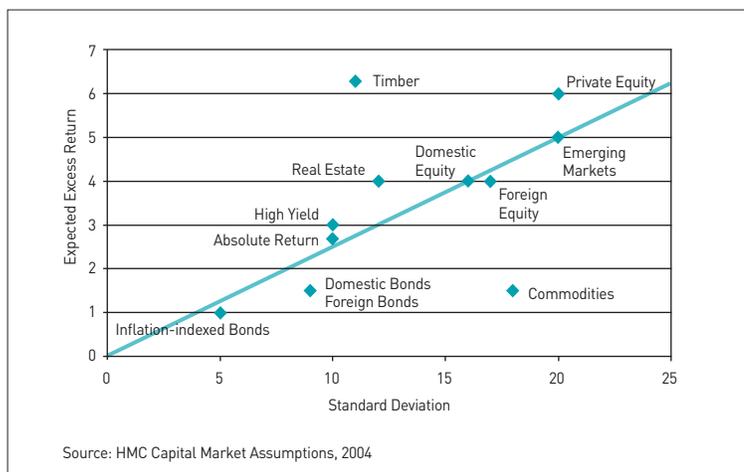
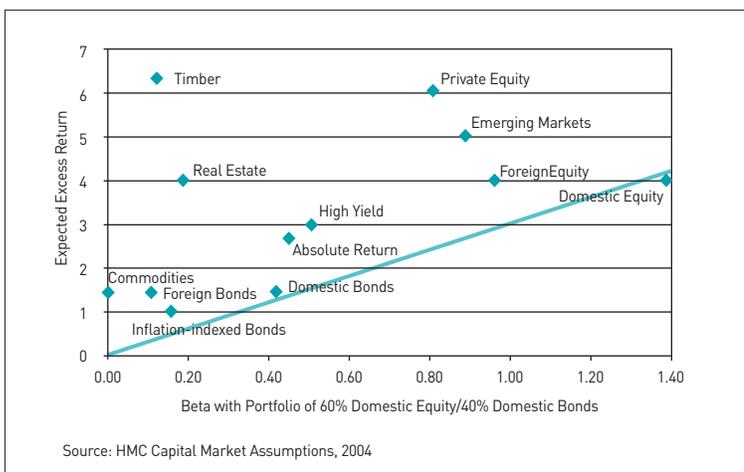


Figure 6: Harvard Investment Beliefs (2)



there's also evidence that the stock market to some degree works the same way.

In general, long-term assets tend to do well when their expected returns fall. So a strategic asset allocation approach would have you tilt into longer-term assets that have this property, that they hedge declines in the real rate of interest. Think back to Figure 1, showing the TIPS yield and how that collapsed over the last decade. That's really bad news for university endowments because we live on the interest. So what we want to do is invest in such a way that we will get rich when that happens. Of course, the flip side is, if interest rates go back up, you're then going to lose endowment value—but at least you will have a higher expected return to live on in the future.

Illiquidity

Another piece of the endowment model is illiquidity. The underlying logic here is that an endowment should never need to liquidate the whole portfolio, so you don't need to keep the whole portfolio liquid. David Swensen at Yale asked the good question, why pay for liquidity that you don't need? Instead, you could profit by essentially offering liquidity to others and charging for it by holding illiquid assets and earning a superior rate of return.

This can be pushed too far, as we all know, and it has been pushed too far. But there is a logic for it: think about the defined contribution pension system that's been evolving in this country. The whole premise of that system is that the assets that you hold in a 401(k) must be marketable daily. They can be valued daily, and you have daily liquidity to shift from one asset class to another. That means you cannot invest in anything that is in the slightest bit illiquid for your retirement. That's nuts. You're not going to retire for decades. Why pay for daily liquidity that you don't need? I think that is a fundamental weakness of the defined contribution pension system for individuals. Anyway, the endowment model says that endowments should at least, to some degree, exploit this issue.

Active Management

Another piece of the model is the notion that active management can play a role. You know that academic economists are very skeptical about active management. Specifically, academics often argue that in the world of retail mutual funds you should just invest passively and buy index funds, and I essentially agree with that. But there certainly is some evidence that there is such a thing as investment skill, and the big question that investors have to think about is not whether the skill exists, but what will persuade skilled managers to share the profits from their skill with the investor?

A retail mutual fund investor doesn't bring anything to the table fundamentally, so they shouldn't expect to share in the rewards of skill. But things are different for endowments for a number of reasons. An endowment is a deep-pocketed investor that can provide a lot of capital in one lump; that's certainly appealing to skilled investors. Endowment managers, at least traditionally, have had a reputation for being stable, thoughtful investors who don't panic at the first sign of a problem. That's very valuable to an active manager. And the largest endowments have a reputation in the markets, so if an active manager can get Harvard or Yale as a client, for example, that's very valuable because other investors will believe that you must be high quality. Their reputation can help endowments get a bigger share of the rewards.

Further, one mustn't minimize the importance of alumni loyalty and commitment to the mission of a university. I think this plays a particularly important role in private equity, where the best firms restrict access to their funds, but very often will give allocations to universities where they have alumni relationships.

For all these reasons, there's a good case for active management by endowments, a much better case than for active management by individuals.

Leading the Herd

Finally, leading the herd has worked for some of the largest endowments. For Harvard, timber is an example. Harvard's move into timber generated quite a bit of interest. Other investors followed, and Harvard was able to sell some of its initial purchases to other investors at very favorable prices just before the financial crisis hit. Now, obviously, that not a long-run strategy; it's a transitional effect. But it did juice up the returns to some of the largest endowments.

Lessons of the Financial Crisis

Harvard and other large endowments operating under the model I've just described experienced massive losses during the financial crisis, which hit during the 2008-09 fiscal year. Those losses were far greater than the losses of plain vanilla portfolios held by smaller endowments. But you have to look at the longer-run returns. Over any longer period, even including the 2008-09 experience, the large endowments did well, better than their benchmarks. The endowment model is not fundamentally broken, and it should not be entirely abandoned.

I would draw three more modest conclusions from the financial crisis.

First, diversification is not always going to work and, in particular, it fails when there's a global economic shock. That doesn't mean that you shouldn't diversify. You should,

but you should not ignore the risks that remain even after you diversify. The risk is still there. The problem with this broad diversification is that normally it will reduce risks for given return. Having done that, you can increase your risk again by using leverage and by taking aggressive strategies within asset classes, and you want to do that to get the high expected rate of return. Harvard, for example, for a long time had a negative 5 percent cash position in the endowment, and some leverage at the endowment level. And within asset classes, it was often quite aggressive—for example, investing in rather opportunistic turnaround kind of real estate rather than core real estate, which is a stable income-producing asset. But even if this works most of the time, it's going to underperform when all asset classes fall together because you don't get the risk reduction, and you have to live with the consequences of leverage and aggressive investing. Fundamentally, that's what caused so many problems.

A second lesson is that liquidity is a much bigger issue than the endowment model recognized, and this is really where reforms have to happen, to become much more aware of liquidity issues. Liquidity can evaporate in many, many markets simultaneously. The really big effect, frankly, is on investments that involve future capital commitments, and private equity is the big one in that regard. Private equity has become a huge problem for many endowments.

Here's an interesting point: Harvard for years was not able to invest as much in private equity as it wished because the leading private equity firms gave equal dollar allocations to all the top universities based on their alumni loyalty. But an equal dollar amount is a much smaller percentage amount for Harvard than it is for other schools. So Harvard was frustrated by its inability to get in, but that turned out to be a blessing in the crisis. Yale, on the other hand, got in much more heavily and, as came out during the crisis, almost a quarter of the Yale endowment was in private equity compared to Harvard with a policy weight for private equity below 15 percent.

The third lesson of the financial crisis has been a very hard lesson at Harvard and other places like it—that is, that you've got to have flexibility to cope with downturns. Many large universities, not just Harvard, found themselves without the flexibility they needed when the crisis hit.

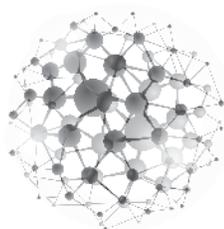
Where can flexibility come from? There are several possible sources. One obvious source is to adjust spending gradually.

Many of my faculty colleagues want to rely entirely on this, just sort of take it easy and adjust gradually and trust that it'll all work out in the long run. Gradual spending adjustment is certainly important in the university context. A common rule to summarize how this might work, which is close to what many schools do, is that the spending level this year is .7 times what you spent last year, plus .3 times your target spending out of the current value of the endowment. If you follow this rule and you get a nasty shock in the endowment, you're going to feel 30 percent of the effect the first year and then the next year, about 50 percent, and so on. You're adjusting with a half-life of about two years.

The problem with gradual adjustment is that if you get a large, negative shock, it can imply many years of falling endowment spending. One thing that most people don't know and are shocked when they hear it, is that between 1973 and 1986, Harvard had 13 years in which the level of real endowment spending fell every year. When people say that the current downturn is unprecedented, the fact is that there have been bad times before, and they can be very prolonged. The reason they're prolonged is that you delay the adjustment; you don't take the full hit initially. It means that you're spending a higher fraction of the endowment—you're running down the endowment, and that prolongs the period of decline.

In the current crisis, many schools, certainly including Harvard, have reacted much more aggressively precisely to avoid this many-years-of-decline phenomenon. That limits the extent to which you can rely on gradual spending adjustments and, even if you were to take that approach, you would prolong the agony. That's all you're doing.

Flexibility could also come from other sources of income. I like to say that the old word was "rich," and the new word is "endowment-dependent"—those are the same thing. Harvard did not adequately recognize that during the boom, that as the endowment share of the budget rose, from 15 percent to over 30 percent at the university level, and, at the Faculty of Arts and Sciences, from 25 percent to over 50 percent. This endowment dependence means that any level of endowment risk has greater consequences for the overall budget. To cope with this, universities ought to either reduce risk or increase flexibility, and this was not recognized. The problem, though, is that the other income sources that one might look at—tuition, sponsored research and so forth—are also under pressure. It's



The more flexible a university is, the more endowment risk it can tolerate, and that will mean a higher average return and higher sustainable spending. Flexibility and reward for risk are the two keys to successful endowment management.

a difficult time to turn to other sources of income.

What about debt markets as sources of flexibility? Debt can be useful, but certainly not a panacea. Debt is good for smoothing temporary shocks to income; but a temporary shock to the endowment return translates into a permanent effect on income. So if you're coping with a long-range or permanent change in income, you can't borrow your way through it. All you're going to do is adjust gradually by using debt. It doesn't change the long-run constraints.

The other point is that many universities already borrowed heavily during the boom, in part because, frankly, there is a tax incentive to do so if you have capital projects for which you can issue tax-exempt debt. Harvard and many other schools did a lot of that, so their debt capacity was already heavily used when the financial crisis hit.

Finally, cost reduction can increase institutional flexibility. But we all know that university costs are dominated by salaries and benefits, and these are much easier to cut in real terms when inflation is high than when inflation is low, because people tolerate nominal salary increases that are less than the rate of inflation much better than they do nominal cuts. Very few universities in the present downturn have tried to cut salaries on a large scale. The University of California is an exception, but it has not happened on a wider scale. That means that in the current downturn, continuing employees—tenured faculty and administrators who continue to work at the university—have contributed relatively little to adjustment. We're all fine; my colleagues may whine about not getting salary increases, but they are not taking cuts.

In the downtown during the late 1970s and early '80s that I mentioned previously, a huge part of the adjustment was in reduction of real salaries. People didn't notice because people think in dollar terms, but that's what happened. The low rate of inflation at present, though, makes the adjustment problem much tougher. That means, of course, that cost reductions come primarily through reducing employment, scaling back expansion plans, and so forth.

I think it's clear that cost reductions are less painful if you've prepared contingency plans in advance. But as I've observed the financial planning process at Harvard, it has traditionally involved the central administration giving the different units an assumption about the growth rate of endowment spending, which they use for their five-year plans—to the extent that they have five-year plans. This constant growth assumption is a mistake because it hides from the planners any notion that there is risk out there. My theme has been that there's a lot of risk, there's a lot of uncertainty. I think it's very important to try to get people to develop alternative plans that are based on a more pessimistic scenario so that, if a

downturn comes, they know what they're going to do. Just the process of contemplating the pessimistic scenario may help to rein in the sort of overaggressive, overoptimistic planning that was characteristic of many places during the boom. Harvard is now beginning to do this, and I think it's a very exciting and beneficial development.

Conclusion

The basic challenge for endowment managers is that the riskless rate of return in the world today is too low to support vigorous, sustainable spending. Endowment managers must, therefore, take risk. I would say that the endowment model is still a good way to do that so long as sufficiently great value is placed on liquidity. The basic lesson there is to watch out for private equity.

Given that there will be risk, though, universities have to plan accordingly. The more flexible a university is, the more endowment risk it can tolerate, and that will mean a higher average return and higher sustainable spending. Flexibility and reward for risk are the two keys to successful endowment management. The university has to increase its flexibility, the endowment managers have to focus on reward for risk, and both of these support sustainable spending.

Discussion

Q: Is Harvard currently hedging against tail risk?

Mr. Campbell: Yes. There's been a so-called tail risk program in place since before the crisis hit using strategies that, for example, benefit if volatility goes up, benefit if the yield curve changes in certain ways that would be characteristic of a crisis. But there's always the question of scale. Those tail-risk strategies weren't large enough to provide a sufficient offset when the crisis hit. And there's always the question of their cost. As you know, options can be very expensive. In any case, yes, there is still tail-risk hedging in place.

In the last decade, many people have felt that a very large and obvious hedging strategy is to maintain a fixed-income portion of the portfolio. During the last 10 years, nominal Treasury bonds particularly have been a great hedge. They were the one asset that went up during the financial crisis. The problem, though, is that the recent pattern is historically unusual. If you look at longer periods of history, you see that it is more common for stocks and bonds to move together. In the late 1970s and '80s, for example, stocks and bonds went down together, essentially because fears of stagflation were driving the markets.

As long as the main downside risk is deflation, nominal Treasuries should be a good hedge against that. But if the downside risk shifts to being either fear of a fiscal crisis or fear of inflation,

both of which are quite plausible, then bonds will not provide a hedge. So this is another warning to endowments, that if you've been living in this comfortable world where a fixed income will save you from an equity bear market, that world can change. I advocate tracking the high-frequency correlation of stocks and bonds and monitoring that indicator carefully.

Q: Do you have a favorite back-of-the-envelope figure for levels of liquidity that an endowment ought to maintain at an institution that is endowment-dependent?

Mr. Campbell: What you want to do is think about the liquidity reserve in two different ways. You can scale it in relation to the university's needs, or you can scale it in relation to the investment opportunities that may occur in a crisis. The first notion would be, we want to have enough liquidity so that we can keep the university running without touching any of the rest of the assets for, let's say, six months. That's an absolute minimum.

But what you also want is a notion of a liquidity reserve that is your dry powder for investment purposes when a crisis comes, because usually when there's a crisis there are some very appealing investment opportunities. Traditionally, endowments thought of themselves as well-positioned to exploit those opportunities. That's one element of the high return that you can expect to make through active management. It's not going to work if you don't have the dry powder. So you would want to scale that relative to the level of the endowment. Some say keep 10 percent in cash. I wouldn't go that far. There are alternatives to cash where you can keep your liquid money; it doesn't all have to be in cash.

Q: Is there any discussion for endowment-driven institutions to explicitly relate the liabilities side of the balance sheet to the asset side of the balance sheet, which is one of the things that seem to get divorced? Universities typically have an endowment management group and a treasury group, and they often report separately all the way up to the board. Is there a model of both sides of the balance sheet?

Mr. Campbell: There is now. During the financial crisis Harvard created a financial management committee, consisting of a mix of administrators, alumni and faculty. That committee has been succeeded more recently by a finance committee of the Harvard Corporation. Both committees have worked to develop pieces of the model. One aspect of

that is the scenario planning that I was just advocating; that is, a methodology for taking the assumed risk and return of the endowment and then simulating that and seeing what it implies for future spending power in optimistic and pessimistic scenarios.

This is an iterative process because universities don't know how risk tolerant they are until they do some planning to see how painful it would be to live with a bad scenario. You loop back and say, for example, that that risk felt like too much. Can we cut that risk? Well, not without reducing payouts, which is itself painful. So you have to consult the different constituencies that are involved and find a fixed point that everybody is the least uncomfortable with.

Q: Do you think that the Senate Finance Committee has a better understanding of university endowments today than they did in the spring of 2008, when highly endowed universities were accused of hoarding?

Mr. Campbell: Well, I don't want to make strong claims about the understanding of politicians. But certainly, seeing the massive endowment declines and the subsequent problems for universities has put that very much on the back burner for a while. For how long? I don't know. We could get back to times when universities are seen as hoarding. But I think it will take a while because the problems are so visible, and it's so clear that if we had entered the crisis with an unusually low spending rate, we would have found the crisis much easier to navigate. That's just a very straightforward point that, I think, could be used to fend off the politicians for a while.

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