

PRIM Board Quarterly Update

FIRST QUARTER 2019

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 14, 2019, meeting:

Markets and PRIT Fund Performance Summary

Worldwide markets rebounded strongly in the March 2019 quarter from the weak December 2018 quarter. The PRIT Fund was up 6.4% gross of fees in the March 2019 quarter (6.3%, net), a strong reversal from the 6% loss in the December 2018 quarter. Volatility, as measured by the VIX, spiked to 36 in December 2018 after bottoming at 11 in August 2018, and is now at approximately 12.7, below the 5-year average of 14.9 and the 10-year average of 18.5. The reversal was in part due to optimism on normalizing trade relations with China and news that the U.S. Federal Reserve will curtail interest rate hikes. Additionally, a stream of more positive economic news propelled the markets higher from the doom and gloom that prevailed at the end of last year.

However, we believe some of the headline figures belie some still cautious signals. For example, the GDP report of 3.2% growth in the first quarter was well above the consensus expectations of 2.0%, and a positive headline surprise of this magnitude is always well-received, but the three largest drivers of the strength are expected to reverse in coming months. Net exports, the largest positive surprise in the report, added 1% to GDP growth in Q1 as exports exceeded imports, but with the backdrop of a still slowing global economy, this is not likely to continue. Also, some think last year's imposition and threats of new tariffs on imports caused an acceleration of import activity in the preceding quarters. In other words, weaker imports in the quarter may have been a reversal of the unusually high import activity in the preceding quarters. GDP growth was also enhanced by inventory building and by an increase in government spending, which are unlikely to be sustained. Stripping out these positive yet transitory contributors and underlying GDP growth was approximately 1.4%.

Additionally, first quarter corporate earnings have been strong with more than 80% of companies exceeding estimates. However, 80% of the companies are also forecasting a slowdown in future quarters. Last, the bond markets, which are a strong indicator of investors' long-term economic expectations are far less sanguine. Bond yields are lower, which means that investors are becoming more pessimistic about long-run economic prospects. For example, the bellwether 10-year Treasury yield of 2.5% compares to 3% one year ago, down 50 basis points. This is not what we would expect to see in a strengthening economy. In fact, more telling is that some forecasters think the next move of the U.S. Federal Reserve will be to lower, not raise interest rates.

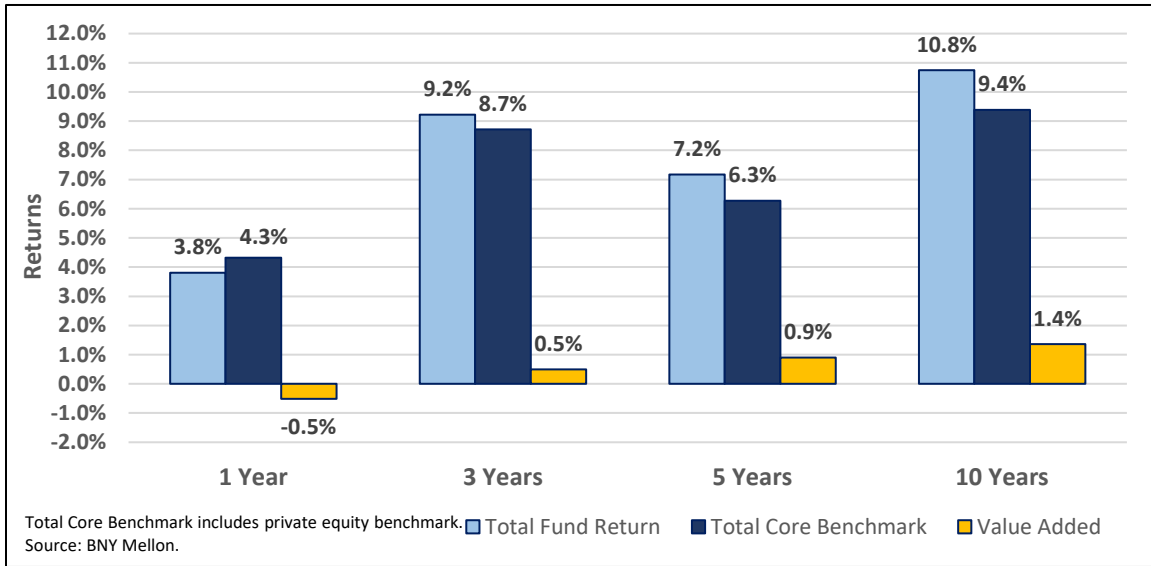
While we are generally pleased with some of the bright spots in economic news, we continue to remain cautious about the strength of the global economy and we believe the PRIT Fund is appropriately positioned for uncertainty ahead.

PRIT Fund Performance Summary

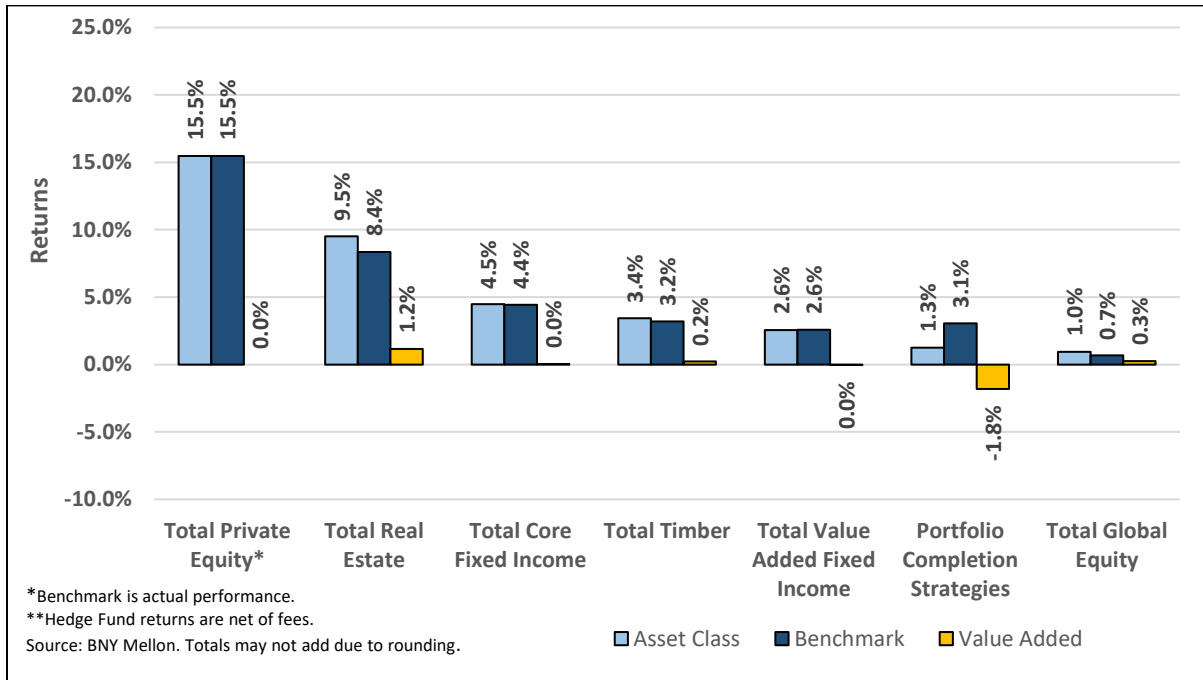
As of March 31, 2019, the PRIT Fund net asset value stood at \$73.1 billion. For the one-year ended March 31, 2019, the PRIT Fund was up 3.8%, (3.4% net), underperforming the total core benchmark of 4.3% by 49 basis points (93 bps net).

- This performance equates to an investment gain of \$2.4 billion, net of fees.
- Net total outflows to pay benefits for the one-year ended March 31, 2019, were approximately \$1.0 billion.

Total PRIT Fund Returns (Gross of Fees)
Annualized Returns as of March 31, 2019



PRIT Asset Class Performance (Gross of Fees)
Trailing 1-year Performance as of March 31, 2019



PRIT Core Fund Performance Summary
Gross of Fees Performance
Trailing 1-Year Performance as of March 31, 2019

Trailing 1-Year Performance: March 31, 2019	Return	Benchmark Return	Over/(Under) Benchmark (bps)	\$Value (millions)	% of PRIT Fund
Total PRIT Fund	3.8%	4.3%	(49)	73,067	100%
Total Global Equity	1.0%	0.7%	30	31,783	43.6%
<i>Domestic Equity</i>	<i>8.6%</i>	<i>8.4%</i>	<i>28</i>	<i>15,805</i>	<i>21.7%</i>
<i>International Developed</i>	<i>-4.1%</i>	<i>-4.1%</i>	<i>(1)</i>	<i>11,400</i>	<i>15.6%</i>
<i>Emerging Markets</i>	<i>-7.4%</i>	<i>-8.3%</i>	<i>88</i>	<i>4,579</i>	<i>6.3%</i>
Private Equity	15.5%	15.5%	0	7,997	11.0%
Real Estate	9.5%	8.4%	116	6,971	9.6%
Total Timberland	3.4%	3.2%	23	2,863	3.9%
PCS	1.3%	3.1%	(180)	7,346	10.1%
Value Added Fixed Income	2.6%	2.6%	(2)	5,955	8.2%
Core Fixed Income	4.5%	4.4%	4	9,316	12.8%

PRIT Asset Class Performance (Gross of Fees)

Annualized Returns as of March 31, 2019

1 Year	3 Year	5 Year	10 Year
PRIVATE EQUITY 15.5%	PRIVATE EQUITY 18.4%	PRIVATE EQUITY 17.2%	PRIVATE EQUITY 17.4%
REAL ESTATE 9.5%	GLOBAL EQUITY 11.1%	REAL ESTATE 10.0%	GLOBAL EQUITY 12.8%
CORE FIXED INCOME 4.5%	REAL ESTATE 8.2%	GLOBAL EQUITY 6.7%	REAL ESTATE 10.7%
TIMBER 3.4%	VALUE-ADDED FIXED INCOME 7.0%	TIMBER 5.5%	VALUE-ADDED FIXED INCOME 9.4%
VALUE-ADDED FIXED INCOME 2.6%	TIMBER 5.9%	CORE FIXED INCOME 4.6%	CORE FIXED INCOME 5.5%
TOTAL PCS 1.3%	TOTAL PCS 5.2%	VALUE-ADDED FIXED INCOME 3.9%	TOTAL PCS 5.2%
GLOBAL EQUITY 1.0%	CORE FIXED INCOME 2.1%	TOTAL PCS 3.0%	TIMBER 3.2%

ORGANIZATIONAL UPDATE

For an unprecedented fourth year in a row, PRIM has been nominated for “Public Plan of the Year” at the Institutional Investor Hedge Fund Industry Awards, to be held in New York on June 27, 2019. PRIM won this award in 2016. The other nominees this year are Ontario Municipal, New Mexico, Wisconsin, Texas Teachers and Illinois Teachers.

We continue to receive recognition for our innovative hedge fund program that produces very high risk-adjusted returns while saving approximately \$100 million annually on hedge funds fees. PRIM led the industry with the use of direct hedge fund investments replacing fund-of-funds, and we also lead in our pursuit of separately managed accounts (SMA’s), which give us complete transparency, more control and lower fees than comingled funds that are the norm for most investors. SMA’s now comprise more than 75% of hedge fund assets. PRIM’s SMA program and more recently, our Emerging Manager Program are being emulated by peers across the globe.

Last month, PRIM’s PCS Director **Bill Li** was inducted into the EQDerivatives Investing Hall of Fame, which *“recognizes those individuals that have led the line in volatility and alternative risk premia thought leadership.”*

We announced his promotion last cycle, but this cycle we announced that **Andrew Gromer**, Investment Officer on the Public Markets team was recently accepted into the Yale School of Management and will be leaving PRIM this summer to begin their MBA program. We are happy for Andrew and support his pursuit of higher education, but at the same time, we are sorry to see him go. He has been a valuable employee to us on the Public Markets team and more recently he has been a valuable contributor to the Private Equity team.

We also announced that in March, **Alyssa Fiore**, Investment Officer on the Private Equity team resigned to accept a position at JP Morgan. Alyssa joined the Private Equity team in 2016 as an Investment Analyst and was promoted last year. Alyssa was a valuable contributor to our fund underwriting effort and she helped manage the co-investment program. Alyssa’s potential was well-recognized in the industry, and the departure came as a surprise to us. We wish her well in her new endeavors. The Private equity team is currently interviewing strong candidates for two open positions.

PRIM currently has four active job openings: A Senior Investment Officer on the Public Markets team, an investment analyst on the Real Estate team, and two analysts on the Private Equity team. We have received more than 1000 applications for those four slots. It is a compliment to all of us that so many highly qualified candidates want to work for PRIM.

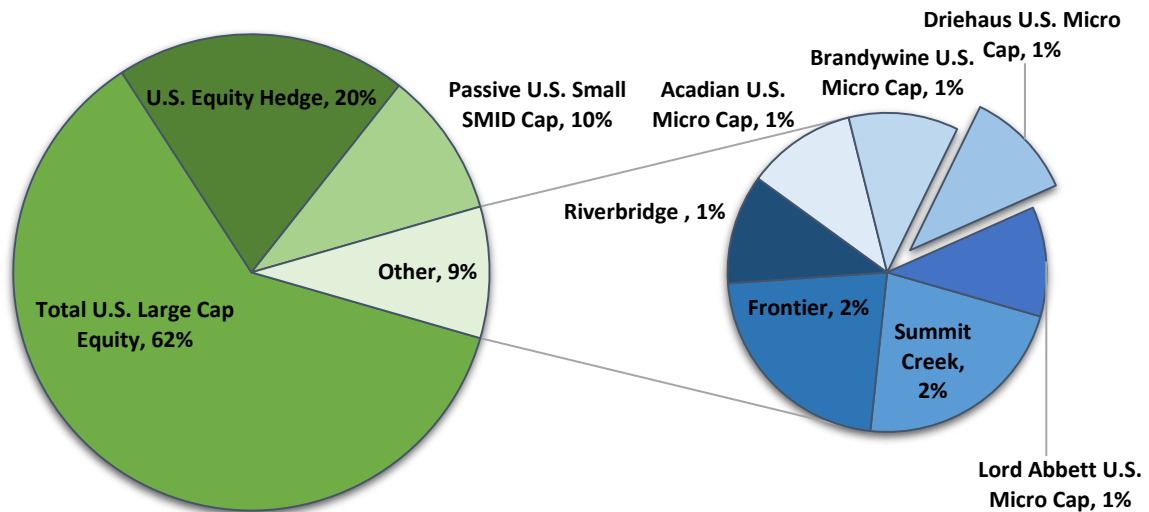
And last, I’d like to highlight that we have added a third women-focused summer internship partner, the **CFA Society Boston**, to supplement our current efforts with **Girls Who Invest** and the Treasurer’s **Women in Finance Fellowship**. We are excited to welcome three new summer internships at PRIM this summer.

PRIM BOARD ACTIONS – MAY 14, 2019

Public Markets

At its May 14, 2019 meeting, the PRIM Board approved the following recommendations of the Investment Committee and PRIM Staff:

The PRIM Board approved an initial allocation of \$100 million to Driehaus Capital Management’s U.S. Micro-Cap Growth Equity Strategy. Funding will be sourced from PRIM’s existing passive U.S. SMID Cap (Russell 2500) equity portfolio. At its February 26, 2019 meeting, the PRIM Board approved a \$300 million allocation to three U.S. Microcap Equity managers as part of the 2018 Request for Proposals (“RFP”): Acadian Asset Management, Brandywine Global Investment Management, and Lord, Abnett & Company. Each manager was allocated \$100 million each. The new structure of the Domestic Equity Portfolio is shown below:



At its February 26, 2019 meeting, the PRIM Board approved the 2019 PRIT Fund asset allocation plan, which included a new allocation to Short-Term Fixed Income. At its May 14 meeting, the PRIM Board approved the issuance of an RFP for Passive Short-Term Fixed Income Investment Management Services.

Portfolio Completion Strategies

At its May 14, 2019 meeting, the PRIM Board approved the following recommendation of the Investment Committee and PRIM Staff:

PRIM issued a Request for Proposals for portfolio completion strategies advisory and managed account platform services on January 7, 2019. PRIM received 11 proposals, seven of which were submitted for Advisory Services, four proposals for Managed Account Platform Services, and one proposal for both Advisory and Managed Account Platform Services. Among the seven Advisory Services bidders and four Platform Services bidders, there was one bundle of joint bidders. The PRIM Board approved the selection of incumbent, Aberdeen Standard Investments (“Aberdeen”) as Primary Advisor for the Portfolio Completion Strategies portfolio, providing services on a full range of investment activities in the portfolio. The PRIM Board further approved NewAlpha Asset Management (“NewAlpha”) as Specialist Advisor for the Portfolio Completion Strategies portfolio, providing sourcing and diligence services on strategy types of Global Macro, Relative Value Trading, and Systematic Strategies. Finally, the PRIM Board approved the selection of incumbent, Hedge Mark Advisors (“HedgeMark”) to provide managed account platform services for the Portfolio Completion Strategies managed account platform program.

Private Equity

At its February 26, 2019 meeting, the PRIM Board approved the following recommendations of the Investment Committee and PRIM Staff:

A commitment of up to \$300 million to Advent International GPE IX, L.P. (“GPE IX” or “Fund IX”). PRIM has invested in seven prior Advent International funds since 1990. Advent’s senior team has worked together for over 14 years. Nearly all of Advent’s funds are in Cambridge Associates’ first or second quartiles for fund performance. Advent targets buyouts in North America, Europe, and Asia in the business and financial services; healthcare; industrial; retail, consumer and leisure; and technology, media and telecom sectors.

A commitment of up to \$250 million to TA XIII, L.P. (“TA XIII” or Fund XIII”). PRIM has invested in five prior TA Associates (“TA”) funds since 1997. TA’s senior team has worked together for over 17 years. With the exception of TA X, all of TA’s funds are in Cambridge Associates’ first or second quartiles for fund performance. TA targets middle-market growth companies in North America, Europe and Asia in the technology, healthcare, financial services, consumer and business services sectors.

A commitment of up to €35 million to Medicxi III, L.P. (“MV III”). PRIM has invested in three prior Medicxi Ventures (Medicxi) funds since 2012. Medicxi’s senior team has worked together for an average of 17 years. Medicxi’s funds are in the top or second quartiles in industry peer performance rankings. Medicxi invests in seed, early- and late-stage biotech assets and companies across several therapeutic areas.

Real Estate and Timberland

PRIM issued a Request for Qualifications (“RFQ”) for timberland appraisal services on March 18, 2019. The purpose of the RFQ was to update PRIM’s list of approved timberland appraisal firms. Firms selected because of this RFQ are eligible to competitively bid for appraisal assignments that are scheduled over the next three calendar years (2019 to 2021). Nine responses were submitted by the deadline.

The Board approve the selection of for placement on PRIM’s list of approved timberland appraisers:

- American Forest Management
- Forest Resource Consultants
- Legacy Appraisal Services
- Mason, Bruce & Girard
- Sewall Forestry & Natural Resources Consulting
- Sterling Consulting
- Terra Source Valuation
- The Healy Company
- Timberland Appraisal Inc

The PRIM Board approved an additional capital commitment of up to \$100 million to AEW’s existing industrial development separate account. AEW is a wholly owned subsidiary of Natixis Investment Managers, L.P. The firm has operations in Europe, Asia and North America. The industrial development program is a component of PRIM’s broader AEW relationship, which began in 2011, and now totals approximately \$1.85 billion in value. This commitment would be the third approved commitment to industrial development, increasing total invested capital to \$300 million. Additional capital is expected to

be invested in approximately two to four investments. The recommended commitment of \$100 million represents 1.4% of PRIM's total real estate portfolio of \$7.0 billion as of March 31, 2019.

Finance & Administration Report

The PRIM Board approved the Fiscal Year ("FY") 2020 PRIM Operating Budget. PRIM's Board's FY 2020 Operating Budget reflects the investment management, advisory, and operational costs necessary to implement, measure, and monitor the approximated \$75 billion in investments of the PRIT Fund.

The projected FY 2020 budget of \$424.8 million is 56.6 basis points (bps) of projected average PRIT Fund assets (\$75 billion), a \$16.5 million, or 4%, budget increase from the prior year. As is PRIM's custom, budgeted expenses for FY 2020 are conservative and foresee continued asset growth. Actual expenses incurred may vary because most expenses are a function of asset levels and investment performance is not predictable.

Investment Management Fees and Third-Party Service Providers comprise \$407 million, or 95.8%, of the total budget. Investment Management Fees increased by \$11.4 million, or 3%, due primarily to growth in assets. Projected costs for Third-Party Service Providers increased \$2.8 million, or 18.3%, mainly due to increased custodian expense and support of new initiatives.

Operations comprise \$17.7 million, or 4.2%, of the total budget. Operations increases by \$2.3 million, or 14.9%, due primarily to projected increased staff size.

The five-year period for the PRIM and PRIT audit and tax services engagements ends after the fiscal and calendar year 2019 audits are complete. The PRIM Board approved the issuance of an Audit and Tax Services RFP.

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.