

PELESTARIAN INSTITUSI WAKAF

**Memperkasa Pendidikan
Tinggi Negara**



disunting oleh
Wan Kamal Mujani

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Ketua Program LRGs Wakaf
LRGS/2013/UKM-UKM/SI

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Investment of Endowment Fund in Higher Education: Best Practice, Performance and Issues

QURROH AYUNIYAH, NAZROL KAMIL MUSTAFFA KAMIL
& MOHAMED ASLAM HANEEF

Abstract

Purpose – The role of endowment funds in higher education across countries in last decades has been important as one of the major funding sources to finance academic activities. Many well-known universities in the world have implemented different strategies for investment management of endowment funds in order to achieve their long-term objectives. The main purposes of this paper are to perform an analysis of conventional endowment funds of higher education and to articulate some benchmarks or best practices related to the financial management of endowment funds. Besides, the paper identifies some unique issues or challenges faced by endowment funds. **Design/Methodology/Approach** – The study evaluates the current practices of conventional endowment funds management of universities based on secondary sources of information, including published reports, journal papers, articles and books. **Findings** – The model of endowment fund investment differs from one university to another. The paper reviews the current practices and strategies of the largest universities' endowment fund investment activities. **Originality/value** – By providing a general review in the conventional endowment funds of higher education, it is expected to have valuable input, which delivers lessons to be learned for contemporary waqf institutions and Islamic third sector. However, the main issue is comparability, where the majority of conventional endowment fund is invested in form of financial assets, while waqf is mostly in the form of real assets, but there is similarity in nature between endowment and waqf funds.

Keywords: Investment; Endowment Funds; Higher Education

Introduction

Endowment fund in the higher education has become one of major sources of funding for scholarships, professorships, academic programs, scientific researches, and other operational activities in the universities. In many cases, a significant portion of universities' operating budget is financed through endowment fund besides government grants and contracts, student tuition and fees, nongovernment grants, health care income, gifts from alumni, parents, and friends, and many more.

For instance, as the largest university endowment fund in the US and Canada according to the National Association of College and University Business Officers and Commonfund Institute (2013), Harvard University covered its operating expenses by 36 percent from the endowment fund, while the proportion of student income, sponsored support, gifts for current use, and others in the fiscal sources operating revenue are only 19 percent 20 percent, 8 percent, and 7 percent respectively (Harvard Financial Report 2013). Besides, in fiscal year 2013, the endowment of the University of Yale also provided the largest portion of the University's operating income, which valued at \$1.02 billion, or 34 percent (The Yale Endowment 2013). Additionally, in the same fiscal year, endowment payout financed roughly 23 percent of Stanford University's operating expenditures (Stanford Endowment Report 2012-2013). Such figures indicate the importance of endowment fund as one of operating revenue sources in the higher education.

The unique nature of endowment fund is the need to preserve the principal amount in the long-term. In this case, the principal is invested and only a portion of the investment earnings is spent, while the remaining incomes are reinvested back into the fund. As a result, the endowment fund grows over time, which finally emerges as a long-term source of funding (Management of Endowment Pool of University of Illinois Foundation Report 2013).

In this regard, different universities shall apply some different strategies in order to achieve endowment funds investment goals that are in line with their institutions' objectives. For example, Harvard Management Company (HMC) has aspiration to realize strong and sustainable long-term investment returns in support of their outstanding institution by employing hybrid model. This model engages a mix of internal and external investment management teams that focus on specific investment areas (Harvard Management Company Endowment Report, September 2013). Moreover, Yale model seeks to meet its investment goals through prudent asset allocation and astute manager selection (Yale Endowment Report 2012).

On the other hand, the idea of endowment fund is similar with the concept of waqf in Islam, which according to Kahf (2002) is an act of holding certain property and preserving it for the confined benefit of certain philanthropy, and prohibiting any use or disposition of it outside that specific objective. Waqf assets can be in the form of real as well as financial assets that can be used for

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many purposes. Accordingly, not only for the religious purposes, waqf lands have been used also for the education sector development. Among the prominent educational institutions that were founded and maintained using waqf lands are the Al-Azhar University in Egypt, University of Cordova in Spain and Universitas Islam Indonesia in Jogjakarta, Indonesia (Zaki et al 2008).

Having said that there exists substantial position of endowment funds for the higher education, there is a need for more studies about current practices of conventional endowment funds investment and how they have performed in order to provide useful benchmark for the contemporary waqf institutions in managing their funds due to their similarity in nature. Therefore, the paper attempts to answer some basic research questions: What are some best practices in investment of endowment funds? What has been the performance of endowment funds? Do endowment funds face any unique issues in their investment activities? These are the issues that shall be addressed in the paper.

The paper comprises seven sections including introduction at the first one. The second section is methodology followed by some analysis of the previous empirical studies related to the determinant of endowment fund's performances. Section four explains the analysis of the best practices in the investment activities of endowment funds. Section five provides analysis of the performances of investment model of the endowment funds in the higher education. The following section elucidates some unique issues faced by the endowment funds. Last section concludes the paper.

Methodology

Methodology is a general approach to conduct a particular research topic. In this regard, it is a system of explicit rules and procedures upon which research is based and against which claims knowledge are comprehensively evaluated (Imaduddin 2006).

The present study extracts from secondary sources of the literature and aimed to analyze some best practices in investment of endowment funds and how they have performed so far in general. Some worldwide universities have been selected as the main focus of the study. The study uses secondary data obtained from the annual published reports of selected universities. Besides, various journal papers, books, and articles have been referred for the purpose achievement of the current paper. The study does not test any hypothesis. It provides comparative analysis related to the conventional endowment funds investment in the higher education.

Determinant Factors of Endowment Performance

Endowment fund refers to assets that are invested for the long term and intended to provide a permanent source of financial support for the institution,

which is in contrast to expendable funds that are typically used for immediate needs (Stanford Endowment Report 2012-2013). They are usually used by the nonprofit organizations including universities, hospitals, religious institutions, and other similar institutes. As stated earlier, the endowment fund is usually structured in which the principal amount is kept intact and only the return from the investment activities can be spent. As the implication, the endowment fund is aimed to have effect over a longer period.

Theoretically, there are several factors that determine the success of the investment of endowment funds, such as asset allocation, asset classes, active-passive strategies, risk management, liquidity management, and spending rate. The following parts explain some empirical studies that analyze those particular factors.

Asset Allocation

Brinson and Beebower (1986) find the determinants of long-term return variability are asset allocation, market timing, security selection, and unexplained factor. Among the four factors, asset allocation gives the largest portion by 91.5 percent while the remaining three are only 1.8 percent, 4.6 percent, and 2.1 percent respectively. The study is also confirmed by Winkelman (2014), which shows that the major contributor to portfolio performance is the overall asset allocation, which gives proportion more than 90 percent.

Brown et al (2010) study the relationship between asset allocation and performance in multiple asset class portfolios, by taking case study of 700 public and private university endowment funds in the US, Canada, and Puerto Rico. It employs cross sectional and time series data from 1984 to 2005. The study shows that asset allocation appears as the main determinant of return level and variation in the time series data. This indicates the average endowment manager follows a much less passive investment strategy. This generates implications for the role of active management in the performance of university endowments, i.e. the largely invariant sample-wide level of passive risk that are documented implies that endowments target a common level of volatility for their policy portfolio, ending up with very similar passive returns.

By using data on asset allocation of university endowments is the set of National Association of College and University Business Officers (NACUBO) Endowment Studies, Knels (2011) finds the alternative asset allocation offers further opportunities for better return-risk portfolio profile, and it was a good decision to allocate capital to these asset classes. However, the power of this asset allocation should not be exaggerated and it may not necessarily last forever. Universal cookbook for superior performance seems to be the skills and knowledge rather than the only asset allocation.

Besides, Knels shows the alternative asset classes may improve the return-risk profile of the portfolio even in the case of smaller endowments, which

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To study the asset allocation decision in a Bayesian framework, Ang et al (2013) find that the shift of asset allocation to riskier asset classes done by ten well-known university endowments produces higher return. This shows the typical endowment expects these asset classes to generate returns in excess of a benchmark adjusted for systematic risk exposure.

Active-Passive Decision

Brown et al (2010) investigates how endowments that rely more on security selection (active endowments) fare in comparison to endowments that rely more on asset allocation (passive endowments). This shows that active endowments significantly out-perform passive one, despite the facts that as a group, university endowments do not seem to produce significant risk-adjusted returns. Although the average endowment does not produce any significant risk-adjusted performance, more actively managed funds have alphas that are between 3 percent and 6 percent greater than those for more passive endowments. It is not the returns to a few selected market segments (e.g. active assets) that drive the performance of these institutions, but security selection as a whole across the entire asset class universe that is the key determinant of an endowment's overall success.

Brown and Tiu (2010) suggest that the active and passive decision in the portfolio management is more likely related to the risk management of the endowment funds. They explain that asset classes can be driven by three different decisions that its manager makes: first, the strategic asset allocation (policy) decision (passive element of a fund manager's decision-making process), second, the tactical asset allocation (market timing) decision (active components), and third, the security selection decision (active components).

The study shows three major findings. Firstly, the average endowment had too little active risk exposure in its portfolio. Secondly, endowment funds could have significantly increased their risk-adjusted performance by enhancing the scale of the alpha-generating strategies they were already employing. Thirdly, this tendency to underutilize active management skills was more pronounced for larger endowments than for smaller ones.

Risk Management

Martin (2011) highlights the importance about endowment risk management, which includes investment risk, operational risk, and regulation. Moreover, Black (2013) finds that endowment and foundation investors need to consider risks to inflation, liquidity, and extreme market events.

Aebi *et al* (2011) find that banks, in which the CRO directly reports to the board of directors and not to the CEO (or other corporate entities), exhibit significantly higher (i.e., less negative) stock returns and ROE during the crisis. In contrast, standard corporate governance variables are mostly insignificantly or even negatively related to the banks' performance during the crisis.

Spending Policy

The spending rule has a strong position in the endowment fund management, as it defines institution's negotiation of the trade off between current organizational need to be fulfilled with the endowment assets preservation in the long run. Therefore, the spending policy has to be well defined and regularly implemented in order to satisfy both short and long term objectives (Yale Endowment 2013).

Wolgom (2003) advises university financial planners that a spending rate must be based on an estimate of the expected rate of return on the endowment. When the expected rate of return changes, the spending rate must also change in the same direction, and this is true in general, as well as the Tobin special case. The spending rates should fall in the face of such unexpected gains to the endowment.

By using data of more than 800 and university endowment funds from 2003 until 2011, Brown and Tiu (2012) find that on average, half of the samples revised their spending rules at least once and about a quarter of the universities changed their spending policies each year. The study also shows that the changes in the spending rule tend to lead the changes in the asset allocation.

Liquidity Management

Biety (2003) explains that liquidity refers to the ability of an institution to meet demands for funds. Liquidity management means ensuring that the institution maintains sufficient cash and liquid assets (1) to satisfy client demand for loans and savings withdrawals, and (2) to pay the institution's expenses.

Wang (2002) examines the relationship between liquidity management and operating performance, and that between liquidity management and corporate value for firms in Japan and Taiwan. The findings suggest that aggressive liquidity management enhances operating performance and is usually associated with higher corporate values for both countries in spite of differences in structural characteristics or in financial system of a firm.

Cornett *et al* (2011) study how banks managed the liquidity shock during the 2007-2009 financial crisis. They conclude that efforts to manage the liquidity crisis by banks led to a decline in credit supply. Chung *et al* (2009) investigate the relationship between earnings management and equity liquidity. The empirical results conclude that companies with higher earnings management suffer lower equity liquidity.

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Best Practices in the Investment Activities of Endowment Fund in the Higher Education

To study the best practices in the investment activities of universities' endowment funds and its performances, the study has selected several universities that are listed in the top forty of largest endowment fund in the US and Canada according to the National Association of College and University Business Officers and Commonfund Institute (2013). The universities that become our main focus are Harvard University, Yale University, Stanford University, Princeton University, Stanford University, Massachusetts Institute of Technology, Columbia University, University of Pennsylvania, University of Chicago, California Institute of Technology, and University of Illinois & Foundation. Besides, the paper has also selected top universities in the UK and Singapore including Cambridge University, Imperial College London, University of Oxford, Edinburgh University, and National University of Singapore.

The analysis is based on the five determinant factors of endowment performances including asset allocation and asset classes, active-passive decision, risk management, spending policy, and liquidity management. The summary of investment model in the selected universities is presented in the Table 1.

Asset Allocation and Asset Classes

Among selected universities, the endowment assets are diversified into various asset classes. However, majority of the universities allocate its endowment assets primarily to the equities include public equity, private equity, US equity, and international equity. Some of them also allocate to real assets, real estate, alternative security, absolute return, stock, and bonds.

For instance, Harvard's endowment remains widely diversified. The asset allocations majority in fiscal year 2013 disbursed into public equities by 16.3 percent. Other assets include absolute return, private equities, real assets, and fixed income gave proportion to the asset allocations by 13.2 percent, 11 percent, 7 percent, and 3.3 percent respectively. The market expanded not only to the US, European, and other developed foreign market like Japan, but also target to the emerging markets like Brazil, India, and China (Harvard Management Company Report 2013).

For the case of Yale University, the combination between quantitative and qualitative measurement generates following asset classes in the fiscal year 2013 including absolute return (17.8 percent), domestic equity (5.9 percent), fixed income (4.9 percent), foreign equity (9.8 percent), natural resources (7.9 percent), private equity (32 percent), real estate (20.2 percent), and cash (1.6

percent). In this case, private equity and real estate gave the largest contribution to the University's asset allocations (Yale Endowment 2013).

Similarly, the endowment fund of Massachusetts Institute of Technology is primarily allocated on the private equity and real estates. The remaining is distributed to domestic bond, foreign bond, common equity, absolute return, domestic equity, foreign equity, real assets, split interest agreement, and others (Massachusetts Institute of Technology Report of the Treasurer 2012).

Moreover, in the fiscal year 2013, according to the Stanford's Endowment Report (2012-2013), the majority of assets were distributed to the public equity, private equity, and absolute return by 25 percent, 23 percent, and 22 percent of the total allocation respectively. Other allocations were disbursed to natural resources, real estate, and fixed income, which gave proportion to the total asset classes by 12 percent, 8 percent, and 10 percent respectively.

With regard to the asset classes in the Princeton University, the majority of endowment fund is allocated to independent return by 24 percent, while the remaining was diversified into several classes namely real asset (23 percent), private equity (23 percent), fixed income and cash (5 percent), domestic equity (8 percent), international equity-developed (6 percent), and international equity-emerging (11 percent). However, the large overweight in private equity is unplanned and therefore it needs to be reviewed (Princeton University Report of the Treasure 2012-2013).

Furthermore, the Columbia University diversified its asset into several classes include global equity, private equity, absolute return strategy funds, real assets, and fixed income. The absolute return strategy funds gave the largest allocation of the total assets classes by 32 percent, followed by global equity by 26 percent and private equity by 20 percent. The real assets and fixed income contributed 18 and 4 percent respectively of the total allocation (The Columbia Endowment Fiscal Year 2013).

In the university of Pennsylvania, the endowment assets classes are allocated into US equities (19.1 percent), international equities (18.1 percent), emerging markets (5.7 percent), absolute return (28.9 percent), private equity (8.6 percent), real estate (5.8 percent), natural resources (3.8 percent), high yield (0.4 percent), and fixed income (9.6 percent) (University of Pennsylvania Annual Financial Report 2012-2013). On the other hand, the University of Chicago allocates its endowment assets to global stocks and bonds, real estate, natural resources, private equities, absolute return strategies, and protection (tail hedging strategies) (The University of Chicago Financial Statement and Supplemental University Information 2011-2012).

Furthermore, California Institute of Technology (Caltech) diversified its endowment assets into several classes, namely US equities, international developed-market equities, emerging markets equities, alternative securities, private equities and venture capital, real assets, fixed income, and cash and other. Among those, the largest portion of the total asset allocation stem from alternative securities by 30 percent followed by real assets by 18 percent. The

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remaining allocation including US equities, international developed-market equities, emerging markets equities, private equities and venture capital, fixed income, and cash and other contributed 12 percent, 11 percent, 11 percent, 10 percent, 3 percent, and 5 percent respectively (California Institute of Technology Endowment Report Fiscal Year 2012).

In the fiscal year 2013, the endowment assets of University of Illinois were largely allocated into three major classes, namely alternatives market by 52 percent, global equity by 38 percent, and global fixed income by 10 percent. Firstly, the alternatives market comprises absolute return (15 percent), hedge equity (15 percent), private equity (10 percent), and real assets (12 percent). Secondly, the global equity consists of US Equity (18 percent), Non-US Equity (12 percent), and Non-US Equity Emerging (8 percent). Lastly, global fixed income includes credit (2 percent), inflation-protected bond (4 percent), and sovereign bond (4 percent) (Management of Endowment Pool of University of Illinois Foundation Report 2013).

For the case of Cambridge University, over the course of 2013, the Endowment fund has been predominantly allocated to the public equity by 65 percent. The remaining 35 percent has been allocated to the private investment (9 percent), absolute return (13 percent), credit (3 percent), real assets (9 percent), and fixed interest/cash (1 percent). The dominant allocation on public equity is a consequence of the long-term return objective of the fund (Cambridge University Endowment Fund Report and Financial Statement 2013).

Besides, in the Imperial College London, the endowment funds have been distributed to the UK equities, international equities, absolute return investments, fixed stock, hedge funds, commodities, associate property partnerships, investment property, investment income receivable cash and income with investment managers, and short term investments or cash. The majority the asset is apportioned in the international equities (Imperial College London Annual Reports and Account 2012-2013). On the other side, the endowment funds in the Edinburgh University were allocated to several asset classes includes equities, bonds, and property (Edinburgh Endowment Fund Report 2012-2013).

Finally, the majority of National University of Singapore's endowment is apportioned to the public equity by 35 percent. The remaining assets were diversified to the marketable alternative assets by 20 percent, non-marketable alternative assets by 12.5 percent, inflation hedges 12.5 percent, and fixed income or global bonds by 20 percent (The National University Society Annual Report 2013).

Active-Passive Decision

The decision of active and passive investment management depends on the universities' investment objectives and strategies. According to the Table 1, there are five universities that actively manage their investment and

portfolio management including Harvard University, Yale University, Stanford University, Princeton University, and Columbia University. On the other hand, only two universities have passive investment management including MIT University and Cambridge University.

In the case of Cambridge, the investment parameter used within each asset classes is day trading of which the fund manager carries out the day-to-day investment transaction. The passive investment and portfolio management, such as index funds and futures, is employed for the purpose of flexibility and transitionally.

The fact shows that majority of the university under the current study case decide to have active investment management. Nevertheless, the remaining universities do not clearly identify their decisions in the report.

Risk Management

Commonly, the universities diversify its asset allocation not only to generate more income on their investment, but also to manage the portfolio risk. Furthermore, to achieve their risk management objectives, some of the universities expand its endowment funds to emerging and international market, besides to the developed market.

For instance, in Caltech University, the asset allocation policy for the endowment investment portfolio highlights diversification across geographies and asset classes. This aims to attain sustainable investment performance whilst avoiding concentrated risk in any single asset class, geography, or investment style that could subject the portfolio to outsized volatility. Similarly, the Princeton University has also expanded its endowment fund into international investment, which is believed to be a crucial part of multi-asset class approach. By investing in the international market, it is projected to raise long-term expected return whilst managing portfolio risk. Harvard, Yale, and Stanford Universities also perform the wide diversifications of asset classes in order to manage their risks.

Correspondingly, Edinburgh has diversified its investment markets to not only developed markets like US, UK, and Japan, but also emerging market such as China. Besides, during 2012 until 2013, the Investment Committee has aspired broader manager and asset diversifications, therefore four external managers are pointed to manage the endowment funds and new investment in property (Hermes Property Unit Trust and Deaconess Student Accommodation) has been allocated.

Furthermore, the universities also have some policies to manage, measure, and monitor their risks by considering some risks include treasury risk, liquidity risk, exchange rate risk, credit and counterparty risks, and many more. For example, the National University of Singapore has established the Society's risk management policies in order to identify and analyze the risks faced by the Society. Besides, it aspires to set appropriate risk limits and controls and

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Besides, as for Pennsylvania University, the investment is exposed to a variety of risks, including market, credit and liquidity risks and attempts to identify, measure and monitor risk through various mechanisms including risk management strategies and credit policies.

Additionally, Oxford University implements some policies in order to manage treasury risks, which comprises liquidity risk, exchange rate risk and credit and counterparty risk. These policies are contained in the Treasury Management Code of Practice prepared in accordance with HEFCE and CIPFA guidelines and annually reviewed by the Finance Committee.

In the case of Cambridge, the principal risks and the directors' approach to managing them are set out below under the following headings including market risk, liquidity risk, and credit risk. The market risk comprises currency risk, interest rate risk, and other price risk.

With regard to the selection of suitable level of risk, the investment office of Chicago University establishes a Total Enterprise Asset Management (TEAM), which takes some internal factors such as growth objectives and debt ratios into their considerations. Besides, the University employs two types risk measurement in the portfolio, namely primary and secondary measurement. The former refers to the Global Equity Factor (GEF), a metric that is similar in concept to beta, while the latter is the amount of private investments that should be targeted.

Spending Policy

In the current case study, the spending rate allowed by the selected universities lied between 4 to 5.8 percent of the total market value of the endowment fund. To come up with such value, every university has its own way to determine it. Generally, the main consideration of having certain point of spending rate is the University has to be able to preserve the long-term endowment fund value.

For instance, MIT regulates its spending rate from the asset at least equal to annual inflation on investment pool value at the beginning of that year, which has to allow assets preservation for reinvestment. In the fiscal 2012, the distribution rate on endowed funds was 4.9 percent, or 5.4 percent on a three-year-average basis. Similarly, the Oxford University has targeted a spending rate of 4 percent, which is designed to fund possible expenditure without reducing its real value.

Likewise, Columbia University sets its spending rate by multiplying the beginning market value by the annual spending rate. In fiscal year 2013, the effective spending rate was 5.2 percent, with actual distributions from the endowment of \$396.4 million. Besides, Yale incorporates the previous year's

spending to plan for its operating budget needs as well as modifies its spending toward the long-term target spending level in order to provide purchasing power stability in the long run.

Moreover, Princeton targets annual spending rates between 4 to 5.75 percent. This policy is employed to enable the endowment to be reinvested to achieve perpetual purchasing power after being spent for the University's operating needs. In fiscal 2013, the Endowment spending distribution, in aggregate, equaled \$778 million. Spending per Endowment unit equated to 4.7 percent of market value at the start of fiscal 2013.

For the case of University of Pennsylvania, in the fiscal year 2013, the spending policy target payout was based on the sum of two aspects. First, 70 percent of the previous fiscal year distribution was corrected by an inflation factor. Second, 30 percent of the lagged fiscal year-end fair value of the AIF, multiplied by 6.5 percent for financial aid funds and 4.7 percent for all other funds. The 22.2 percent of student aids are covered by endowment income. Over the past five years, financial aid from the endowment has increased by 152.4 percent and aid from operating funds has increased by 61.3 percent.

As for Chicago University, the spending rate is within the range of 4.5 to 5.5 percent of a 12-quarter average market value, lagged one year. The flexibility of this rate aims to allow them to lower the rate of spending during periods of market appreciation and to increase it during periods of decline. It has the added benefit of mitigating the payout from sudden swings or shocks in the financial markets.

Due to its main objective to fulfill current spending as well as preserve purchasing power real value in the long-term, the Illinois University has set the required return of its endowment assets equal to the sum of rate of purchasing power loss and the spending rate. Therefore, the spending rate is determined based on the required return and the rate of purchasing power loss. In 2013, the spending rate lied at 5.8 percent.

With regard to the Edinburgh's spending policy, the endowment funds are mainly used to support scholarship and bursaries' program, academic chairs and professorships, and building works. The 98 percent of the total endowment is restricted in the usage purpose and 36 percent of it requires the permanent capital preservation.

Liquidity Management

With regard to the liquidity management, the universities set certain amount of its assets to meet their liquidity need in various ways. For instance, Yale University manages to have its assets in illiquid form such as private equity, real estate, and natural resources, due to its belief that this form of assets offers more potential opportunity to generate more revenue.

However, Yale manages the prudent liquidity management as well as keeps a rational proportion of liquid assets by having substantial internal and

external sources pay interest, st reserves that pr equity partnersh satisfy capital attractive invest financing activit

Similarly cash, cash equiva This is due to t private investme ability to withdra that may be with discretion as to w real estate funds. Other means of Princeton attempt independent return liquidity.

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Table 1. Investme

Name of University	Asset Classes (Major)
Harvard	Public equity (16.3%)
Yale	Private equity (32%), Real esta (20%)

external sources of liquidity at its disposal. The liquidity sources include bonds pay interest, stocks, pay dividends, real estate that produces rents, energy reserves that provide both returns on capital and returns of capital, and private equity partnerships. This is crucial to support current University operations, satisfy capital commitments to investment partnerships, take advantage of attractive investment opportunities, and provide support for the University's financing activities.

Similarly, MIT also manages various sources of liquid assets such as cash, cash equivalents, marketable debt and equity securities, and lines of credit. This is due to the fact that certain investments in real estate, equities, and private investments may be subject to some restrictions. Firstly, limit MIT's ability to withdraw capital after such investment. Secondly, limit the amount that may be withdrawn as of a given redemption date. In this case, MIT has no discretion as to withdrawal with respect to its investment in private equity and real estate funds. Therefore, the presence of liquid assets becomes important. Other means of managing the liquidity is done in the Princeton University. Princeton attempts to diversify its asset classes by shifting exposure from independent return to other marketable equity categories in order to improve the liquidity.

In case of Caltech University, there are three main reasons of the importance of liquidity. First, the obligation that endowment portfolio has must be satisfied in the short run. Second, without liquidity, there are some investment opportunities that cannot be exploited. Third, in the economic downturn, there is need for cash. Therefore, Caltech manages the liquidity by setting up certain percentage of its asset that can be changed into cash under normal or abnormal circumstances within certain period of time. In this case, the Caltech's endowment portfolio is quite liquid with nearly 30 percent of the assets currently convertible to cash within one to two weeks under normal circumstances, and nearly 40 percent convertible to cash within a calendar quarter under normal circumstances.

Table 1. Investment Model of the Endowment Funds in the Higher Education

Name of University	Asset Classes (Majority)	Active-Passive Decision	Risk Management	Spending Policy	Liquidity Management
Harvard	Public equity (16.3%)	Active	By expanding its endowment fund into emerging-market investment.	(-)*	(-)*
Yale	Private equity (32%), Real estate (20%)	Active	Reformed its portfolio target to nontraditional asset classes.	5.25%	Assets are in the form of illiquid. But keep a rational proportion for liquid asset.

Stanford	Public equity (25%)	Active	Diversifies its asset allocation.	5.5%	(-)*	
Princeton	Independent return (24%), Real asset (23%), Private equity (23%)	Active	By expanding its endowment fund into international investment.	4-5.75%	By shifting exposure from independent return to other marketable equity categories in order to improve the liquidity.	Edinburgh
MIT	Private equity, Real estate	Passive	Diversifies its assets allocation.	4.9-5.4%	Have various sources of liquidity at its disposal.	NUS
Columbia	Absolute return (32%)	Active	Diversifies its assets allocation.	5.2%	(-)*	
Pennsylvania	US equity (19.1%), International equity (18.3%)	(-)*	Identify, measure and monitor risk through risk management strategies and credit policies.	The spending policy target payout was based on the sum of 70% of the previous fiscal year distribution and 30% of the lagged fiscal year-end.	Continues a conservative liquidity profile and can meet these commitments.	(-)* indicates
Chicago	Global stocks and bonds.	(-)*	Considers the economic risks borne by the University to select accepted risk level.	4.5-5.5%	(-)*	
Caltech	Alternative security (30%)	(-)*	Diversifies its assets allocation.	(-)*	Nearly 30% of the assets convertible to cash within one to two weeks under normal circumstances	
Illinois	US equity (18%)	(-)*	(-)*	5.8%	(-)*	
Cambridge	Public equity (65%)	Passive	The risk is set out below market, liquidity, and credit risks.	(-)*	(-)*	
ICL	International Equity	(-)*	(-)*	(-)*	(-)*	

The economic fund containing endowment by its pre-crisis portfolio assets including has produced growth the last five years benchmark.

In the fiscal thousands with approximately \$29,907,024 the put Harvard as the benchmark, Global annual return on the average annual period, the end percent over the 2013).

Oxford	(-)*	(-)*	Implements some policies to manage treasury risks (liquidity, exchange rate, and credit and counterparty risks).	4%	(-)*
Edinburgh	Equity, Bond, Property	(-)*	(-)*	98% is restricted in the usage purpose and 36% requires perpetuity.	(-)*
NUS	Public equity (35%)	(-)*	Society's risk management policy.	(-)*	(-)*

(-)* indicates that the information is not available.

The Performance of Endowment Funds Investment in the Higher Education

Harvard University

The economic downturn of 2008 until 2009 has exposed Harvard endowment fund containing a lot of illiquid investments. This results the decline of the endowment by 27.3 percent, which until present time, it has not gotten back to its pre-crisis peak of \$36,900,000 thousands. However, by improving liquidity assets including allocating greater direct real-estate investment, the investment has produced good outcomes. The returns increased by 1.7 percent annually in the last five years ended in June 2013, larger than its policy portfolio benchmark.

In the fiscal year 2013, Harvard's endowment funds valued at \$31,778,186 thousands with the return on the fund was 11.3 percent. This figure grows approximately by 6.25 percent from the previous fiscal year, which valued at \$29,907,024 thousands (Harvard Financial Report Fiscal Year 2013). This fact put Harvard as the largest university endowment fund in the country.

Regarding market benchmarks employed, Harvard uses policy portfolio benchmark, Global 60/40, and US 60/40. Over the last three years, the average annual return on the Harvard endowment has been 10.5 percent, compared with the average annual return on the Policy Portfolio of 9.1 percent. In the longer period, the endowment has returned 9.4 percent over the last ten years and 12 percent over the last twenty years (Harvard Management Company Report 2013).

Yale University

The financial crisis has given many lessons in the Yale model. In 2009, the crisis caused a sharp decline in the Endowment by 24.6 percent, which drifted peer returns as well as US equity and treasury portfolio returns by -22 percent and -13.2 percent respectively. However, due to Yale's focus more on the longer horizon investment, as market rebounded, Yale's equity positions generated outsized returns. This shows that Yale strategy to have equity orientation and active management approach excels during the crisis. This is indicated by in the nine of the past ten years, the University's ten-year annual returns of 11 percent placed the first rank in the Cambridge Associates universe (Yale Endowment 2013).

Presently, Yale's endowment produced 12.5 percent return in fiscal 2013, which generates an investment outcome of \$2.29 billion. The endowment value in 2013 grows over six times greater than of its previous ten years. Furthermore, the annual rate of spending has risen by roughly 8 percent during the last decade. This results larger contribution from the Endowment by 4 percent in the total revenues, where in 2003 and 2013 the portion of Endowment fund was 30 percent and 34 percent respectively. In the following year, it is expected that Endowment will give portion by 35 percent of the University's total income.

With regard to the market benchmark, Yale employs active and passive benchmarks for its asset class performance, while for its investment performance Yale use Mean of Broad Universe of Colleges and Universities benchmark. Since 2003, Yale's long-term investment and asset classes' performance have been excellent. Over ten years, Yale has added \$7.19 billion relative to its composite benchmark and \$7.01 billion relative to the average return of a broad universe of college and university endowments. At the same time, almost every asset classes outperformed its benchmark levels.

Stanford University

In the fiscal year of 2013, the University's endowment assets amounted at \$21.9 billion, with the annual growth rate of 10 percent over the past ten years. Moreover, the investment gain was 12.2 percent (Stanford Management Company Report 2013).

With regard to the Merged Pool return as compared with the composite benchmarks that Stanford employed, Stanford MP's performance was slightly better in 2013. In the one-year return, the MP returns were 12.2 percent, while its benchmark was 11.2 percent and ACWI IMI Net (AGG 60/40) was 9.7 percent. In the three-year return, the MP performed similarly with its benchmark, which returns were 11.5 percent, but lead the ACWI IMI Net (AGG 60/40), which was at 9.2 percent.

As for the individual business unit performance, the majority of asset classes performed better than SMC Board approved benchmarks in the one-year

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as well as ten-year returns. Only real estate's return fell behind its benchmark, where in the one-year return, the real estate gave return at 12.1 percent while its benchmark was at 12.3 percent. In the ten-year return, the real estate was 6.1 percent in return, while its benchmark was 9.9 percent.

Princeton University

In the fiscal year 2013, which ended on 30 June, the University's endowment amounted at \$18.2 billion. The value grew positively by 11.7 percent from the previous fiscal year (Princeton University Report of the Treasure 2012-2013).

The University uses both primary and secondary benchmarks. The former is the Policy Portfolio Index (PPI), while the latter is the 65/35 blends of the S&P 500 and the Barclays Government/Credit Bond Index. In 2013, the University's investment return led its primary benchmark by 1.8 percent, but below its secondary benchmark that stood at 13.2 percent.

Moreover, in the same fiscal year, the University had an operating surplus of \$121 million, or 8.2 percent of total operating incomes. This achievement was obtained mainly through prudent management of operating expenses, as well as careful stewardship of the University's resources.

Massachusetts Institute of Technology (MIT)

MIT's endowment comprises roughly 3,500 individual funds. The fund is used for a variety of purposes and includes both donor-restricted endowment funds and funds selected by the Executive Committee of the MIT Corporation (Executive Committee) to function as endowment (Massachusetts Institute of Technology Report of the Treasurer 2012).

In the fiscal year end 2012, the market value of investments in the endowment and similar funds, excluding pledges for endowed purposes, amounted \$10,149.6 million. The figure positively grew by 4.5 percent from \$9,712.6 million level of last year, and exceeded the peak year-end level reached in fiscal 2008 of \$9,947.6 million. With regard to the return performance, MIT's core Pool A endowment generated a return of 8.0 percent in 2012. Furthermore, MIT's support from investments increased 10.2 percent due primarily to revenue from the increase in the endowment distribution rate, additions to the endowment and other invested assets.

Columbia University

On June 30 2013, the endowment reached valued at \$8.2 billion, with more than 200,000 donors from the alumni, parents, friends, and students who have given more than \$6 billion in total. Donors also set a new cash giving record of \$647

million in fiscal year 2013. Besides, the value of the managed assets component of the endowment equaled to \$7.6 billion.

Since its commencement of ten years, the IMC has produced an annualized net return of 11 percent on the managed assets component of the endowment, after deducted by the manager fees. The figure surpassed both a ten-year annualized return of the MSCI All Country World Equity Index of 7.6 percent and 4.5 percent for the Barclays Aggregate Bond Index.

During the same period, for the five-year period ending June 30 2013, the total annualized net return on the managed assets component of the endowment stood at 6.8 percent. This outperformed its benchmarks annualized return, namely 2.3 percent for the MSCI All Country World Equity Index and 5.2 percent for the Barclays Aggregate Bond Index. Besides, for the one-year period ending June 30 2013, the total net return on the managed assets component of the endowment was 11.5 percent. This was slightly below the return for the MSCI All Country World Equity Index, which was 16.6 percent but better than the Barclays Aggregate Bond Index, which was at -0.7 percent.

University of Pennsylvania

The endowment fund of University Pennsylvania comprises 5,363 donor-restricted and 829 unrestricted funds established by the Board of Trustees for a variety of purposes (University of Pennsylvania Annual Financial Report 2012-2013). The majority of the fund is invested in the Associated Investments Fund (AIF) where many individual endowments and trusts hold shares.

In the fiscal year 2013, the investment return of the University was 14.4 percent. This is caused by Penn's investment team leveraged strong equity market performance with prudent asset and investment management. The total endowment value grew positively by 14.6 percent, from \$6.75 billion to \$7.74 billion.

University of Chicago

The endowment fund of University of Chicago, which consists of approximately 2,900 individual donors, is primarily invested in the Total Return Investment Pool (TRIP). The Investment Office takes a Total Enterprise Asset Management (TEAM) approach in planning the TRIP's investment strategy. The fundamental rule of endowment for the university is to support financially the academic programs in the long-term by providing a sustainable source of income. In the fiscal year 2012, the endowment contributed 12 percent of the University's total revenues (The University of Chicago Financial Statement and Supplemental University Information 2011-2012).

In the fiscal year 2012, the University's endowment market value stood at \$6.57 billion, including \$870 million of Medical Center endowment and \$277 million came from the investment return during the same fiscal period. The

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TRIP's return was 6.8 percent, which placed it at the first rank of the 20 largest endowments for the three years return and second rank for the five-year period. During the last decades from June 30 2003 to June 30 2012, the endowment had increased from \$3.20 billion to \$6.57 billion. During that period, the University earned an average annual return of 9.6 percent or 148 basis points ahead of the benchmark, while gifts to endowment totaled \$776 million. This is due to the help of solid investment returns, generous alumni support, and prudent spending,

California Institute of Technology (Caltech)

The endowment fund of California Institute of Technology, which consists of more than 1,100 donors, is managed by the Caltech Investment Office, under the direction of the Investment Committee of the Board of Trustees (California Institute of Technology Endowment Report Fiscal Year 2012). The office has an ultimate goal to generate long-term rates of return that support the annual endowment payout and preserve the inflation-adjusted purchasing power of the endowment, allowing it to support the Institute's activities for generations to come.

During fiscal year 2013, the Caltech endowment investment portfolio has given 11.5 percent of one-year return, surpassed its portfolio benchmark by 3.2 percent but slightly below the broad College and University Average return by 0.4 percent. For the three-years return, Caltech generated the same return rate as the Cambridge Associates College and University Average return of 8.9 percent, and beat its policy benchmark by 1.6 percent. However, for the five-years and ten-years periods, the University's annualized return underperformed both its policy benchmark and the Cambridge Associates College and University Average return due to 2008 financial crisis impact. During the crisis, Caltech had raised its cash level to more than 20 percent of the portfolio. In 2008 and 2009, the annual return rate was -14.6 percent and -7.4 percent. However, in the fiscal year 2013, the market value of Caltech's investment pool performed well. This was indicated by the increase from \$1.87 billion to \$2.03 billion.

Moreover, approximately \$102 million in endowment payout in fiscal year 2013 significantly advanced Caltech's research and education in key areas and supported 16.8 percent of the campus-operating budget.

University of Illinois

The endowment fund of University of Illinois is invested in one pool namely the University of Illinois Foundation Endowment Pool, in which each endowment owns a number of units in the pool. The Investment Policy Committee of the Foundation's Board of Directors supervises the endowment fund management. Besides, it is also responsible for setting and monitoring the strategic asset allocation. Besides, the full-time and professional investment team, which is led

by the Chief Investment Officer (CIO), is responsible for the day-to-day implementation of the strategic asset allocation and for investment manager selection and execution (Management of Endowment Pool of University of Illinois Foundation Report 2013).

In the fiscal year 2013, the market value of University's endowment assets positively increased from \$1,100.6 million to \$1,344.6 million, which generated one-year return rate by 13.5 percent. The return rate outperformed its benchmark by 1.1 percent. However, the three-year, five-year, and ten-year periods during the same year, the annualized return lagged behind its benchmark. For three-year return rate, the University performed below its benchmark by 1.3 percent, while for five-year and ten-year return rate the University annualized returns underperformed its benchmarks by 1.5 percent and 1.3 percent respectively.

Cambridge University

According to the Cambridge University Endowment Fund Report and Financial Statement (2013), the Cambridge University Endowment Fund, abbreviated as CUEF, is an unauthorized unit trust scheme established pursuant to a trust deed dated 30 June 2010 (Trust Deed) and the trustee of the CUEF (Trustee) is the Chancellor, Masters, and Scholars of the University of Cambridge. The Trustee has appointed Cambridge Investment Management Limited (CIM), a wholly owned subsidiary company of the University, to operate the CUEF.

The return of CUEF in the year to June 2013 was 20 percent, which was in line with the fund's objective in the long run. However, this figure was still slightly below the global equity market index, which stood at 20.5 percent. Fortunately, the public equity and absolute return, as the largest proportion of the asset allocation, performed better than their market benchmark. This is indicated through the fact that during the last five years, the fund has had annualized return of 8.3 percent, which has been 2 percent higher than the long-term RPI-linked objective.

Imperial College London (ICL)

Similar with other universities, the endowment has an important position in Imperial College London's long run strategy in order to secure its financial stability. This is achieved through optimizing the investment return as well as delivering a consistent funding source to sustain College's objectives (Imperial College London Annual Reports and Account 2012-2013).

During fiscal year 2012 until 2013, the endowment fund has risen positively by 18 percent from £306 million to £354 million. It contributed £13 million of the total £822 million of the University's income in 2013. The figure grew by 62.5 percent from the previous fiscal year. Besides, new donations and endowments amounted at £8.8 million during the year, while the endowment

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returns were 16.5 percent (Imperial College London Annual Reports and Account 2012-2013).

University of Oxford

The Oxford Endowment Fund was established on 1 January 2009, under the provisions of the Universities and Colleges (Trusts) Act 1943. The Fund's objective is to create collective investment of the assets of trusts. This is managed both by the University itself, and by other trustees for purposes related to the University.

The income from endowment and investment revenue was £27.8 million out of £1,086.9 million of the total University's revenue in the fiscal year 2013. Compared to the prior fiscal year, this amount grew positively by 8.6 percent from £25.6 million. The contribution of endowment in the total income was 2.5 percent. The remaining sources stem from funding body grants, academic fees and support grants, research grants and contracts, other income, and donation of heritage assets (University of Oxford Financial Statement 2012-2013).

The Oxford Endowment Fund's market value amounted at £1,231m and it contributed £44m to the collegiate University at 31 July 2013. For the twelve-month period to 31 July 2013, the Fund returned 15.7 percent, while for the three years to 31 July 2013 it returned an annualized 9.8 percent and for five years 7.4 percent. The annualized volatility of the Fund since inception is 8.7 percent.

Edinburgh University

The endowment fund investment of Edinburgh University aims to preserve long-term capital value at the same time as delivering income to support University's activities. To achieve this, the Investment Committee of the University drawn from Court members and external investment professionals was established in order to manage as well as construct strategic direction of the endowment fund. Specifically, the Investment Committee has several responsibilities including sets investment policy and strategy, controls asset allocation, identifies fund managers, supervises fund performance, and recommends University Court on its investment program (Edinburgh Endowment Fund Report 2012-2013).

Interestingly, Edinburgh University has had a Socially Responsible Investment Policy, which encourages companies on ethical issues for the last decades. This led the University became the first institution in Europe that join the United Nations Principles of Responsible Investment in January 2013. Therefore, the University has a framework to consider environmental, social and corporate governance into its investment strategy.

Compared with the previous fiscal year, in 2013 the investment and endowment income rose significantly by 39 percent from £13 million to £18

million. This contributed 2.24 percent of the University's total income. Other sources were gained from other operating income, research grant and contracts, and funding council grants. With regard to endowment return, the five-year return is 10.9 percent per annum while ten-year return is 9.3 percent per annum.

National University of Singapore (NUS)

In 1995, the \$1.5 million endowment fund in the National University of Singapore Society (NUSS) was to establish professorship at the university. Moreover, it was established and raised more than \$1 million for the NUSS Endowment Fund for UTown Student Advancement in July 2011 (The National University Society Annual Report 2013).

Some Unique Issues

According to Curwood (2012), many endowment funds management neglect the importance of risk management. Firstly, endowment funds management tends to define the problem incorrectly by focusing too much on expected return while largely ignoring risk. Secondly, they narrowly assess the solution set by seeking only a single risk management tool instead of establishing an organization. Thirdly, they underestimate the dynamic complexity of risk. Fourthly, they are impatient and looking for shortcuts, which shows two related human behaviors that give disadvantages for the investment. Fifthly, they inadequately allocate time by overemphasizing what is easy. In this regard, they perform merely administrative tasks and relying on historical data.

Conclusion

Endowment funds play a substantial role in the higher education, which is indicated through a significant portion of the universities' expenditure is financed by this fund. Therefore, the investment management of endowment funds to fulfill the current operating budget whilst preserving its long-term value becomes crucial. By taking case 15 worldwide universities in the U.S., Canada, UK, and Singapore, the study analyzes the model used by each university in investing their endowment funds by looking at five perspectives namely asset allocation and asset classes, active-passive decision, risk management, and liquidity management.

Firstly, the study shows among selected universities, majority of them allocate their endowment assets into equity such as public equity, private equity, US equity, and international equity. Secondly, related to the active-passive decision, there are five universities actively managing their investment and portfolio management, while only two universities decide otherwise.

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Thirdly, the universities have set some policies in order to identify, measure, and monitor their risks including market risk, liquidity risk, exchange rate risk, and credit risk. The matter of risk management is also highlighted in the unique issue that is faced by the endowment funds management.

Fourthly, they also determine the accepted spending rate, which considers current operating needs and future capital perpetuity of the endowment funds. The spending rate in the current case study lied between 4 to 5.8 percent. Finally, in order to manage their liquidity, the universities have various sources of liquidity at the disposal. This is important in order to maintain cash and liquid assets for many purposes.

Our observations in this paper have important implications for contemporary waqf institutions. The fact that the endowment funds in all the institutions of higher learning in our study invest in financial assets indicates that a waqf institution, at least one set up for the purpose of higher education, should seriously consider going down that same path. That is, contemporary waqf institutions should also contemplate operating financial assets rather than working exclusively with real estate or other physical assets. In recent times, much has been said and written about cash waqf and this should pave the way for waqf institutions to redefine and innovate their modus operandi. If indeed a waqf body decides to go this way, some of the findings in this paper may serve as useful reference. Given that conventional endowment funds have been doing this for quite some time, waqf institutions can learn from them in terms of some of their best practices, as well as avoiding mistakes and pitfalls they encountered.

On the other hand, should waqf establishments opt for sticking with physical assets, for one reason or another, there are still some generic takeaways from our work here. Among them in brief, firstly, asset selection and allocation is an important aspect that deserves attention of waqf managers. Secondly, there is benefit in actively managing a portfolio of assets. Waqf managers should not have a lackadaisical attitude towards the composition of waqf assets. Thirdly, a risk management framework should be incorporated in the management of waqf. Fourthly, spending rates must track rates of return generated from waqf assets. Finally, liquidity management must be given due emphasis.

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