

2013

The Yale Endowment



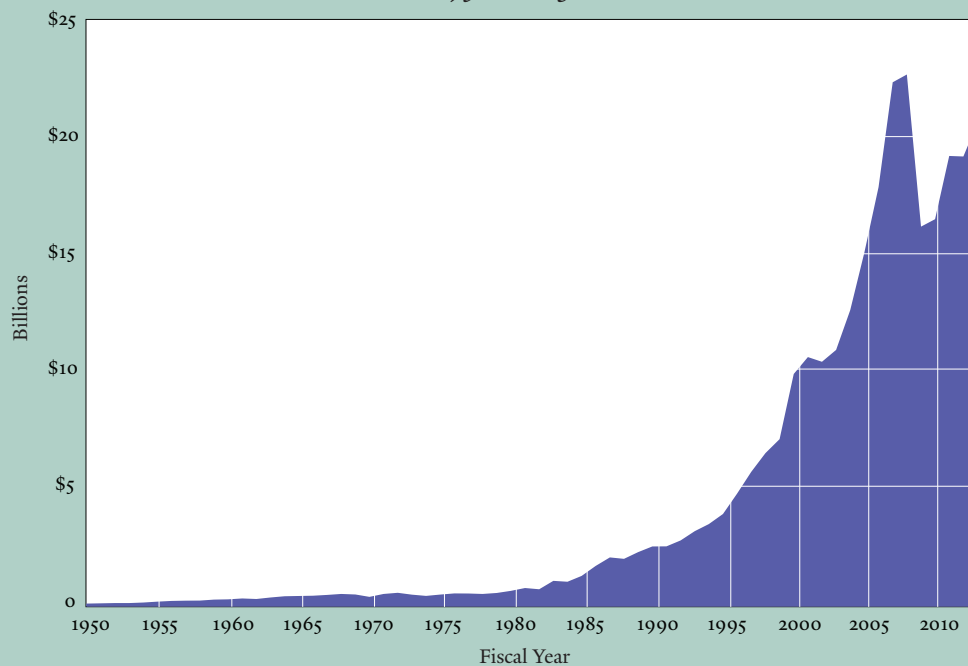
Endowment Highlights

	Fiscal Year				
	2013	2012	2011	2010	2009
Market Value (in millions)	\$20,780.0	\$19,344.6	\$19,374.4	\$16,652.1	\$16,326.6
Return	12.5%	4.7%	21.9%	8.9%	-24.6%
Spending (in millions)	\$1,024.0	\$994.2	\$ 986.8	\$ 1,108.4	\$ 1,175.2
Operating Budget Revenues (in millions)	\$2,968.6	\$2,851.7	\$2,734.2	\$2,681.3	\$2,559.8
Endowment Percentage	34.5%	34.9%	36.1%	41.3%	45.9%

Asset Allocation (as of June 30)

Absolute Return	17.8%	14.5%	17.5%	21.0%	24.3%
Domestic Equity	5.9	5.8	6.7	7.0	7.5
Fixed Income	4.9	3.9	3.9	4.0	4.0
Foreign Equity	9.8	7.8	9.0	9.9	9.8
Natural Resources	7.9	8.3	8.7	8.8	11.5
Private Equity	32.0	35.3	35.1	30.3	24.3
Real Estate	20.2	21.7	20.2	18.7	20.6
Cash	1.6	2.7	-1.1	0.4	-1.9

Endowment Market Value 1950–2013

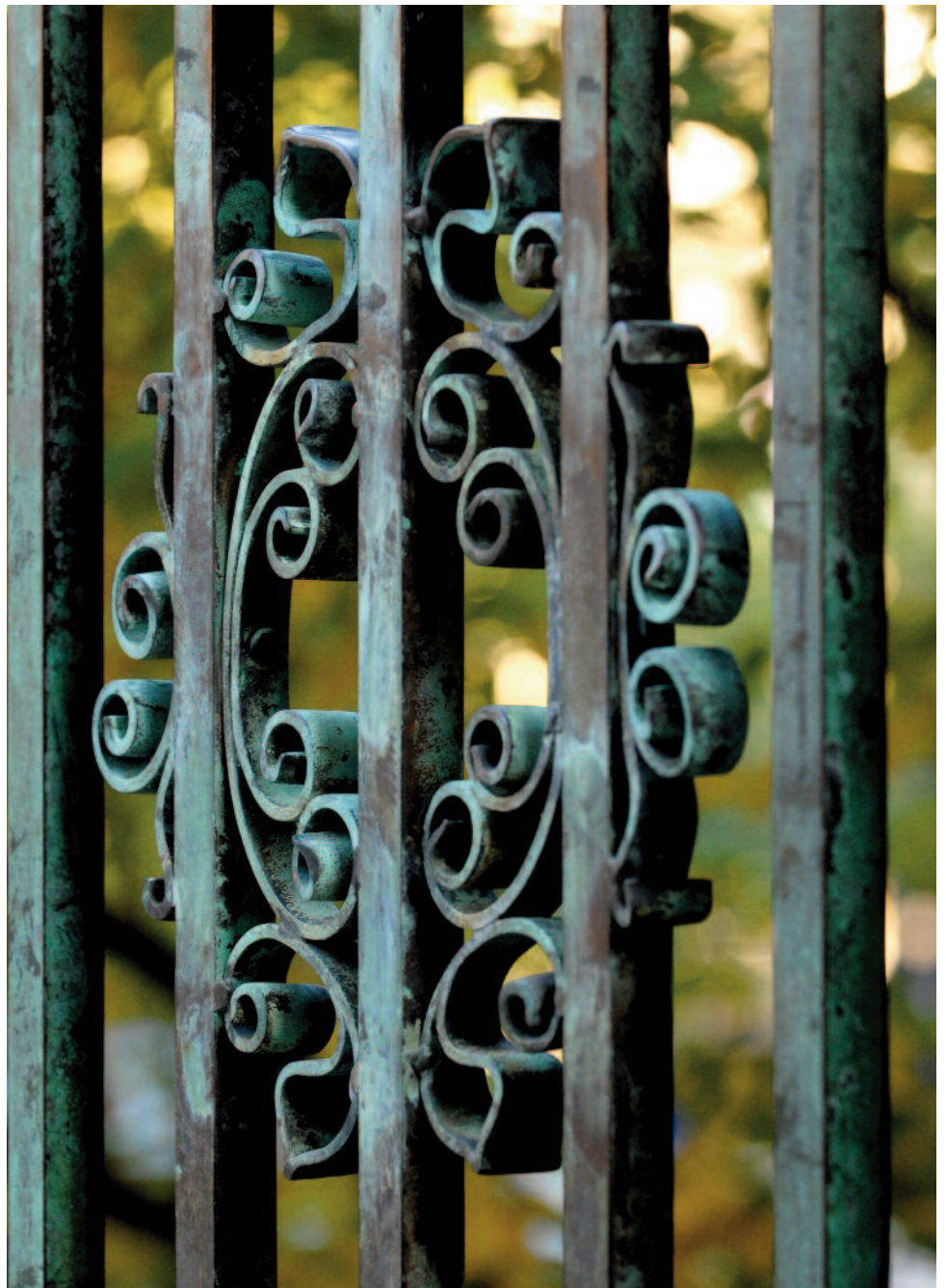


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Front cover:
Window of Sterling Memorial Library, east façade.

Right:
Detail of gate leading to Old Campus from Elm Street.



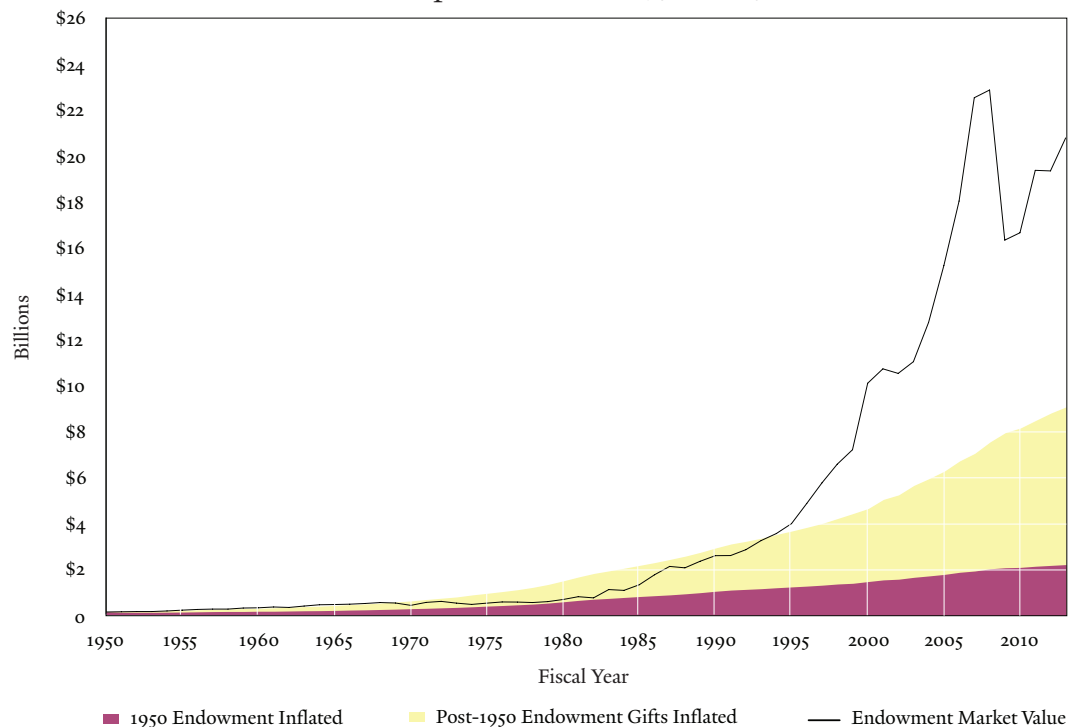
Introduction

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Yale's Endowment generated a 12.5 percent return in fiscal 2013, producing an investment gain of \$2.29 billion. Over the past ten years, the Endowment grew from \$11.03 billion to \$20.78 billion. With annual net ten-year investment returns of 11.0 percent, the Endowment's performance exceeded its benchmark and outpaced institutional fund indices. For nine of the past ten years, Yale's ten-year record ranked first in the Cambridge Associates universe. The Yale Endowment's twenty-year record of 13.5 percent per annum produced a 2013 Endowment value of over six times the 1993 value. Yale's excellent long-term record stems from disciplined and diversified asset allocation policies and superior active management results.

Spending from the Endowment grew during the last decade from \$470 million to \$1.02 billion, an annual growth rate of approximately 8 percent. On a relative basis, Endowment contributions expanded from 30 percent of total revenues in fiscal 2003 to 34 percent in fiscal 2013. Next year, spending will amount to \$1.05 billion, or 35 percent of projected revenues. Yale's spending and investment policies provide substantial levels of cash flow to the operating budget for current scholars while preserving Endowment purchasing power for future generations.

Endowment Growth Outpaces Inflation 1950–2013



The Yale Model

The Yale model of endowment investing has come under intense scrutiny for its performance during the recent financial crisis. Skeptics suggest that the Yale Endowment, with its emphasis on diversification and active management of equity-oriented, often-illiquid assets, failed to deliver on its promise.

Critics argue that Yale's model lacked diversification in times of crisis, evidenced by the Endowment's 24.6 percent decline for the fiscal year ending June 30, 2009. In the global financial crisis, as in the 1998 Asian financial crisis and the 1987 stock market crash, global markets exhibited concurrent broad-based declines. Correlations of risky assets increased markedly as market participants expressed extreme preferences for liquidity and quality. While these were painful periods for equity-oriented investors, they were short lived as individual countries and markets soon reverted to fluctuating in response to country- and asset-specific drivers of performance. During the bleak period of poor performance and high correlation, full faith and credit holdings of the U.S. government provided the only safe harbor. The short-term protection to investor portfolios provided by U.S. Treasury securities comes at a high long-term price, however. Expected returns for fixed income instruments fall short of expected returns for equity-

oriented investments and, over long periods of time, fail to generate the returns required to support current University operations while preserving the purchasing power of assets.

Yale's portfolio, positioned for strong long-term returns, lacked significant exposure to low-expected-return Treasury securities and suffered in the market meltdown. The Endowment's decline of 24.6 percent underperformed peer returns of -22.0 percent and a classic 60 percent U.S. equity and 40 percent Treasury bond portfolio return of -13.2 percent. Critics presented Yale's short-term underperformance as validation of traditional asset allocations focused heavily on public equities and fixed income. Although the Endowment produced painful losses in fiscal 2009, the results of any one-year period tell very little about the efficacy of a long-term investment strategy. Performance over longer horizons demonstrates the strength of Yale's investment program.

While Yale's diversified, equity-oriented portfolio underperformed during the financial crisis, it handsomely outperformed a traditional U.S. stock and bond portfolio over the past twenty-five years. If Yale's assets had been invested in the 60 percent equity/40 percent bond portfolio since 1988, the Endowment would be valued at only \$9.11 billion today, less than

half of its current value of \$20.78 billion. Furthermore, the spending distribution to fund University operations during fiscal 2013 would have totaled approximately \$440 million, significantly below Yale's actual spending distribution of \$1.02 billion. Cumulative spending over the twenty-five-year period would have been approximately 40 percent below actual spending levels, which surpassed \$11.60 billion for the period.

In periods both before and after the crisis, Yale's Endowment performed admirably. In nine of the past ten years, the University's ten-year returns stood atop the Cambridge Associates universe. In fiscal 2004, when Yale failed to post the top ten-year return, the University placed second. Even in an environment that included an extraordinary financial crisis, the Yale model excelled.

While traditional asset allocations held up well during fiscal 2009 and in the immediate aftermath of the crisis, that short-term outperformance came at a heavy cost to the growth of a portfolio's value over the long term. During periods when traditional portfolios outperform, critics are quick to cast aspersions on the Yale model, but traditional 60 percent equity/40 percent bond portfolios are not diversified, not equity-oriented, and not appropriate for long-term investors.



Aerial view showing Yale Divinity School (top), Betts House and Greenberg Conference Center (middle), and Leitner Observatory and Planetarium (bottom right).

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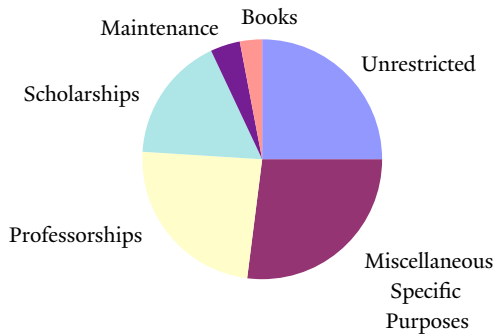
Totaling \$20.78 billion on June 30, 2013, the Yale Endowment contains thousands of funds with various purposes and restrictions. Approximately 85 percent of funds constitute true endowment, gifts restricted by donors to provide long-term funding for designated purposes. The remaining funds represent quasi-endowment, monies that the Yale Corporation chooses to invest and treat as endowment.

Donors frequently specify a particular purpose for gifts, creating endowments to fund professorships, teaching, and lectureships (24 percent); scholarships, fellowships, and prizes (17 percent); maintenance (4 percent); books (3 percent); and miscellaneous specific purposes (27 percent). Twenty-five percent of funds are unrestricted. Twenty-two percent of the Endowment benefits the overall University, with remaining funds focused on specific units, including the Faculty of Arts and Sciences (37 percent), the professional schools (26 percent), the library (7 percent), and other entities (7 percent).

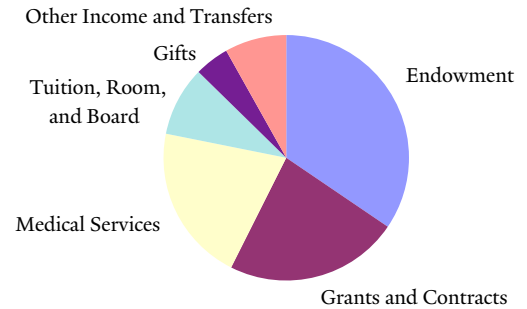
Although distinct in purpose or restriction, Endowment funds are commingled in an investment pool and tracked with unit accounting much like a large mutual fund. Endowment gifts of cash, securities, or property are valued and exchanged for units that represent a claim on a portion of the total investment portfolio.

In fiscal 2013 the Endowment provided \$1.02 billion, or 34 percent, of the University’s \$2.97 billion operating income. Other major sources of revenues were grants and contracts of \$680 million (23 percent); medical services of \$616 million (21 percent); net tuition, room, and board of \$272 million (9 percent); gifts of \$135 million (5 percent); and other income and transfers of \$241 million (8 percent).

Endowment Fund Allocation
Fiscal Year 2013



Operating Budget Revenue
Fiscal Year 2013



3

Yale’s portfolio is structured using a combination of academic theory and informed market judgment. The theoretical framework relies on mean-variance analysis, an approach developed by Nobel laureates James Tobin and Harry Markowitz, both of whom conducted work on this important portfolio management tool at Yale’s Cowles Foundation. Using statistical techniques to combine expected returns, variances, and covariances of investment assets, Yale employs mean-variance analysis to estimate expected risk and return profiles of various asset allocation alternatives and to test sensitivity of results to changes in input assumptions.

Because investment management involves as much art as science, qualitative considerations play an extremely important role in portfolio decisions. The definition of an asset class is quite subjective, requiring precise distinctions where none exist. Returns and correlations are difficult to forecast. Historical data provide a guide, but must be modified to recognize structural changes and compensate for anomalous periods. Quantitative measures have difficulty incorporating factors such as market liquidity or the influence of significant, low-probability events. In spite of the operational challenges, the rigor required in conducting mean-variance analysis brings an important perspective to the asset allocation process.

The combination of quantitative analysis and market judgment employed by Yale produces the following portfolio:

Asset Class	June 2013 Actual	June 2013 Target
Absolute Return	17.8%	20.0%
Domestic Equity	5.9	6.0
Fixed Income	4.9	5.0
Foreign Equity	9.8	11.0
Natural Resources	7.9	8.0
Private Equity	32.0	31.0
Real Estate	20.2	19.0
Cash	1.6	0.0



Berkeley College, a winter view of the windows of the Common Room.

The target mix of assets produces an expected real (after inflation) long-term growth rate of 6.3 percent with risk (standard deviation of returns) of 14.8 percent. Because actual holdings differ from target levels, the actual allocation produces a portfolio expected to grow at 6.2 percent with risk of 14.8 percent. The University's measure of inflation is based on a basket of goods and services specific to higher education that tends to exceed the Consumer Price Index by approximately one percentage point.

At its June 2013 meeting, Yale's Investment Committee adopted a number of changes to the University's policy portfolio allocations. The Committee approved increases in the absolute return target from 18 percent to 20 percent, in the foreign equity target from 8 percent to 11 percent, in the natural resources target from 7 percent to 8 percent, and in the fixed income target from 4 percent to 5 percent. Those increases were funded by a three percentage point decrease in the real estate target and a four percentage point decrease in the private equity target.

Over the longer term, Yale seeks to allocate approximately one-half of the portfolio to the illiquid asset classes of private equity, real estate, and natural resources. The Endowment has made significant progress on this dimension over the past five years.

Providing resources for current operations and preserving the purchasing power of assets dictate investing for high returns, causing the Endowment to be biased toward equity. The University's vulnerability to inflation further directs the Endowment away from fixed income and toward equity instruments. Hence, 95 percent of the Endowment is targeted for investment in assets expected to produce equity-like returns, through holdings of domestic and international securities, absolute return strategies, real estate, natural resources, and private equity.

Over the past two decades, Yale dramatically reduced the Endowment's dependence on domestic marketable securities by reallocating assets to nontraditional asset classes. In 1993, 47 percent of the Endowment was committed to U.S. stocks, bonds, and cash. Today, target allocations call for 11 percent in domestic marketable securities, while the diversifying assets of absolute return, foreign equity, natural resources, private equity, and real estate dominate the Endowment, representing 89 percent of the target portfolio.

The heavy allocation to nontraditional asset classes stems from their return potential and diversifying power. Today's actual and target portfolios have significantly higher expected returns than the 1993 portfolio with similar volatility. Alternative assets, by their very nature, tend to be less efficiently priced than traditional marketable securities, providing an opportunity to exploit market inefficiencies through active management. The Endowment's long time horizon is well suited to exploit illiquid, less efficient markets such as venture capital, leveraged buyouts, oil and gas, timber, and real estate.

Liquidity

Since market participants routinely overpay for liquidity and since less liquid markets exhibit more inefficiencies than their liquid counterparts, illiquid markets create opportunities for astute investors to identify mispricings and generate outsized returns. Furthermore, operational, strategic, and company-building skills of control-oriented, illiquid asset managers can add tremendous value to portfolio holdings. Investors willing to accept less liquid alternatives enhance the opportunity to outperform the market. Intelligent pursuit of illiquidity is well suited to endowments, which operate with extremely long time horizons.

Yale's belief in the attractive market opportunity among less liquid assets led the University to allocate a significant portion of the Endowment to the illiquid assets of private equity, real estate, and natural resources. Yale maintains a reasonable allocation to marketable asset classes, however, in order to preserve sufficient liquidity 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.

The evaporation of liquidity during the financial crisis highlighted the importance of prudent liquidity management. Because Yale had long recognized the necessity of understanding and monitoring the Endowment's liquidity profile, the University had substantial internal and external sources of liquidity at its disposal. Even a portfolio characterized by high percentages of illiquid, long-term assets contains more liquidity than might be immediately apparent. Yale's holdings generate a fair amount of natural liquidity: bonds pay interest, stocks

pay dividends, real estate produces rents, energy reserves provide both returns on capital and returns of capital (through depletion), and private equity partnerships distribute proceeds from realizations. The Investments Office carefully forecasts how these distributions will behave under a range of economic scenarios.

Holdings of marketable securities provide a source of non-disruptive liquidity, namely liquidity generated in a manner that does not change the Endowment's asset class exposure. For example, bonds and stocks can serve as collateral for repurchase agreements (repos) and security lending, respectively. The owner of the securities generates liquidity through proceeds produced by the repo and security lending activity, while retaining the economic exposure associated with the securities.

External borrowing represents another source of non-disruptive liquidity. As a result of Yale's planning well before the advent of the crisis, the University had access to nearly \$2 billion of commercial paper funding, a level substantially in excess of the University's crisis-related needs. In November 2009, after the crisis subsided, Yale issued \$1 billion of five-year fixed-rate taxable bonds with attractive pricing to refund the commercial paper draws. That debt is now largely repaid.

In the late 1990s, Yale developed a flexible and responsive model for projecting illiquid fund contributions, distributions, and net asset values based on the levels of future fund commitments, asset class investment returns, the pace of fund commitment calls and fund distributions, and overall Endowment returns. Yale Investments Office Senior Director Dean

Takahashi and former Director Seth Alexander's article, "Illiquid Alternative Asset Fund Modeling," published in the *Journal of Portfolio Management* in winter 2002, described Yale's illiquid asset model.

Yale continues to use the same basic model, albeit with some improvements and modifications. The Investments Office periodically revises model parameters to reflect historical experience and incorporates adjustments reflecting current market conditions. For instance, during the financial meltdown, the model was adjusted to depress Endowment growth rates and reflect the anticipated slower pace of capital calls and distributions. Furthermore, the Investments Office employs the illiquid asset model to stress-test Yale's liquidity position under a range of economic scenarios.

High-quality forecasting tools elucidated the Endowment's liquidity position during the financial crisis and enabled Yale to steer the Endowment through the crisis with sufficient liquidity. The Endowment met all of its liquidity requirements, including private equity, real estate, and natural resources capital calls; spending distributions for University operations; and debt repayments.

Economic and financial market turbulence during 2008 and 2009 highlighted the importance of monitoring and managing Endowment liquidity. Fortunately, Yale's careful forecasting and in-place liquidity mechanisms enabled the University to meet its cash needs. Although the financial crisis has passed, liquidity management and monitoring remain ongoing Endowment priorities and the Investments Office continues to refine and test its liquidity model.



Education, 1890, by Louis Comfort Tiffany and Tiffany Studios, a stained-glass window created for Yale's Linsly-Chittenden Hall.

Asset Class Characteristics

Yale's seven asset classes are defined by differences in their expected response to economic conditions, such as economic growth, price inflation, or changes in interest rates, and are weighted in the Endowment portfolio by considering their risk-adjusted returns and correlations. The University combines the asset classes in such a way as to provide the highest expected return for a given level of risk, subject to fundamental diversification and liquidity constraints.

Absolute Return

In July 1990, Yale became the first institutional investor to define absolute return strategies as a distinct asset class, beginning with a target allocation of 15.0 percent. Designed to provide significant diversification to the Endowment, absolute return investments are expected to generate high long-term real returns by exploiting market inefficiencies. The portfolio is invested in two broad categories: event-driven strategies and value-driven strategies. Event-driven strategies rely on a very specific corporate event, such as a merger, spin-off, or bankruptcy restructuring, to achieve a target price. Value-driven strategies involve hedged positions in assets or securities with prices that diverge from their underlying economic value. Today, the absolute return portfolio is targeted to be 20.0 percent of the Endowment, below the average educational institution's allocation of 24.4 percent to such strategies. Absolute return strategies are expected to generate a real return of 5.25 percent with risk of 12.5 percent.

Unlike traditional marketable securities, absolute return investments have historically provided returns largely independent of overall market moves. Since its 1990 inception, the portfolio exceeded expectations, returning 11.2 percent per year with low correlation to domestic stock and bond markets.

Domestic Equity

Financial theory predicts that equity owners should expect to receive returns superior to those expected from less risky assets such as bonds and cash. The predominant asset class in most U.S. institutional portfolios, domestic equity represents a large, liquid, and heavily researched market. While the average educational institution invests 20.1 percent of assets in domestic equities, Yale's target allocation to this asset class is only 6.0 percent. The domestic equity portfolio has an expected real return of 6.0 percent with a standard deviation of 20.0 percent. The Wilshire 5000 Index serves as the portfolio benchmark.

Despite recognizing that the U.S. equity market is highly efficient, Yale elects to pursue active management strategies, aspiring to outperform the market index by a few percentage points, net of fees, annually. Because superior stock selection provides the most consistent and reliable opportunity for generating attractive returns, the University favors managers with exceptional bottom-up, fundamental research capabilities. Managers searching for out-of-favor securities often find stocks that are cheap in relation to fundamental measures such as asset value, future earnings, or cash flow. Over the past twenty years, Yale's domestic equity portfolio has posted returns of 13.1 percent per year.

Fixed Income

Fixed income assets generate stable flows of income, providing more certain nominal cash flow than any other Endowment asset class. The bond portfolio exhibits a low covariance with other asset classes and serves as a hedge against financial accidents or periods of unanticipated deflation. While educational institutions typically maintain a substantial allocation to fixed income instruments, averaging 10.1 percent, Yale's target allocation to fixed income and cash is only 5.0 percent of the Endowment. Bonds have an expected real return of 2.0 percent with risk of 8.0 percent. The Barclays Capital 1-3 Year U.S. Treasury Index serves as the portfolio benchmark.

Yale is not particularly attracted to fixed income assets, as they have the lowest expected returns of the seven asset classes that make up the Endowment. In addition, the government bond market is arguably the most efficiently priced asset class, offering few opportunities to add significant value through active management. Based on skepticism of active fixed income strategies and belief in the efficacy of a highly structured approach to bond portfolio management, the Investments Office chooses to manage Endowment bonds internally. Though averse to market timing strategies, credit risk, and call options, Yale manages to add value consistently in its management of the bond portfolio. Over the past twenty years, the fixed income portfolio has generated returns of 5.6 percent per annum.

Foreign Equity

Foreign equity investments give the Endowment exposure to the global economy, providing diversification and the opportunity to earn outsized returns through active management. Yale allocates 5.0 percent of its portfolio to foreign developed markets and 2.0 percent to emerging markets. In addition, Yale dedicates 4.0 percent of the portfolio to opportunistic foreign positions, with the expectation that holdings will be concentrated in markets that offer the most compelling long-term opportunities, particularly China, India, and Brazil. Yale's foreign equity target allocation of 11.0 percent stands below the average endowment's allocation of 20.1 percent. Expected real returns for emerging equities are 7.5 percent with a risk level of 22.5 percent, while developed equities are expected to return 6.0 percent with risk of 20.0 percent. The portfolio is measured against a composite benchmark of (a) developed markets, measured by the Morgan Stanley Capital International (MSCI) Europe, Australasia, and Far East (EAFE) Investable Market Index; (b) emerging markets, measured by a blend of the MSCI Emerging Markets Investable Market Index and the MSCI China A-Share Index; and (c) opportunistic investments, measured by a custom blended index.

Yale's investment approach to foreign equities emphasizes active management designed to uncover attractive opportunities and exploit market inefficiencies. As in the domestic equity portfolio, Yale favors managers with strong fundamental research capabilities. Capital allocation to individual managers takes into consideration the country allocation of the foreign equity portfolio, the degree of confidence that Yale possesses in a manager, and the appropriate size for a particular strategy. In addition, Yale attempts to exploit compelling undervaluations in countries, sectors, and styles by allocating capital to the most compelling opportunities. The twenty-year return of Yale's foreign equity portfolio is 14.1 percent per year.

The Death of Alpha?

As endowments, foundations, and other institutional investors have increasingly shifted into private equity, real assets, and hedge funds over the past decade, these “alternative” assets have become more mainstream. Some market observers contend that as alternative asset classes have become more crowded and competitive, the ability to outperform has essentially disappeared.

Yale has never viewed the mean return for alternative assets as particularly compelling. The attraction of alternatives lies in the ability to generate top quartile or top decile returns. As long as individual managers exhibit substantial dispersion of returns and high-quality investment funds dramatically outperform their less skilled peers, Yale enjoys the opportunity to produce attractive returns for the Endowment and to demonstrate that manager alpha (excess return) is alive and well.

The figure below shows the dispersion in returns between the top and bottom quartiles in collections of actively managed illiquid asset portfolios with vintage years ranging from 1993 through 2012. Top quartile venture capital, leveraged buyout, natural resources, and real estate managers have consistently surpassed their bottom quartile peers by substantial margins, with annualized spreads averaging double-digit percentages. With the exception of dispersion in

venture capital (inflated by the 1990s technology bubble), a comparison of the most recent decade with the decade before shows roughly comparable performance spreads. The operational, strategic, and company-building skills of private equity and real assets managers have the potential to add tremendous value to portfolio holdings, creating alpha and differentiating the strongest performers. Investors with the ability to select top managers can certainly generate outsized returns.

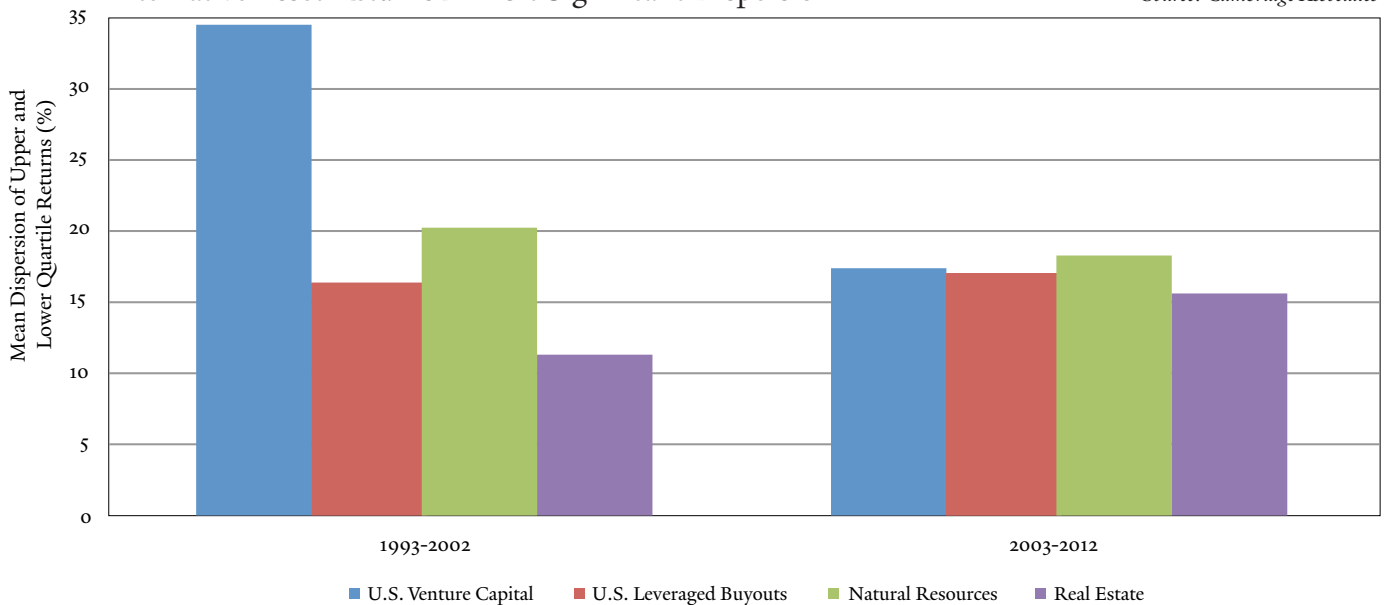
In asset classes such as venture capital and private equity, elite firms create a virtuous cycle in which investment success begets investment success. Because franchise firms have demonstrated exceptional judgment, strategic insight, and company-building skills, entrepreneurs and owner-managers seek to partner with them. Top-tier managers benefit from extraordinary deal flow, a stronger negotiating position, and superior access to capital markets, and thus are well positioned to outperform their peers. Academic research supports the notion of franchise firm performance persistence in venture capital and, to a lesser extent, in leveraged buyouts.* Although new fund entrants certainly can and do post impressive returns, they face significant challenges in breaking into the top tier. Furthermore, because elite venture capital firms limit assets

under management and are consistently oversubscribed, they rarely, if ever, accept new investors. As a result, institutions that are new to alternative assets face difficulties in accessing top managers. While alpha is not dead, opportunities to access it may not be available to all investors.

Yale has consistently demonstrated its ability to identify high-quality active managers. For the twenty years ending June 30, 2013, 57 percent of Yale’s outperformance relative to the median Cambridge Associates endowment was attributable to the value added by Yale’s active managers. Over the past two decades, the Endowment returned a cumulative 1,152 percent relative to the Cambridge median of 402 percent, an outperformance of 5.1 percent per annum. If Yale had employed its actual asset allocation, but had earned the rate of return of the median manager in each asset class, it would have outperformed the Cambridge median manager by 2.2 percent per year, the value added by Yale’s asset allocation. The remaining 2.9 percent per annum of the Endowment’s outperformance results from Yale’s active management. The Endowment was able to generate alpha even as alternative assets became increasingly capitalized and competitive. Manager selection remains an important differentiating factor for Yale.

Alternative Asset Returns Exhibit Significant Dispersion

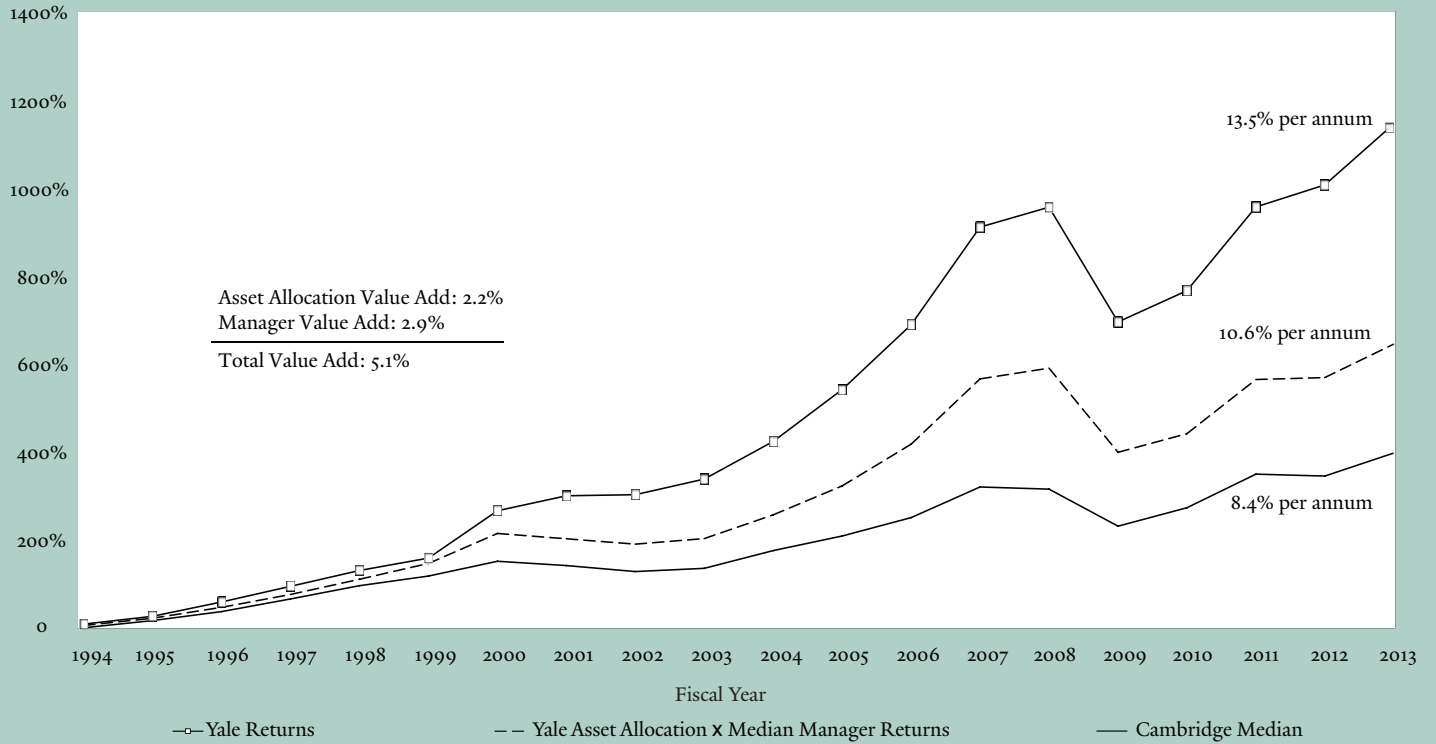
Source: Cambridge Associates



*Steven N. Kaplan and Antoinette Schoar, “Private Equity Performance: Returns, Persistence, and Capital Flows,” *Journal of Finance*, no. 4 (August 2005): 1791.

Cumulative Return for Twenty Years Ending June 30, 2013

Source: Yale, Cambridge Associates



Sheffield-Sterling-Strathcona Hall, viewed from courtyard.

Natural Resources

Equity investments in natural resources – oil and gas, timberland, and metals and mining – share common risk and return characteristics: protection against unanticipated global inflation, high and visible current cash flow, and opportunities to exploit inefficiencies. At the portfolio level, natural resource investments provide attractive return prospects and significant diversification. Yale has an 8.0 percent long-term policy allocation to natural resources with expected real returns of 6.35 percent and risk of 20.3 percent. Yale's current natural resources allocation is in line with that of the average endowment.

Superior operators have demonstrated the ability to generate excess returns over a market cycle. The inception-to-date return of Yale's oil and gas (1986), timber (1996), and mining (2011) portfolio clocks in at an impressive 16.0 percent per annum.

Private Equity

Private equity offers extremely attractive long-term risk-adjusted returns, stemming from the University's strong stable of value-adding managers that exploit market inefficiencies. Yale's private equity portfolio includes investments in venture capital and leveraged buyout partnerships. The University's target allocation to private equity of 31.0 percent far exceeds the 9.5 percent actual allocation of the average educational institution. In aggregate, the private equity portfolio is expected to generate real returns of 10.5 percent with risk of 26.8 percent.

Yale's private equity program, one of the first of its kind, is regarded as among the best in the institutional investment community, and the University is frequently cited as a role model by other investors. Yale's private equity strategy emphasizes partnerships with firms that pursue a value-added approach to investing. Such firms work closely with portfolio companies to create fundamentally more valuable entities, relying only secondarily on financial engineering to generate returns. Investments are made with an eye toward long-term relationships – generally, a commitment is expected to be the first of several – and toward the close alignment of the interests of general and limited partners. Since inception in 1973, the private equity program has earned an astounding 29.9 percent per annum.

Real Estate

Investments in real estate provide meaningful diversification to the Endowment. A steady flow of income with equity upside creates a natural hedge against unanticipated inflation without a sacrifice of expected return. Yale's 19.0 percent long-term policy allocation significantly exceeds the average endowment's commitment of 4.2 percent. Expected real returns are 6.0 percent with risk of 17.5 percent.

While real estate markets sometimes produce dramatically cyclical returns, pricing inefficiencies in the asset class and opportunities to add value allow superior managers to generate excess returns over long time horizons. Since inception in 1978 the portfolio has returned 11.6 percent per annum.

The illiquid nature of private real estate and the time-consuming process of completing transactions create a high hurdle for casual investors. A critical component of Yale's investment strategy is to create strong, long-term partnerships between the Investments Office and its investment managers. Over the past two decades, Yale played a critical role in the development and growth of a number of successful real estate investment organizations.

Asset Allocations

	Yale University	Educational Institution Mean
Absolute Return	17.8%	24.4%
Domestic Equity	5.9	20.1
Fixed Income	4.9	10.1
Foreign Equity	9.8	20.1
Natural Resources	7.9	8.3
Private Equity	32.0	9.5
Real Estate	20.2	4.2
Cash	1.6	3.2

Data as of June 30, 2013



Architectural detail, stone carving from the entrance to the Hall of Graduate Studies.

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The spending rule is at the heart of fiscal discipline for an endowed institution. Spending policies define an institution's compromise between the conflicting goals of providing support for current operations and preserving purchasing power of endowment assets. The spending rule must be clearly defined and consistently applied for the concept of budget balance to have meaning.

The Endowment spending policy, which allocates Endowment earnings to operations, balances the competing objectives of providing a stable flow of income to the operating budget and protecting the real value of the Endowment over time. The spending policy manages the trade-off between these two objectives by combining a long-term spending rate target with a smoothing rule, which adjusts spending in any given year gradually in response to changes in Endowment market value.

The target spending rate approved by the Yale Corporation currently stands at 5.25 percent. According to the smoothing rule, Endowment spending in a given year sums to 80 percent of the previous year's spending and 20 percent of the targeted long-term spending rate applied to the fiscal year-end market value two years prior. The spending amount determined by the formula is adjusted for inflation and constrained so that the calculated rate is at least 4.5 percent, and not more than 6.0 percent, of the Endowment's inflation-adjusted market value two years prior. The smoothing rule and the diversified nature of the Endowment are designed to mitigate the impact of short-term market volatility on the flow of funds to support Yale's operations.

Lessons from the Crisis

The financial crisis highlighted a number of important issues and lessons that investors would be wise to heed. The crisis made clear the importance of a long-term orientation and underscored the need to support a diversified, equity-oriented, active-management strategy with adequate organizational resources and capabilities.

Organizations, investment teams, and committees that lack commitment to a long time horizon make sub-optimal decisions during periods of tumult and uncertainty. During 2008 and 2009, for example, some institutions overreacted to short-term concerns surrounding portfolio performance and volatility, choosing to reduce equity exposure near the market's nadir. Yale instead sought to maintain equity exposure, aggressively managing liquidity and prudently employing debt. Similarly, after the October 1987 stock market crash, Yale made a rebalancing purchase of nearly \$100 million of equities (representing more than 5% of Endowment value) funded by a corresponding sale of nearly \$100 million of bonds. In the context of crisis-induced gloom, Yale's actions appeared rash, particularly as many institutions

responded to market declines by further reducing their already diminished equity exposure. In both cases, however, as markets rebounded, Yale's equity positions produced outsized returns. Those that chose an untimely reversal of strategy missed the benefits of the recovery.

The crisis emphasized that the Yale model is only appropriate for organizations with a strong, dedicated, and skilled investment staff. Although the fundamental principles of the Yale model are straightforward, execution of an active management strategy demands a significant commitment of resources, particularly during chaotic and uncertain times. Identifying high-quality active managers with the ability to generate alpha consistently requires dedicated sourcing, researching, and monitoring of investment funds. Demands on management are amplified during market dislocations when sensibly reallocating funds between managers and making challenging rebalancing decisions depend upon the knowledge and input of experienced investment staff. Establishing and maintaining an unconventional investment profile require acceptance of uncomfortably

idiosyncratic portfolios, which can, at times, appear imprudent. Unless institutions maintain contrarian positions through difficult times, the resulting damage of buying high and selling low imposes severe financial and reputational costs.

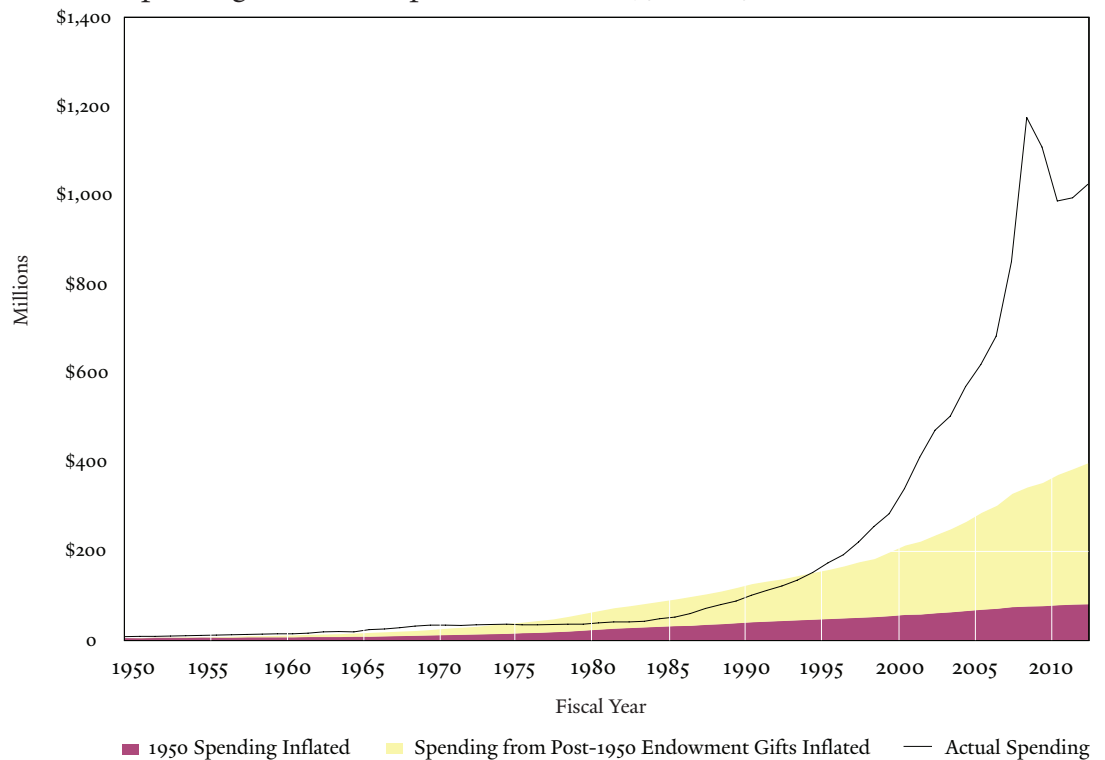
The financial crisis highlighted the importance of understanding, forecasting, and managing portfolio liquidity, which can change dramatically during periods of turmoil. Investors with large allocations to illiquid assets must possess a sophisticated understanding of the liquidity tools at their disposal and must dedicate sufficient organizational resources to modeling, tracking, and stress-testing portfolio liquidity.

The Yale model of endowment investing is not appropriate for everyone. Investors must address the particular investment policy needs of their institutions and take into consideration their resources and temperament. Only those organizations with a true long-term perspective and sufficient staff resources should pursue an active, equity-oriented, alternatives-focused investment strategy. The costly game of active management guarantees failure for the casual participant.

The spending rule has two implications. First, by incorporating the prior year's spending, the rule eliminates large fluctuations, enabling the University to plan for its operating budget needs. Over the last twenty years, the standard deviation of annual changes in actual spending has been approximately 66 percent of the standard deviation of annual changes in Endowment value. Second, by adjusting spending toward the long-term target spending level, the rule ensures that spending will be sensitive to fluctuating Endowment market values, providing stability in long-term purchasing power.

Despite the conservative nature of Yale's spending policy, distributions to the operating budget rose from \$470 million in fiscal 2003 to \$1.02 billion in fiscal 2013. The University projects spending of \$1.05 billion from the Endowment in fiscal 2014, representing approximately 35 percent of revenues.

Spending Growth Surpasses Inflation 1950–2013



Institutions versus Individuals

The most important distinction in the investment world does not separate individuals and institutions; the most important distinction divides those investors with the ability to make high-quality active management decisions from those investors without active management expertise. Few institutions and even fewer individuals exhibit the ability and commit the resources to produce risk-adjusted excess returns.

The correct strategies for investors with active management expertise fall on the

opposite end of the spectrum from the appropriate approaches for investors without active management abilities. Aside from the obvious fact that skilled active managers face the opportunity to generate market-beating returns in the traditional asset classes of domestic and foreign equity, skilled active managers enjoy the more important opportunity to create lower-risk, higher-returning portfolios with the alternative asset classes of absolute return, real assets, and private equity. Only those investors with active management ability

sensibly pursue market-beating strategies in traditional asset classes and portfolio allocations to nontraditional asset classes.

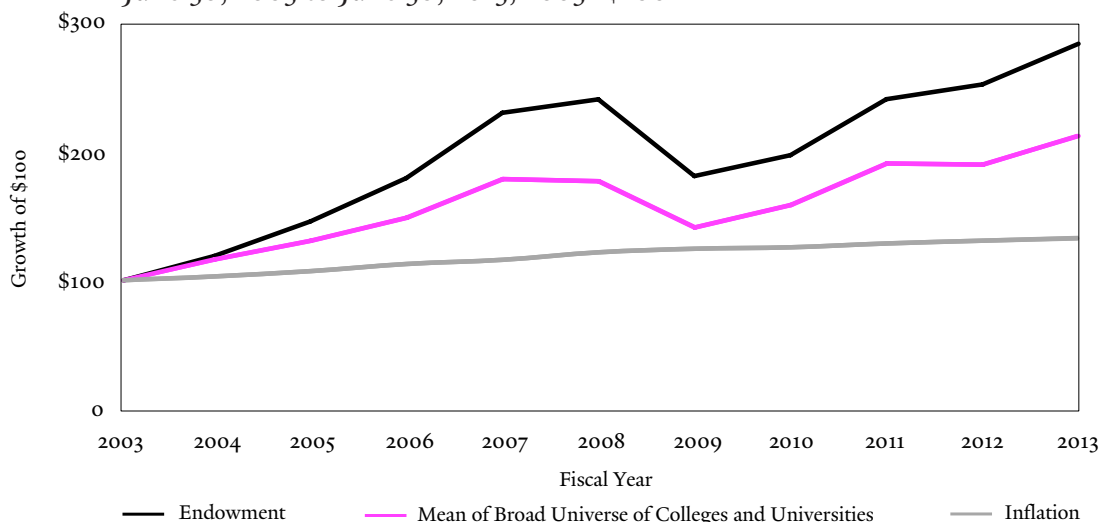
No middle ground exists. Low-cost passive strategies suit the overwhelming number of individual and institutional investors without the time, resources, and ability to make high-quality active management decisions. The framework of the Yale model applies to only a small number of investors with the resources and temperament to pursue the grail of risk-adjusted excess returns.

5

Yale has produced excellent long-term investment returns. Over the ten-year period ending June 30, 2013, the Endowment earned an annualized 11.0 percent return, net of fees, surpassing annual results for domestic stocks of 8.1 percent and domestic bonds of 4.5 percent, and placing it among the top one percent of large institutional investors. Endowment outperformance stems from sound asset allocation policy and superior active management.

Yale’s long-term superior performance relative to its peers and benchmarks has created substantial wealth for the University. Over the ten years ending June 30, 2013, Yale 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.

Yale’s Performance Exceeds Peer Results
June 30, 2003 to June 30, 2013, 2003=\$100



Performance by Asset Class

Yale’s long-term asset class performance continues to be outstanding. In the past ten years, nearly every asset class posted superior returns, outperforming benchmark levels.

Over the past decade, the absolute return portfolio produced an annualized 9.7 percent return, exceeding the passive Barclays 9-12 Month Treasury Index by 7.6 percent per year and besting its active benchmark of hedge fund manager returns by 4.2 percent per year. For the ten-year period, absolute return results exhibited little correlation to traditional marketable securities.

The domestic equity portfolio returned an annualized 10.8 percent for the ten years ending June 30, 2013, outperforming the Wilshire 5000 by 2.7 percent per year and the Russell Median Manager return, net of estimated fees, by 3.3 percent per year. Yale’s active managers have added value to benchmark returns primarily through stock selection.

Yale’s internally managed fixed income portfolio earned an annualized 3.4 percent over the past decade, keeping pace with the Barclays 1-5 Year Treasury Index and exceeding the Russell Median Manager return by 0.2 percent per year. Because the fixed income portfolio serves as the University’s primary source of liquidity, the Endowment forgoes opportunities to generate excess returns.

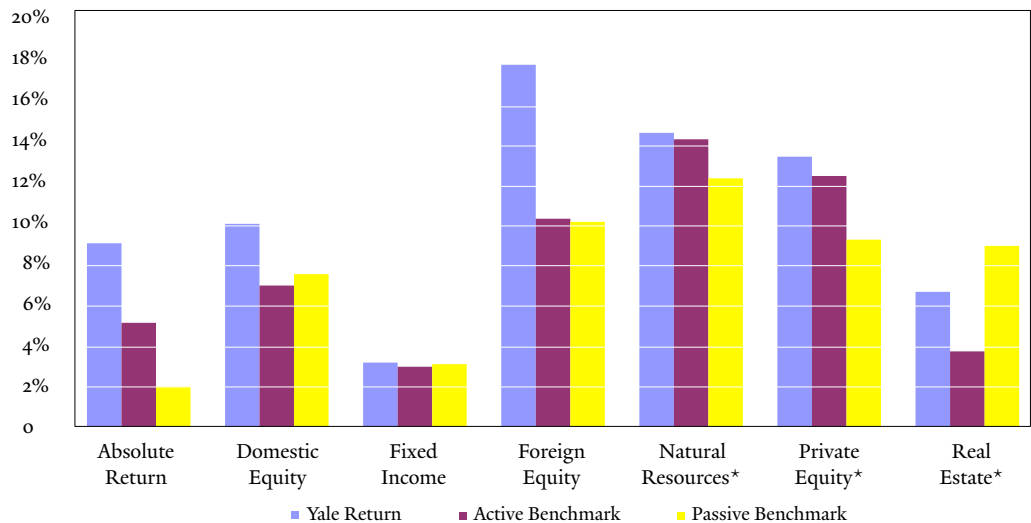
The foreign equity portfolio generated an annual return of 19.3 percent over the ten-year period, outperforming its composite benchmark by 8.4 percent per year and the Russell Median Manager return by 8.2 percent per year. The portfolio's excess return is due to astute country allocation and effective security selection by active managers.

Yale's natural resources portfolio produced an annualized return of 15.6 percent over the past decade, surpassing its composite passive benchmark by 2.4 percent per year and the Cambridge Associates natural resources manager pool by 0.3 percent per year. Yale's strong performance results from partnership with superior operators.

Private equity earned 14.4 percent annually over the last ten years, outperforming the composite passive benchmark by 4.4 percent per year and outperforming the return of a pool of private equity managers compiled by Cambridge Associates by 1.0 percent per year.

Real estate generated a 7.2 percent annualized return over the ten-year period, underperforming the MSCI REIT Index by 2.4 percent per year, but outperforming a pool of Cambridge Associates real estate managers by 3.2 percent per year. Yale's active outperformance is due to successful exploitation of market inefficiencies and timely pursuit of contrarian investment strategies.

Yale Asset Class Results Beat Most Benchmarks June 30, 2003 to June 30, 2013



* Yale Returns and Active Benchmarks are dollar-weighted.

Active Benchmarks

Absolute Return: Dow Jones Credit Suisse Composite
Domestic Equity: Frank Russell Median Manager, U.S. Equity
Fixed Income: Frank Russell Median Manager, Fixed Income
Foreign Equity: Frank Russell Median Manager Composite,
 Foreign Equity
Natural Resources: Cambridge Associates Natural Resources
Private Equity: Cambridge Associates Private Equity Composite
Real Estate: Cambridge Associates Real Estate

Passive Benchmarks

Absolute Return: Barclays 9-12 Mo Treasury
Domestic Equity: Wilshire 5000
Fixed Income: Barclays 1-5 Yr Treasury
Foreign Equity: Blend of MSCI EAFE Investable Market Index, MSCI Emerging Markets Investable Market Index, MSCI China A-Shares, Custom Opportunistic Blended Index
Natural Resources: Blend of Custom Timber REIT Basket, S&P O&G Exploration & Production Index, HSBC Global Mining Index
Private Equity: Blend of Russell 2000, Russell 2000 Technology, MSCI ACWI ex-US Small-Cap Index
Real Estate: MSCI REIT Index

Management and Oversight

6

Since 1975, the Yale Corporation Investment Committee has been responsible for oversight of the Endowment, incorporating senior-level investment experience into portfolio policy formulation. The Investment Committee consists of at least three Fellows of the Corporation and other persons who have particular investment expertise. The Committee meets quarterly, at which time members review asset allocation policies, Endowment performance, and strategies proposed by Investments Office staff. The Committee approves guidelines for investment of the Endowment portfolio, specifying investment objectives, spending policy, and approaches for the investment of each asset category.

Investment Committee

Douglas A. Warner, III '68
Chairman
Former Chairman
J.P. Morgan Chase & Co.

G. Leonard Baker '64
Managing Director
Sutter Hill Ventures

Francis Biondi '87
Managing Member
King Street Capital Management

Ben Inker '92
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GMO

Paul Joskow '72 PH.D.
President
Alfred P. Sloan Foundation

Stefan Kaluzny '88
Managing Director
Sycamore Partners

Kevin Ryan '85
Founder and CEO
Gilt Groupe

Peter Salovey '86 PH.D.
President
Yale University

Carter Simonds '99
Managing Director
Blue Ridge Capital

Dinakar Singh '90
CEO and Founding Partner
TPG-Axon Capital



Peabody Museum tower, springtime view.

Nobel Prize Winners at Yale

Two Yale University professors were recognized with Nobel Prizes in 2013,

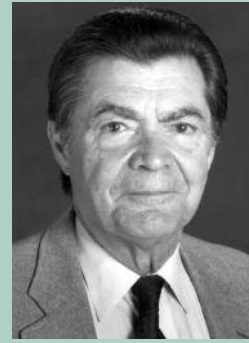


joining six other distinguished members of the Yale community who received the prestigious award in prior years. Yale is delighted to count among the members of the University community the 2013 winners James E. Rothman and Robert J. Shiller.



Lars Onsager

The Nobel Prize in Chemistry, 1968. Onsager's discoveries of reciprocal relations in chemical thermodynamics were recognized for their importance in the thermodynamics of irreversible processes.



George E. Palade

The Nobel Prize in Physiology or Medicine, 1974. Palade redefined the field of cell physiology. He, Albert Claude, and Christian de Duve were acknowledged for their influential findings on structural and functional cell organization.



Tjalling C. Koopmans

The Nobel Prize in Economic Sciences, 1975. Koopmans and Russian economist Leonid Vitaliyevich Kantorovich shared the prize for their independent analyses of the optimal allocation of scarce resources.



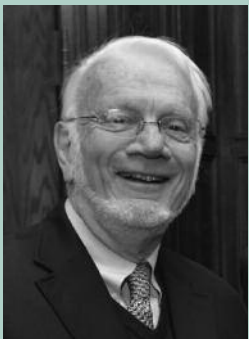
James Tobin

The Nobel Prize in Economic Sciences, 1981. Tobin was honored for his theory of financial markets and their relation to consumption, investment, expenditures, employment, production, and prices.



Sidney Altman

The Nobel Prize in Chemistry, 1989. Altman and Thomas R. Cech shared the Nobel Prize for their discovery of the catalytic properties of ribonucleic acid.



Thomas A. Steitz

The Nobel Prize in Chemistry, 2009. Steitz, with Venkatraman Ramakrishnan and Ada E. Yonath, was lauded for his scholarship of the structure and function of the ribosome.



James E. Rothman

The Nobel Prize in Physiology or Medicine, 2013. Rothman, Randy W. Schekman, and Thomas C. Südhof were honored for their contributions to cell physiology through their discovery of machinery regulating vesicle traffic, a major cellular transport system.



Robert J. Shiller

The Nobel Prize in Economic Sciences, 2013. Shiller, a behavioral economist, was recognized with Eugene F. Fama and Lars Peter Hansen for their empirical analysis of asset prices.

The Investments Office manages the Endowment and other University financial assets, and defines and implements the University's borrowing strategies. Headed by the Chief Investment Officer, the Office currently consists of twenty-six professionals.

Investments Office

David F. Swensen '80 PH.D.
Chief Investment Officer

Matthew S. T. Mendelsohn '07
Associate Director

Dean J. Takahashi '80, '83 MPPM
Senior Director

Celeste P. Benson
Senior Portfolio Manager

Alexander C. Banker
Director

John V. Ricotta '08
Senior Associate

Alan S. Forman
Director

Patrick K. Sherwood '13 M.B.A.
Senior Associate

Lisa M. Howie '00, '08 M.B.A.
Director

Cain P. Soltoff '08
Senior Associate

Timothy R. Sullivan '86
Director

Xinchen Wang '09
Senior Associate

Kenneth R. Miller '71
Senior Associate General Counsel

David S. Katzman '10
Senior Financial Analyst

Stephanie S. Chan '97
Associate General Counsel

Sebastian K. Serra '11
Senior Financial Analyst

Deborah S. Chung
Associate General Counsel

Philip J. Bronstein '12
Financial Analyst

J. Colin Sullivan
Associate General Counsel

Timothy H. Hillas '13
Financial Analyst

Carrie A. Abildgaard
Associate Director

Daniel J. Otto '12
Financial Analyst

Michael E. Finnerty
Associate Director

E. Benjamin VanGelder '13
Financial Analyst

R. Alexander Hetherington '06
Associate Director

David Y. Zhang '12
Financial Analyst

Back cover:

Edward P. Evans Hall, named for the late Edward P. Evans '64, the recently completed home of the School of Management.

Yale Rallies Behind Its Financial Steward

In recognition of Chief Investment Officer David F. Swensen's contributions to Yale University over the past twenty-eight years, a group of ninety colleagues, friends, and family donated more than \$36 million in Swensen's honor. The gifts raised through the Swensen Initiative will be invested in Yale's Endowment.

A portion of the funds will establish a chair in the Economics Department, where Swensen was a student and then taught for more than thirty years. "Nothing could be a more appropriate recognition of [Swensen's] devotion to Yale and its academic mission than a professorship in his name," said William C. Brainard, Arthur M. Okun Professor Emeritus of Economics.

A second fund will endow the Swensen-McMahon Head Coach of Women's Tennis, named in honor of Swensen and Meghan R. McMahon '87, a former standout Yale athlete and tennis coach. In assuming her title as the Swensen-McMahon Head Coach of Women's Tennis, Danielle L. McNamara expressed honor and gratitude, noting that it would be difficult to find "two people who love Yale and Yale Tennis more." Director of Athletics Thomas A. Beckett praised Swensen's work as "transformative for Yale."

The Initiative creates a fund for innovative teaching in Yale College and builds on the existing David Swensen Scholarship Fund, while the remainder provides endowment funding for teaching and research across the University.

Finally, Swensen has been recognized in Berkeley College – where he is a longtime Fellow – with the master's residence now called Swensen House. Berkeley College Master Marvin M. Chun was honored to acknowledge Swensen in "the college's most beautiful space in which we welcome

freshman parents, congratulate the seniors, and host countless events to enhance Berkeley spirit."

"The outpouring of support for Yale's academic and athletic programs both overwhelms and humbles me," Swensen said. "And to have the master's house at Berkeley College named for me is far more than I ever dreamed possible."

Yale Investments Office Senior Director Dean Takahashi highlighted Swensen's "vision of integrity and excellence that inspires us to aim higher." "On the personal front," Takahashi added, "he leads by example.... He chooses to serve the greater good over his personal gain.... Dave not only makes the world better, he makes us, his friends, better."

Yale Provost Benjamin Polak wrote that Swensen is "the de facto professor of finance to a generation.... And what he has taught us – what he has taught me – is not just finance. It is ethics. It is humanity. It is

the core values of the University, the core values that David embodies."

University President Peter Salovey said, "Donors have directed their contributions to some of Yale's most important priorities – support for great teaching and great coaching as well as unrestricted funds that can be directed wherever they are needed most. I am so thankful that our alumni and friends have come together to recognize a Yale leader in a way that will do so much good for the University."

"Over the last two decades, Yale moved from being a national leader to an institution of global scope and eminence," former President Richard C. Levin said. "This work required substantial investment in faculty, students, and infrastructure. David's extraordinary investment returns gave us the resources we needed to expand the University's reach and influence. I am deeply grateful for his achievements, his unfailing integrity, and his friendship."



David F. Swensen, Chief Investment Officer, and Dean J. Takahashi, Senior Director of the Yale Investments Office, acknowledge applause at the announcement of the Swensen Initiative.

Sources

Financial and Investment Information

Educational institution asset allocations and returns from Cambridge Associates.

Much of the material in this publication is drawn from memoranda produced by the Investments Office for the Yale Corporation Investment Committee. Other material comes from Yale's financial records, Reports of the Treasurer, and Reports of the President.

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Pages 10-11

The Death of Alpha: Swensen, *Pioneering Portfolio Management*, pp. 238-240.

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Individuals versus Institutions: Excerpted from Swensen, *Pioneering Portfolio Management*, pp. 2-3.

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Nobel Prize Winners at Yale:
The Official Web Site of the Nobel Prize.
<http://www.nobelprize.org/>

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