

PRIM Board Quarterly Update

FIRST QUARTER 2018

Markets Overview and PRIT Fund Performance Summary

PRIM Executive Director and Chief Investor Officer Michael G. Trotsky, CFA provided the following information to the PRIM Board at its May 15, 2018, meeting:

MARKETS OVERVIEW

U.S. GDP growth slowed to 2.3% annualized in the first quarter of 2018 from 2.9% in the final quarter of 2017. Consumption growth was weak in the quarter, despite a surge in real disposable income, causing some economists to question the extent to which the recent tax cuts have stimulated any meaningful boost in business activity, but it may still be early. Recent business surveys and some data, such as weaker-than-expected growth in jobs, manufacturing and consumer spending (weakest report in five years last week), suggest that advanced economies lost some momentum at the beginning of 2018. This morning, China reported weaker-than-expected investment and retail sales, suggesting a slowdown there. However, the consensus is still for a strong and improving worldwide economy and the U.S. Fed has been more focused on our low unemployment rate (the unemployment report dipped below 4% last week), some first signs of wage growth, and the stronger than anticipated pick-up in inflation, as Personal Consumption Expenditures (PCE) hit 1.9% in March. Consensus is predicting three Fed rate hikes this year, but at least a few economists are still projecting four.

Financial markets don't typically respond well to rising interest rates and tighter monetary policy, especially if the data doesn't consistently confirm an expansion. Add to that the continued geopolitical concerns around a possible trade war with China and other trading partners, reciprocal tariffs, the Iran nuclear pact news, other stresses in the Middle East, and negotiations to denuclearize North Korea, and it is easy to understand why volatility spiked and the markets sold off in Q1.

Perhaps this sell off was due, or even past due, after an outstanding year in 2017 and a strong start to the year in January. At the Investment Committee meeting, we discussed how the first quarter sell-off might have been an indication of a "don't fight the Fed" mentality among investors. There may have been a building fear that the Fed was tightening more quickly than was supported by underlying business activity and that the Fed might overshoot on the tightening. Conversely, over the couple of weeks the markets have rallied despite the string of weaker-than-expected news. What is going on? Perversely, sometimes bad news (weaker-than-expected news) is good for the markets. Maybe some believe that the Fed, observing some underlying weakness, will begin to act less hawkish. It bears watching, both the underlying economic indicators...and the Fed. Again, the consensus is for economic strengthening and some of the indicators are not so positive. This is what makes a market and what gives us comfort in our well-diversified portfolio.

In the first quarter, domestic stocks were down, developed international equities were down and bonds were down as yields and interest rates continued to rise modestly. A 60/40 mix of stocks and bonds, a common benchmark for diversified portfolios, was down more than 1% in the quarter. The lone bright spot was in Emerging Markets equities, which were up 1.3% in the first quarter. Our commitment to EM equities served us well, it was the only equity sleeve that wasn't cut last year in our asset allocation decisions.

To review:

Index (% chg.)	JAN	FEB	MAR	Q1/2018	APRIL	MAY
S&P 500	5.7	-3.7	-2.5	-0.8	0.4	3.1
Dev Int'l Equity	5.0	-4.5	-2.0	-1.7	2.3	1.1
EM Equity	8.3	-4.6	-2.0	1.3	0.4	0.1
Diversified Bonds	-1.2	-0.9	0.6	-1.5	0.7	-0.1
STRIPS	-4.2	-4.6	4.4	-4.6	-2.4	-0.1

A 60/40 mix of global stocks and bonds is flat for the year with global equities up approximately 2% and bonds down about 2%.

PRIT FUND PERFORMANCE SUMMARY

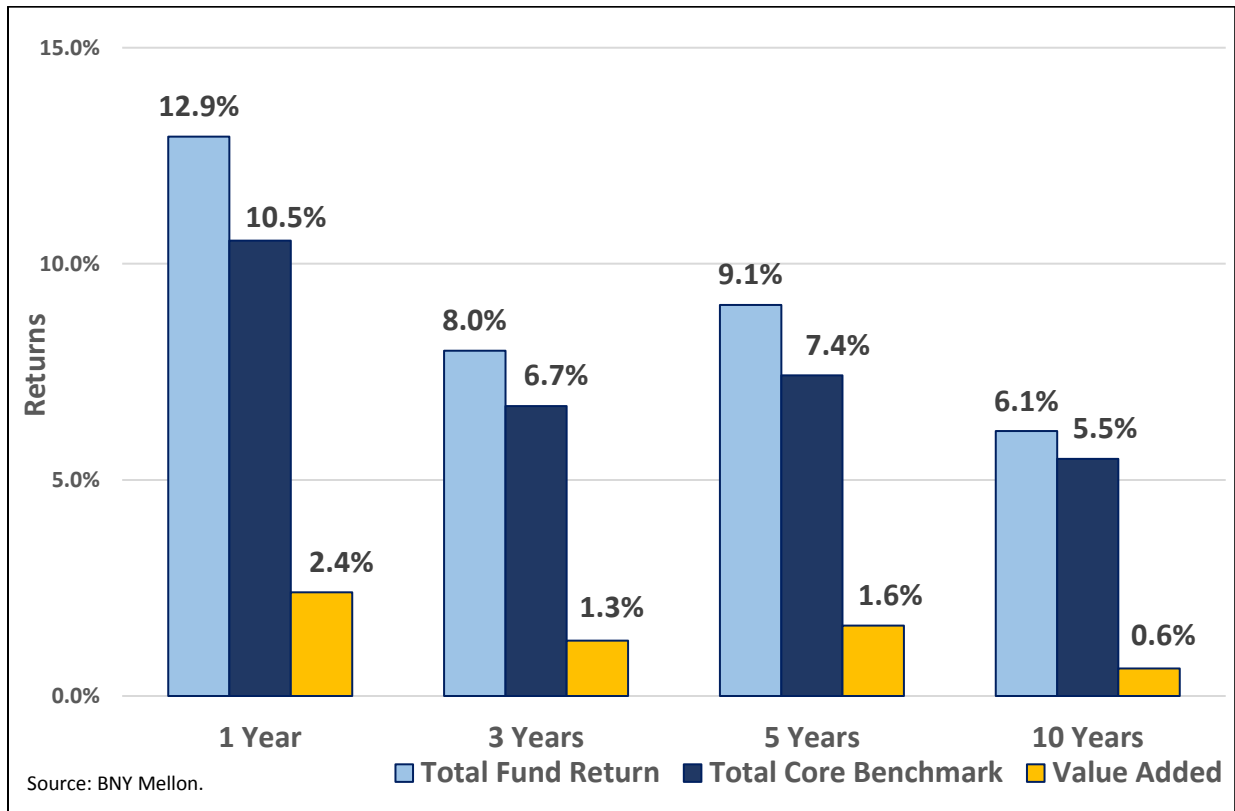
The PRIT Fund performed very well in the March 2018 quarter. For the quarter, the PRIT Fund was up 0.6% gross, or 0.5% net, outpacing the benchmark by 23 basis points. As I said earlier, a 60/40 split of stocks and bonds was down 1.3% in the quarter and this performance was strong competitively. Private Equity was up 6% in the quarter, an outstanding result.

As of March 31, 2018, the PRIT Fund net asset value stood at \$71.6 billion. For the one-year ended March 31, 2018, the PRIT Fund rose 12.9% gross (12.5% net), outperforming the total core benchmark of 10.5% by 240 basis points (192 bps net).

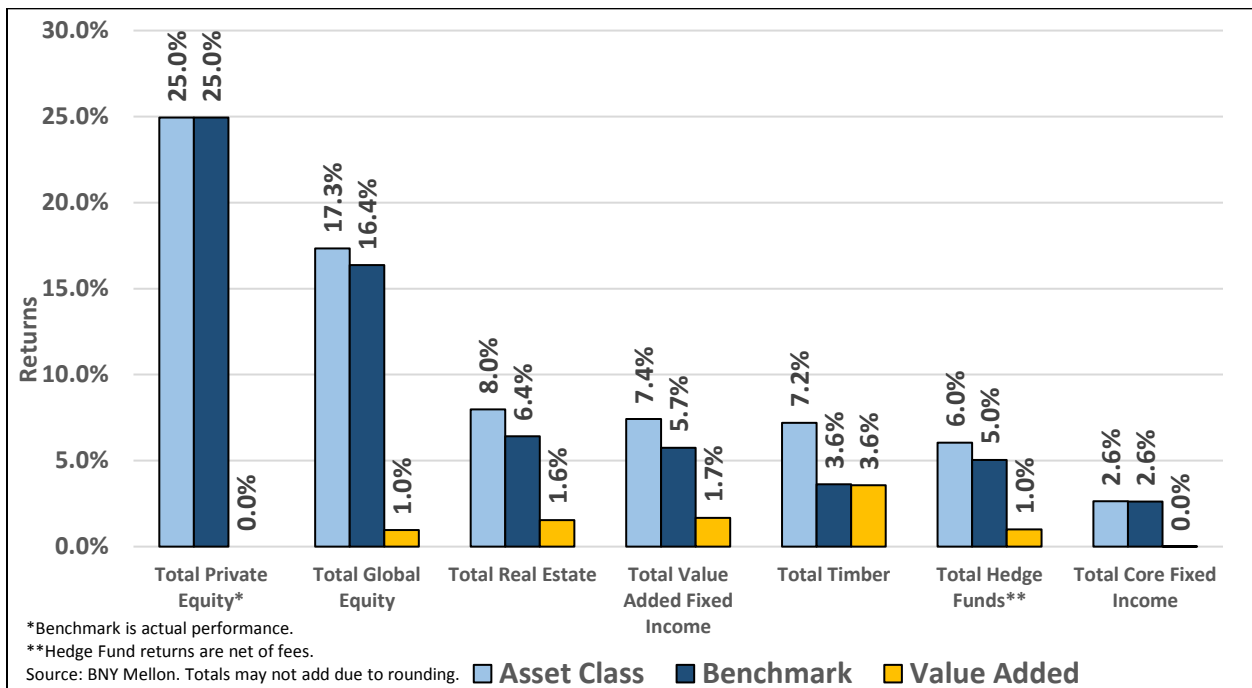
- This performance equates to an investment gain of \$8.1 billion, net of fees.
- This outperformance equates to \$1.2 billion of value above the benchmark return, net of fees.
- All seven major asset classes outperformed their respective benchmarks.
- Net total outflows to pay benefits for the one-year ended March 31, 2018, were approximately \$1.5 billion.

As a reminder, this strong performance follows a very strong calendar year in 2017 when the PRIT Fund was up 17.7% gross (17.2% net). We still know of no other fund in the country of our size or larger that outperformed us. And as I have mentioned in the past, this outperformance was achieved with a significantly lower risk profile than our peers, who on average have a 50% allocation to global equities, versus our 40% allocation. 2017 was impressive, no doubt, and we are thankful for that very strong performance in an up market, but what I think is even more interesting is that in the last 12-month downturn, which occurred when global equities were down more than 5% in our fiscal year 2016, we were up 2.3%, while most other funds were either flat or down. In the down market of fiscal year 2016, we also know of no other fund in the country our size or larger that outperformed us. And incidentally, we also significantly outperformed the endowments and foundations in those same years. This shows that our carefully constructed and de-risked portfolio is working exactly as intended, providing us with substantial outperformance in both down markets like FY16, and Q1 of this year, and in up markets like CY17.

Total PRIT Fund Returns (Gross of Fees)
Annualized Returns as of December March 31, 2018



PRIT Asset Class Performance (Gross of Fees)
Trailing 1-year Performance as of March 31, 2018



PRIT Core Fund Performance Summary (Gross of Fees)

Trailing 1-Year Performance as of March 31, 2018

Trailing 1-Year Performance: March 31, 2018	Return	Benchmark Return	Over/(Under) Benchmark (bps)	\$Value (millions)	% of PRIT Fund
Total PRIT Fund	12.9%	10.5%	240	71,628	100%
Total Global Equity	17.3%	16.4%	96	30,984	43.3%
<i>Domestic Equity</i>	<i>14.3%</i>	<i>13.8%</i>	<i>49</i>	<i>13,390</i>	<i>18.7%</i>
<i>International Developed</i>	<i>16.8%</i>	<i>15.8%</i>	<i>100</i>	<i>12,396</i>	<i>17.3%</i>
<i>Emerging Markets</i>	<i>26.5%</i>	<i>24.9%</i>	<i>169</i>	<i>5,198</i>	<i>7.3%</i>
Private Equity	25.0%	25.0%	0	7,536	10.5%
Real Estate	8.0%	6.4%	155	6,121	8.5%
Total Timberland	7.2%	3.6%	357	2,548	3.6%
Hedge Funds	6.0%	5.0%	100	5,944	8.3%
Value Added Fixed Income	7.4%	5.7%	168	5,855	8.2%
Core Fixed Income	2.6%	2.6%	2	9,122	12.7%

PRIT Asset Class Performance (Gross of Fees)

Annualized Returns as of March 31, 2018

1 Year	3 Year	5 Year	10 Year
PRIVATE EQUITY 25.0%	PRIVATE EQUITY 19.1%	PRIVATE EQUITY 19.6%	PRIVATE EQUITY 13.1%
GLOBAL EQUITY 17.3%	GLOBAL EQUITY 9.3%	REAL ESTATE 10.5%	VALUE-ADDED FIXED INCOME 7.0%
REAL ESTATE 8.0%	REAL ESTATE 8.8%	GLOBAL EQUITY 9.9%	REAL ESTATE 6.5%
VALUE-ADDED FIXED INCOME 7.4%	VALUE-ADDED FIXED INCOME 5.7%	TIMBER 6.8%	GLOBAL EQUITY 6.5%
TIMBER 7.2%	TIMBER 5.0%	HEDGE FUNDS (NET OF FEES) 4.8%	TIMBER 4.4%
HEDGE FUNDS (NET OF FEES) 6.0%	HEDGE FUNDS (NET OF FEES) 2.5%	VALUE-ADDED FIXED INCOME 4.4%	CORE FIXED INCOME 4.1%
CORE FIXED INCOME 2.6%	CORE FIXED INCOME 0.7%	CORE FIXED INCOME 3.4%	HEDGE FUNDS (NET OF FEES) 3.4%



PRIM DEVELOPMENTS

Organizational Update

Diversity and Inclusion

Earlier this month we began an in-depth study on diversity and inclusion at PRIM. Our COO, Tony Falzone, CFO, Deb Coulter, and Investment Officer, Christina Marcarelli and Michael G. Trotsky, CFA are working closely with outside consultants from IBIS Consulting Group to conduct this organizational assessment. This is a very important issue to us and to the Board because the more we can embrace our differences within PRIM —diversities of thinking style, experience, race, gender, sexual orientation, faith, ability and more—the better we can serve the diverse citizens of Massachusetts, both now and in the future.

Christina Marcarelli and Michael G. Trotsky, CFA participated in the CFA Institute’s Diversity and Inclusion roundtable event in NYC earlier this month. After Michael’s term ended as a Governor of the CFA Institute last September, the CFA asked him to join an advisory committee of CEO’s, CIO’s, and other investment industry executives from across the nation to develop a best practices guide for companies in the investment industry to use to increase diversity. As many people know, this industry lags most others in terms of diversity. But industry leaders are finally banding together and are very serious about addressing the issue.

Increasing the diversity of PRIM staff is a priority for Michael and we have been very successful. Of the seven new permanent hires over the last 12 months, six are diverse in either race, gender or both. The intern pool is similarly diverse. Of the 10 interns hired over the last year, all were diverse in either race, gender or both. This year, our five expected interns are all diverse in either race, gender or both, and all five are women in this year’s class. So, in total, of the 17 new employees hired over the last year, 16 were diverse in either race, gender or both.

Our experience shows that turnover and recruitment efforts disproportionately affects our diverse candidates because all private sector employers in our space are targeting diverse candidates and the pool from which to choose is not large. It is hyper-competitive for diverse employees in the investment industry.

New Hires

After a long search, we have hired our new Director of Human Resources. On May 14th, Jennifer Kuhn joined the PRIM team. Jennifer joins us after almost 15 years at Big Brothers Big Sisters of Massachusetts Bay where she was most recently their Director of Human Resources. During her time at Big Brothers Big Sisters, Jennifer was responsible for all HR related functions from strategic HR leadership to tactical employee support. She worked closely with each business unit to support the organization’s strategic growth and directional planning; and with the executive team to provide counsel and leadership in the areas of organizational planning, talent development, employee engagement, culture development, and employee relations. She also led the organization’s first Diversity and Inclusion effort. Jennifer began her career as a portfolio administrator at The Colony Group and was also the Assistant Director of Development at Horizons for Homeless Children. Jennifer holds a Bachelor’s degree in Business Administration from Elon University.

Summer Interns Class of 2018

This summer we welcome an outstanding cohort of interns from both the “Girls Who Invest” and the Treasury’s “Women in Finance Fellowship” programs. Isabelle Tabak joins PRIM from Babson College, while Anmei Zhi is from Smith College. Both Isabelle and Anmei are “Women in Finance Fellowship” recipients. Alexis Sabbaghian of Boston College comes to PRIM via the “Girls Who Invest” program.

Massachusetts State Audit Report

The Office of the State Auditor conducted a performance audit of the PRIM Board for the period July 1, 2015 through June 30, 2017. The State Auditor examined PRIM’s compliance with its policies and procedures for procurement of investment management and professional services, as well as the reasonableness of certain travel expenses incurred by PRIM staff members. The audit revealed no significant instances of noncompliance by PRIM.

PRIM BOARD ACTIONS

At its May 15, 2018 meeting, the PRIM Board approved the following recommendations of the Investment Committee and PRIM Staff:

Portfolio Completion Strategies

The PRIM Board approved an initial allocation of up to \$200 million in the Complus Asia Macro Fund (the Fund), to be invested through a PRIM managed account.

Complus is a discretionary Macro manager focusing on the Asia Pacific region. The Manager seeks to build a diversified portfolio of opportunities that vary in theme and time horizon. The Fund primarily has positions in Asian interest rates and FX, leveraging the team’s deep knowledge of 13 local markets. To best exploit opportunities, a position could be structured as either directional or relative value. Whilst the investment proposition is strong, there is also a keen focus on risk management and capital preservation, resulted in the Fund's low volatility and minimal drawdowns since inception. The Fund has delivered an attractive Sharpe ratio and low correlation to Global Macro peers.

Private Equity

The PRIM Board approved a commitment of up to \$150 million to Thoma Bravo Fund XIII (“Fund XIII”). PRIM has invested in ten prior Thoma Bravo, LLC (“Thoma Bravo”) funds since 2001. Thoma Bravo’s senior team has worked together for an average of 16 years. All of Thoma Bravo’s funds are in Cambridge Associates’ first or second quartiles for fund performance. Thoma Bravo is a sector specialist private equity group focusing on investing in businesses that provide application, infrastructure or security software products or technology enabled services.

The PRIM Board approved a commitment of up to \$75 million to TowerBrook Structured Opportunities II, L.P. (“TSO II”). PRIM has invested in two prior TowerBrook Capital Partners private equity funds since 2008. TowerBrook’s senior team has worked together for an average of 11 years. With the exception of Fund III, all of TowerBrook’s funds are either in Cambridge Associates’ first or second quartiles for fund performance. The firm is focused on investing in businesses characterized by complexity, in partnership with highly capable management teams. TowerBrook invests across multiple industries that include healthcare, consumer & retail, financial services, aerospace, and diversified industrials.

The PRIM Board approved the Investment Committee recommendation of a commitment of up to \$50 million to Thompson Street Capital Partners Fund V (“Fund V”). Thompson Street is led by nine senior investment professionals with an average tenure of 11 years at the firm. All of Thompson Street’s funds are in Cambridge Associates’ first or second quartiles for fund performance, except for a prior fund that

employed a different investment strategy. Thompson Street targets buyouts of small and middle-market businesses in the Midwest and Mid-South regions of the U.S. in the software and technology services; healthcare and life science services; and business services and engineered products sectors.

The PRIM Board approved the Investment Committee recommendation of a commitment of up to \$75 million to Providence Strategic Growth III, L.P. (“Fund III” or “PSG III”). PSG III is managed by Providence Strategic Growth Capital Partners (“PSG”), an affiliate of Providence Equity Partners. PRIM has invested in five Providence Equity Partners’ funds since 2001. However, these funds pursued a different strategy than PSG III. PSG’s growth equity track record is in Cambridge Associate’s first quartile for fund performance. PSG III will be led by Mark Hastings and Peter Wilde. PSG III will target private equity investments in growth-oriented, lower middle market companies, primarily in the United States.

The PRIM Board approved the Investment Committee recommendation of a commitment of up to \$35 million to Polaris Growth Fund I, L.P. (“Fund I” or “Growth Fund”). PRIM has invested in four Polaris Partners’ funds since 2000. However, these funds pursued a different strategy than Fund I. The Growth Fund will be led by Bryce Youngren who has worked at Polaris Partners for 16 years. Fund I will target buyouts of lower middle-market software and technology enabled services companies in North America.

The PRIM Board approved the Investment Committee recommendation of the addition of Thompson Street Capital Partners, Polaris Partners, and Providence Equity Partners to the co-investment manager bench because these three firms meet PRIM’s co-investment criteria. Those criteria include:

- A superior track record
- A strong co-investment history
- A willingness to partner with PRIM

The Client Services team -- Paul Todisco, Francesco Daniele and Sam Olivier -- will continue meeting the retirement boards of PRIM’s member retirement systems throughout the year. To schedule a visit, please contact Paul at ptodisco@mapension.com, Francesco at fdaniele@mapension.com or Sam at solivier@mapension.com, or call 617-946-8401. We look forward to seeing you soon.