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November 12, 2017

Why are University Endowments Large and Risky?

University endowments invest more than 75% of their assets in risky securities. This large allocation to risky assets, commonly called “stocks for the long run”, matches the standard investment advice provided to individual investors with long horizons. But universities are not individuals. Investment advice designed for individuals ignores universities' core mission to generate social dividends: the creation and dissemination of knowledge. When managing the endowment, university leaders must focus on the *entire* university's objective function; the endowment is not a pool of donor money to be managed with the sole goal of maximizing financial returns.

Our research develops an integrated framework where different stakeholders jointly govern the investments of the university, balancing the production of social dividends and the welfare of its members. These risky investments come in two forms: internal investments in research and teaching and external investments in the capital markets via the endowment. We show that a university with many opportunities to invest internally chooses a high spending rate to undertake these projects and maintains a relatively small endowment invested primarily in risk-free assets. A university without such opportunities behaves in an opposite manner, thereby making a large endowment heavily invested in risky assets a signal that the university faces poor-quality new projects. Constraints on endowment spending rates, such as the 7% UPMIFA rule, effectively eliminate internal investment opportunities. This constraint causes universities to accumulate large endowments invested in risky assets. Donors give to their alma mater because they want to promote social dividends that come from research and teaching, not because they value a large endowment.

The Puzzle

Describing universities as perpetual ivory towers, though often meant as a pejorative, describes well universities' special place in society as centers of learning with a distinct mission from that of businesses: create new knowledge via research as well as preserve and spread it via teaching. Alumni donate to support universities in their mission. But rather than investing internally to build the metaphorical towers higher and shine the light of learning more widely, universities and their endowments invest on average more than 75% of their assets in risky external projects, e.g., equities, hedge funds, real estate, and commodities.¹ This choice of asset allocation can be justified by the standard advice provided by models designed for individual long-term investors², but should it be? Universities are not simply individuals with a long horizon.

Following the initial success of the Yale University endowment headed by David Swensen since 1985, the practice of extensive asset allocation to alternative and other risky and illiquid investment strategies is now common in nonprofit foundations and charities.³ Such behavior, while seemingly risk-proof as markets rose, led most endowments to lose between 25% and 50% of their wealth during the recent financial crisis. In turn, spending rates of endowments were dramatically cut, leading to reduced admissions, lower student aid, hiring freezes, and halted construction across universities nationwide.⁴

Our research questions whether the endowment should be put at risk in hopes of increasing its size – maximizing the size of the endowment is not the university's goal. Risky assets lose their value in recessions, exactly when the university needs to draw upon the endowment because other sources of funding are no longer available. The harm to a university is further increased if it were expecting to use the endowment to fund new projects such as student aid, new faculty hires or laboratory construction in the near future. It is often suggested that the long-horizon nature of universities and non-profits put them in a unique position to capture the upside of risk without facing the downside. This claim has been proven to be false: universities need cash in recessions just as everyone else does. Recessions and falling endowments do not put on hold universities' true goals and objectives: producing a continual supply of research and teaching, along with equitable support for all of the university stakeholders.

The puzzling endowment management of universities is not due to their not-for-profit nature, and for-profit corporations behave in a similar way. Consider the iconic Apple Inc. It has accumulated \$250 billion of financial reserves which one can think of as roughly equivalent to a university's endowment.⁵ One would think that, while it awaits value-increasing projects to spend these reserves on, Apple would use a conservative cash management strategy, holding mainly safe and liquid fixed income and cash-like securities. However, our research documents that U.S. industrial firms do not hold "cash" on their balance sheets: 40% of their financial reserves are invested in risky assets, such as equities, mortgage-backed securities, hedge funds, corporate bonds, etc.⁶ For Apple, 45% of its entire balance sheet is invested in risky financial securities! In the same way as one can think of Apple as a taxable hedge fund (Braeburn Capital, headquartered in Nevada) that happens to make phones, Harvard is a tax-free hedge fund that happens to be have a university.

Universities seem to focus their value creation not on internal projects through expansion but instead by taking massive risks in financial markets in hopes of expanding their endowments. Temporary investments in risky external assets when good new internal projects are scarce make sense. The implicit promise is to invest internally someday in the future. But after decades of growing endowments subject to extreme volatility, that day of spending on internal projects and the corresponding transition to more safely invested endowments never seems to come.

Four Discrepancies in Current Policy

In order to provide universities with consistent endowment asset allocation and spending advice, our research focuses first and foremost on the goals, objectives and preferences of the *entire* university: either a preference for producing social dividends or maintaining a fair level of support across generations. Using these assumed objectives, we solve for the implied optimal endowment investment and payout policies. Our analysis highlights strong discrepancies between the implied policies we obtain and those we observe universities actually undertaking. These differences must be due to either universities having different objectives from those we assume or universities currently receiving poor investment advice that fails to fully account for their objectives. We highlight four common arguments for risky endowment allocations and explain their inconsistencies with our model of universities.

Financial Constraints might be one reason universities choose not to invest internally in their good projects. These financial constraints come in two forms. The most literal financial constraint is when the university does not have the cash on hand to undertake a project. Lack of cash does not seem to be the case. Most universities have endowments that could cover their entire operating expenses for several years even if all other sources of funding ceased.⁷ A second form of financial constraint might be that universities cannot bear the risk of an additional project. This constraint would be plausible were endowments invested in risk-free assets. Endowments are instead invested in very risky assets. Thus universities seem capable of bearing risks – they simply choose to take the risk in financial markets rather than through internal investing and expansion.

The Safety of Stocks in the Long Run is used to justify the risky positions of endowments.⁸ Universities do have long horizons and poor stock returns do seem to be followed by better returns on average. However, these subsequent good returns are not guaranteed and poor returns can continue for decades – look at Japan over the last decades. Universities may have long horizons but they are also particularly poor at absorbing shocks (high fixed costs and low variable costs) – shrinking is painful and difficult to reverse with the return of good times. Moreover, universities have a long horizon ONLY IF they survive.

The Low Risk Aversion of universities is an oft cited justification for their aggressive endowment investment policies. But the walls of a university, its buildings, classrooms and offices are neither risk averse nor risk loving. When a university takes on risk via the endowment, that risk is borne not by the assets of the university but by its stakeholders: students, faculty, administrators, and donors. They bear the consequences of downturns and sharp declines in equity prices and hedge fund returns.

Stakeholders are risk averse, and any risk taken in the endowment reduces the risk a university can take in its core mission of expanding research and teaching.

Sustaining the University Forever with the endowment cannot justify risky investments. If donors truly want to sustain the university at its current level, the only way to do so is by investing in as risk-free assets as possible.⁹ In contrast if donors wish the university to grow, risk in the endowment is not the best way to generate that growth if the university has good new projects available. Donations to universities have dramatically increased over the last two decades and these donations have been heavily weighted toward universities with past success in research and teaching. As a result, it seems unreasonable to view universities as solely funded out of past donations. Future donations actually represent a significant part of university funding, something administrators must take into account when considering the trade-off between internal and external investment.

Take the example of our home institution, the University of Washington.¹⁰ Rounding things up, the university's endowment is worth about \$3 billion and pays out about 5% per year, which is \$150 million. But the university at the same time raises an average of \$250 million per year in new donations. With these numbers in mind, how can one justify risking the endowment in the stock market for future generations as a means of supporting the university, as opposed to investing internally to generate a stream of future donations?

The Case for Producing Social Dividends

In our work, we define the objective function of universities as producers of social dividends.¹¹ More specifically, we model the trustees' mandate of investing an endowment that must fund internal projects, such as research and teaching. Under this mandate, trustees maximizing future cash flows face the trade-off between investing externally or internally. External investment occurs via endowment funds in the capital markets. Internal investment consists of funding current research and teaching, which will generate knowledge and future donations. While facing this trade-off, trustees must simultaneously balance the demands of a diverse set of constituents: internal stakeholders such as faculty and students versus external stakeholders such as donors, alumni, and society at large.

We show that a university with many opportunities to invest internally chooses high spending rates to undertake these projects and maintains a relatively small endowment. Because a university without such opportunities behaves in an opposite manner, a large endowment heavily invested in risky assets signals that the university faces poor-quality new projects. Similarly, observing a for-profit industrial firm holding a large pool of risky financial assets, like Apple, one infers that the firm has few good internal investment projects and is just parking money.

The quality of the new projects universities have available does vary over time. We show that, when projects are scarce, it makes sense for universities to temporarily tilt their endowments toward risky assets in financial markets as donor capital will temporarily be more productive there. When good projects arrive, universities choose to take advantage of the past growth in their endowment. They

invest internally, reducing the size of their endowment, while shifting the remaining endowment toward risk-free assets. Thus temporary risk taking in financial markets followed by large internal investment makes sense for universities, but PERMANENT investments in risky assets cannot be explained by a university with access to new productive projects.

We show that the governance structure of universities also influences the rate of internal investment and the risk-taking in financial markets. A university more controlled by altruistic stakeholders invests more internally and holds a safer endowment because those in control value the social dividends produced by universities. When altruistic stakeholders have less control, universities grow more slowly because self-interested stakeholders value their own support from the university which is diluted by growth: each student, faculty member, alumnus, and dean loses part of their claim to the university when the university grows.

Constraints on endowment spending rates, such as the 7% UPMIFA rule, effectively eliminate internal investment opportunities.¹² Having cash on hand is no longer sufficient to invest in a project. Instead a university must now have effectively twenty times the necessary cash on hand in order to invest out of the 7% allowed maximum. Although well-intentioned, this artificial constraint causes delayed or completely forgone internal investment and prompts universities to accumulate large endowments invested in risky assets to compensate. Moreover, this cap prevents universities from using their endowments as buffers against severe budget holes like the ones they experienced in 2008-2009.

The Bill & Melinda Gates Foundation, though not a university, exemplifies donors focusing on research as an investment.¹³ Cascade, the foundation's investments arm, has as a primary goal is to manage the assets to allow the foundation to spend as much as necessary to achieve its goals: cure diseases, improve public schools, etc. The foundation exists in order to create a public good and a high level of spending is expected by all the stakeholders in the foundation. Because of the somewhat random nature of the arrival rate of new projects, the goal is obviously not to deplete all the capital immediately. But the explicitly stated goal is to deplete the endowment within 50 years of Bill & Melinda Gates' death.¹⁴ The Gates' want their legacy to outlive them, but more importantly they want to make the world a better place today. Permanent good comes from the development of research today: eliminating malaria today is better than eliminating it in 500 years.

University administrators often mistakenly view faculty, students, buildings, etc., as cost centers and not as investments. This would be akin to the Gates' viewing their foundation as a cost rather than an investment. Internal university investments are obviously risky since many research agendas fail. However, it is the nature of universities and foundations to take risk internally, where the payoff can be big along two dimensions. First, in the case of the Gates Foundation, the investment is responsible for dramatically lowering the rate of malaria in Africa. And second, donors in the future will support new projects. Warren Buffett recently pledged his personal fortune to the Gates Foundation due to its record of investment and success, a gift to be spent within his lifetime.¹⁵

For universities, successful research projects such as those that help to understand AIDS, cancer or the causes of poverty prompt donors to endow centers, professorships, and scholarships to keep the

intellectual capital within their alma mater. Investing today has two clear benefits: the production of social dividends valued by donors and society as well as likely future donations. If administrators treat today's donations as the only ones they will ever receive, then that will likely be true. In contrast if administrators are willing to spend heavily when good project opportunities arrive, future donations will be more likely as donors see their money put to good use. Donors donate to their alma mater because they want to promote social dividends that come from research and teaching, not because they value a large endowment.

The Case for Maintaining Intergenerational Fairness

In our research, we also analyze the optimal endowment management policies if the university's objective function is the oft-cited mandate of maintaining intergenerational fairness.¹⁶ The Nobel Prize winning economist James Tobin wrote: "The trustees of an endowed institution are the guardians of the future against the claims of the present. Their task is to preserve equity among generations."¹⁷ Almost all institutions involved in university endowment management cite intergenerational fairness (or equity) as an important part of their mandate and preferences. Princeton University writes on its website, "It is our fiduciary responsibility to ensure intergenerational equity, whatever challenges lie ahead."

What are the implications of this fairness mandate on the university's investment policies? Some would argue that it would be unfair for the university not to invest its endowment in risky assets as it would rob future generations from a sizeable equity risk premium. However, these expected returns are not free and instead come with significant risk. We argue that investing in risky assets is unfair since it allows the current generation to consume more while transferring a gamble to the future generations.

We model the trade-off that long-lived fair universities and nonprofits face in allocating their endowments between risky and risk-free assets to provide payouts to overlapping generations of beneficiaries.¹⁸ Deterministic fairness is the unwillingness to give any generation a higher level of consumption at the expense of another. We generalize this notion to a stochastic setting, defining stochastic fairness as the unwillingness to give any generation a probabilistically higher level of consumption at the probabilistic cost to another generation.

Our analysis unambiguously shows that the preference for fairness across generations reduces an institution's willingness to bear risk. As a result, the puzzle remains: universities claim to base their investment decisions on intergenerational fairness, yet they allocate on average over 75% of their endowment to risky assets. Either universities have goals other than intergenerational fairness—despite their own claims—or they have been receiving investment advice that fails to fully account for their preferences.

Furthermore, our analysis shows that a preference for fairness prompts a university to choose a low spending rate and investments in relatively safe assets. Implicit constraints to spend a high minimum percentage annually out of the endowment actually force universities to invest in risky assets that

generate a high expected return needed to sustain the minimum payout. However, this high payout for the current generations, sustained by risky assets, comes at the cost that some future generations may end up with nothing.

Imagine that you have just read that an anti-aging drug was just discovered. Would you drive home faster or slower tonight? Potential immortality, although not invincibility, and the potentially long horizon it implies does not guarantee a higher risk-bearing capacity. Universities have the potential to exist forever, but risking the endowment for future generations means that there may not be future generations.

Implications for Other Non-Profit Institutions

Public pension plans and sovereign wealth funds face a similar dilemma. They heavily tilt their asset allocation towards riskier assets to solve under-funding problems and to meet the demands for higher payouts now without an increase in costs today. Just as for universities, this shift toward risky assets as a “solution” will lead to lower benefits for future generations when poor returns occur.

However, public pension plans are among the worst positioned to take this risk, despite their long horizons. Since they appear unable to fill their under-funding gap in good times, how do they expect to fill it in bad times? Poor asset returns come exactly at times when other sources of revenue (taxes) dwindle and demands for payments rise. Taking on financial market risk on the asset side is highly unfair to the future generations of retirees who are holding a gamble instead of a pension promise.

In general, non-profits should not avoid all risk. They must continue to take risks that support their direct mission. This risk might come in the form of opening a new homeless shelter despite currently having the cash on hand to fund it only for a few years. However, taking risk in financial markets should be minimized. Financial market risk directly limits the risk that can be taken in pursuit of their core missions, and it places an unfair burden on future generations.

Conclusion

We believe that professional investment advisors for university endowments as well as public policy that regulates and influences their investments and spending must be re-evaluated to take into account the ways in which university objectives differ from individual investors. Universities have a mandate for producing knowledge through research, spreading that knowledge through teaching and providing equitable support across all the generations of their stakeholders. Artificial constraints that mandate minimum and maximum payout rates distort the decisions of universities, pushing them toward investments in riskier financial assets rather than focusing their limited risk-bearing capacity on internal projects directly related to their mandate.

Our research shows how endowments offer a window into the internal investment opportunities and structure of universities. Small and safe endowments indicate universities with many good internal investment opportunities that invest heavily in these opportunities. Permanently large and risky endowments indicate universities without access to new projects or universities that are not focused on their stakeholders' wishes of producing more social dividends.

Unconstrained universities may temporarily choose to build their endowment via risky investments in financial markets. But they then choose to spend heavily out of their endowment to fund good projects when they arrive. Following this spending, universities choose safer assets to support their projects until they start yielding donations. Donors donate to their alma mater in order to support these projects, not to provide capital to the for-profit corporations that are part of the S&P 500 Index, which happens when endowments are invested in risky assets.

Artificial constraints can obscure this window, meaning universities with access to projects may invest their endowments in risky assets because constraints prohibit them from taking their internal projects. Though well intentioned, these constraints lead to the unintended outcome of universities destroying value by taking unnecessary risks in the financial markets in order to undo the constraints.

Notes:

¹ “Secrets of the academy: The drivers of university endowment success” by J. Lerner, A. Schoar, and J. Wang, *Journal of Economic Perspectives*, 2 (3), 207-222, 2008.

² “Strategic asset allocation - Portfolio choice for long-term investors” by J. Campbell and L. Viceira, Oxford University Press, Oxford, U.K., 2002.

³ “Pioneering Portfolio Management - An unconventional approach to institutional investment” by D. Swensen, Free Press, New York, NY, 2009.

⁴ “How university endowments respond to financial market shocks: Evidence and Implications” by J. Brown, S. Dimmock, J-K. Kang, and S. Weisbenner, *American Economic Review*, 104 (3), 931-962, 2014.

⁵ <http://investor.apple.com>

⁶ “Precautionary savings with risky assets: When cash is not cash” by R. Duchin, T. Gilbert, J. Harford, and C. Hrdlicka, *Journal of Finance*, 72 (2), 793-852, 2017.

⁷ “The governance of university endowments: Insights from a TIAA-CREF Institute survey” by J. Brown, S. Dimmock, J-K. Kang, D. Richardson, and S. Weisbenner, *TIAA-CREF Institute Research Dialogue*, 102, July 2011.

⁸ “Stocks for the long-run: The definitive guide to financial market returns & long-term investment strategies” by J. Siegel, McGraw-Hill, New York, NY, 2008.

⁹ Inflation is often cited as a reason to take risks in the endowment. However many researchers have shown conclusively that taking on risk does not solve the problem of inflation. Equities and most other risky assets universities invest in are not hedges for inflation since their prices actually fall in times of inflation.

¹⁰ <http://f2.washington.edu/treasury/>

¹¹ “Why are university endowments large and risky?” by T. Gilbert and C. Hrdlicka, *Review of Financial Studies*, 28 (9), 2643-2686, 2015.

¹² <http://uniformlaws.org/Act.aspx?title=Prudent%20Management%20of%20Institutional%20Funds%20Act>
UPMIFA was enacted in 49 states between 2007 and 2012. Its predecessor, UMIFA, which was enacted in 1975 by 47 states, also contained maximum payout caps. Pennsylvania passed a law that also contains maximum spending limits.

¹³ <http://www.gatesfoundation.org/about/pages/gates-foundation-asset-trust.aspx>

¹⁴ Adam Meyerson, president of the Philanthropy Roundtable, wrote in the *Wall Street Journal* on 3/10-11/2012 (A13) about the trend in giving-now rather than giving-later-forever: “When a foundation is set up to dribble out its funds in perpetuity, there is a high risk it will eventually drift into projects the donor did not believe in. Recognizing this, Mr. Feeney has insisted on giving away money fast to do good now.”

¹⁵ <http://money.cnn.com/2006/06/25/magazines/fortune/charity1.fortune/>

¹⁶ “Leaders’ preferences for fairness and risk-sharing across generations” by T. Gilbert and C. Hrdlicka, *University of Washington Working Paper*, 2015.

¹⁷ “What is permanent endowment income?” by J. Tobin, *American Economic Review*, 64 (2), 427-432, 1974.

¹⁸ Our model explicitly takes into account the empirical regularity in stock returns (mean reversion) commonly known for making stocks appear safer in the long-run.