Long-Term Investment Pool & Similar Funds (LTIP)

Investment Review for Calendar 2013 Submitted March 2014

This cover page provides a summary overview of the Pennsylvania State University Long-Term Investment Pool (see next page for details) for Calendar Year 2013. The second page summarizes LTIP-related data that is discussed on the remaining pages, along with performance analysis.

Executive Overview

Long-Term Investment Pool (LTIP) Performance

Annualized *net* investment returns for the Penn State University LTIP (adjusted for the impact of gifts and spending, and after external investment management expenses) for periods ending December 31, 2013 are:

Calendar 13	3 Years	5 Years	10 Years
14.2%	**10.6%**	**11.8%**	**8.6%**

Long-Term Investment Pool Market Value (pg 3)

As of December 31, 2013, Penn State University's LTIP was valued at $3.20 billion, including $2.12 billion in endowment assets and $1.08 billion in non-endowed funds. An additional $110 million was held as Similar Funds (see page 2 for details).

Review of Investment Markets (pg 4)

The graph below compares respective returns for 12-months ending December 31, 2013 and December 31, 2012 for the S&P 500, MSCI All Country World (ACWI) ex-US, Dow Jones UBS Commodities, Barclays Aggregate Bonds, and publicly-traded Real Estate Investment Trusts (REITs) Indexes. As shown below, US equity returns for calendar 2013 exceeded their 2012 performance, while non-US equities, REITs, US bonds and Commodities all trailed their respective prior year returns by varying degrees.

Investment Diversification and Asset Mix (pg 5)

At calendar year-end, 52% of LTIP assets were invested in public equities (domestic and foreign) and 11% in private equity/venture capital, representing 63% of LTIP in growth-oriented assets. In addition, 16% was invested in fixed income/cash, 12% in real return assets (TIPS, real estate, natural resources and commodities), and 9% in diversifying strategies (hedge funds).

Comparative Fund Performance (pg 6)

Penn State's LTIP returned 14.2% net for the year ending December 31, 2013 versus 14.6% for the Passive Policy Portfolio, whereas LTIP's 3- and 5-yr relative performance notably outpaced the respective passive benchmark returns.

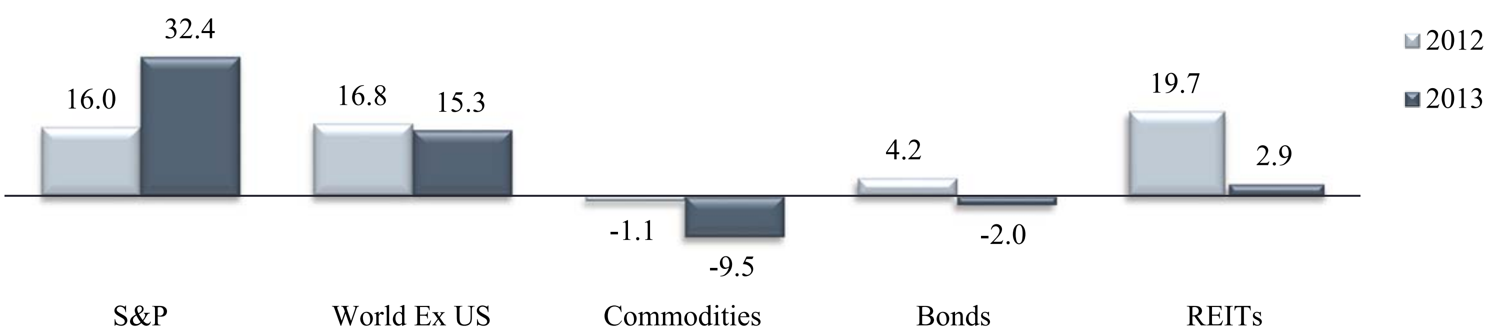
LTIP Liquidity (pg 7)

With nearly one-half of assets convertible to cash in a matter of days, the LTIP maintains adequate liquidity to satisfy anticipated cash requirements.

LTIP Performance and Spending (pg 8)

The Penn State LTIP's average annual net returns of 8.6% for both the last 10- and 20-year periods have allowed the LTIP to maintain inflation-adjusted spending while achieving long-term intergenerational equity.

Investment Market Returns
Calendar Years Ending December 31



5-Year LTIP Facts and Figures

	Annual Periods Ending December 31				
	2013	2012	2011	2010	2009
Investment Performance					
Endowment[1] (annualized net returns)	14.2%	14.0%	3.9%	14.1%	13.0%
Market Values ($ millions)					
Endowment[1]	2,120.7	1,859.0	1,669.1	1,545.8	1,356.5
Similar Funds[2]	109.7	94.3	89.7	116.5	103.2
Endowment and Similar Funds	2,230.4	1,953.3	1,758.8	1,662.3	1,459.7
Gifts & Other Additions ($ mils)	87.3	52.6	139.1	71.4	63.4
Current Spending ($ mils)	73.1	71.2	66.4	62.5	64.3

As described in footnote #3 below, approximately $1 billion earmarked to fund FAS 106 liabilities (post-retirement health care benefits for PSU retirees) was commingled into the University's Long-Term Investment Pool (LTIP) over the past four years. Prospectively, the reported market value, and related analysis, for LTIP will include all commingled funds, as shown below December 31, 2013.

	2013	2012	2011	2010	2009
Non-Endowed Funds[3]	1,081.0	717.3	134.8	135.7	125.6
Total LTIP[4] & Similar Funds	3,311.4	2,670.6	1,893.6	1,798.0	1,585.3

1) Endowment — donor-restricted gifts

2) Similar Funds — deferred gifts and donor-restricted funds in transit to Endowment

3) Non-Endowed Funds earmarked for FAS 106 liability (employee post-retirement health care benefits)

4) Commingled assets over which Penn State's Office of Investment Management (OIM) has investment responsibility, as approved by the Penn State Investment Council (PSIC), exclusive of Similar Funds

Penn State Investment Council (PSIC) Meetings

August 23, 2013:

- Committing $20M to: Townsend Real Estate Alpha Fund I, L.P.

November 1, 2013:

- Committing $20M to: Levine Leichtman Capital Partners V, L.P.
- Investing $25M in: SFP Value Realization Fund
- Investing $50M in: Kiltearn Global Equity Fund
- Investing $50M in: Manning & Napier U.S. Core Equity Fund

December 13, 2013:

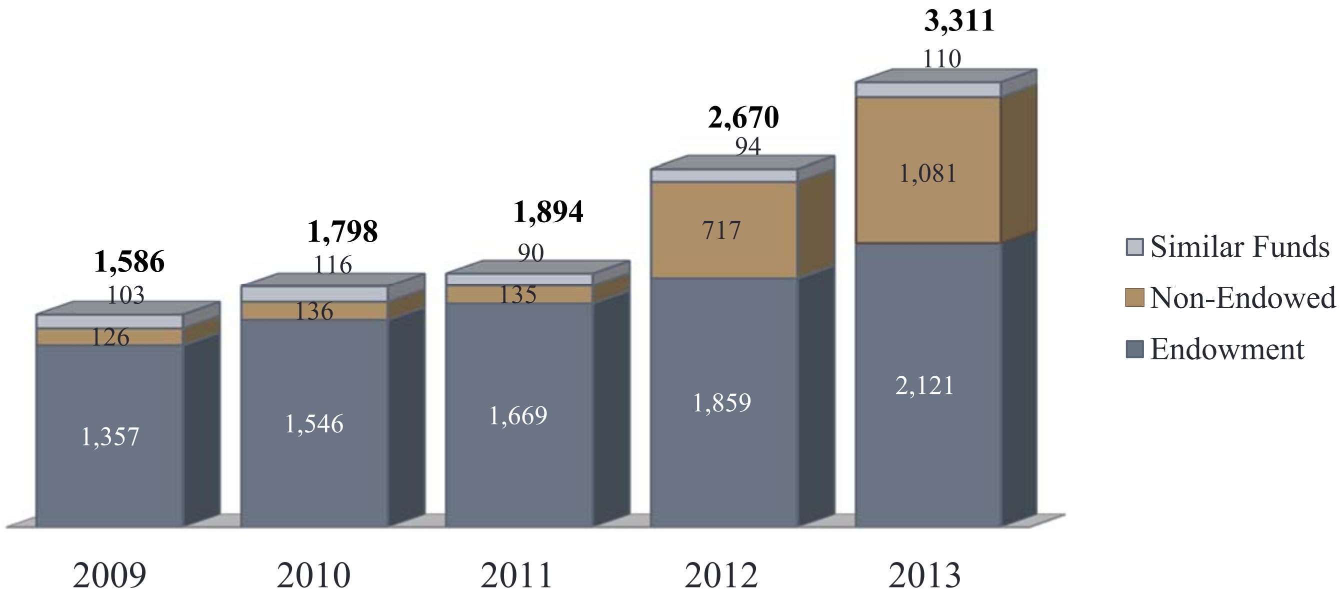
- Committing $20M to: Odyssey V, L.P.
- Committing $15M to: Atlas Capital Resources II, L.P.
- Committing $10M to: DFJ Venture XI, L.P.

Please note that commitments made to Limited Partnerships (LPs) are not immediately invested and are called (paid in) over several years until commitment is satisfied, except as noted.

Long-Term Investment Pool Market Value

As of December 31, 2013, Penn State's Long-Term Investment Pool was valued at $3.20 billion, including non-endowed funds in the amount of $1.08 billion of non-endowed funds that has been commingled into the LTIP. Non-pooled assets — charitable remainder trusts, charitable gift annuities, and other life income funds in addition to donor restricted funds — accounted for an additional $110 million, shown below as Similar Funds, for a total $3.31 billion in assets.

Long-Term Investment Pool Market Value
Calendar Years Ending December 31
($ millions)



Endowment Assets

Endowment assets increased by $262 million during calendar 2013, from $1.86 billion to $2.12 billion. As seen in the table on page 2, endowed gifts added over the last 12 months totaled $87 million, while endowment program support (spending) amounted to $73 million. Current endowment spending has been approved by the Board of Trustees to remain at an annual rate of 4.5%.

Long-Term Investment Pool

As of December 31, the market value of the Long-Term Investment Pool totaled $3.20 billion, including $1.08 billion in non-endowed assets that have been commingled for investment purposes, but are restricted to the on-going funding of the University's FAS 106 liability, per above.

The reminder of this report will focus on the Long-Term Investment Pool, including all commingled funds.

Review of Investment Markets in Calendar 2013

Following a year of double-digit gains globally, domestic equities in calendar 2013 doubled the performance of the prior year, while developed, non-US equities repeated their double-digit gains and emerging markets were slightly negative. Meanwhile, fixed income returns were uncharacteristically negative. The performance of investment markets that directly impact Penn State University's Long-Term Investment Pool is discussed below.

US Equities

The S&P 500 returned 32.4% for the 12 months ending December 31, 2013, compared to 16.0% for calendar 2012, while the more broadly-based Russell 3000 Index returned 33.6% and 16.4%, respectively. Small-capitalization stocks, as measured by the Russell 2000 Index, returned 38.8% versus 16.3% last year. The Nasdaq Index's return of 38.3% bested the broad domestic indexes in calendar 2013, improving on its 2012 return of 15.9%.

Non-US Equities

Equities outside the United States broadly trailed as the Morgan Stanley All Country World (ACW) Index ex-US returned 15.3% for the 12-month period ending December 31, 2013. This was slightly lower than its calendar 2012 return of 16.8%. On the other hand, emerging market equities in developing countries returned -2.6% over the last 12 months, far short of their 18.2% return in calendar 2012.

Fixed Income

Barclays Capital Aggregate Bond Index (various maturities of US Government and non-government domestic bonds) returned -2.0% in calendar 2013 versus 4.2% in 2012. US Long-Term Treasury Bonds returned -12.7% in calendar 2013 versus 3.6% a year earlier.

For calendar 2013 and 2012, 91-day Treasury Bills remained essentially flat at 0.1%. Global Treasury Inflation Protected Securities (TIPS) returned -3.2% in calendar 2013 compared to 8.5% in calendar 2012.

Real Estate

Publicly-traded Real Estate Investment Trusts (REITs) returned 2.9% for the calendar year ended December 31, 2013, lower than their 2012 return of 19.7%. Privately-held real estate investment partnerships, as measured by the largely commercial property NCREIF Index, returned 11.0% in both calendar years 2013 and 2012.

Alternatives

Private Equity Buyouts and Venture Capital earned time-weighted returns of 17.0% and 15.1%, respectively, for the 12 months ending September 30, 2013 (private capital partnerships are reported on a 3-month lag). In the previous 12-month period ending September 30, 2012, Private Equity Buyouts returned 14.9%, while Venture Capital was at 7.5%. By comparison to public markets, the Russell 2000 Index of small-capitalization stocks returned 30.1% for the 12 months ending September 30, 2013 and 31.9% for the year ending September 30, 2012.

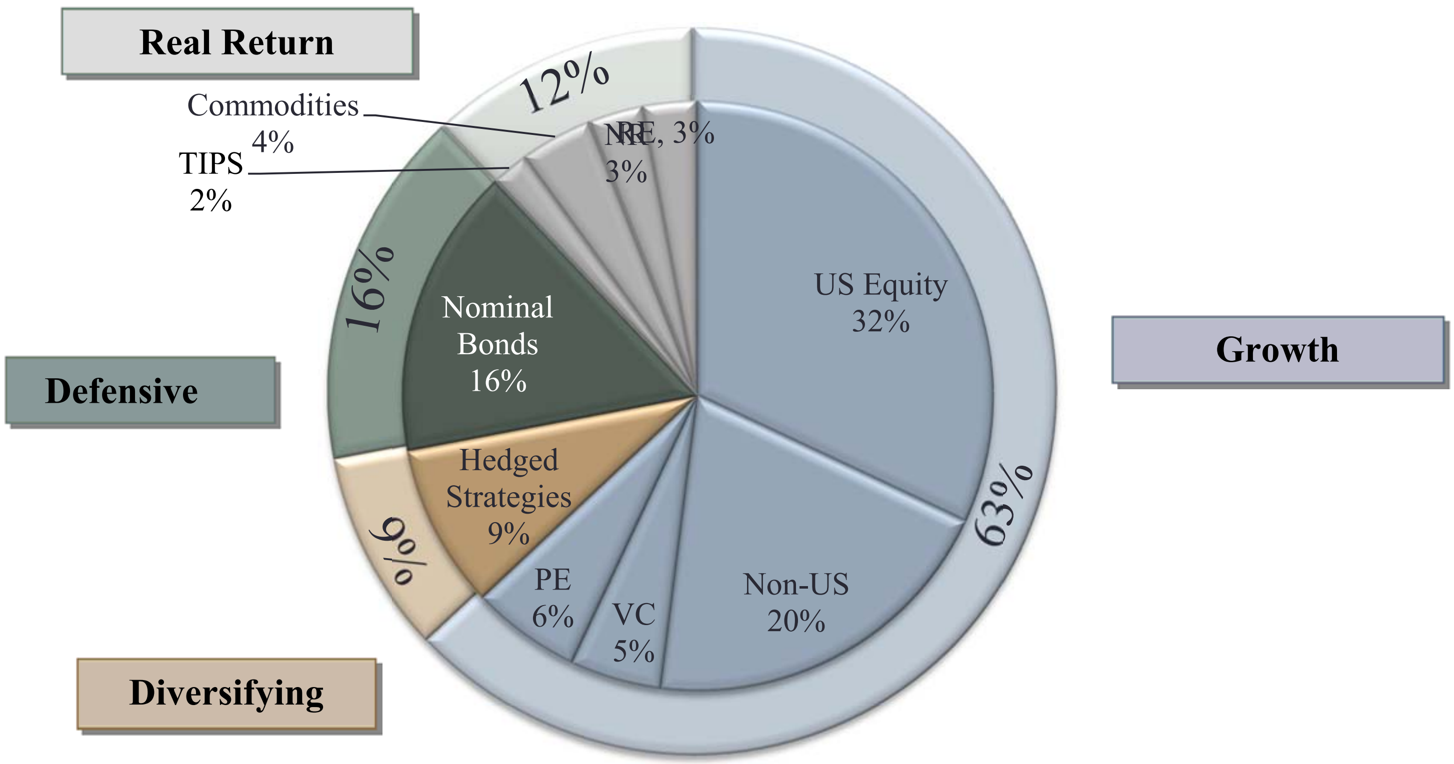
Economic and Market Outlook

In the 12 months ending December 31, 2013, global equity markets generally surged ahead, with US equities easily outpacing non-US indexes. However, fixed income markets were negative after six consecutive years of positive returns, as bond markets began to anticipate the possibility of Federal Reserve Bank tapering its monthly purchase of treasury and mortgage-backed bonds. Prospectively, expectations for domestic corporate profits are leveling off in the face of record profit margins but a slowly recovering world economy, especially in the European developed countries.

Penn State's well-diversified Long-Term Investment Pool — consisting of public equities, private partnerships, bonds, and hedge funds in addition to inflation-sensitive "real return assets" — continues to be the appropriate investment approach for long-term growth and sustainable spending.

Investment Diversification and Asset Mix

Asset allocation is a primary determinant of investment performance and risk control. LTIP's asset mix combines four broad investment strategies – growth (economic-sensitive), real (inflation-sensitive), diversifying (low sensitivity to economic/investment-market fluctuations), and defensive – to maximize potential returns, while tempering volatility. In the graph below, the four macro investment strategies are shown in the outermost ring with their December 31, 2013 allocations of 63%, 9%, 16% and 12%, respectively; however, the percentages fluctuate over time depending on market trends and allocations approved by the Penn State Investment Council.



At a more granular level, LTIP's diversified portfolio includes a variety of traditional asset classes that comprise the four macro strategies, as shown by the slices within the inner pie (percentages are rounded):

- Growth (63%): 32% in publicly-traded US and 20% in publicly-traded non-US common stocks, as well as 5% in venture capital and 6% private equity funds.
- Diversifying (9%): 4% in credit-related, 3% in equity-related strategies and less than 2% in various other hedged strategies.
- Defensive (16%): 11% in US government and investment grade corporate bonds, and 5% in global bonds.
- Real Return (12%): 2% in Global Treasury Inflation Protected Securities (TIPS), as well as 3% in real estate, 3% in natural resources, and 4% in commodities.

The approximately 75% currently allocated to growth and inflation sensitive strategies is intended to take advantage of capital growth and purchasing power protection offered by equity-type investments. The 16% invested in defensive (fixed income) and 9% in various hedged strategies is intended to provide stability and diversification during times of market turbulence and uncertain economic conditions.

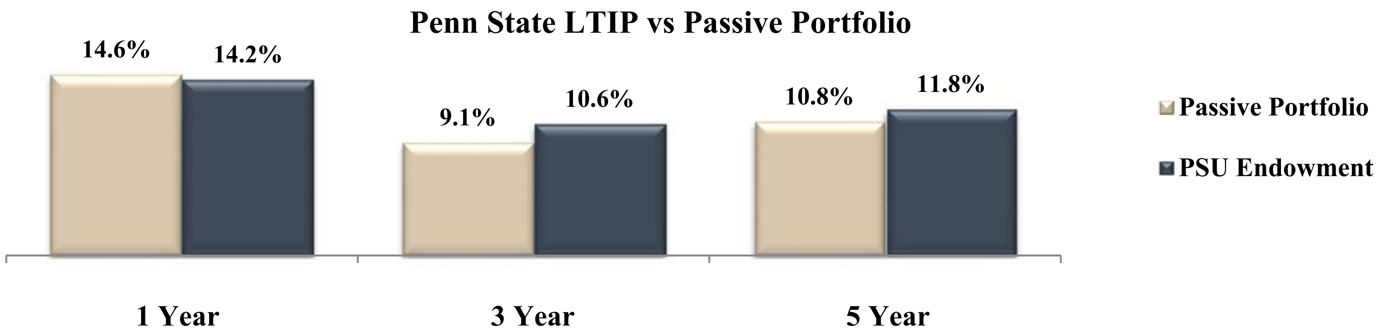
LTIP Performance Compared to Passive Portfolio

The Pool's investment performance is measured against a hypothetical *Passive Portfolio,* comprised of four broad asset categories: Public Equities, Private Capital, Fixed Income and Commodities. This passive portfolio serves as a blended benchmark against which the performance of the actual, actively-managed, and more broadly-diversified LTIP portfolio is monitored. This analysis is separate from the previous page where the described strategies do not necessarily have measurable benchmarks and represent a conceptual, top-down approach to asset allocation that is updated and reviewed regularly.

In the table below, the respective static weightings of four traditional major asset categories are associated with corresponding market benchmarks and their respective index returns to generate *Passive Portfolio* returns over 1-, 3-, and 5-year horizons:

			Annualized % Benchmark Returns		
Asset Class	**Benchmark**	**% Weighting**	**1 Year**	**3 Years**	**5 Years**
Public Equities	MSCI All Country World	55	23.4	10.3	15.5
Total Private Capital	Custom Index	20	14.5	14.8	5.9
Fixed Income	Barclays Aggregate Bond Index	20	-2.0	3.3	4.4
Commodities	Dow Jones UBS Commodities	5	-9.5	-8.1	1.5
Total Passive Portfolio (net)		**100%**	**14.6%**	**9.1%**	**10.8%**

Note: the above categories are very broad: the equity and fixed income categories include hedge funds whose strategies are equity and/or credit oriented, respectively, while commodities include hedge funds and long-only equities invested in a variety of commodity strategies. The weightings used here are assumed to be constant over the entire 5-yr period, much like a traditional balanced portfolio whose weightings are rebalanced back to policy weights to account for fluctuating market returns.

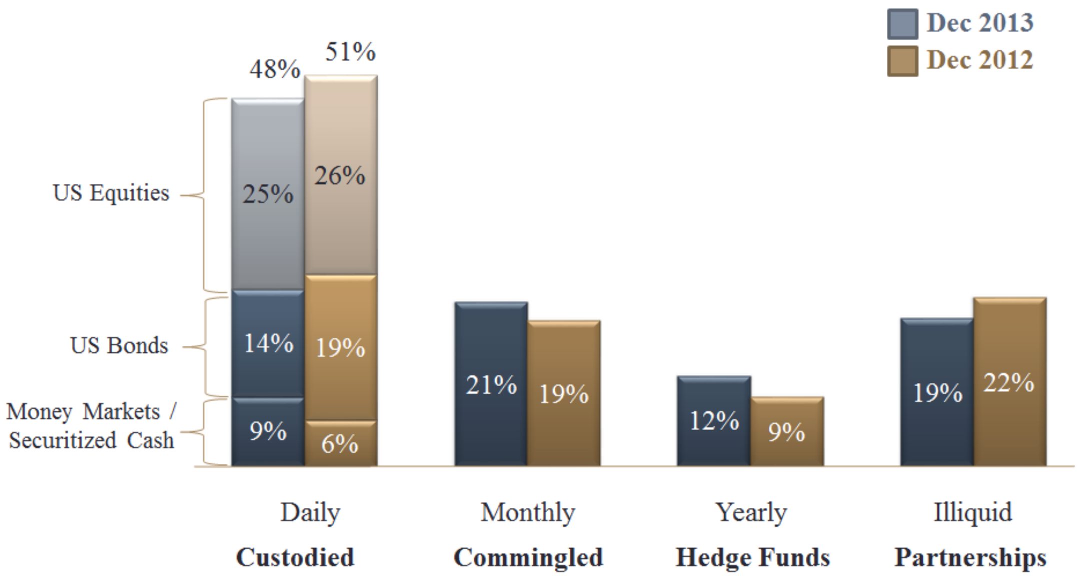


As shown above, Penn State's LTIP returned 14.2% net for calendar 2013, slightly lagging the 14.6% return of the Passive Portfolio, owing largely to the timing of cash inflows associated with the transfer of the non-endowed funds during the last 12 months. For the 3- and 5-year periods, the Long-Term Investment Pool's annualized returns of 10.6% and 11.8% outpaced the Passive Portfolio's 9.1% and 10.8%, respectively. This indicates that, over the long term, LTIP was able to outperform passive indexes through selection of active investment managers and broader assortment of assets as shown on the previous page.

The Passive Portfolio provides a guidepost to help achieve long-term results that are consistent with the twin objectives of purchasing-power preservation, along with stable LTIP spending. LTIP's performance varies from the *static* Passive Portfolio as a consequence of several factors, including but not limited to the timing of cash-flows, tactical shifts in asset mix, and individual investment manager performance and turnover.

Long-Term Investment Pool Liquidity

Financial crises are characterized, among other considerations, by lack of liquidity, as institutions are unable to meet current obligations due to lack of available cash. In the graph below, LTIP assets are classified according to how quickly they can be converted to cash. Securities listed on exchanges or traded over-the-counter, and held in custody as separately managed accounts, can be liquidated on a daily basis (typically 1- and 3-day settlement for bonds and stocks, respectively). Commingled portfolios, i.e., collectively-managed investment pools of publicly-traded securities, are eligible for purchase or sale at least once a month. Hedge fund partnerships are typically open for at least partial liquidation once a year, with a few having more and/or less frequent liquidity "windows." Non-marketable partnerships are considered illiquid primarily because of the inability of limited partners to transact at will.



Observations from the blue (left) bars of each of the four pairs above for the period ending December 31, 2013:

- 48% percent of LTIP assets are invested in stocks and bonds that can be converted to cash in a matter of days. Of this, about 2% is held in money market accounts, along with approximately 7% in "securitized cash" (i.e., fully-collateralized S&P and Treasury futures), which can be readily converted to cash in order to satisfy day-to-day and/or unforeseen cash requirements.
- Commingled portfolios, primarily non-US public equities, comprise 21% of LTIP assets and can be converted to cash within 30 days or, in some cases, sooner.
- 12% of LTIP assets are invested in various diversifying hedge fund partnerships and can be at least partially converted to cash annually or in many cases quarterly.
- 19% percent of LTIP assets are invested in more than 100 different partnership funds or other non-marketable investments which are considered illiquid because underlying holdings are typically not readily marketable, as well as uncertain timing of future cash distributions.

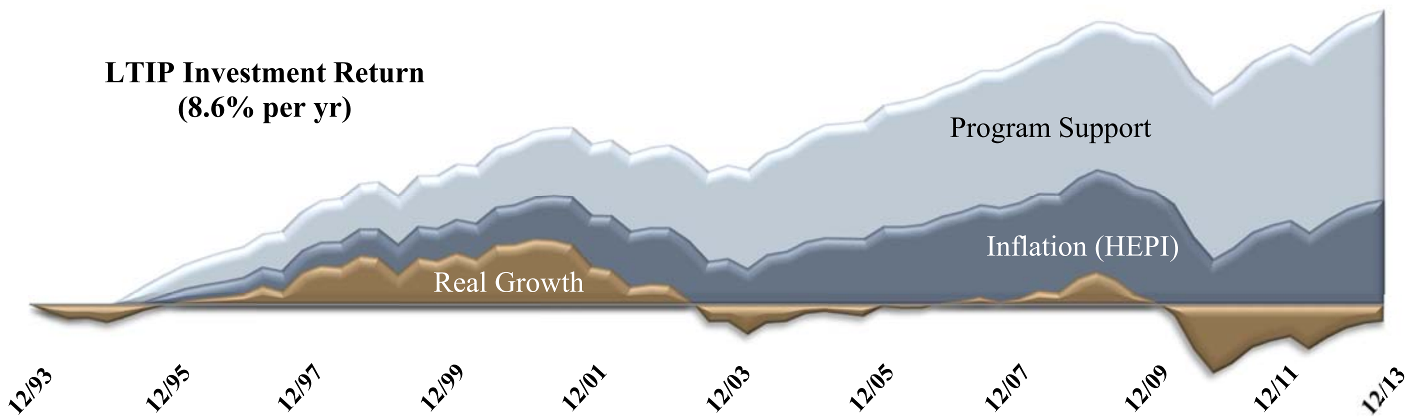
The foregoing indicates that LTIP maintains sufficient liquidity to satisfy anticipated cash requirements.

Liquidity Trends

As shown above, the liquidity profile of Penn State's LTIP has shifted somewhat from the end of calendar 2012 (tan bars) to the end of calendar 2013 (grayish-blue bars). Daily liquidity decreased slightly (from 51% to 48%), while monthly liquidity increased from 19% to 21% and yearly liquidity increased from 9% to 12%. On the other hand, illiquid non-marketable alternative assets decreased from 22% to 19%, owing to the growth of the total investment pool as a result of commingling non-endowed assets primarily into the other three liquidity categories. Over time, stepped up commitments to partnerships will gradually result in larger representation by non-marketable investments.

Long-Term LTIP Growth and Spending

In the chart below, the top line represents the cumulative net investment return of the Penn State Long-Term Investment Pool (LTIP) over the last 20 years, averaging 8.6% per year. The layers illustrate investment return apportioned to program support (spending as previously discussed on page 3) and inflation (as measured by the Higher Education Price Index [HEPI]), with the remaining residual representing net, real (inflation-adjusted) growth.



Cumulative 20-year Returns

LTIP's primary investment goal is to earn a long-term rate of return sufficient to support *current* spending and to preserve *future* purchasing power. This two-pronged objective is illustrated by apportioning total nominal (i.e., before adjusting for inflation) investment return (top line above) into discrete layers, representing program support and inflation, along with a residual layer corresponding to net *real* growth. Because investment returns periodically fluctuate (illustrated by the jagged topography above), real growth, which nets out program support and inflation from total LTIP return, oscillates across the horizontal "intergenerational equity" line. While market fluctuations have caused the growth layer to swing positive and negative, "intergenerational equity" has largely been achieved.

Two Very Different Decades of Market Performance

The variable nature of investment returns is characterized in the table below which bifurcates the last 20 years into two successive 10-year periods, whose respective investment returns differed widely, but less so than in the past. The 10 years ending December 2003 (second row) benefitted from an extended equity bull market during the 1990's, while the 10 years ending December 2013 (first row) suffered large sell-offs in equities, before rebounding over the last 4.8 years. The return disparity is reflected by comparing the S&P 500's 10-year average return for the decade ending December 31, 2013 (7.4%) versus December 31, 2003 (11.1%) below:

10-Year Periods	Annual *Nominal* Returns				Annual *Real* Returns		
Ending December 31	***S&P 500***	***Bond Index***	***LTIP***	***HEPI***	***S&P***	***Bonds***	***LTIP***
2003 to 2013	7.4%	4.6%	8.6%	2.8%	4.6%	1.8%	5.7%
1993 to 2003	11.1	7.0	8.6	3.5	7.6	3.5	5.1
Diff (percentage points)	**-3.7%p**	**-2.4%p**	**0.0%p**	**-0.7%p**	**-3.0%p**	**-1.7%p**	**0.6%p**

As shown by the negative differentials for the S&P and Bonds in the third row above, market index returns for the most recent 10 years lagged those for the previous 10 years: S&P 500's 7.4% annualized nominal return for the 10 years ending December 31, 2013 trailed its 11.1% pace for the prior 10-year period by 3.7%p (percentage points); Barclays Aggregate Bond Index returned 4.6% for the December 31, 2013 10-year period versus 7.0% for the prior 10-year period. LTIP's 8.6% annualized nominal net return for the 10 years ending December 31, 2013 markedly *exceeded* the respective returns for both stocks and bonds. LTIP's prior 10-year return likewise averaged 8.6%.

On an inflation-adjusted basis relative to HEPI (boxed column in middle of above table), LTIP's net real return difference was a *positive* 0.6%p compared to *negative* real differences of 3.0%p for stocks and 1.7%p for bonds (last row of the right three columns above). Over the last decade, decreased public equity exposure along with increased "alternative investments" has enabled LTIP to outperform both stocks and bonds (nominal and real) for the 10 years ending December 2013, when overall investment returns were significantly lower than the prior 10-year period.