# STATE OF CONNECTICUT OFFICE OF THE TREASURER

# 2017



## COMBINED INVESTMENT FUNDS COMPREHENSIVE ANNUAL FINANCIAL REPORT

For the fiscal year ended June 30, 2017

## **STATE OF CONNECTICUT** Office of the State Treasurer



The State Motto, "Qui Transtulit Sustinet" (He Who Transplanted Still Sustains), has been associated with various versions of the State Seal from the creation of the Saybrook Colony Seal.

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For the fiscal year ended June 30, 2017

Prepared by: State of Connecticut Office of the Treasurer 55 Elm Street Hartford, CT 06106-1773



### COMBINED INVESTMENT FUNDS

### COMPREHENSIVE ANNUAL FINANCIAL REPORT

For The Fiscal Year Ended June 30, 2017

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# Introductory Section





DENISE L. NAPPIER TREASURER

December 29, 2017

To the State of Connecticut Combined Investment Funds

Fellow Beneficiaries,

I am pleased to submit this Comprehensive Annual Financial Report for the State of Connecticut Combined Investment Funds (CIF) for the fiscal year ended June 30, 2017. The CIF generated a net investment return of 14.18 percent for the fiscal year. The State's three largest pension funds – the Teachers' Retirement Fund (TRF), the State Employees' Retirement Fund (SERF), and the Connecticut Municipal Employees' Retirement Fund (CMERF) – returned 14.38 percent, 14.32 percent and 13.05 percent, respectively, outperforming their benchmarks by 114, 115, and 98 basis points. Longer term, the five-year returns for the two largest funds, TRF and SERF, were 8.80 percent, while the seven-year returns were 8.96 percent and 9.02 percent, respectively.

The CIF performance for Fiscal Year 2017 added \$3.30 billion of market value to pension assets. After paying fees and expenses, including \$793 million of benefit payments in excess of contribution receipts, the CIF ended the fiscal year with an all-time record of \$32.5 billion in net assets.

The primary purpose of the CRPTF is to help the State pay its benefit obligations. Accordingly, from July 1, 1999 through June 30, 2017, it has distributed \$24.3 billion in benefits and received \$12.4 billion in contributions, resulting in \$11.9 billion of payments in excess of contributions.

Responsibility for both the accuracy of the data and the completeness and fairness of this report rests with Treasury management. All disclosures necessary and required to enable fellow beneficiaries and the financial community to gain an understanding of CIF financial activities are contained within this report.

The enclosed financial statements and data are presented fairly in all material respects and are reported in a manner designed to present the financial position and results of CIF operations accurately.

The CIF were established pursuant to Connecticut General Statutes Section 3-31b as a means to invest pension and trust fund assets entrusted to the Treasurer in a variety of investment classes. The CIF are comprised of separate pooled investment funds: Liquidity Fund, Alternative Investment Fund, Mutual Equity Fund, Core Fixed Income Fund, Inflation Linked Bond Fund, Emerging Market Debt Fund, High Yield Debt Fund, Developed Markets International Stock Fund, Emerging Markets International Stock Fund, Real Estate Fund, and Private Investment Fund.

The units of the CIF are owned by six pension funds: Teachers' Retirement Fund; State Employees' Retirement Fund; Connecticut Municipal Employees' Retirement Fund; State Judges' Retirement Fund; Probate Court Retirement Fund; and State's Attorneys' Retirement Fund. In addition, the CIF are owned by nine trust funds: Soldiers' Sailors' and Marines' Fund; Police and Fireman' Survivors' Benefit Fund; Connecticut Arts Endowment Fund; School Fund; Ida Eaton Cotton Fund; Hopemead State Park Fund; Andrew C. Clark Fund; Agricultural College Fund and State of Connecticut Other Post-Employment Benefits Trust Fund.

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#### LETTER FROM THE TREASURER

#### **Financial Information**

The consolidated CIF assets at the close of Fiscal Year 2017 were \$32.5 billion based on fair value and the CIF were in full compliance with the standards of the Governmental Accounting Standards Board. The CIF are invested across global public and private market equity, fixed income and alternative asset classes. Additional information on the CIF can be found in the Notes to the Financial Statements.

#### Internal Control Structure

Management is responsible for maintaining a system of adequate internal accounting controls designed to provide reasonable assurance that transactions are (i) executed in accordance with management's general or specific authorization, and (ii) recorded as necessary to maintain accountability for assets and to permit preparation of financial statements consistent with generally accepted accounting principles. We believe the internal controls in effect during Fiscal Year 2017 adequately safeguarded the CIF assets and provided reasonable assurance regarding the proper recording of financial transactions. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived and that the valuation of costs and benefits requires estimates and judgments by management.

#### **Independent Audit**

The State of Connecticut's independent Auditors of Public Accounts conducted an annual audit of this Comprehensive Annual Financial Report in accordance with generally accepted auditing standards. The Auditors' report on the basic financial statements is included in the Financial Section of this report.

#### **Management Discussion and Analysis**

The Government Accounting Standards Board requires a narrative introduction, overview and analysis to accompany the basic financial statements in the form of a Management's Discussion and Analysis (MD&A). This letter of transmittal is designed to complement and be read in conjunction with the MD&A. The MD&A can be found in the Financial Section immediately following the report of the independent auditors.

#### Awards

The Government Finance Officers Association of the United States and Canada awarded the Combined Investment Funds a Certificate of Achievement for Excellence in Financial Reporting for its Comprehensive Annual Financial Report for the fiscal year ended June 30, 2016. The Certificate is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government financial reports.

#### **Requests for Information**

This Comprehensive Annual Financial Report is designed to provide a general overview of investment activities of the CIF. We hope this report will prove both informative and useful. Questions concerning any of the information contained in this report or requests for additional financial information should be addressed to the Office of the Treasurer, 55 Elm Street, Hartford, Connecticut 06106-1773, or by telephone to (860) 702-3000. Copies of the report also will be available on the internet at www.ott.ct.gov.

Sincerely,

Denise h. Rappier

Denise L. Nappier Treasurer State of Connecticut





December 29, 2017

This Comprehensive Annual Financial Report was prepared by the Office of the Treasurer, which is responsible for the accuracy of the data contained herein, the completeness and fairness of the presentation, and all disclosures. We present the financial statements and data as accurate in all material respects and prepared in conformity with generally accepted accounting principles. Such financial statements are audited annually by the State of Connecticut Auditors of Public Accounts.

To carry out this responsibility, the Office of the Treasurer maintains financial policies, procedures, accounting systems and internal controls that management believes provide reasonable, but not absolute, assurance that ac-curate financial records are maintained and investments and other assets are safeguarded.

It is our belief that the contents of this Annual Report make evident the Office of the Treasurer's support of the safe custody and conscientious stewardship of the State's property and money, including Trusts and Custodial accounts held by the State Treasurer. In addition, the Office of the Treasurer has sought to maximize earnings on the assets held by the State Treasurer within the boundaries of prudent investment guidelines authorized by Article Four, Section 22 of the Connecticut Constitution and by Title 3 of the Connecticut General Statutes, thereby stabilizing taxpayer costs and securing the safety of benefit commitments established by various general statutes covering the State retirement systems and other retirement systems administered by the State.

The State of Connecticut also issues a Comprehensive Annual Financial Report (the CAFR) available from the State Comptroller's Office. The material presented herein is intended to expand on, but not to conflict with, the State's CAFR.

In management's opinion, the internal control structure of the Office of the Treasurer is adequate to ensure that the financial information in this report fairly presents the financial condition and results of operations of the funds that follow.

Sincerely,

- G. Wan

Lawrence A. Wilson Interim Deputy Treasurer State of Connecticut

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Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Connecticut State Treasurer's Combined Investment Funds

> For its Comprehensive Annual Financial Report for the Fiscal Year Ended

> > June 30, 2016

Christophen P. Morrill

Executive Director/CEO

#### THE CONNECTICUT STATE TREASURY

#### **Mission Statement**

To serve as the premier State Treasurer's Office in the nation through effective management of public resources, high standards of professionalism and integrity, and expansion of opportunity for the citizens and businesses of Connecticut.

#### **Constitutional and Statutory Responsibilities**

The Office of the Treasurer was established following the adoption of the fundamental orders of Connecticut in 1638. The Treasurer shall receive all funds belonging to the State and disburse the same only as may be directed by law, as described in Article Fourth, Section 22 of the Connecticut Constitution and in Title 3 of the Connecticut General Statutes.

The Treasurer, as chief elected fi nancial offi cer for the State, oversees the prudent preservation and management of State funds, including the investment of a \$32.5 billion portfolio of pension and trust fund assets, \$6.5 billion in total state and local short-term investments, and \$3.3 billion of assets in the Connecticut Higher Education Trust. The Treasurer maintains an accurate account of all funds through sophisticated security measures and procedures.

#### **Public Service**

The Office of the Treasurer includes an Executive Office as well as five distinct divisions, each with specific responsibilities: Pension Funds Management, Cash Management, Debt Management, Unclaimed Property, and the Second Injury Fund.





#### LIST OF PRINCIPAL OFFICIALS

COMBINED INVESTMENT FUNDS 55 Elm Street, 6th Floor Hartford, CT. 06106-2773 Telephone: (860) 702-3155 Facsimile: (860) 702-3042 World Wide Web: www.ott.ct.gov

Treasurer, State of Connecticut DENISE L. NAPPIER (860) 702-3010

Interim Deputy Treasurer, State of Connecticut LAWRENCE A. WILSON, CTP (860) 702-3070

Chief Investment Officer LAURIE MARTIN, CIA, CPA (860) 702-3195

> Deputy Chief Investment Officer VACANT

General Counsel CATHERINE E. LAMARR (860) 702-3018

Chief Compliance Officer CHRISTINE SHAW (860) 702-3211

#### INVESTMENT ADVISORY COUNCIL

The Investment Advisory Council (IAC) consists of the State Treasurer and the Secretary of the Office of Policy and Management (as ex-officio members of the Council); five public members, all of whom shall be experienced in matters relating to investments, appointed by the Governor and legislative leadership; three representatives of the State teachers' unions and two representatives of the State employees' unions (CGS Sec. 3-13b).

Pursuant to C.G.S. Sec.3-13b, the IAC annually reviews the Investment Policy Statement (IPS), recommended by the Treasurer, which outlines the standards governing investment of the Connecticut Retirement Plans and Trust Funds (CRPTF) assets by the Treasurer. The IPS includes, with respect to each plan and trust fund, (A) investment objectives; (B) asset allocation policies and risk tolerances; (C) asset class definitions, including specific types of permissible investments within each asset class and any specific limitations or other considerations governing the investment of any funds; (D) investment and money manager guidelines; (E) investment performance evaluation guidelines; (F) guidelines for the selection and termination of providers of investment related services, which shall include, but not be limited to, external investment and money managers, investment consultants, custodians, broker-dealers, legal counsel, and similar investment industry professionals; and (G) proxy voting guidelines. The Treasurer shall thereafter adopt the IPS, including any such changes recommended by the IAC the Treasurer deems appropriate, with the approval of a majority of the members appointed to the IAC. The latest IPS was adopted by the Treasurer and approved by the IAC in August 2012, and amended four times, reflecting revisions including the projected capital market returns, the liquidity needs of each plan and trust fund and other financial scenarios for the CRPTF, emanating from the 2012 Asset Liability Study that the Treasurer led, with the assistance of IAC members.

All plan and trust fund investments by the State Treasurer shall be reviewed by the IAC along with all information regarding such investments provided to the IAC which the Treasurer deems relevant to the Council's review and such other information as may be requested by the Council. The IAC shall also review the report provided by the Treasurer at each regularly scheduled meeting of the IAC as to the status of the plan and trust funds and any significant changes which may have occurred or which may be pending with regard to the funds. The Council shall promptly notify the Auditors of Public Accounts and the Comptroller of any unauthorized, illegal, irregular or unsafe handling or expenditure of plan and trust funds or breakdown in the safekeeping of plan and trust fund assets or contemplated action to do the same within their knowledge.

At the close of the fiscal year, the IAC shall make a complete examination of the security investments of the State and determine as of June thirtieth, the value of such investments in the custody of the Treasurer and report thereon to the Governor, the General Assembly and beneficiaries of plan and trust fund assets administered, held or invested by the Treasurer (CGS Sec. 3-13b(c)(2)).

Council members who contributed their time and knowledge to the IAC during fiscal year 2017 include:
CAROL M. THOMAS, Interim Chairperson, as appointed by the Governor; Representative of State employees' unions; Retiree, Department of Developmental Services
BENJAMIN B. BARNES, Secretary, State Office of Policy and Management (Ex officio member)
JOSHUA HALL, Representative of State teachers' unions; Hartford Federation of Teachers
DAVID HIMMELREICH, Principal, Hynes, Himmelreich, Glennon & Company
MICHAEL LeCLAIR, Senior Vice President/Investments, Stifel
STEVEN MUENCH, Representative of State teachers' unions; NEA, Danbury
DENISE L. NAPPIER, Treasurer, State of Connecticut (Ex officio member) and Council secretary

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#### **CONSULTANTS**

Cliffwater Associates - Marina del Rey, California Aon Hewitt Investment Consulting, Inc. - Chicago, Illinois Stepstone Group, LP - New York, New York The Townsend Group - Cleveland, Ohio Meketa Invesmtment Group - Boston, Massachusetts

#### **MASTER CUSTODIAN**

Bank of New York Mellon - New York, New York

#### **AUDITORS**

Auditors of Public Accounts - Hartford, Connecticut

#### **INVESTMENT ADVISORS**

#### LIQUIDITY FUND

State Street Global Advisors - Boston, Massachusetts Payden & Rygel - Los Angeles, California Pacifi c Investment Management Company - Newport Beach, California Lazard Asset Management LLC - New York, New York Colchester Global Investors Ltd. - London, England

#### **MUTUAL EQUITY FUND**

#### Large Cap

State Street Global Advisors - Boston, Massachusetts T. Rowe Price Associates - Baltimore, Maryland

#### All Cap

Capital Prospects, LLC - Stamford, Connecticut FIS Group, Inc. - Philadelphia, Pennsylvania

#### **Small/Mid Cap Active**

Bivium Capital Partners - San Francisco, California Frontier Capital Management Company, LLC - Boston, Massachusetts

#### DEVELOPED MARKET INTERNATIONAL STOCK FUND (DMISF)

Index

State Street Global Advisors - Boston, Massachusetts Core

AQR Capital Management - Greenwich, Connecticut Acadian Asset Management - Boston, Massachusetts Progress Investment Management Company - San Francisco, California

#### Active-Growth

MFS Institutional Advisors, Inc. - Boston, Massachusetts Active-Value

Grantham, Mayo, Van Otterloo & Co. - Boston, Massachusetts Small Cap

Schroder Investment Management - New York, New York Dimensional Fund Advisors - Austin, Texas William Blair & Company - Chicago, Illinois

#### EMERGING MARKET INTERNATIONAL STOCK FUND (EMISF)

Aberdeen Asset Management, Inc. - Philadelphia, Pennsylvania Schroder Investment Management - New York, New York Grantham, Mayo, Van Otterloo & Co. - Boston, Massachusetts

#### **REAL ESTATE FUND (REF)**

AEW Capital Management, LP - Boston, Massachusetts American Realty Advisors - Glendale, California Apollo Real Estate Investment Fund - New York, New York Blackstone Real Estate Advisors - New York, New York Canyon Johnson Urban Funds - Beverly Hills, California Capri Capital Advisors - Chicago, Illinois Clarion Lion Industrial Trust - Baltimore, Maryland Colony Realty Partners II - Los Angeles, California Cornerstone Real Estate Advisors - Hartford, Connecticut Covenant Apartment Funds - Nashville, Tennessee Crow Holdings Realty Partners - Dallas, Texas Cypress Acquisition Partners - Dallas, Texas Gerding Edlen, LP- Portland, Oregon Hart Realty Advisors - Simsbury, Connecticut IL & FS India Realty Fund II, LLC - Ebene, Mauritius JP Morgan Investment Management, New York, New York Landmark Real Estate Partners, Simsbury, Connecticut Lone Star Global Acquisitions Ltd - dallas, Texas MacFarlane Urban Real Estate Fund - San Francisco, California Prime Property Fund - New York, New York Prudential Real Estate Investors - Madison, New Jersey Rockwood Capital - Greenwich, Connecticut Starwood Global Opportunity Funds - Greenwich, Connecticut UBS Trumbull Property - Hartford, Connecticut Urban Strategy America Fund - Boston, Massachusetts USAA EAgle Fund - San Antonio, Texas WLR Recovery Associates IV LLC - New York, New York

#### CORE FIXED INCOME FUND (CFIF)

State Street Global Advisors - Boston, Massachusetts BlackRock Financial Management, Inc. - New York, New York Wellington - Boston, Massachusetts Conning-Goodwin Capital Advisers Inc. - Hartford, Connecticut Progress Investment Management Company - San Francisco, California Prudence Crandall Fund III Opportunistic (Rock Creek)- Washington, District of Columbia Prudence Crandall Fund IV Opportunistic (K2 Advisors) - Stamford, Connecticut

#### **HIGH YIELD DEBT FUND (HYDF)**

Loomis Sayles & Co., Inc. - Boston, Massachusetts Stone Harbor Investment Partners - New York, New York Shenkman Capital Management - Stamford, Connecticut Oaktree Capital Management, L.L.C. - Los Angeles, California AllianceBernstein, LP New York, NY DDJ Capital Management, LLC - Waltham, MA Columbia Management Investment Advisers, LLC - Minneapolis, MN Nomura Corporation Research & Asset Management, Inc. - New York, NY

#### EMERGING MARKET INTERNATIONAL STOCK FUND (1)

Ashmore Emerging Markets Debt Fund - London, England Pyramis Global Investors - Boston, Massachusetts Fidelity Institutional Asset Mgt. Trust Co. - Merrimack, NH Stone Harbor Investment Partners - New York, New York

(1) Not included in the listing are currency overlay managers: The Bank of New York - New York, New York and Bridegwater Associates, Inc. - Westport, Connecticut.

#### **INFLATION LINKED BOND FUND (ILBF)**

BlackRock Financial Management, Inc. - New York, New York Colchester Global Investors Ltd. - London, England New Century Advisors, LLC - Chevy Chase, Maryland

#### PRIVATE INVESTMENT FUND Corporate Buyouts

AIG Altaris Health Partners - New York, New York Boston Ventures VII - Boston, Massachusetts Charterhouse Equity Partners - New York, New York Court Square Capital Partners - New York, New York Ethos Private Equity Fund V - Jersey, Channel Islands FS Equity Partners - Los Angeles, California GENNX360 Capital Partners II - New York, New York Hicks Muse Tate & Furst Equity Fund III - Dallas, Texas ICV Capital Partners II LLC - New York, New York JFL Equity Investors - Wilmington, Deleware KKR Funds - New York, New York Leeds Equity Partners - New York, New York Nogales Investors Fund II - Los Angeles, California RFE Investment Partners - New Canaan, Connecticut TA XI - Boston, Massachusetts Thomas H. Lee Equity Fund VI - Boston, Massachusetts Vista Equity Partners - San Francisco, California Wellspring Capital Partners V - New York, New York Welsh, Carson, Anderson & Stowe – New York, New York Yucaipa American Alliance Fund II LP - Los Angeles, California Yucaipa III - Los Angeles, California

#### **Venture Capital**

Crescendo III – Minneapolis, Minnesota Syndicated Communications Venture Partners V - Silver Spring, Maryland

#### Mezzanine

Audax Mezzanine III Limited Partnership - New York, New York GarMark Partners II LP – Stamford, Connecticut

#### International

Gilbert Global Equity Partners - Tacoma, Washington Pinebridge Global Emerging Markets Fund - New York, New York

#### Fund of Funds

M2 CT Horizon Legacy Fund - Wilmington, Deleware CT Growth Capital - Westport, Connecticut CS/CT Cleantech Opportunities Fund - New York, New York M2 CT Emerging Private Equity - Chicago, Illinois Fairview Capital Partners, Inc - Farmington, Connecticut JP Morgan Nutmeg Opportunity Fund - New York, New York Landmark Private Equity Funds – Simsbury, Connecticut Stepstone Pioneer Capital Funds - Chapel Hill, North Carolina

#### **Special Situations**

Apollo Investment Fund VIII LP - New York, New York Castlelake II LP - MInneapolis, Minnesota Clearlake Capital Partners – Santa Monica, California Levine Leichtman Capital Partners - Beverly Hills, California Pegasus Partners - Cos Cob, Connecticut WLR Recovery Fund IV - New York, New York

#### **ALTERNATIVE INVESTMENT FUND**

Arclight Energy Partners Funds - Boston, Massachusetts EIG Energy Fund XV Limited Partnership - Washington D.C. Marathon European Credit Opportunity - New York, New York Prudence Crandall I Permal Limited Partnership - New York, New York Prudence Crandall II Prisma Limited Partnership - New York, New York Prudence Crandall III Rock Creek Limited Partnership - Washington D.C. Prudence Crandall IV K2 Limited Partnership - Stamford, Connecticut Thomas Welles Funds - New York, New York

# Financial Section



#### STATE OF CONNECTICUT



JOHN C. GERAGOSIAN

AUDITORS OF PUBLIC ACCOUNTS State Capitol 210 Capitol Avenue Hartford, Connecticut 06106-1559

ROBERT J. KANE

#### **INDEPENDENT AUDITORS' REPORT**

Governor Dannel P. Malloy Members of the General Assembly:

#### **Report on the Financial Statements**

We have audited the accompanying financial statements of the Combined Investment Funds, which comprise the statement of net position as of June 30, 2017, the statements of changes in net position for the fiscal years ended June 30, 2017 and 2016, and the related notes to the financial statements.

#### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### **Opinion**

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Combined Investment Funds as of June 30, 2017, and the statements of changes in financial position for the fiscal years ended June 30, 2017 and 2016, in conformity with accounting principles generally accepted in the United States of America.

#### **Emphasis of Matter**

As explained in Note 1B to the financial statements of the combined investment funds, the real estate, private investment, alternative investment, and core fixed income funds include investments that are carried at the investment advisors' June 30, 2017 fair value, or net asset value equivalent. The Treasurer's staff reviews the estimated fair values provided by the investment advisors for reasonableness. In those instances in which an advisor's value appears to be overstated, this estimated fair value is adjusted accordingly. We reviewed the documentation and procedures used by the Treasury to determine the fair values, and found them to be appropriate and reasonable; however, because of the inherent uncertainty in valuing these investments, determination of the estimated fair value market values may differ from the actual values had a ready market existed for these investments. Our opinion is not modified with respect to this matter.

As discussed in Note 1 to the financial statements, the financial statements referred to in the first paragraph are intended to present only the Combined Investment Funds administered by the Office of the State Treasurer. They do not purport to, and do not, present fairly the financial position of the State of Connecticut as of June 30, 2017, and the changes in financial position for the fiscal years end June 30, 2017 and 2016, in conformity with generally accepted accounting principles in the United States of America. Our opinion is not modified with respect to this matter.

#### **Other Matters**

#### Required Supplementary Information

Management's Discussion and Analysis, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

#### Supplementary Information

Our audit was made for the purpose of forming an opinion on the financial statements of the Combined Investment Funds as a whole. Certain other financial information, which includes the Schedule of Net Position by Investment Fund, Schedules of Changes in Net Position by Investment Fund, Total Net Position Value by Pension Plans and Trust Funds and the Schedules of Investment Activity by Pension Plan and by Trust contained within the investment section of this document, is presented for purposes of additional analysis and is not a required part of the financial statements of the combined investment funds. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements of the combined investment funds and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is presented fairly in all material respects in relation to the financial statements taken as a whole.

#### Other Information

The introductory, investment and statistical sections include information other than the schedules noted within the investment section that is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information other than the schedules specifically noted within the investment section, has not been subjected to the auditing procedures applied in the audit of the basic financial statement and, accordingly, we do not express an opinion or provide any assurance on it.

#### Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated December 29, 2017, on our consideration of the State Treasury's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report will be issued under separate cover in the *Independent Auditors' Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards for the Fiscal Year Ended June 30, 2017*, and is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be considered in assessing the results of our audit.

John C. Geragosian State Auditor

Robert J. Kane State Auditor

December 29, 2017 State Capitol Hartford, Connecticut



#### MANAGEMENT'S DISCUSSION AND ANALYSIS

This section presents Management's Discussion and Analysis (MD&A) of the Comprehensive Annual Financial Report (CAFR) of the State of Connecticut's Office of the Treasurer Combined Investment Funds (CIF) financial position and performance for the fiscal year ended June 30, 2017. It is presented as a narrative overview and analysis. Management of the State of Connecticut's Office of the Treasurer encourage readers to review it in conjunction with the transmittal letter included in the Introductory Section at the front of this report and the financial statements in the Financial Section that follow.

The Combined Investment Funds serve as an investment vehicle for the six State pension plans and nine trust funds collectively known as the Connecticut Retirement Plans and Trust Funds representing the pension funds of the State teachers, State and municipal employees, as well as non-retirement trust funds that support academic programs, grants and initiatives throughout the State and are managed for the sole benefit of the participants. CIF investments range in investment diversity from domestic and international stocks to fixed income, real estate and private investment equity. Investments of the pension plans and trust funds are combined in a commingled investment pool as authorized by state statute. Each pension plan and trust fund owns an equity position in the CIF and receives proportionate investment income from the CIF in accordance with each respective ownership percentage. The pension plan and trust fund's allocated share of each type of investment in the CIF is shown in the Schedule of Changes in Net. Investment gains or losses are also reported in the Statement of Changes in Net Position of each pension plan and trust. The Market Value per share is therefore approximately the same for each of the pension plans and trust funds investments in the CIF.

The CIF financial statements reported by the Treasurer's Office for which the Treasurer has fiduciary responsibility for the investment thereof follow this MD&A and provide detailed information about the individual funds.

#### FINANCIAL HIGHLIGHTS Condensed Financial Information

#### **Combined Investment Funds**

#### Net Position and Changes in Net Position

The net position of the Combined Investment Funds at the close of the 2017 fiscal year was \$32.5 billion, an increase of \$3.3 billion from the previous year. The change in net position resulted from a \$4.1 billion increase from operations (realized and unrealized gains and investment income) partly offset by \$0.8 billion of net redemptions from the Combined Investment Funds comprised of net beneficiary distributions.

The net position of the Combined Investment Funds at the close of the 2016 fiscal year was \$29.2 billion, a decrease of \$0.6 billion from the previous year. The change in net position resulted from a minor increase from operations (realized and unrealized gains and investment income) offset by \$0.6 billion of net cash withdrawals from the Combined Investment Funds comprised of net beneficiary distributions.

#### Assets held in trust for Participants

A summary of the net position of assets held in trust for participants is presented below.

Condensed Statement of Net Position Fiscal Year Ended June 30,					
Assets	2017	Increase (Decrease)	2016	Increase (Decrease)	2015
Investments at Fair Value Cash, Receivables and Other Total Assets Liabilities Net Position	\$32,568,375,166 10,300,741,694 42,869,116,860 (10,321,246,846) \$32,547,870,014	\$3,362,320,165 (4,597,191,581) (1,234,871,416) 4,536,821,669 \$3,301,950,253	\$29,206,055,001 14,897,933,275 44,103,988,276 (14,858,068,515) \$29,245,919,761	\$(764,201,850) 4,289,147,010 3,524,945,160 (4,146,001,915) \$(621,056,755)	\$29,970,256,851 10,608,786,265 40,579,043,116 (10,712,066,600) \$29,866,976,516

#### MANAGEMENT'S DISCUSSION AND ANALYSIS

Additions	2017	Increase (Decrease)	2016	Increase (Decrease)	2015
Dividends	\$510,388,935	\$50,435,311	\$459,953,624	\$(42,960,324)	502,913,948
Interest	308,532,848	(28,740,648)	337,273,496	75,263,268	262,010,228
Securities Lending & Other Incom	ne 48,252,029	19,482,997	28,769,032	6,012,543	22,756,489
Total Investment Income	867,173,812	41,177,660	825,996,152	38,315,487	787,680,665
Total Investment Expenses	99,529,828	8,875,246	90,654,582	3,156,155	87,498,427
Net Investment Income	767,643,984	32,302,414	735,341,570	35,159,332	700,182,238
Net Increase (Decrease) in Fair Value of Investments and	3,332,743,095	4.052.859.827	(720, 116, 722)	(022.062.006)	212,946,364
Foreign Currency Net Increase (Decrease) in Net Position resulting			(720,116,732)	(933,063,096)	
from operations Purchase of Units by	4,100,387,079	4,085,162,241	15,224,838	(897,903,764)	913,128,602
Participants	2.687.016.102	222.634.561	2.464.381.541	(546.025.125)	3,010,406,666
Total Additions	6,787,403,181	4,307,796,802	2,479,606,379	(1,443,928,889)	3,923,535,268
Total Additions	0,707,403,101	4,307,790,002	2,479,000,379	(1,443,920,009)	3,923,333,200
Deductions					
Administrative Expense	4,000,655	(602,017)	4,602,672	(19,373)	4,622,045
Distribution of Income to					
Unit Owners	24,306,542	10,836,504	13,470,038	4,006,919	9,463,119
Redemption of Units by					
Participants	3,457,145,731	374,555,307	3,082,590,424	(514,008,330)	3,596,598,754
Total Deductions	3,485,452,928	384,789,794	3,100,663,134	(510,020,784)	3,610,683,918
Change in Net Position	3,301,950,253	3,923,007,008	(621,056,755)	(933,908,105)	312,851,350
Net Position – Beginning of year	29,245,919,761	(621,056,755)	29,866,976,516	312,851,350	29,554,125,166
Net Position – End of year	\$32,547,870,014	\$3,301,950,253	\$29,245,919,761	\$(621,056,755)	\$29,866,976,516

#### Condensed Statement of Changes in Net Position Fiscal Year Ended June 30,

#### **OVERVIEW OF THE FINANCIAL STATEMENTS**

This discussion and analysis is an introduction to the Office of the Treasurer's Combined Investment Funds basic financial statements, which are comprised of: 1) Statement of Net Position, 2) Statement of Changes in Net Position and 3) Notes to the Financial Statements.

The Statements of Net Position and Changes in Net Position are two financial statements that report information about the Combined Investment Funds. These statements include all assets and liabilities using the accrual basis of accounting. The current year's revenues and expenses are taken into account regardless of when cash is received or paid.

The Statement of Net Position presents all of the Combined Investment Funds assets and liabilities, with the difference between the two reported as "net position". Over time, increases and decreases in net position measure whether the Combined Investment Funds financial position is improving or deteriorating.

The Statement of Changes in Net Position presents information showing how the Combined Investment Funds net assets changed during the most recent year. All changes in net assets are reported as soon as the underlying events giving rise to the change occurs, regardless of the timing of related cash flows. Therefore, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (eg. security lending rebates and dividend and interest income).

The Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the Combined Investment Funds financial statements.

#### MANAGEMENT'S DISCUSSION AND ANALYSIS

#### **ECONOMIC CONDITIONS AND OUTLOOK**

Domestic growth, as measured by Gross Domestic Product (GDP), experienced modest growth during the fiscal year. For Fiscal Year 2017, GDP (on a year-over-year basis) ranged between 1.5 percent and 2.2 percent. For the entire fiscal year, GDP averaged a 1.9 percent year-over-year rate, up from Fiscal Year 2016's 1.8 percent rate. Meanwhile the unemployment rate ended the fiscal year at 4.4 percent, down from the 4.9 percent rate at the end of Fiscal Year 2016. During the course of the fiscal year, approximately 2.2 million people were added to payrolls.

Domestic inflation averaged 1.8 percent during the fiscal year, up sharply from 0.7 percent in fiscal year 2016. Excluding the more volatile food and energy components, inflation during the fiscal year averaged 2.1 percent, unchanged from Fiscal Year 2016. Similar to domestic inflation, inflation in the Eurozone was stronger as well, with an average inflation rate of 1.1 percent, up from 0.0 percent during the 2016 fiscal year period.

Connecticut's unemployment rate has continued to decline from a high of 9.5 percent in October 2010 to 5.0 percent in July 2017, compared to the national unemployment rate of 4.3 percent. The State Comptroller reported on September 29, 2017 that the State's General Fund ended the 2017 fiscal year with a pre-audited \$22.7 million deficit which will be eliminated through a transfer from the Budget Reserve Fund.

#### **CONTACTING THE OFFICE OF THE TREASURER**

This Comprehensive Annual Financial Report is designed to provide a general overview of the CIF and to show the Office of the Treasurer's accountability for its stewardship of CIF assets. Questions about this report or requests for additional information should be addressed to:

Office of the Treasurer 55 Elm Street Hartford, CT 06106-1773 Telephone (860) 702-3000 www.ott.ct.gov

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS

#### STATEMENT OF NET POSITION JUNE 30, 2017

ACCETC	TOTAL
ASSETS nvestments in Securities, at Fair Value	
Liquidity Fund	\$-
Cash Equivalents	283,293,693
Asset Backed Securities	254,922,819
Government Securities	3,701,714,063
Government Agency Securities	716,184,623
Mortgage Backed Securities	280,579,047
Corporate Debt	4,037,232,777
Convertible Securities	51,662,496
Common Stock	15,327,223,987
Preferred Stock	77,158,462
Real Estate Investment Trust	319,238,833
Business Development Corportation	57,625,395
Mutual Fund	228,915,053
Limited Liability Corporation	1,156,486
Trusts	-
Limited Partnerships	7,231,467,432
Total Investments in Securities, at Fair Value	32,568,375,166
Cash	89,144,432
Receivables	00,111,102
Foreign Exchange Contracts	7,804,771,380
Interest Receivable	78,637,964
Dividends Receivable	34,440,797
Due from Brokers	259,182,529
Foreign Taxes	16,147,498
Securities Lending Receivable	1,237,681
Reserve for Doubtful Receivables	(4,655,941)
Total Receivables	8,189,761,908
Invested Securities Lending Collateral	2,020,761,587
Prepaid Expenses	1,073,767
Total Assets	42,869,116,860
LIABILITIES	
Payables	
Foreign Exchange Contracts	7,816,967,543
Due to Brokers	463,602,882
Income Distribution	3,033,211
Other Payable	217,027
Total Payables	8,283,820,663
Securities Lending Collateral	2,020,761,587
Accrued Expenses	16,664,596
Total Liabilities	10,321,246,846
NET POSITION HELD IN TRUST FOR PARTICIPANTS	\$ 32,547,870,014

The accompanying notes are an integral part of these financial statements.

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS

#### STATEMENT OF CHANGES IN NET POSITION FOR THE FISCAL YEAR ENDED JUNE 30, 2017

ADDITIONS	TOTAL
OPERATIONS	
Investment Income	
Dividends	\$ 510,388,935
Interest	308,532,848
Other Income	21,127,292
Securities Lending	27,124,737
Total Income	867,173,812
Expenses	
Investment Advisory Fees	77,960,003
Custody and Transfer Agent Fees	3,471,588
Professional Fees	2,852,273
Security Lending Fees	1,576,512
Security Lending Rebates	11,360,474
Investment Expenses	2,308,978
Total Expenses	99,529,828
Total Expenses	99,529,626
Net Investment Income	767,643,984
Net Increase (Decrease) in the Fair Value of Investments and Foreign Currency	3,332,743,095
Net Increase (Decrease) in Net Position Resulting from Operations	4,100,387,079
Unit Transactions Purchase of Units by Participants	2,687,016,102
TOTAL ADDITIONS	6,787,403,181
DEDUCTIONS Administrative Expenses: Salary and Fringe Benefits	(4,000,655
Distributions to Unit Owners: Income Distributed	(24,306,542
Unit Transactions Redemption of Units by Participants	(3,457,145,731
TOTAL DEDUCTIONS	(3,485,452,928
Change in Net Position Held in Trust for Participants	3,301,950,253
Change in Net Position Held in Trust for Participants Net Position- Beginning of Period	<u>3,301,950,253</u> 29,245,919,761

The accompanying notes are an integral part of these financial statements

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS

#### STATEMENT OF CHANGES IN NET POSITION FOR THE FISCAL YEAR ENDED JUNE 30, 2016

ADDITIONS		TOTAL
OPERATIONS		
Investment Income	<u>,</u>	
Dividends	\$	459,953,624
Interest		337,273,496
Other Income		7,688,194
Securities Lending		21,080,838
Total Income		825,996,152
Expenses		
Investment Advisory Fees		74,630,968
Custody and Transfer Agent Fees		3,284,270
Professional Fees		3,380,185
Security Lending Fees		1,574,507
Security Lending Rebates		5,335,764
Investment Expenses		2,448,888
Total Expenses		90,654,582
		00,004,002
Net Investment Income		735,341,570
Net Increase (Decrease) in the Fair Value of Investments and Foreign Currency		(720,116,732)
Net Increase (Decrease) in Net Position Resulting from Operations		15,224,838
Unit Transactions Purchase of Units by Participants		2,464,381,541
TOTAL ADDITIONS		2,479,606,379
DEDUCTIONS Administrative Expenses: Salary and Fringe Benefits		(4,602,672)
Distributions to Unit Owners: Income Distributed		(13,470,038)
Unit Transactions Redemption of Units by Participants		(3,082,590,424)
TOTAL DEDUCTIONS		(3,100,663,134)
Change in Net Position Held in Trust for Participants		(621,056,755)
Net Position- Beginning of Period		29,866,976,516
Net Position- End of Period		
Net Position- End of Period	\$ 2	29,245,919,761

The accompanying notes are an integral part of these financial statements

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS NOTES TO FINANCIAL STATEMENTS

#### NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The Combined Investment Funds (CIF) are separate legally defined funds, which have been created by the Treasurer of the State of Connecticut (the Treasurer) under the authority of the Connecticut General Statutes (CGS) Section 3-31b. The CIF are open-end, unitized portfolios consisting of the Liquidity Fund, Alternative Investment Fund, Mutual Equity Fund, Core Fixed Income Fund, Inflation Linked Bond Fund, Emerging Market Debt Fund, High Yield Debt Fund, Developed Market International Stock Fund, Emerging Market International Stock Fund, and the Private Investment Fund. The CIF were established to provide a means for investing pension and other trust fund assets entrusted to the Treasurer in a variety of investment classes. The units of the CIF are owned by these pension and trust funds. For financial reporting purposes of the State of Connecticut, the CIF are considered to be external investment pools and are not reported in the State's combined financial statements. Instead, each fund type's investment in the CIF is reported as "equity in combined investment funds" in the State's combined balance sheet.

The Treasurer, as sole fiduciary of the CIF, is authorized to invest in a broad range of fixed income and equity securities, as well as real estate properties, mortgages and private equity. This authority is restricted only by statute. Such limitations include prohibitions against investment in companies doing business in Iran and those doing business in Northern Ireland, but who have failed to implement the MacBride Principles (CGS Section 3–13h). Other legislation restricts the maximum aggregate investment in equity securities to 60% of the fair value of the Trust Funds.

The CIF are not subject to regulatory oversight and are not registered with the Securities and Exchange Commission as an investment company.

The following is a summary of significant accounting policies consistently followed by the CIF in the preparation of their financial statements.

#### A. NEW PRONOUNCEMENTS

There were no new pronouncements for the fiscal year ending June 30, 2017.

#### **B. SECURITY VALUATION**

Investments are stated at fair value for each of the CIFs as described below.

For the Alternative Investment, Real Estate and Private Investment Funds substantially all of the investments, other than those in the Liquidity Fund, are shown at values that are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The Core Fixed Income Fund also include investments that are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The Core Fixed Income Fund also include investments that are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The CIF's assets are fair valued quarterly by the General Partner and at such other times as determined by the General Partner and are based on Accounting Standards Codification (ASC) 820 "Fair Value Measurements and Disclosures". The fair value the General Partner assigned to these investments is based upon available information and does not represent necessarily the amount that ultimately might be realized upon sale or maturity. Because of the inherent uncertainty of the fair value that would have been used had a ready market for the security existed, and the difference could be material. The General Partner is responsible for coordination and oversight of all investment valuations.

The Treasurer's staff reviews the valuations for all investments in these alternative asset classes to see that they are reasonable and consistent. Due to the inherent uncertainty of valuation, those estimated values may differ significantly from the values that would have been used had a ready market for the securities existed and the differences could be material.

#### Liquidity Fund

Existing money market vehicles are valued at amortized cost on a daily basis, which approximates fair value. A standard price hierarchy is utilized in the daily valuation of the Liquidity Fund.

The Liquidity Fund at times may utilize foreign currency contracts to facilitate transactions in foreign securities and to manage the CIF's currency exposure. Contracts to buy are used to acquire exposure to foreign currencies, while contracts to sell are used to hedge the CIF's investments against currency fluctuations. Also, a contract to buy or sell can offset a previous contract. Losses may arise from changes in the value of the foreign currency or failure of the

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS NOTES TO FINANCIAL STATEMENTS (Continued)

counterparties to perform under the contracts' terms.

Investing in forward currency contracts may increase the volatility of the CIF's' performance. Price movements of currency contracts are influenced by, among other things, international trade, fiscal, monetary, and exchange control programs and policies; national and international political and economic events; and changes in worldwide interest rates. Governments from time to time intervene in the currency markets with the specific intent of influencing currency prices. Such intervention may cause certain currency prices to move rapidly. Additionally, the currency markets may be particularly sensitive to interest rate fluctuations.

The U. S. dollar value of forward foreign currency contracts is determined using forward currency exchange rates supplied by a quotation service.

Investments are valued based on quoted market prices when available. For securities that have no quoted market value, fair value is estimated based on yields currently available on comparable securities of issuers with similar credit ratings and maturities.

"When-issued" securities held in the fund are fully collateralized by U.S Government securities and such collateral is in the possession of the CIF's custodial bank. The collateral is evaluated daily to ensure its market value exceeds the current market value of the instruments including accrued interest.

The Liquidity Fund invests in Mortgage Backed Securities (MBSs) and Asset Backed Securities (ABSs), which are included in the Statement of Net Position. These are bonds issued by a special purpose trust that collects payments on an underlying collateral pool of mortgage or other loans and remits payments to bondholders. The bonds are structured in a series of classes or tranches, each with a different coupon rate and stated maturity date. Interest payments to the bondholders are made in accordance with the trust indentures and amounts received from borrowers in excess of interest payments and expenses are used to amortize the principal on the bonds. Such principal payments are made to retire the tranches of bonds in order of their stated maturity. Because mortgage prepayments are largely dependent on market interest rates, the ultimate maturity date of the bonds is unpredictable and is sensitive to changes in market interest rates, but is generally prior to the stated maturity date. At June 30, 2017, the Fund held MBSs of \$138,464,921 and ABSs of \$168,082,920.

Repurchase agreements held in the fund are collateralized at 100 percent of the securities' value. Such transactions are only entered into with primary government securities dealers who report directly to the Federal Reserve Bank of New York. The collateral is evaluated daily to ensure its fair value exceeds the current fair value of the repurchase agreements including accrued interest.

#### Alternative Investment Fund

Investments in securities not listed on security exchanges and investments in limited partnerships, which comprise substantially all of the CIF's investments, are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The Treasurer's staff reviews the estimated fair values provided by the investment advisors for reasonableness. In those instances where an advisor's value appears to be overstated, this estimated fair value is adjusted accordingly.

#### Mutual Equity Fund

Securities traded on securities exchanges are valued at the last reported sales price on the last business day of the fiscal year. Corporate bonds and certain over-the-counter stocks are valued at the mean of bid and asked prices as furnished by broker-dealers.

#### Core Fixed Income Fund

Investments are valued based on quoted market prices when available. For securities that have no quoted market value, fair value is estimated based on yields currently available on comparable securities of issuers with similar credit ratings and maturities.

"When-issued" securities held in the CIF are fully collateralized by U.S Government securities and such collateral is in the possession of the CIF's custodial bank. The collateral is evaluated daily to ensure its market value exceeds the current market value of the instruments including accrued interest.

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS NOTES TO FINANCIAL STATEMENTS (Continued)

The Core Fixed Income Fund invests in Mortgage Backed Securities (MBSs) and Asset Backed Securities (ABSs), which are included in the Statement of Net Position. These are bonds issued by a special purpose trust that collects payments on an underlying collateral pool of mortgage or other loans and remits payments to bondholders. The bonds are structured in a series of classes or tranches, each with a different coupon rate and stated maturity date. Interest payments to the bondholders are made in accordance with the trust indentures and amounts received from borrowers in excess of interest payments and expenses are used to amortize the principal on the bonds. Such principal payments are made to retire the tranches of bonds in order of their stated maturity. Because mortgage prepayments are largely dependent on market interest rates, the ultimate maturity date of the bonds is unpredictable and is sensitive to changes in market interest rates, but is generally prior to the stated maturity date. At June 30, 2017, the CIF held MBSs of \$142,114,126 and ABSs of \$87,031,155.

Interest-only stripped mortgage backed securities (IOs), a specialized type of Collateralized Mortgage Obligation (CMO), are included as Mortgage Backed Securities on the Statement of Net Position. The cash flow on these investments is derived from the interest payments on the underlying mortgage loans. Prepayments on the underlying loans curtail these interest payments, reducing the value of the IOs and, as such, these instruments are extremely sensitive to changes in interest rates, which encourage or discourage such prepayments. At June 30, 2017 the CIF's holdings had a fair value of \$470,097 and a cost of \$822,382. The valuations were provided by the custodian.

Investments in non-U.S. fixed income securities are utilized on an opportunistic basis. Certain advisors within the Core Fixed Income Fund are authorized to invest in global fixed income securities.

Investments in securities not listed on security exchanges and investments in limited partnerships are carried at the general partner's June 30, 2017 fair value or net asset value (NAV) equivalent. The Treasurer's staff reviews the estimated fair values provided by the investment advisors for reasonableness. In those instances where an advisor's value appears to be overstated, this estimated fair value is adjusted accordingly.

#### Inflation Linked Bond Fund

Investments are valued based on quoted market prices when available. For securities that have no quoted market value, fair value is estimated based on yields currently available on comparable securities of issuers with similar credit ratings and maturities.

"When-issued" securities held in the CIF are fully collateralized by U.S Government securities and such collateral is in the possession of the CIF's custodial bank. The collateral is evaluated daily to ensure its market value exceeds the current market value of the instruments including accrued interest.

Investments in non-U.S. fixed income securities are utilized on an opportunistic basis. Certain advisors within the Inflation Linked Bond Fund are authorized to invest in global fixed income securities.

The Inflation Linked Bond Fund sometimes invests in Asset Backed Securities (ABSs), which are included in the Statement of Net Position. These are bonds issued by a special purpose trust that collects payments on an underlying collateral pool of mortgage or other loans and remits payments to bondholders. The bonds are structured in a series of classes or tranches, each with a different coupon rate and stated maturity date. Interest payments to the bondholders are made in accordance with the trust indentures and amounts received from borrowers in excess of interest payments and expenses are used to amortize the principal on the bonds. Such principal payments are made to retire the tranches of bonds in order of their stated maturity. Because mortgage prepayments are largely dependent on market interest rates, the ultimate maturity date of the bonds is unpredictable and is sensitive to changes in market interest rates, but is generally prior to the stated maturity date. At June 30, 2017, the CIF held ABSs, consisting of swaps and resulting in a fair value of \$754, 194.

#### Emerging Market Debt Fund

Investments are valued based on quoted market prices when available. For securities that have no quoted market value, fair value is estimated based on yields currently available on comparable securities of issuers with similar credit ratings.

The Emerging Market Debt Fund invests in securities in emerging market countries that are either U.S. dollardenominated or issued in the local currency of the country. In addition to bond interest rate sensitivity, the local currency bonds' values will fluctuate with exchange rates.

#### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS NOTES TO FINANCIAL STATEMENTS (Continued)

"When-issued" securities held in the CIF are fully collateralized by U.S Government securities and such collateral is in the possession of the CIF's custodian. The collateral is evaluated daily to ensure its market value exceeds the current market value of the instruments including accrued interest.

The Emerging Market Debt Fund sometimes invests in Asset Backed Securities (ABSs), which are included in the Statement of Net Position. These are bonds issued by a special purpose trust that collects payments on an underlying collateral pool of mortgage or other loans and remits payments to bondholders. The bonds are structured in a series of classes or tranches, each with a different coupon rate and stated maturity date. Interest payments to the bondholders are made in accordance with the trust indentures and amounts received from borrowers in excess of interest payments and expenses are used to amortize the principal on the bonds. Such principal payments are made to retire the tranches of bonds in order of their stated maturity. Because mortgage prepayments are largely dependent on market interest rates, the ultimate maturity date of the bonds is unpredictable and is sensitive to changes in market interest rates, but is generally prior to the stated maturity date. At June 30, 2017, the CIF held ABSs, consisting of swaps and resulting in a fair value of \$243,071.

#### High Yield Debt Fund

Investments are valued based on quoted market prices when available. For securities that have no quoted market value, fair value is estimated based on yields currently available on comparable securities of issuers with similar credit ratings and maturities.

"When-issued" securities held in the fund are fully collateralized by U.S Government securities and such collateral is in the possession of the CIF's custodial bank. The collateral is evaluated daily to ensure its market value exceeds the current market value of the instruments including accrued interest.

Investments in non-U.S. fixed income securities are utilized on an opportunistic basis. Certain advisors within the High Yield Debt Fund are authorized to invest in global fixed income securities.

The Inflation Linked Bond Fund sometimes invests in Asset Backed Securities (ABSs), which are included in the Statement of Net Position. These are bonds issued by a special purpose trust that collects payments on an underlying collateral pool of mortgage or other loans and remits payments to bondholders. The bonds are structured in a series of classes or tranches, each with a different coupon rate and stated maturity date. Interest payments to the bondholders are made in accordance with the trust indentures and amounts received from borrowers in excess of interest payments and expenses are used to amortize the principal on the bonds. Such principal payments are made to retire the tranches of bonds in order of their stated maturity. Because mortgage prepayments are largely dependent on market interest rates, the ultimate maturity date of the bonds is unpredictable and is sensitive to changes in market interest rates, but is generally prior to the stated maturity date. At June 30, 2017, the CIF held ABSs, consisting of swaps and resulting in a fair value of (\$1,188,521).

#### Developed Market International Stock Fund

The Developed Market International Stock Fund at times may utilize foreign currency contracts to facilitate transactions in foreign securities and to manage the CIF's currency exposure. Contracts to buy are used to acquire exposure to foreign currencies, while contracts to sell are used to hedge the CIF's investments against currency fluctuations. Also, a contract to buy or sell can offset a previous contract. Losses may arise from changes in the value of the foreign currency or failure of the counterparties to perform under the contracts' terms.

Investing in forward currency contracts may increase the volatility of the CIF's' performance. Price movements of currency contracts are influenced by, among other things, international trade, fiscal, monetary, and exchange control programs and policies; national and international political and economic events; and changes in worldwide interest rates. Governments from time to time intervene in the currency markets with the specific intent of influencing currency prices. Such intervention may cause certain currency prices to move rapidly. Additionally, the currency markets may be particularly sensitive to interest rate fluctuations.

The U. S. dollar value of forward foreign currency contracts is determined using forward currency exchange rates supplied by a quotation service

Investments in securities listed on security exchanges are valued at the last reported sales price on the last business day of the fiscal year; securities traded in the over-the-counter market and listed securities for which no sale was reported
on that date are valued at the mean of the last reported bid and asked prices.

Certain cash held in non-U.S. dollar denominated trading accounts is non-interest bearing.

#### Emerging Market International Stock Fund

The Emerging Market International Stock Fund at times may utilize foreign currency contracts to facilitate transactions in foreign securities and to manage the CIF's' currency exposure. Contracts to buy are used to acquire exposure to foreign currencies, while contracts to sell are used to hedge the CIF's' investments against currency fluctuations. Also, a contract to buy or sell can offset a previous contract. Losses may arise from changes in the value of the foreign currency or failure of the counterparties to perform under the contracts' terms.

Investing in forward currency contracts may increase the volatility of the CIF's' performance. Price movements of currency contracts are influenced by, among other things, international trade, fiscal, monetary, and exchange control programs and policies; national and international political and economic events; and changes in worldwide interest rates. Governments from time to time intervene in the currency markets with the specific intent of influencing currency prices. Such intervention may cause certain currency prices to move rapidly. Additionally, the currency markets may be particularly sensitive to interest rate fluctuations.

The U. S. dollar value of forward foreign currency contracts is determined using forward currency exchange rates supplied by a quotation service

Investments in securities listed on security exchanges are valued at the last reported sales price on the last business day of the fiscal year; securities traded in the over-the-counter market and listed securities for which no sale was reported on that date are valued at the mean of the last reported bid and asked prices.

Certain cash held in non-U.S. dollar denominated trading accounts is non-interest bearing.

#### Real Estate Fund

Investments in securities not listed on security exchanges and investments in trusts, limited partnerships, and annuities, which comprise substantially all of the CIF's investments, are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The Treasurer's staff reviews estimated fair values provided by the investment advisors for reasonableness. In those instances where an advisor's value appears to be overstated, this estimated fair value is adjusted accordingly.

#### Private Investment Fund

Investments in securities not listed on security exchanges and investments in limited partnerships and limited liability corporations, which comprise substantially all of the CIF's investments, are carried at the general partner's June 30, 2017 fair value, or net asset value (NAV) equivalent. The Treasurer's staff reviews estimated fair values provided by the investment advisors for reasonableness. In those instances where an advisor's value appears to be overstated, this estimated fair value is adjusted accordingly.

Fair values of the underlying investments are generally represented by cost unless there has been an additional arms-length indication of value, such as a public offering or a new investment by a third party.

#### C. INVESTMENT TRANSACTIONS AND RELATED INCOME

Investment transactions are accounted for on a trade date basis. Dividend income is recognized as earned on the ex-dividend date. Interest income is recorded on the accrual basis as earned. Realized gains and losses are computed on the basis of the average cost of investments sold. Such amounts are calculated independent of and are presented as part of the Net Increase(Decrease)in the Fair Value of Investments on the Statement of Changes in Net Position. Realized gains and losses on investments held more than one fiscal year and sold in the current year were included as a change in the fair value of investments reported in the prior year(s) and the current year. Unrealized gains and losses represent the difference between the fair value and the cost of investments. The increase (decrease) in such difference is also accounted for in the Net Increase (Decrease) in Fair Value of Investments. In the CIF's' cost basis records, premiums are amortized using the straight-line method that approximates the interest method.

Dividends earned by the Private Investment, Real Estate and Alternative Investment Funds relate to investments that are not listed on security exchanges. Such dividends are recognized as income when received, generally net of

advisory fees.

#### D. FOREIGN CURRENCY TRANSLATION

The value of investments, assets and liabilities denominated in currencies other than U.S. dollars are translated into U.S. dollars based upon appropriate fiscal year end foreign exchange rates. Purchases and sales of foreign investments and income and expenses are converted into U.S. dollars based on currency exchange rates prevailing on the respective dates of such transactions. The CIF do not isolate that portion of the results of operations arising from changes in the exchange rates from that portion arising from changes in the market prices of securities.

#### E. SHARE TRANSACTIONS AND PRICING

All unit prices are determined at the end of each month based on the net asset value of each CIF divided by the number of units outstanding. Purchases and redemptions of units are based on the prior month end price and are generally processed on the first business day of the month.

#### F. EXPENSES

Expenses of the CIF, excluding certain management fees as discussed in more detail in note 1J, are recognized on the accrual basis and are deducted in calculating net investment income and net asset value on a monthly basis. Each of the CIF bears its direct expenses, such as investment advisory fees, and, in addition, each of the CIF is allocated a portion of the overhead expenses of the Pension Funds Management Division of the Office of the State Treasurer, which services the CIF. These expenses include salary and fringe benefit costs and other administrative expenses. Certain of these costs are allocated among the CIF based on relative net asset values. Other costs are charged directly based on the specific duties of personnel.

#### G. DISTRIBUTIONS

Distributions to unit holders of the CIFs were discontinued after September 30, 2013.

#### H. DERIVATIVE FINANCIAL INSTRUMENTS

GASB Statement Number 53 Accounting and Financial Reporting for Derivative Instruments, requires that the fair value of financial arrangements called derivatives or derivative instruments be reported in the financial statements. GASB defines a derivative instrument as a financial instrument or other contract with all of the following characteristics: a) It has one or more reference rates and (2) one or more notional amounts or payment provisions or both. b) It requires no initial net investment or an initial net investment that is smaller than would be required for other types of contracts that would be expected to have a similar response to changes in market factors. c) Its terms require or permit net settlement, it can readily be settled net by a means outside the contract, or it provides for delivery of an asset that puts the recipient in a position not substantially different from net settlement.

For the fiscal year ended June 30, 2017, the CIF maintained positions in a variety of such securities that are all reported at fair value on the Statement of Net Position. The following is a listing of such securities:

CIF	Cost	Fair Value
Liquidity	\$485,158,234	\$468,961,661
Core Fixed Income	144,901,985	145,297,233
Inflation Linked Bond	5,056,091	5,048,778
Emerging Market Debt	8,253,885	8,380,712
High Yield Debt	24,463,583	24,494,322
Asset Backed Securities:		
CIF	Cost	Fair Value
Liquidity	\$171,616,700	\$168,082,920
Core Fixed Income	86,850,325	87,031,155

Mortgage Backed Securities, Net of CMO's:					
CIF	Cost	Fair Value			
Liquidity	\$138,799,019	\$129,083,007			
Core Fixed Income	86,620,005	86,863,327			
CMO's:					
CIF	Cost	Fair Value			
Liquidity	\$9,530,700	\$9,381,914			
Core Fixed Income	55,469,343	55,250,799			
TBA's:					
CIF	Cost	Fair Value			
Core Fixed Income	\$118,613,510	\$118,184,621			
Interest Only:					
CIF	Cost	Fair Value			
Core Fixed Income	\$822,382	\$470,097			
Options:					
CIF	Cost	Fair Value			
Inflation Linked Bond	\$863,057	\$775,491			

The Inflation Linked Bond Fund held futures with a negative notional cost of (\$198,263,037) and an unrealized loss of \$412,624 reported in the Due from Brokers in the Statement of Net Position. The Core Fixed Income Fund held futures with a negative notional cost of (\$13,943,831) and an unrealized gain of \$84,506 reported in the Due from Brokers in the Statement of Net Position. The High Yield Debt Fund held futures with a negative notional cost of (\$16,140,454) and an unrealized gain of \$46,371 reported in the Due from Brokers in the Statement of Net Position The Developed Market International Stock also held futures with a notional cost of \$132,460,661 and an unrealized loss of \$2,498,395 reported in the Due from Brokers in the Statement of Net Position.

The Liquidity, Core Fixed Income, Inflation Linked, Emerging Market Debt, High Yield Debt, Developed Market International Stock and Emerging Market International Stock Funds were invested in foreign exchange contracts. The specific nature of these investments is discussed more fully in the foreign exchange contract note for each respective fund, where appropriate. These financial instruments are utilized for trading and other purposes. Those that are used for other than trading purposes are foreign exchange contracts, which can be used to facilitate trade settlements, and may serve as foreign currency hedges. The credit exposure resulting from such contracts is limited to the recorded fair value of the contracts on the Statement of Net Position.

The remaining such securities are utilized for trading purposes and are intended to enhance investment returns. All positions are reported at fair value and changes in fair value are reflected in income as they occur. The CIF's' credit exposure resulting from such investments is limited to the recorded fair value of the derivative financial instruments.

The Liquidity, Mutual Equity, Emerging Market Debt, and the Emerging Market International Stock Funds also utilize derivatives indirectly through participation in mutual funds. These mutual funds may hold derivatives from time to time. Such derivatives may be used for hedging, investment and risk management purposes. These transactions subject the investor to credit and market risk.

#### I. COMBINATION/ELIMINATION ENTRY

The financial statements depict a full presentation of each of the CIF. However, one of these funds, the Liquidity Fund, is owned both directly by the pension plans and trust funds which have accounts in the Liquidity Fund, and also indirectly because each of the other CIF has an account with the Liquidity Fund. As a result, elimination entries are presented for the purpose of netting out balances and transactions relating to the ownership of the Liquidity Fund by the other CIF. The combined presentation totals to the overall net assets owned by the pension plans and trust funds. In order to help the Liquidity Fund managers better manage their cash balances, realized gains (losses) are no longer included in the Liquidity Fund income sweep.

#### J. FEES AND REALIZED GAINS

Investment advisory fees incurred for certain investments in the Alternative Investment, Core Fixed Income, Private Investment and Real Estate Funds are generally charged to the entity in which the CIF has been invested. In such cases, these amounts are either capitalized in the cost basis of the investment on a cash basis and become a component of unrealized gain (loss) or are netted against the corresponding income generated. Certain other fees are incurred directly by the CIF and are expensed. These expensed amounts are accrued and the expense is reflected as Investment Advisory Fees on the Statement of Changes in Net Position. The appropriate treatment is determined depending on the terms of the investment agreement. Capitalized fees are not separately presented on the Statement of Changes in Net Position. These fees are borne by the partners in their respective shares. The following is a listing of the Funds total fees for the fiscal year ended June 30, 2017:

CIF	Netted	Capitalized	Expensed	Total
Alternative Investment	\$ 10,492,724	\$ 549,956	\$ -	\$ 11,042,680
Core Fixed Income	919,783	-	2,602,485	3,522,268
Private Investment	11,050,087	16,068,437	2,656,009	29,774,533
Real Estate	9,955,336	4,359,943	9,398,239	23,713,518

Periodically the Private Investment and Real Estate Funds may receive security distributions in lieu of cash. These securities are included as Common Stock and Real Estate Investment Trust, respectively on the Statement of Net Position. When one of these individual securities is sold the realized gain or loss is included in the Net Increase (Decrease) in the Fair Value of Investments presented on the Statement of Changes in Net Position. The Private Investment Fund incurred realized gain of \$ 873,759 for such transactions for the fiscal year ended June 30, 2017.

The Liquidity, Mutual Equity, Emerging Market Debt and the Emerging Market International Stock funds include investments in a limited partnership and investments in mutual funds. Fees incurred from these investments are deducted from the operations of the CIF and are not separately presented on the Statement of Changes in Net Position. The following is a listing of the corresponding fees incurred for the fiscal year ended June 30, 2017:

CIF		Amount
Liquidity	\$	175,794
Emerging Market Debt		17,224,896
Developed Market International Stock	(	8,091
Emerging Market International Stock		1,203,271

Investment advisory fees for the Liquidity, Mutual Equity, Core Fixed Income, Inflation Linked Bond, Emerging Market Debt, High Yield Debt, Developed Market International Stock and the Emerging Market International Stock Funds, except those noted above are estimated monthly based on periodic reviews of asset values. Accordingly, the amounts listed as Investment Advisory Fees on the Statement of Changes in Net Position represent estimates of annual management fee expenses.

#### K. RECLASSIFICATIONS

Certain prior year amounts have been reclassified to conform to the current year presentation. Net Realized Gain (Loss) and Net Change in Unrealized Gain(Loss) on investments and foreign currency is now presented as Net Increase (Decrease) in the Fair Value of Investments and Foreign Currency.

#### L. RELATED PARTY AND OTHER TRANSACTIONS

There were no related party transactions during the fiscal year. Additionally, there were no "soft dollar" transactions. Soft dollar transactions result from arrangements whereby firms doing business with organizations such as the Treasury arrange for third parties to provide other services in lieu of cash payment. These arrangements tend to obscure the true cost of operations and can result in potential overpayment for services. Such transactions have been prohibited by the Treasurer.

#### M. ESTIMATES

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of

revenues and expenses during the reporting period. Actual results could differ from those estimates.

#### NOTE 2: DEPOSITS, INVESTMENTS AND SECURITIES LENDING PROGRAM

#### Deposits:

The CIF minimize custodial credit risk by maintaining certain restrictions set forth in the Investment Policy Statement. Custodial credit risk is risk associated with the failure of a depository financial institution. In the event of a depository financial institution's failure the CIF would not be able to recover its deposits or collateralized securities that are in the possession of the outside parties. The CIF utilize a Liquidity Account that is a cash management pool investing primarily in highly liquid money market securities such as commercial paper, certificates of deposit, bank notes and other cash equivalents, asset backed securities, and floating rate corporate bonds. Deposits shall consist of cash instruments generally maturing in less than one year and having a quality rating, by at least one widely recognized rating agency, of A-1 or P-1 and earn interest at a rate equal to or better than the International Business Communications (IBC) First Tier Institutions-Only Rated Money Fund Report Index.

At June 30, 2017, the reported amount of Funds deposits were \$89,144,432 and the bank balance was \$89,144,432. Of the bank amount, \$89,144,432 was uncollateralized and uninsured. Through the Securities Lending Program, \$2,023,662,776 was collateralized with securities held by the counterparty's trust department or agent but not in the State's name.

#### Investments:

The CIF measure and record their investments using fair value measurement guidelines established by GAAP. The guidelines recognize a three tired fair value hierarchy, as follows: Level 1: Quoted prices for identical investments in active market; Level 2: Observable inputs other than quoted market price; and, Level 3 Unobservable inputs. At June 30, 2017 the CIF have the following recurring fair value measurements.

	Fair Value Measurements				
Investments by Fair Value Level	Total	Level 1	Level 2	Level 3	
Liquidity Fund	\$ -	\$-	\$-	\$-	
Cash Equivalents	283,293,693	652,000	282,641,693		
Asset Backed Securities	254,922,819	-	254,922,819	-	
Government Securities	3,701,714,063	1,256,715,059	2,444,999,004	-	
Government Agency Securities	716,184,623	-	716,184,623	-	
Mortgage Backed Securities	280,579,047	-	280,579,047	-	
Corporate Debt	4,037,232,777	-	3,939,687,518	97,545,259	
Convertible Securities	51,662,496	-	51,662,496	-	
Common Stock	15,327,223,987	15,327,223,987	-	-	
Preferred Stock	77,158,462	59,690,903	17,467,559	-	
Real Estate Investment Trust	319,238,833	273,995,685	45,243,148	-	
Business Development Corporation	57,625,395	57,625,395	-	-	
Mutual Fund	228,915,053	228,915,053	-	-	
Limited Partnerships (publicly traded)	522,410	522,410	-	-	
Total	\$25,336,273,658	\$17,205,340,492	\$8,033,387,907	\$97,545,259	
Investments Measured at the Net Asset Value	(NAV)	Unfunded	Redemption	Redemption	
		Commitments	Frequency	Notice Period	
Limited Liability Corporation	1,156,486	\$-	Illiquid	N/A	
Limited Partnerships	7,230,945,022	1,868,389,612	Illiquid	N/A	
Total	7,232,101,508	\$ 1,868,389,612			
Total Investments in Securities at Fair Value	\$32,568,375,166		-		

Pursuant to the Connecticut General Statutes, the Treasurer is the principal fiduciary of the plans and trusts, authorized to invest in a broad range of equity and fixed income securities, as well as real estate properties, mortgages and private equity. The CIF minimize credit risk, the risk of loss due to the failure of the security issuer or backer, in accordance with a comprehensive Investment Policy Statement (IPS), as developed by The Office of the Treasurer and the State's Investment Advisory Council (IAC), that provides policy guidelines for the plans and trusts and the CIF and includes an asset allocation plan. The asset allocation plan's main objective is to maximize investment returns over the long term at an acceptable level of risk. There have been no violations of these investment restrictions during the 2017 fiscal year.

The CIF's concentration of credit risk is the risk attributed to the magnitude of an investment in a single issuer. There are no restrictions in the amount that can be invested in Government Securities and Government Agency Securities.

#### NOTES TO FINANCIAL STATEMENTS (Continued)

The following table provides average credit quality and exposure levels information on the credit ratings associated with Funds investments in debt securities.

	Fair Value	Percentage of Fair Value
Aaa	\$2,614,408,280	28.04%
Aa	612,132,025	6.56
A	886,350,713	9.51
Ваа	820,963,491	8.80
Ва	742,742,033	7.96
В	967,039,117	10.38
Саа	439,933,802	4.72
Са	9,343,490	0.10
С	5,016,575	0.05
Prime 1	748,364,737	8.02
Prime 2	24,269,973	0.26
Prime 3	1,802,928	0.02
U.S. Government fixed income securities (not rated)	130,876,265	1.40
Non US Government fixed income securities (not rated)	304,998,050	3.27
Not Rated	1,017,348,039	10.91
	\$9,325,589,518	100.00%

The investments in the Private Equity, Real Estate and Alternative Investment Funds generally utilize investment vehicles such as annuity contracts, common stocks, limited partnerships and trusts to comply with investment guidelines against direct ownership of such investment assets.

The investments of the Liquidity, Mutual Equity, Core Fixed Income, Inflation Linked Bond, Emerging Market Debt, High Yield Debt, Developed Market International Stock and the Emerging Market International Stock Funds have securities registered under the Bank of New York Mellon's nominee name MAC & Co. and held by a designated agency of the Pension Plans and Trust Funds of the State of Connecticut, or bearer and held by a designated agency of the Pension Plans and Trust Funds of the State of Connecticut.

Investments of cash collateral received and invested under securities lending arrangements are registered and maintained by a third party administrator exclusively for the CIF. In circumstances where securities or letters of credit are received as collateral under securities lending arrangements, the collateral is held by the master custodian in a commingled pool in the third party administrator's name as trustee. Securities Lending collateral of \$2,023,662,776 is invested in various short term repurchase agreements classified which is classified as cash equivalents.

The following table provides information about the interest rate risks associated with the CIF investments. Interest rate risk is the risk that the value of fixed income securities will decline because of rising interest rates. The prices of fixed income securities with a longer time to maturity tend to be more sensitive to changes in interest rates and therefore, more volatile than those with shorter maturities. Investment Managers that manage the CRPTF portfolio are given full discretion to manage their portion of CRPTF assets within their respective guidelines and constraints. The guidelines and constraints require each manager to maintain a diversified portfolio at all times. In addition, each core manager is required to maintain a target duration that is similar to its respective benchmark which is typically the Barclay's Aggregate – an intermediate duration index.

The investments include certain short-term cash equivalents which include certificate of deposits and collateral, various long term items, and restricted assets by maturity in years.

			Investment Matu	rities (in Years)	
Investment Type	Fair Value	Less Than 1	<u>1 - 5</u>	<u>6 - 10</u>	More Than 10
Cash Equivalents	\$283,293,693	\$283,293,693	\$0	\$0	\$0
Asset Backed Securities	254,922,819	3,421,310	104,431,066	104,468,147	42,602,296
Government Securities	3,701,714,063	226,328,300	1,522,901,765	856,578,687	1,095,905,311
Government Agency Securities	716,184,623	95,297,380	53,914,240	21,968,013	545,004,990
Mortgage Backed Securities	280,579,047	-	63,067,629	20,776,800	196,734,618
Corporate Debt	4,037,232,777	1,360,182,144	1,448,360,981	916,313,518	312,376,134
Convertible Debt	51,662,496	1,156,915	9,879,736	12,517,162	28,108,68
	\$9,325,589,518	\$1,969,679,742	\$3,202,555,417	\$1,932,622,327	\$2,220,732,032

Exposure to foreign currency risk results from investments in foreign currency-denominated equity or fixed income securities. As a means of limiting its exposure, the CIF utilize a strategic hedge ratio of 50% for the Developed Market

#### NOTES TO FINANCIAL STATEMENTS (Continued)

International Stock Fund (DMISF). This strategic hedge ratio represents the neutral stance or desired long-term exposure to currency for the DMISF. To implement this policy, currency specialists actively manage the currency portfolio as an overlay strategy to the equity investment managers. These specialists may manage the portfolio passively or actively depending on opportunities in the market place. While managers within the fixed income portion of the portfolio are allowed to invest in non-U.S. dollar denominated securities, managers are required to limit that investment to a portion of their respective portfolios. The following table provides information on deposits and investments held in various foreign currencies, which are stated in U.S. dollars. Negative amounts are reflective of short positions.

	Fixed Income Securities				Equities					
									-	Real Estate
Foreign Currency	/ Total	Cash	Cash Equiv Collateral	Government Securities	Corporate Debt	Asset Backed	Mortgage Backed	Common Stock	Preferred Stock	Investment Trust
Argentine Peso	\$25,554,055	\$736,936	\$ -	\$23,355,279	\$1,461,840		\$ -	\$ -	\$ -	\$ -
Australian Dollar	438,685,449	498,930	÷ -	97,524,852	7,887,460	÷ -	-	308,418,265	-	24,355,942
Brazilian Real	258,327,654	813,899	-	107,363,513	-	(9,821)	-	143,789,893	6,370,170	,
Canadian Dollar	120,512,388	1,497,599	-	21,062,610	-	(45,772)	-	97,935,729	-	62,222
Chilean Peso	18,436,190	-	-	413,756	-	-	-	18,022,434	-	- ,
Colombian Peso	59,622,298	1,266,909	-	58,175,410	-	-	-	179,979	-	-
Czech Koruna	18,091,334	(737)	-	12,538,803	-	-	-	5,553,268	-	-
Danish Krone	117,933,921	119,558	-	1,281,442	-	-	-	116,532,921	-	-
Egyptian Pound	7,446,542	1,569,121	-	-	3,723,615	-	-	2,153,806	-	-
Euro Currency	2,352,030,954	4,207,687	-	246,731,502	6,902,529	(26,460)	-	2,066,018,579	17,323,865	10,873,252
Georgian Lari	2,128,403	-	-	-	2,128,403	-	-	-	-	-
Ghanaian Cedi	2,696,564	-	-	-	2,696,564	-	-	-	-	-
Hong Hong Dollar	715,345,683	1,500,269	-	-	-	-	-	706,795,556	-	7,049,858
Hungarian Forint	73,330,616	812,386	-	29,992,181	-	-	-	42,526,049	-	-
Iceland Krona	2,330	2,330	-	-	-	-	-	-	-	-
Indian Rupee	4,810,355	-	-	300,909	4,509,446	-	-	-	-	-
Indonesian Rupiah	155,857,832	613,129	-	54,873,446	38,907,320	-	-	61,463,937	-	-
Israeli Shekel	36,423,523	235,632	-	-	-	-	-	36,187,891	-	-
Japanese Yen	1,408,203,467	5,917,457	-	35,454,990	-	212,190	-	1,359,217,449	-	7,401,381
Malaysian Ringgit	93,381,385	1,551,262	-	77,031,244	-	-	-	14,798,879	-	-
Mexican Peso	233,226,077	301,249	-	185,996,928	3,630,783	252,892	-	43,044,225	-	-
New Zealand Dolla	r 143,220,151	877,405	-	127,517,617		-	-	14,825,129	-	-
Nigerian Naira	205,424	66,626	-	-	-	-	-	138,798	-	-
Norwegian Krone	58,528,632	459,427	-	6,414,408	-	-	-	51,654,797	-	-
Peruvian Nouveau	Sol 26,245,810	-	-	26,245,810	-	-	-	-	-	-
Philippine Peso	46,124,646	5,418	-	1,945,313	-	-	-	44,173,915	-	-
Polish Zloty	145,366,374	67,406	-	100,203,598	-	-	-	45,095,370	-	-
Pound Sterling	1,233,149,377	2,466,504	6,374	240,599,792	2 7,082,254	(61,166)	3,216,406	967,733,881	-	12,105,332
Romanian Leu	9,501,944	264,132	-	9,237,812	-	-	-	-	-	-
Russian Ruble	57,047,215	1,331,200	-	55,591,169	-	-	-	124,846	-	-
Singapore Dollar	118,118,676	453,629	-	22,029,445	-	-	-	92,054,025	-	3,581,577
South African Rand	193,635,476	408,332	-	92,469,905	-	-	-	100,658,751	-	98,488
South Korean Won	453,526,347	173,889	-	-	-	-	-	425,914,678	27,437,780	-
Sri Lanka Rupee	6,676,950	-	-	-	6,645,952	-	-	30,998	-	-
Swedish Krona	190,501,456	(43,618)	-	4,384,320	-	-	-	186,160,754	-	-
Swiss Franc	501,034,722	433,508	-	-	-	-	-	500,601,214	-	-
Thailand Baht	147,823,924	93,755	-	26,369,024	-	-	-	121,265,943	-	95,202
Turkish Lira	170,169,267	247,875	-	57,057,963	4,030,887	-	-	108,757,144	-	75,398
Uruguayan Peso	3,981,055			3,981,055		-	-	-	-	-
- ·	\$9,646,904,466	\$28,949,104	\$6,374 \$	51,726,144,096	\$89,607,053	\$321,863	\$3,216,406	\$7,681,829,103	\$51,131,815	\$65,698,652

#### **Securities Lending:**

Certain of the CIF engage in securities lending transactions to provide incremental returns. The CIF are permitted to enter into securities lending transactions pursuant to Section 3-13d of the Connecticut General Statutes. The CIF's third party securities lending administrator is authorized to lend available securities to authorized broker-dealers and banks subject to a formal loan agreement.

During the period ended June 30, 2017, the Agent lent certain securities and received cash or other collateral as indicated on the Agency Securities Lending Agreement. The Agent did not have the ability to pledge or sell collateral securities delivered therefore absent a borrower default. Borrowers were required to deliver collateral for each loan equal to at least 102 percent of the fair value of domestic loaned securities or 105 percent of the fair value of foreign loaned securities.

Pursuant to the Agency Securities Lending Agreement, the Agent has an obligation to indemnify the CIFs in the event any borrower failed to return the loaned securities or pay distributions thereon. There were no such failures

by any borrowers to return loaned securities or pay distributions thereon during the fiscal year that resulted in a declaration or notice of default by a borrower. During the fiscal year, the CIF and the borrowers maintained the right to terminate all securities lending transactions upon notice. The cash collateral received on each loan is eligible for investment in cash, securities guaranteed by the U. S. government or any agency of the U. S. government, securities guaranteed by a sovereign government that participates in the General Arrangements to Borrow (Group of 10 or G10) and rated AA or better, or reverse transactions on an overnight or term basis. On June 30, 2017, the CIF had no credit risk exposure to borrowers. The fair value of collateral held for the CIF as of June 30, 2017 was \$2,020,761,587 as cash. The fair value of securities on loan for the CIF as of June 30, 2017 was \$1,973,294,759 as cash.

Under ordinary circumstances, the net weighted average maturity (weighted average maturity of assets less the weighted average maturities of liabilities) will not exceed 60 days. As of June 30, 2017 the cash collateral investment pool had an average duration of 8.86 days and an average weighted final maturity 53.79 days.

The fair value of collateral held and the fair value of securities on loan are as follows for the CIF as of June 30, 2017:

CIF	Fair Value of Collateral	Fair Value of Securities Lent
Mutual Equity	\$778,701,169	\$760.779.648
Core Fixed Income	181,891,304	177,884,431
Inflation Linked Bond	243,894,814	238,729,786
Emerging Market Debt	26,952,510	26,376,550
High Yield Investment	523,258,667	511,955,351
Developed Market International Stock	62,998,657	60,166,734
Emerging Market International Stock	203,064,465	197,402,259
	\$2,020,761,586	\$1,973,294,759

Investments made using the cash collateral received from security loans were included in the Statement of Net Position. The fair value of these amounts is as follows:

		Cash
CIF		Equivalents
Mutual Equity	\$	779,380,031
Core Fixed Income		182,049,885
Inflation Linked Bond		244,107,437
Emerging Market Debt		26,976,004
High Yield Debt		523,714,851
Developed Market International Stock		64,193,069
Emerging Market International Stock		203,241,499
Total	\$ 2	2,023,662,776

These investments are held in a separate accounting consisting of individual securities custodied by the Agent in the name of the CIF. The above total amounts were included on the Statement of Net Position in "Invested Securities Lending Collateral".

#### NOTE 3: PURCHASES AND SALES OF INVESTMENT SECURITIES

For the period ended June 30, 2017, the aggregate cost of purchases and proceeds from sales of investment securities were as follows:

CIF	Purchases	Sales
Alternative Investment	\$293,992,305	\$219,356,110
Mutual Equity	3,218,982,933	3,921,887,127
Core Fixed Income	5,778,237,131	5,657,204,275
Inflation Linked Bond	1,025,238,157	1,012,487,413
Emerging Market Debt	5,126,513,620	5,030,163,319
High Yield Debt	4,354,122,550	4,227,851,102
Developed Market International Stock	3,067,258,281	2,955,491,616
Emerging Market International Stock	1,645,532,118	1,632,116,493
Real Estate	975,318,965	911,896,196
Private Investment	1,702,913,546	1,507,563,473

The above amounts include the effect of cost adjustments processed during the year.

## NOTE 4: UNREALIZED APPRECIATION AND DEPRECIATION ON INVESTMENTS AND FOREIGN EXCHANGE CONTRACTS

At June 30, 2017, the gross appreciation of investment securities in which there was an excess of fair value over cost, the gross depreciation of investment securities in which there was an excess of cost over fair value and the resulting net appreciation (depreciation) by the CIF were as follows:

CIF	Gross Appreciation	Gross Depreciation	Net Appreciation (Depreciation)
Liquidity Investment Fund	\$8,877,003	\$26,632,208	(\$17,755,205)
Alternative Investment Fund	261,317,409	14,986,831	246,330,578
Mutual Equity	2,439,744,551	122,220,936	2,317,523,615
Core Fixed Income	49,395,299	11,882,224	37,513,075
Inflation Linked Bond	26,054,204	40,944,373	(14,890,169)
Emerging Market Debt	34,177,140	42,854,022	(8,676,882)
High Yield Debt	67,746,704	60,717,609	7,029,095
Developed Market International Stock	1,451,375,043	287,502,750	1,163,872,293
Emerging Market International Stock	729,748,933	86,157,680	643,591,253
Real Estate	324,411,230	85,710,413	238,700,817
Private Investment Fund	711,405,110	240,638,719	470,766,391

#### **NOTE 5: FOREIGN EXCHANGE CONTRACTS**

From time to time the Liquidity, Core Fixed Income, Inflation Linked Bond Fund, Emerging Market Debt, High Yield Debt Fund, Developed Market International Stock, Emerging Market International Funds utilize foreign currency contracts to facilitate transactions in foreign securities and to manage the CIF's currency exposure. Contracts to buy are used to acquire exposure to foreign currencies, while contracts to sell are used to hedge the CIF's investments against currency fluctuations. Also, a contract to buy or sell can offset a previous contract. Losses may arise from changes in the value of the foreign currency or failure of the counterparties to perform under the contracts' terms.

The U. S. dollar value of forward foreign currency contracts is determined using forward currency exchange rates supplied by a quotation service.

Investing in forward currency contracts may increase the volatility of the CIF's performance. Price movements of currency contracts are influenced by, among other things, international trade, fiscal, monetary, and exchange control programs and policies; national and international political and economic events; and changes in worldwide interest rates. Governments from time to time intervene in the currency markets with the specific intent of influencing currency prices. Such intervention may cause certain currency prices to move rapidly. Additionally, the currency markets may be particularly sensitive to interest rate fluctuations.

At June 30, 2017, the CIF had recorded unrealized gains (losses) from open forward currency contracts as follows:

Liquidity Funds:		
Local Currency Name	Value	Unrealized Gain/(Loss)
Contracts to Buy:		
Argentina Peso	\$6,072,997	(\$180,051)
Brazil Real	3,081,000	(14,916)
Canadian Dollar	1,033,596	14,704
Chilean Peso	5,134,000	4,252
Chinese Yuan Renminbi	5,999,000	56,180
Colombian Peso	5,154,000	(179,915)
Czech Koruna	9,029,288	504,558
Dominican Rep Peso	1,016,097	9,412
Egyptian Pound	5,064,569	(14,289)
Euro Currency Unit	20,142,936	385,476
Ghanaian Cedi	1,535,000	37,151
Hungarian Forint	9,861,385	162,190
Indian Rupee	4,981,000	21,418
Indonesian Rupiah	3,749,000	13,903
Israeli Shekel	1,041,696	13,419

Japanese Yen	5,735,016	(57,300)	
Kazakhstan Tenge	3,621,000	(58,933)	
New Zealand Dollar	1,422,123	14,649	
Norwegian Krone	5,683,963	69,396	
Peruvian Sol	2,513,404	28,482	
Philippines Peso	3,011,000	(63,168)	
Polish Zloty	4,078,573	33,725	
Pound Sterling	13,536,925	230,259	
Romanian Leu	5,869,080	339,066	
Russian Ruble (New)	1,270,000	17,035	
Serbian Dinar	502,000	(2,173)	
Singapore Dollar	2,496,090	6,219	
South African Rand	2,998,000	28,860	
South Korean Won	2,500,000	(44,703)	
Swedish Krona	10,153,270	330,587	
Thailand Baht	3,023,000	(4,272)	
Turkish Lira	1,496,000	16,088	
Uganda Shilling	1,688,939	26,898	
	\$154,493,947	\$1,744,207	
Contracto to Solly			
Contracts to Sell: Australian Dollar	35,073,724	(287,994)	
Brazil Real	1,003,000	(207,994) (6,704)	
Canadian Dollar	6,674,615	(158,865)	
Chilean Peso	1,138,877	(130,803) 875	
Czech Koruna	8,983,226	(1,117,738)	
Euro Currency Unit	21,488,966	(850,983)	
Ghanaian Cedi	511,477	(28,430)	
Hungarian Forint	5,410,292	(53,187)	
Israeli Shekel	1,042,117	(12,998)	
Japanese Yen	2,043,000	25,761	
Mexican Peso	21,156,092	9,895	
New Zealand Dollar	55,735,971	(640,509)	
Polish Zloty	25,721,837	(462,564)	
Pound Sterling	7,163,015	(31,994)	
Romanian Leu	3,891,988	(294,490)	
Singapore Dollar	23,632,240	(163,947)	
South African Rand	564,000	6,569	
Turkish Lira	820,193	702	
Uganda Shilling	1,688,000	(32,684)	
	223,742,630	(4,099,285)	
Grand total	\$378,236,577	(\$2,355,078)	
Financial Statement Amo	ounts:		
	Receivable	Payable	Net
FX Value	\$ 378,236,577	\$ 378,236,577	\$ -
Unrealized Gain/Loss	1,744,207	(4,099,285)	(2,355,078)
Net	\$ 379,980,784	\$ 382,335,862	\$(2,355,078)
Inflation Linked Bond Fund:			
Local Currency Name	Value	Unrealized Gain/(Loss)	
Contracts to Buy:			
Australian Dollar	\$2,725,624	\$35,955	
Canadian Dollar	2,756,377	39,846	
Danish Krone	441,684	5,080	
Euro Currency Unit	20,732,035	124,836	
Japanese Yen	22,906,041	(175,151)	
Mexican Peso	3,141,925	23,602	
New Zealand Dollar	6,226,983	2,597	
Norwegian Krone	22,956,261	280,273	
Pound Sterling	195,862,430	3,059,225	
South African Rand	4,715,405	(89,704)	
Swedish Krona	39,897,150	1,268,624	
	\$322,361,915	\$4,575,183	
Contracts to Sell:			
Australian Dollar	57,030,881	(456,629)	
	0.,000,001	(100,020)	

			Jinnaoay
Canadian Dollar	2,603,274	(51,038)	
Danish Krone	142,622	17	
Euro Currency Unit	56,622,487	(951,769)	
Japanese Yen	8,579,676	61,719	
Mexican Peso	17,369,816	(39,720)	
New Zealand Dollar	70,209,944	(832,038)	
Polish Zloty	2,334,839	(41,709)	
Pound Sterling	19,853,114	(102,909)	
Swedish Krona	677,489	(2,068)	_
One of testal	235,424,142	(2,416,144)	
Grand total	\$557,786,057	\$2,159,039	=
Financial Statement Am	ounts:		
	Receivable	Payable	Net
FX Value	\$557,786,057	\$557,786,057	\$ -
Unrealized Gain/Loss	4,575,183	(2,416,144)	2,159,039
Net	\$562,361,240	\$560,202,201	\$ 2,159,039
Emerging Market Debt F			
Local Currency Name	Value	Unrealized Gain/(Loss)	1
Contracts to Buy:	<b>*</b> 4 <b>* *</b> 4 <b>* *</b>	(0.4.07.0.4.0)	
Argentina Peso	\$4,003,119	(\$107,949)	
Brazil Real	53,627,273	(129,957)	
Chilean Peso	12,723,072	(36,790)	
Colombian Peso Czech Koruna	4,742,093 33,127,736	(216,760) 1,301,354	
Egyptian Pound	1,707,000	4,717	
Euro Currency Unit	12,503,763	445,131	
Hungarian Forint	8,546,131	147,614	
Indian Rupee	8,474,087	28,752	
Indonesian Rupiah	4,923,125	18,136	
Japanese Yen	5,461,709	(139,284)	
Malaysian Ringgit	3,388,806	(22,121)	
Mexican Peso	12,608,400	458,982	
Peruvian Sol	3,165,611	18,874	
Polish Zloty	34,307,886	726,927	
Romanian Leu	9,898,740	369,752	
Russian Ruble (New)	7,480,461	(200,046)	
South African Rand	2,311,562	(30,860)	
Thailand Baht	23,048,618	275,772	
Turkish Lira	20,063,330 \$266,112,522	<u>95,131</u> \$3,007,375	
	φ200, 112, 522	φ3,007,373	
Contracts to Sell:			
Argentina Peso	3,586,151	91,459	
Brazil Real	63,713,636	844,475	
Colombian Peso	2,815,000	53,715	
Czech Koruna	7,184,358	(638,104)	
Euro Currency Unit	1,376,084	(84,257)	
Hungarian Forint	1,086,419	(44,029)	
Indonesian Rupiah	2,662,533	(26,967)	
Japanese Yen	5,510,010	187,585	
Mexican Peso	14,725,458	(565,581)	
Peruvian Sol Philippines Peso	6,108,550	(76,412) 5,936	
Polish Zloty	596,095 1,140,000	(49,614)	
Romanian Leu	230,000	(9,896)	
Russian Ruble (New)	9,921,170	235,160	
South African Rand	7,205,290	(62,203)	
Thailand Baht	2,038,499	(6,541)	
Turkish Lira	8,529,484	(5,516)	
	138,428,737	(150,790)	
Grand total	\$404,541,259	\$2,856,585	
			_
Financial Statement Am			
	Receivable	Payable	Net
FX Value	\$404,541,259	\$404,541,259 (150,700)	\$- 2 856 585
Unrealized Gain/Loss	3,007,375	(150,790)	2,856,585

STATE OF CONNECTICUT, OFFICE OF THE TREASURER, DENISE L. NAPPIER

#### NOTES TO FINANCIAL STATEMENTS (Continued)

Net	\$407,548,634	\$404,692,049	\$ 2,856,585
High Yield Debt Fund: Local Currency Name	Value	Unrealized Gain/(Loss)	
Contracts to Buy:	Value	Officalized Galli/(L033)	-
Euro Currency Unit	\$1,070,830	\$18,633	
Pound Sterling	584,498	4,925	
r curia ctorning	\$1,655,328	\$23,558	
	<u> </u>	\$20,000	
Contracts to Sell:			
Euro Currency Unit	1,142,926	(11,406)	
Pound Sterling	1,962,243	(11,030)	_
	3,105,169	(22,436)	
Grand total	\$ 4,760,497	\$ 1,122	_
			_
Financial Statement A			
	Receivable	Payable	Net
FX Value	\$ 4,760,497	\$4,760,497	\$ -
Unrealized Gain/Loss	23,558	(22,436)	1,122
Net	\$4,784,055	\$4,782,933	\$ 1,122
Developed Market Internat	ional Stock Fund		
Local Currency Name	Value	Unrealized Gain/(Loss)	
Contracts to Buy:	value		-
Australian Dollar	\$241,729,918	\$6,080,877	
Canadian Dollar	392,856,577	6,799,292	
Danish Krone	1,429,035	15,545	
Euro Currency Unit	74,237,067	1,000,234	
Hong Kong Dollar	3,555,928	(5,209)	
Israeli Shekel	5,385,246	102,744	
Japanese Yen	392,208,696	(4,473,426)	
Mexican Peso	72,320	(126)	
New Zealand Dollar	450,796,352	6,925,151	
Norwegian Krone	162,395,371	1,648,703	
Pound Sterling	323,212,643	6,560,724	
Singapore Dollar	237,049,365	1,040,668	
Swedish Krona	189,691,076	6,074,917	
Swiss Franc	2,488,923	21,242	
	\$2,477,108,517	\$31,791,336	
Contracts to Sell:			
Australian Dollar	480,336,497	(5,768,217)	
Canadian Dollar	442,364,410	(15,885,303)	
Danish Krone	49,486,110	(592,587)	
Euro Currency Unit	216,992,939	(3,589,282)	
Hong Kong Dollar	91,749,408	214,642	
Israeli Shekel	20,399,975	(300,600)	
Japanese Yen New Zealand Dollar	715,657,689	11,280,691	
	577,677,082 385 316 706	(17,065,958)	
Norwegian Krone	385,316,706	(3,352,573)	
Pound Sterling Singapore Dollar	431,377,162 263,543,910	(2,814,452) (1,335,264)	
Swedish Krona	353,795,300	(1,335,264) (8,220,498)	
Swiss Franc	287,086,861	(2,072,121)	
Owiss i rand	4,315,784,049	(49,501,522)	
Grand total	\$6,792,892,566	(\$17,710,186)	
	<u> </u>	(\$17,710,100)	
Financial Statement A		Davabla	Net
EX Value	Receivable	Payable	Net
FX Value	\$6,792,892,566	\$6,792,892,566	\$ - (17 710 196)
Unrealized Gain/Loss	31,791,336	(49,501,522)	(17,710,186)
Net	\$6,824,683,902	\$6,842,394,088	\$(17,710,186)
Emerging Market Internati			
Local Currency Name	Value	Unrealized Gain/(Loss)	-
Contracts to Buy:	<b>MOFO 000</b>	(@0.000)	
Brazil Real	\$259,328	(\$2,693)	

#### NOTES TO FINANCIAL STATEMENTS (Continued)

Hong Kong Dollar	547,935	69		
Indonesian Rupiah	166,262	(171)		
South African Rand	1,382,421	(16,304)		
Thailand Baht	1,519,186	(861)		
Turkish Lira	40,620	(67)		
	\$3,915,752	\$(20,027)		
Contracts to Sell:				
Hong Kong Dollar	581,712	60		
South Korean Won	329,525	(235)		
Turkish Lira	69,033	(75)		
	980,270	(250)		
Grand total	\$4,896,022	(\$20,277)		
Financial Statement Amour				
	Receivable	Payable	Net	
FX Value	\$4,896,022	\$4,896,022	\$	-
Unrealized Gain/Loss	(20,027)	(250)	(20,2	77)
Net	<u>\$4,875,995</u>	\$4,896,272	\$ (20,2	77)

The net unrealized gain has been included in the Statement of Changes in Net Position as a component of Net Change in Unrealized Gain (Loss) on Investments and Foreign Currency.

#### **NOTE 6: COMMITMENTS**

In accordance with the terms of the individual investment agreements, the Private Investment, Real Estate, Alternative Investment Funds and Core Fixed Income Fund have outstanding commitments to make additional investments. These commitments will be fulfilled as suitable investment opportunities become available. Commitments at June 30, 2017, were as follows:

CIF	Total Commitment	Cumulative Amounts Funded	Unfunded Commitment
Real Estate	\$3,281,467,201	\$2,866,281,403	\$415,185,798
Private Investment	6,349,570,922	4,955,392,253	1,394,178,669
Alternative Investment	1,730,000,000	1,670,974,855	59,025,145
Core Fixed Income	550,000,000	550,000,000	-

Certain Private Investment Funds allow the General Partner to recycle distributions without a reduction in unfunded commitments and accordingly have no impact upon the above amounts. Capital recycling is a tool frequently used by investment managers to fully invest the committed capital in portfolio investments. Since fees and expenses are a component of a General Partner's total capital commitments, capital recycling generally allows managers to: (i) mitigate the impact of fees and expenses and (ii) increase the possibility that limited partner capital is invested in portfolio companies. Recycling provisions allow managers to recall capital distributions if certain criteria are met. The use of recycling provisions varies by manager but generally limits capital recycling to a range between 0% and 20% of total commitments. As a result the actual commitment could be as much as 120% of the stated commitment amount.

#### **NOTE 7: CONTINGENCY**

A limited partnership in the PIF invested \$15 million in a portfolio company that reported double digit revenue growth. In 2005, the General Partner initiated a sales process expecting to realize significant gain. Lack of cooperation from management challenged the sale process, resulting in legal action from the partnership and other investors in the portfolio company to force a sale. This process uncovered serious financial irregularities in the portfolio company, resulting in the removal and criminal investigation of the CEO and other senior managers. The portfolio company is currently in bankruptcy. In July 2008, the Bankruptcy Court approved the portfolio company's plan of liquidation. A liquidation trustee was appointed to oversee further liquidation efforts, including investigation and pursuit of potential litigation claims. The liquidation trustee has filed law suits or arbitration proceedings against certain parties, including the bank that issued the credit facility, the investment bank, an equipment manufacturer, accounting firms, and a law firm, among others. In January 2009, the liquidation trustee entered into a settlement agreement with the General Partner, exchanging mutual releases for the GP, the fund and its investors.

Additionally, the settlement agreement provides for a sharing of recovery from further prosecution of the matter, including any settlement reached with the insurance carrier. Recoveries are anticipated to be quite modest, if at all. In 2009, the bank has filed a motion under seal which, if granted, may permit the bank to reduce any liability to the liquidation trustee by the proportionate amount that it can attribute to either the minority shareholders (including the fund). The liquidating trustee has prepared a motion to close out the bankruptcy case, which was heard on November 19, 2015. The bankruptcy was closed on November 20, 2015. No further recoveries from or related to Le-Natures' are expected.

#### NOTE 8: SUBSEQUENT EVENT

The CRPTF has performed an evaluation of subsequent events through December 29, 2017, the date the basic financial statements wer available to be issued. No material events were identified.

#### NOTE 9: COST BASIS OF INVESTMENTS

The aggregate cost values of investments in the Funds are as follows at June 30, 2017:

	LIQUIDITY FUND	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND
Investments in Securities, at Cost					
Liquidity Fund	\$-	\$176,833,266	\$411,822,610	\$150,342,325	\$38,016,392
Cash Equivalents	278,764,721	-	-	-	(252,599)
Asset Backed Securities	171,616,700	-	-	86,850,325	863,057
Government Securities	560,611,701	-	-	525,572,285	1,302,078,989
Government Agency Securities	179,379,418	-	-	535,995,940	-
Mortgage Backed Securities	148,329,719	-	-	142,089,348	-
Corporate Debt	1,517,538,188	-	-	554,821,517	6,921,982
Convertible Securities	-	-	-	-	-
Common Stock	-	-	4,125,007,180	-	-
Preferred Stock	-	-	-	2,877,939	-
Real Estate Investment Trust	-	-	171,905,383	15,391,183	-
Business Development Corp	-	-	-	-	-
Mutual Fund	83,711,810	-	-	-	-
Limited Liability Corporation	-	-	-	-	-
Trusts	-	-	-	-	-
Limited Partnerships	-	1,603,624,241	228,077	550,000,000	-
Partnerships	-	-	-	-	-
Annuities	-	-	-	-	-
Total Investments in Securities, at cost	\$2,939,952,257	\$1,780,457,507	\$ 4,708,963,250	\$ 2,563,940,862	\$ 1,347,627,821

COMBINED INVESTMENT FUNDS 2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT

EMERGING MARKET DEBT FUND	HIGH YIELD DEBT FUND	DEVELOPED MARKET INTERNATIONAL STOCK FUND	EMERGING MARKET INTERNATIONAL STOCK FUND	REAL ESTATE FUND	PRIVATE INVESTMENT FUND
\$46,889,245	\$152,794,257	\$124,436,767	\$49,193,010	\$86,226,795	\$301,086,109
(3,886)	610,705	4,174,606	-	-	-
-	(1,059,284)	-	-	-	-
1,278,747,026	58,113,532	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
280,334,866	1,655,570,165	-	-	-	-
455,000	43,551,000	-	-	-	-
395,023	10,970,593	4,972,559,487	2,147,394,044	-	1,347,145
-	17,358,608	16,441,341	32,234,711	-	-
-	28,498,275	60,370,904	282,016	-	-
-	61,275,483	-	-	-	-
-	-	2,452,555	130,091,489	-	-
-	-	-	-	-	1,432,734
-	-	-	-	-	-
-	-	-	-	1,917,730,506	2,196,097,547
-	-	-	-	-	-
-	-	-	-	-	-
\$1,606,817,274	\$ 2,027,683,334	\$ 5,180,435,660	\$ 2,359,195,270	\$2,003,957,301	\$2,499,963,535

STATE OF CONNECTICUT, OFFICE OF THE TREASURER, DENISE L. NAPPIER



# Investment Section



# Pension funds management division Division Overview

#### Introduction

As principal fiduciary of six state pension funds and nine trust funds (known collectively as the Connecticut Retirement Plans and Trust Funds (CRPTF), the Treasurer is responsible for managing investment assets for retirement plans serving approximately 219,000 state and municipal employees, teachers, retirees and survivor-ships, as well as trust funds that support academic programs, grants, and initiatives throughout the state.

Prudent investment management requires the proper safeguard of the CRPTF assets to ensure the retirement security of the beneficiaries and to support the spending policies of the trust funds. Funding of the pension benefit liability is dependent upon state contributions, investment returns and the contribution requirements of eligible retirement plan participants. The spending requirements of the trust funds are met through the generation of investment income and capital gains with a focus on the preservation of capital.

The Combined Investment Funds (CIF) were established pursuant to Connecticut General Statutes Section 3-31b as a means to invest pension and other trust fund assets in a variety of investment classes. The CIF is comprised of the following separate pooled investment funds: Liquidity Fund; Mutual Equity Fund; Core Fixed Income Fund; Emerging Markets Debt Fund; High Yield Debt Fund; Inflation Linked Bond Fund; Developed Markets International Stock Fund; Emerging Markets International Stock Fund; Real Estate Fund; Private Investment Fund; and Alternative Investment Fund.

Over the last ten years, the net asset value of the CRPTF investments under Treasury management has grown from \$25.9 billion to approximately \$32.5 billion. The Teachers' Retirement Fund, with approximately \$17.1 billion of assets under management at June 30, 2017, is the largest participating plan. The State Employees' Retirement Fund and the Connecticut Municipal Employees' Retirement Fund have approximately \$12.0 billion and \$2.4 billion of assets, respectively. For the fiscal year ended June 30, 2017, total investment income (comprised of interest income, dividends, securities lending income, and net realized and unrealized capital gains, net of operating expenses) before allocation of administrative expenses, was approximately \$4.1 billion.

CRPTF's total investment in the CIF at fair value as of June 30, 2017 was:

INVESTMENT SUMMARY AT JUNE 30, 2017		
	Fair	% of Total Fund
	Value (1)(3)	Fair Value
Liquidity Fund (LF) (2)	\$ 1,387,328,362	4.26%
Mutual Equity Fund (MEF)	7,026,486,865	21.57%
Developed Markets International Stock Fund (DMISF)	6,344,307,953	19.48%
Emerging Markets International Stock Fund (EMISF)	3,002,786,523	9.22%
Real Estate Fund (REF)	2,242,658,118	6.89%
Core Fixed Income Fund (CFIF)	2,601,453,937	7.99%
Inflation Linked Bond Fund (ILBF)	1,332,942,016	4.09%
Emerging Market Debt Fund (EMDF)	1,598,180,952	4.91%
High Yield Debt Fund (HYDF)	2,034,712,429	6.25%
Alternative Investment Fund (AIF)	2,026,788,085	6.22%
Private Investment Fund (PIF)	2,970,729,926	9.12%
Total Fund	<u>\$32,568,375,166</u>	100.00%

(1) "Fair value" includes securities and cash invested in the Liquidity Fund (LF), and excludes receivables (FX contracts, interest, dividends due from brokers, foreign tax, securities lending receivables, reserve for doubtful accounts, invested securities lending collateral and prepaid expenses), payables (FX contracts, due to brokers, income distribution, securities lending collateral and accrued expenses), and cash not invested in the LF.

(2) The fair value of the LF represents the pension and trust assets allocated to the LF (excluding receivables and payables); the LF balances of the other combined investment funds are shown in the fair value of each fund.

(3) Fair Value (\$32.6 billion) differs from net assets (\$32.5 billion) as net assets include additional balance sheet items.

#### **Fund Management**

Under the supervision of a Chief Investment Officer, appointed by the Treasurer with the approval of the Investment Advisory Council (IAC), the Pension Funds Management Division (PFM) executes and manages the investment programs of the pension and trust funds with a 13 member professional staff. Internal resources are augmented by several outside consulting firms that provide research and analytical expertise to the Treasurer, the Chief Investment Officer and PFM professionals. During Fiscal Year 2017, The Bank of New York Mellon (BNY Mellon) served as the custodian of record for the CRPTF, maintaining physical custody of and safeguarding plan assets. BNY Mellon also provided recordkeeping services under the supervision of PFM, and Deutsche Bank was the provider of securities lending services.

The Treasurer employs external money and investment managers to manage the portfolios underlying each CIF. Money and investment managers are selected based upon asset class expertise, investment performance and style. Investment and money managers are expected to comply with the parameters, guidelines, and restrictions set forth in the CRPTF Investment Policy Statement (IPS). As of June 30, 2017, 159 external money and investment managers were employed by the Treasury to invest the pension and trust assets, an increase of 5 managers from June 30, 2016 (See Figure 1-5).

All operating overhead is allocated directly to the earnings of the pension and trust fund assets under management. The Treasury manages assets in a cost-effective manner, consistent with the maximization of long-term returns.

#### **Investment Policy**

One of the immutable principles of investment management is that asset allocation decisions are responsible for as much as 90 percent of investment returns. In September 2012, the IAC approved the Treasurer's adopted IPS, including the asset allocation plan, which governs the CRPTF investment portfolios and each of the CIFs. Subsequently, in December 2012, January 2013, April 2013, and July 2013, the IAC approved the Treasurer's adopted modifications.

The asset allocation plan is customized for each plan and trust with the main objective being the maximization of investment returns over the long term at an acceptable level of risk, primarily through asset diversification. Risk, in this context, is defined as volatility of investment returns. (See Understanding Investment Performance under Supplemental Information.)

Diversification across asset classes is a critical component in structuring portfolios to maximize return at a given level of risk. In developing an asset allocation strategy, there is thorough analysis of the expected risk/return tradeoffs under different economic scenarios predicated on established correlations of investment returns and the diversification benefits of the available asset classes (i.e., those not restricted by statute).

As shown in Figure 1-4, the number and complexity of asset classes comprising the asset allocation policy have fluctuated during the last ten years. As of June 30, 2017, multiple asset classes were integrated in the IPS, including global public market equities and fixed income, as well as alternative investments such as real estate, private equity, hedge fund and real asset investment strategies.

At fiscal year-end, domestic, international developed and emerging markets equities (stocks) comprised the largest percentage of the total CRPTF, at approximately 52 percent. Publicly traded equities have an established record of maximizing investment returns over the long term. Fixed income, real estate and alternative investments were also included to enhance portfolio returns during highly inflationary or deflationary environments, to mitigate the effects of volatility in the stock market and to provide current income.

#### **Asset Classes**

To realize the asset allocations set forth in the IPS for each plan and trust, the Treasurer administers the CIFs as a series of mutual funds in which the various retirement plans and trusts may invest through the purchase of ownership interests. The asset mix for each of the 15 plans and trusts is established by the Treasurer, with approval of the independent IAC, based upon (1) capital market theory, (2) financial and fiduciary requirements and (3) liquidity needs. However, there are instances in which the asset mix for a trust is set by the trust's governing document. A broad array of asset classes is considered for inclusion in a potential asset allocation structure. Each asset class has its own distinct characteristics, as well as expectations for long-term return and risk behavior.

The asset classes that make up the CRPTF portfolio include:

#### **Domestic Equity**

The Mutual Equity Fund (MEF) assets are allocated across the broad U.S. stock market to ensure diversification by market capitalization and investment style, such as value and growth. The MEF may opportunistically invest up to 30 percent of assets to take advantage of shifts in the investment landscape or opportunities that offer diversification and/or risk-return benefits, and may include investments in any market capitalization and/or investment style as well as an allocation to stocks outside the US. As of June 30, 2017, the MEF structure was approximately 75.72 percent invested in large-cap stocks, 10.45 percent in small/mid-cap stocks, 8.97 percent in all-cap, and 4.86 percent in cash equivalents and other net assets. The MEF's ten largest holdings, aggregating 14.76 percent of Fund investments, included a variety of blue chip companies and were broadly diversified, with the largest holding of 2.71 percent in Apple Inc. Performance of the MEF is measured against the Russell 3000 Index (R3000).

Management of the MEF includes the use of pure indexing, enhanced indexing, active management, and opportunistic strategies executed by external money managers. Index and enhanced index strategies are referred to as passive strategies since their investment portfolios are similar to the index. The goal of enhanced indexing is to generate a return slightly in excess of the selected index. Indexing is particularly appropriate for the "large-cap" segment of the equity markets, which is defined as the securities of the largest capitalized public companies. Given the overall efficiency of the domestic equity market, approximately 76 percent of the portfolio is invested in passive strategies. The balance of the portfolio is actively managed, primarily in the less efficient "small and mid-cap" sectors of the equity markets. These securities are issued by companies that are smaller and not as closely monitored, researched or analyzed as the larger capitalization companies. As a result of this relative inefficiency, active money managers have the potential to outperform these markets over the long term, while earning an acceptable level of return per unit of risk.

#### International Equity

Exposure to international equities is provided through two funds: the Developed Markets International Stock Fund (DMISF) and the Emerging Markets International Stock Fund (EMISF), each of which has distinct risk/return profiles. Stocks from developed market countries tend to offer lower risk and return potential compared to emerging market securities as a result of generally more stable economic and political environments and the depth and liquidity of their financial markets. The foreign currency exposure in the DMISF is partially hedged back to the U.S. dollar. DMISF and EMISF assets are allocated across foreign markets so that there is diversification by country, sector, capitalization and style, in a mix that is structured to replicate the characteristics of the comparable non-U.S. developed and emerging stock market indices to which each combined investment fund is benchmarked.

External money managers invest DMISF assets primarily in common stocks issued by companies in developed market countries domiciled outside of the U.S. The benchmark for DMISF is the Morgan Stanley Capital International Europe Australasia and Far East Investable Market Index (MSCI EAFE IMI) 50 percent hedged. The DMISF is comprised of passive indexing, core developed markets and opportunistic strategies. As of June 30, 2017, the DMISF structure was approximately 84.11 percent invested in large-cap stocks, 15.67 percent in small-cap stocks, and 0.22 percent in cash equivalents and other net assets. Mandates for active growth/value and small cap developed market strategies represent roughly 22.34 percent and 15.67 percent of the DMISF, respectively. The currency exposure of the DMISF investments is managed through a currency hedging overlay strategy.

The EMISF invests primarily in the common stocks of non-U.S. corporations domiciled in countries included in the EMISF benchmark, which is the Morgan Stanley Capital International Emerging Markets Investable Market Index (MSCI EM IMI). EMISF investments are made through portfolios managed by external money managers. The EMISF is invested 100 percent in active, unhedged emerging markets strategies.

#### Fixed Income

Fixed income assets are diversified across four funds: the Core Fixed Income Fund (CFIF), the Inflation Linked Bond Fund (ILBF), the Emerging Markets Debt Fund (EMDF), and the High Yield Debt Fund (HYDF). Investments in the various fixed income CIFs serve to reduce the overall volatility of CRPTF returns under numerous economic scenarios. Further, the fixed income CIFs provide cash flow to the CRPTF in the form

of interest and principal payments.

The CFIF consists of externally managed, primarily investment grade, fixed income portfolios that include debt instruments issued by the U.S. Government and its agencies, quasi-government agencies, U.S. corporations and any other public or private U.S. corporation whose debt security is regulated by the Securities and Exchange Commission (including Eurobonds and quasi or sovereign debt). Assets are diversified across sectors, industries, credit quality and duration, and up to 30 percent may be opportunistically invested based on changes in the investment landscape that may improve diversification, reduce risk or enhance return. As of June 30, 2017, the CFIF structure approximated 41.0 percent invested in Treasury/agency securities, 21.9 percent in corporate securities, 5.5 percent in mortgage-backed securities, 3.3 percent in asset-backed securities, and 28.3 percent in cash equivalents and other net assets. The benchmark for CFIF is the Barclays U.S. Aggregate Bond Index.

The ILBF consists of externally managed fixed income portfolios containing domestic and foreign developed market sovereign bonds. These government bonds are primarily inflation-linked securities. Inflation linked bonds offer protection against inflation and contribute to overall portfolio diversification. As of June 30, 2017, the ILBF structure was comprised of securities from the following countries or regions: 41.2 percent in the U.S., 18.7 percent in the U.K., 17.2 percent in the Eurozone, 10.4 percent in Australia and New Zealand, 3.9 percent in Mexico and 8.6 percent in other countries and cash equivalents. The benchmark for ILBF is the Barclays World Government Inflation-Linked Bond Index.

The EMDF consists of externally managed fixed income portfolios that contain debt instruments issued by governments and companies located in emerging countries as defined by the benchmark and The World Bank. The benchmark for EMDF is the J.P. Morgan Emerging Markets Bond Index Global Diversified/J.P. Morgan Government Bond Index - Emerging Markets Global Diversified (50 percent/50 percent). As of June 30, 2017, the EMDF structure approximated 35.9 percent invested in Latin America, 31.2 percent in Europe, 16.4 percent in Asia, 9.2 percent in Africa, 4.4 percent in the Middle East and 2.9 percent in cash equivalents and other net assets. The benchmark accounts for U.S. dollar-denominated debt and for debt issued in local currencies. The local currency debt is not hedged as the foreign currency is considered an additional source of alpha, or return in excess of that predicted by its benchmark..

The HYDF consists of externally managed fixed income portfolios that include debt instruments rated below investment grade by a nationally recognized rating agency service. The assets are diversified by sector, industry, credit quality and duration. The majority of the bonds are U.S. dollar-denominated. As of June 30, 2017, the HYDF structure approximated 81.8 percent invested in corporate securities, 2.7 percent in Treasury securities, and 15.5 percent in cash equivalents and other net assets. The benchmark for HYDF is the Citigroup U. S. High Yield Market Capped Index.

#### Liquidity Fund

The Liquidity Fund (LF) consists of externally managed fixed income portfolios intended to provide a liquid source of funds for investment operations and earn a return greater than money market instruments, with minimal exposure to risk of principal. While the majority of the LF is invested in money market instruments, there are allocations to intermediate maturities, developed market sovereign bonds and emerging market currencies. As of June 30, 2017, the LF structure approximated 55.8 percent invested in money market sovereign bonds and emerging bonds and currencies. The benchmark for the LF is the one month London Interbank Offered Rate (LIBOR) Index.

#### **Real Estate**

The Real Estate Fund (REF) is the vehicle by which the CRPTF invests in the real estate asset class and may consist of a number of different investment strategies and investment vehicles, including externally managed commingled funds, open-end funds, separate accounts, and publicly traded real estate securities. The REF invests in real estate properties and mortgages and is designed to dampen the volatility of overall returns through diversification and to generate attractive risk-adjusted rates of return. The REF will invest in the following: core strategies; value added strategies (investments involving efforts to increase property value through repositioning, development and redevelopment); opportunistic strategies (strategies that target niche opportunities, market inefficiencies, or special

purpose markets); and publicly traded securities (primarily Real Estate Investment Trusts and Real Estate Operating Companies). Leverage at the aggregate of the REF is limited to 60 percent of REF's total valuation. These investments also adhere to the Responsible Contractor Policy. As of June 30, 2017, the REF structure was approximately 60.4 percent invested in core, 22.1 percent in value-added, 13.7 percent in opportunistic and 3.8 percent in cash equivalents and other net assets. The benchmark for REF is the National Council of Real Estate Investment Fiduciaries National Property Index (NCREIF-NPI), lagged by one quarter

#### **Private Investments**

The Private Investment Fund (PIF) is the vehicle used to invest in private equity. PIF investments generally are made in externally managed limited partnerships or through separate accounts that focus on private investments. These vehicles include investments in both venture capital and corporate finance investment strategies. Venture capital typically involves equity capital invested in young or development stage companies, and may include start-up, early, mid or late-stage companies. Corporate finance typically involves equity and debt capital invested in growth, mature or distressed stage companies, often through the financing of acquisitions, spin-offs, mergers or changes in capitalization. As of June 30, 2017, the PIF structure was approximately 69 percent invested in Corporate Finance, 21 percent in Venture, and 11 percent in cash equivalents and other net assets. The benchmark for PIF is the Standard & Poor's 500 Index (S&P 500).

#### Alternative Investments

The Alternative Investment Fund (AIF) invests in strategies that offer the potential to enhance return and/ or reduce risk. The AIF provides a vehicle for investment in portfolio strategies which are not easily classified, categorized, or described in other CIFs. Hybrid strategies which contain multiple asset classes are also considered part of the opportunity set. As of June 30, 2017, the AIF structure was approximately 84.7 percent invested in hedge fund of funds, 6.1 percent in real assets, 0.5 percent in opportunistic strategies, and 8.7 percent in cash equivalents and other net assets. AIF's benchmark is the 90-day Treasury Bill.

#### **Securities Lending**

The CRPTF maintains a securities lending program designed to provide incremental risk adjusted returns. This program involves the lending of portfolio securities to broker/dealers in return for payment. Each loan is secured by collateral valued slightly in excess of the market value of the loaned securities. To further mitigate the risks of securities lending transactions, the CRPTF's securities lending bank carefully monitors the credit ratings of each counter-party and overall collateral levels.

Deutsche Bank was responsible for marketing the program, lending the securities, and obtaining adequate collateral during Fiscal Year 2017. As of June 30, 2017, securities with a market value of approximately \$2.0 billion had been loaned against collateral of approximately \$2.0 billion. Income generated by securities lending totaled \$14.2 million for the fiscal year.

#### The Year in Review Total Fund Performance

For the fiscal year ending June 30, 2017, the CRPTF achieved an annual total return of 14.2 percent, net of all fees and expenses. The three largest pension plans, the Teachers' Retirement Fund, the State Employees' Retirement Fund, and the Connecticut Municipal Employees' Retirement Fund -- which represent 98 percent of total assets -- returned 14.4 percent, 14.3 percent and 13.1 percent and outperformed their benchmarks by 114, 115 and 98 basis points, respectively. In addition, the plans outperformed their actuarial assumed rates of return of 8.0 percent, 6.9 percent and 8.0 percent, respectively. The CIFs' investment performance for Fiscal Year 2017 added \$3.3 billion of market value to pension assets and every CIF posted positive returns. After paying fees and expenses, including \$793 million of benefit payments in excess of contribution receipts, the CIFs ended the fiscal year with assets of \$32.5 billion.

The DMISF returned 24.8 percent, outperforming its benchmark return of 22.4 percent. Developed international markets benefited from improving macroeconomic trends, continued European central bank

accommodative monetary policies, and election results across many countries. For the trailing three-, five- and seven-year periods, the DMISF compounded returns, net of all fees and expenses, were 5.3 percent, 11.9 percent and 9.9 percent, respectively.

The EMISF returned 23.0 percent, outperforming its benchmark return of 22.8 percent. Strong performance in emerging market equities during the year was primarily due to a steady recovery in global growth contributing positively to corporate earnings. For the trailing three-, five- and seven-year periods, the EMISF compounded returns, net of all fees and expenses, were 2.1 percent, 4.1 percent and 4.4 percent, respectively.

The MEF returned 19.3 percent, outperforming its benchmark return of 18.5 percent. Much like devloped and emerging market equities, U.S. equity performance during the year was driven by global growth that led to an increase in corporate earnings. In addition, the anticipation for fiscal policy, regulatory and tax changes were positive tailwinds for the asset class. For the trailing three-, five- and seven-year periods, the MEF compounded returns, net of all fees and expenses, were 9.2 percent, 14.6 percent and 15.2 percent, respectively.

The HYDF returned 12.6 percent, outperforming its benchmark return of 12.1 percent. Strong demand from investors combined with lack of quality supply, improved commodity prices, as well as positive global growth contributed to the positive returns for the year. For the trailing three-, five- and seven-year periods, the HYDF compounded returns, net of all fees and expenses, were 3.5 percent, 6.2 percent and 7.6 percent, respectively.

The PIF returned 11.0 percent, but underperformed its public market S&P 500 benchmark return of 17.9 percent. Utilizing the institutional standard for measuring private equity performance, Internal Rate of Return (IRR), PIF generated a net IRR of 14.4 percent. While the market for private equity and venture capital-backed exits was down from the prior fiscal year, the PIF portfolio continued to generate positive cash flow with investment distributions exceeding contributions by \$269 million for the year. For the trailing three-, five- and seven-year periods, the PIF compounded returns, net of all fees and expenses, were 11.3 percent, 11.9 percent and 12.1 percent, respectively.

The EMD returned 9.1 percent, outperforming its blended benchmark return of 6.3 percent. The stabilization of commodity prices combined with favorable economic conditions in emerging market countries has been supportive for the EMD asset class during the year. In addition, the rise of the U.S. dollar versus foreign currencies also has had a significant impact. For the trailing three-, five- and seven-year periods, the EMD compounded returns, net of all fees and expenses, were 2.3 percent, 3.1 percent and 5.1 percent, respectively.

The AIF, which invests in hedge funds, real assets and other opportunistic investments, returned 8.5 percent, outperforming its 90-day T-Bill benchmark return of 0.5 percent. Gains in equity sensitive hedge fund strategies such as equity long/short and event driven funds were the primary driver of returns as the public equities markets rallied. For the trailing three- and five-year periods, the AIF compounded returns, net of all fees and expenses, were 2.2 percent and 3.9 percent, respectively.

The REF returned 7.4 percent, slightly outperforming its benchmark return of 7.3 percent. Performance in open end core and core plus funds was very strong during the year and recent commitments to a number of new value add and opportunistic strategies has been accretive to the fund. For the trailing three-, five- and seven-year periods, the REF compounded returns, net of all fees and expenses, were 10.6 percent, 10.5 percent and 10.8 percent, respectively.

The CFIF returned 1.9 percent, outperforming its benchmark return of -0.3 percent. Corporate bonds performed well during the year, however, U.S. Treasury bonds lost value as interest rate yields across all time periods increased. The Federal Reserve implemented three rate hikes during the fiscal year. For the trailing three-, five- and seven-year periods, the CFIF compounded returns, net of all fees and expenses, were 2.4 percent, 2.3 percent and 3.3 percent, respectively.

The LF returned 1.0 percent, outperforming its benchmark return of 0.7 percent. Exposure to corporate securities benefited the LF during the year offset by increases in short term interest rates. For the trailing three-, five- and seven-year periods, the LF compounded returns, net of all fees and

#### expenses, were 0.2 percent, 0.4 percent and 0.4 percent, respectively.

The ILBF returned 0.7 percent, underperforming its benchmark return of 0.8 percent. The expectation that global inflation was going to increase during the year did not occur and this was the primary reason for the low performance of the ILBF. For the trailing three-, five- and seven-year periods, the ILBF compounded returns, net of all fees and expenses, were 0.0 percent, -0.1 percent and 2.6 percent, respectively.

#### 2017 Management Initiatives

The continued implementation in Fiscal Year 2017 of the CRPTF investment pacing plans established for real estate, alternative investment and private equity opportunities led to a total of \$925 million of new investment capital. Nine investment commitments totaling \$775 million were awarded to the Private Investment Fund and \$150 million was awarded to three Real Estate Fund managers. Also during the fiscal year, Treasurer Nappier continued funding her in-state opportunistic investment mandate, in the Private Investment Fund. In the CRPTF public market portfolios, the Treasurer hired five investment managers for the High Yield Debt Fund mandate; the assignment was effected through a competitive search. Additionally, Treasurer Nappier selected two consulting firms for general investment consulting services and Connecticut Higher Education Trust oversight duties, after a competitive search.

The Connecticut Horizon Fund (CHF), first funded in 2005, is an aggregate of public and private market funds. The CHF is a \$1 billion-plus fund-of-funds public market program and additionally includes a \$155 million private equity allocation and a \$170 million alternative investment allocation designed to provide the Office of the State Treasurer access to a wider number of women-owned, minority-owned, Connecticut-based and emerging firms. As of June 30, 2017, the public market program totaled 4 managers and 36 sub-managers. Emerging firms represent the largest allocation of total assets at 72 percent; minority-owned firms represent 42 percent; women-owned firms followed with 28 percent and Connecticut-based firms were 19 percent of total assets. Additionally, there were 3 private equity managers and 20 sub-managers; including 8 minority-owned, 3 emerging strategies, 1 women-owned and 8 Connecticut-based. In the separately managed Fund-of-Hedge Fund mandate sleeve within the AIF, there were 2 managers and 25 sub-managers; the breakdown includes 21 emerging strategies, 13 minority-owned firms, 7 Connecticut-based and 5 women-owned firms.

Expansion of the diversity of firms with which PFM does business continued during Fiscal Year 2017; overall, 35 minority-owned, women-owned, Connecticut-based and emerging firms, comprised 26.3 percent of the firms doing business with the division. These firms earned fees of \$37.7 million, representing over 39 percent of all fees paid by the division.

#### **Corporate Governance**

In carrying out her fiduciary responsibilities, and in conformance with state law, the Treasurer considers the financial implications for long-term shareholder value of a portfolio company's environmental, social and governance corporate structure and practices. The primary method the Treasurer's Office utilizes to address corporate governance at publicly-traded companies in which the CRPTF invests is through proxy voting. These companies hold annual general meetings at which shareholders vote to approve or reject proposals presented by the company's management or by shareholders on significant transactions or activities at a company. The Treasurer's Office uses comprehensive guidelines approved by the independent Investment Advisory Council when casting proxy votes at these meetings. The guidelines, incorporate best practices on corporate structure, administration and control to reduce risk, encourage sustainability and increase opportunities for growth.

In Fiscal Year 2017, the Treasury filed or co-filed shareholder resolutions on behalf of the CRPTF at 14 companies on issues related to climate change, board diversity, access to the proxy, board declassification and independent chairs. In addition, Treasury staff held discussions with corporate leaders of more than two dozen companies about shareholder concerns. To support its efforts, the Treasury worked with a broad cross section of investors representing public pension funds, investment firms, labor funds and faith-based investors.

There were a number of noteworthy votes during the fiscal year. The CRPTF was lead-filer on a resolution filed at Vista Outdoor, Inc. which called for the annual election of directors (also known as board declassification). The resolution received support from 94 percent of shareholders – making it one of the most

successful votes of the 2017 proxy season.

There were also groundbreaking resolutions filed with oil and gas companies on climate change: the CRPTF garnered majority support from shareholders on resolutions filed at Occidental Petroleum (67%) -- the first such successful vote at a U.S. oil company -- and Exxon Mobil (62%). These companies were asked to prepare a report for shareholders assessing the impact on the company of technological advances and government policies to limit global warming to below 2 degrees Celsius.

Progress was also made as a result of engagements without formal shareholder votes. In the case of Wells Fargo, the Treasury filed a resolution calling for a change in the company's corporate bylaws to ensure an independent non-executive board chair, following news that the bank paid \$185 million in penalties and restitution associated with opening two million unauthorized deposit and credit card accounts. Wells Fargo agreed, and the Treasury withdrew its resolution.

The Treasury also actively promoted board diversity with FleetCor Technologies and Chimera Investment, and ultimately withdrew shareholder resolutions after successful engagements. In the case of FleetCor, the company added a woman to its board; and with Chimera, it agreed to amend its corporate governance guidelines and nominating charter to incorporate diversity considerations when selecting board nominees.

Resolutions filed on behalf of the CRPTF are consistent with Connecticut's proxy voting guidelines. Copies of the CRPTF's proxy voting guidelines and a report of proxy votes cast are available on the Treasury's website, www.ott.ct.gov/pension\_guidelines.html.

#### Investment Restrictions

The Treasurer's Office is charged with administering three laws that authorize investment restrictions on companies doing business in Northern Ireland, Sudan and Iran. Connecticut's MacBride law, set forth in Section 3-13h of the Connecticut General Statutes, is based on the MacBride Principles, which are a corporate code of conduct for companies doing business in Northern Ireland designed to address religious discrimination in the workplace. During Fiscal Year 2017, the CRPTF restricted its managers from investing in two companies for failure to adopt these principles: Domino's Pizza Inc. and Yum Brands, Inc

The Treasurer's Office monitored companies doing business in Sudan pursuant to Section 3-21e of the Connecticut General Statutes. The Sudan law, adopted in 2006, authorizes the Treasurer to engage companies doing business in Sudan and potentially divest holdings in those companies if their business is contributing to the government's perpetuation of genocide in Sudan. As of the end of Fiscal Year 2017, the Treasurer's Office prohibited direct investment in eighteen companies: Bharat Heavy Electricals Ltd.; China North Industries Group; China North Industries Corporation a.k.a. NORINCO; NORINCO International Cooperation Ltd.; North Huajin Chemical Industries Co. Ltd.; North Navigation Control Technology Co. Ltd.; China Petroleum and Chemical Corp.; CNPC (Hong Kong); Dongfeng Motor Corporation; Jiangxi Hongdu Aviation Industry Ltd.; Oil and Natural Gas Corp.; Mangalore Refinery and Petrochemicals Ltd.; ONGC Nile Ganga BV, Amsterdam; ONGC Videsh Limited; ONGC Videsh Vankorneft; PetroChina Co. Ltd.; Petronas Capital Ltd.; and Sinopec Shanghai Petrochemical Corp.

Connecticut's Iran law, Connecticut General Statutes Section 3-13g, authorizes the Treasurer to engage with companies doing business in Iran, and potentially divest holdings in such companies if she determines such companies, by their business activities, may be contributing to the Iranian government's development of its nuclear program and its support of global terrorism. As of the end of Fiscal Year 2017, the Treasurer's Office prohibited direct investment in fourteen companies: Bongaigaon Refinery & Petrochemicals; Ca La Electricidad de Caracas; Chennai Petroleum Corp.; China Bluechemical; China National Offshore Oil Corporation; China Oilfield Services Ltd.; CNOOC; Daelim Industrial Co. Ltd.; IBP Co. Ltd.; Indian Oil Corporation Ltd.; Lanka loc Plc; Offshore Oil Engineering Co.; Oil India Ltd.; and Petroleos de Venezuela S.A..

#### Asset Recovery and Loss Prevention

The Treasurer's Legal Unit works to manage risk by limiting opportunities for loss due to the malfeasance of others. Extensive pre-contracting due diligence helps the Office of the Treasurer select the best available vendors and suitable products to meet the needs of the Office. Careful contract negotiation, coupled with periodic review, development and implementation of best practice contract language, helps to ensure clarity

with respect to the obligations of the Office of the Treasurer and its vendors and investment partners. The Office maintains regular contact with other similar governmental offices and institutional investors, sharing ideas for enhancement of contract language, frequently sharing advice with counterparts in other states.

The Offi ce of the Treasurer deters malfeasance with its reputation for active and diligent pursuit of all opportunities to recover assets lost due to the misfeasance or malfeasance of others.

The Office of the Treasurer believes that most disputes can be resolved through dialogue designed to enforce contract terms or clarify misunderstanding. The Office is, however, prepared, when necessary, to pursue judicial solutions where negotiation is unsuccessful. Although very limited as a percentage of all investments, the Office, like all other investors, experiences losses due to corporate malfeasance. In these instances, the Office believes that litigation managed by investors is more effectively negotiated, efficiently litigated and achieves larger settlements for the benefit of all investors. As such, the Office is committed to taking on its fair share of the management responsibility of such litigation and will consider making application to serve as lead plaintiff in class action litigation where appropriate. From time to time, the Office has used litigation to encourage corporate governance enhancements. Although rare, the Office has filed individual and group actions to pursue specific rights where disputing parties are unwilling or unable to reach an extra-judicial conclusion. Since the U.S. Supreme Court's 2010 decision in Morrison v. National Australia Bank, the Office has experienced an increase in its participation in group actions as a means of seeking recovery of lost assets. The Office works with other institutional investors to collaborate and monitor Morrison-related matters.

#### **Class Action Securities Litigation**

The Combined Investment Funds recovered \$1,658,628 million from class action settlements in the fiscal year ended June 30, 2017. The Office continues to closely monitor opportunities to recover lost assets through participation in class action litigation. As of the close of the fiscal year, the class action filing portion of the asset recovery program has exceeded \$50 million since inception.

The Office of the Treasurer, as the Trustee for the CRPTF, served as lead plaintiff in the matter known as In Re Amgen, Inc. Securities Litigation, filed in the federal district court for the Southern District of California. The case, settled for \$95 million prior to the commencement of the trial. The court has approved the terms of the settlement and the claims filing process is underway.

#### Corporate Governance Related Litigation

Litigation has not been recommended for corporate governance matters in the 2017 fiscal year. The Office of the Treasurer has focused on engagement of companies to promote good corporate citizenship. The Office is judicious in its consideration of the merits of litigation.

#### Other Litigation

The Office of the Treasurer continues its participation in group action in Belgium adverse Fortis, N.A., France adverse Vivendi, S.A., Japan adverse Olympus, Denmark adverse O.W. Bunker, Germany adverse Volkswagen and Porsche and in Texas' state court adverse BP. The Fortis and Olympus matters have announced settlements, which are awaiting court approval and distribution of settlement proceeds. The Office evaluated the merits of joining other foreign group action during the fiscal year. Participation in foreign group action became necessary as the Supreme Court's decision in Morrison foreclosed all other avenues of recovery in matters of securities fraud

#### Figure 1-1

#### PENSION AND TRUST FUNDS ASSET ALLOCATION Actual vs. Policy at June 30, 2017

		TE	ERF			SEI	RF			CN	IERF	
		Targe	t Lowe	r Upper		Target	Lower	Upper		Target	Lower	Upper
	Actual	Polic	y Range	e Range	Actual	Policy	Range	Range	Actual	Policy	Range	Range
U.S. EQUITY												
Mutual Equity Fund (MEF)	22.3%	21.0%	17.0%	25.0%	22.2%	21.0%	17.0%	25.0%	16.1%	16.0%	13.0%	19.0%
INTERNATIONAL EQUITY												
Developed Market Intl Stock Fund (DMISF)	20.3%	18.0%	14.0%	22.0%	20.4%	18.0%	14.0%	22.0%	14.2%	14.0%	11.0%	17.0%
Emerging Market Intl Stock Fund (EMISF)	9.7%	9.0%	7.0%	11.0%	9.5%	9.0%	7.0%	11.0%	7.2%	7.0%	6.0%	8.0%
REAL ESTATE												
Real Estate Fund (REF)	7.0%	7.0%	5.0%	9.0%	6.9%	7.0%	5.0%	9.0%	7.0%	7.0%	5.0%	9.0%
FIXED INCOME												
Core Fixed Income Fund (CFIF)	6.7%	7.0%	6.0%	8.0%	7.4%	8.0%	6.0%	10.0%	7.9%	8.0%	6.0%	10.0%
Inflation Linked Bond Fund (ILBF)	3.5%	3.0%	2.0%	4.0%	5.1%	5.0%	4.0%	6.0%	4.9%	5.0%	4.0%	6.0%
Emerging Market Debt Fund (EMDF)	) 5.4%	5.0%	4.0%	6.0%	4.1%	4.0%	3.0%	5.0%	8.0%	8.0%	6.0%	10.0%
High Yield Debt Fund (HYDF)	5.7%	5.0%	4.0%	6.0%	5.4%	5.0%	4.0%	6.0%	13.9%	14.0%	11.0%	17.0%
Liquidity Fund (LF)*	5.2%	6.0%	5.0%	7.0%	3.4%	4.0%	3.0%	5.0%	2.8%	3.0%	2.0%	4.0%
PRIVATE EQUITY												
Private Investment Fund (PIF)	8.1%	11.0%	8.0%	14.0%	9.6%	11.0%	8.0%	14.0%	10.1%	10.0%	7.0%	13.0%
ALTERNATIVE INVESTMENT												
Alternative Investment Fund (AIF)	6.1%	8.0%	6.0%	10.0%	6.0%	8.0%	6.0%	10.0%	7.9%	8.0%	6.0%	10.0%
TOTAL	100.0%	100.0%			100.0%	100.0%			100.0% <sup>2</sup>	100.0%		

\*Additional LF balances are included in actual allocations of other investment funds.

Figure 1-2

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TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund

Figure 1-3



TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 1-4



#### Figure 1-5

#### PENSION AND TRUST FUNDS

١d	V	S	or	B	re	ea	k	d	01	N	n	

Isor Breakdown			
	June 30,	June 30,	
Fund	2017	2016	
MEF	6	6	
DMISF(1)	9	9	
EMISF	3	3	
PIF	61	60	
CFIF	7	7	
ILBF	3	3	
EMDF	4	3	
HYDF	9	6	
REF	42	42	
LF	5	5	
AIF	10	10	
Total <sup>(2)</sup>	159	154	

Does not include the Currency Overlay Manager. (1)

(2) Actual total advisors was 150 and 145, respectively when factoring in advisors across multiple funds. Private Investment partnerships with nonmaterial balances are not included.

#### Figure 1-6



Each Plan benchmark composite represents the Plan's policy (1) allocation weights times each investment Fund's benchmark return.

#### Figure 1-7



#### Combined Investment Funds Total Return Analysis (%)

	Fiscal Years Ended June 30,			Annualized				
	2017	2016	2015	2014	2013	3 Years	5 Years	10 Years
(Investment performance is calculated using a time-weighted rate of retu	rn based on the	market rate o	f return.)					
PLANS								
Teachers' Retirement Fund (TERF)	14.38	0.25	2.79	15.67	11.83	5.63	8.80	4.97
TERF Custom Benchmark	13.24	(0.06)	3.21	15.09	11.95	5.32	8.52	4.87
State Employees' Retirement Fund (SERF)	14.32	0.26	2.84	15.62	11.90	5.63	8.80	4.87
SERF Custom Benchmark	13.17	(0.01)	3.24	15.15	11.88	5.32	8.52	4.87
Connecticut Municipal Employees' Retirement								
Fund (CMERF)	13.05	1.15	2.57	13.58	9.60	5.46	7.86	4.73
CMERF Custom Benchmark	12.07	0.77	2.32	13.85	10.32	4.94	7.74	4.90
U.S. Stocks								
Mutual Equity Fund	19.26	1.75	7.32	25.28	21.15	9.20	14.60	6.71
Russell 3000 Index	18.51	2.14	7.29	25.22	21.46	9.10	14.59	7.26
International Stocks								
Developed Markets International Stock Fund	24.81	(7.09)	0.67	22.31	22.56	5.30	11.86	2.80
MSCI EAFE IMI 50% Hedged	22.41	(9.26)	3.79	21.24	21.31	4.85	11.14	2.25
Emerging Markets International Stock Fund	23.00	(7.15)	(6.93)	11.50	3.29	2.06	4.14	1.57
MSCI Emerging Market Investable Market Index	22.82	(12.16)	(4.41)	14.31	3.66	1.03	4.09	2.09
Equity Commercial Real Estate								
Real Estate Fund	7.38	11.51	12.93	10.66	10.26	10.58	10.53	2.18
NCREIF (1 Qtr. Lag)	7.27	11.84	12.72	11.18	10.52	10.58	10.69	6.72
U.S. Fixed Income								
Core Fixed Income Fund	1.89	3.46	1.85	4.28	(0.24)	2.40	2.25	4.31
Barclays Aggregate Bond Index	(0.31)	6.00	1.86	4.37	(0.69)	2.48	2.21	4.48
Emerging Market Debt	9.11	6.01	(7.57)	6.99	1.69	2.25	3.07	5.87
50% JP Morgan EMBI/50% JPM GBI EMBI	6.26	5.96	(7.72)	7.61	2.82	1.28	2.83	6.08
High Yield Debt	12.59	(0.31)	(1.31)	12.24	8.46	3.47	6.19	6.77
Citigroup High Yield Market Capped Index	12.09	0.82	(0.80)	11.25	9.05	3.88	6.33	7.17
Inflation Linked Bonds	0.66	2.29	(2.85)	4.17	(4.28)	0.01	(0.05)	4.30
Barclays World Gov't Inflation Linked Bond Index	0.81	2.76	(3.21)	4.44	(4.78)	0.09	(0.06)	4.10
(2) Commercial Mortgage Fun	N/A	N/A	0.25	10.17	0.88	N/A	N/A	N/A
Barclays Aggregate Bond Index	N/A	N/A	1.86	4.37	(0.69)	N/A	N/A	N/A
Alternative Assets								
Private Investment Fund	10.97	8.87	14.04	16.06	9.50	11.27	11.85	9.51
S & P 500	17.90	3.99	7.42	24.61	20.60	9.61	14.63	7.18
Liquidity Fund								
(1) Liquidity Fund	0.96	0.68	(1.07)	0.54	0.66	0.18	0.35	0.98
LIBOR 1 Month Index	0.72	0.32	0.17	0.17	0.21	0.40	0.32	0.80
Alternative Investment Fund	8.51	(5.32)	3.98	6.63	6.39	2.22	3.92	N/A
90-Day T-Bill	0.49	0.19	0.02	0.05	0.11	0.23	0.17	N/A

(1) The Liquidity Fund includes all cash balances, including manager cash. However all fund returns still reflect cash balances.

# liquidity fund

#### Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Liquidity Fund (LF) is to: (1) provide a liquid source of funds for investment operations and (2) earn a return greater than that of money market investments.

Date of Inception: November 1, 2007	<b>Total Net Position:</b> \$2,919,442,572
<b>Performance Objective:</b> A net return that matches the benchmark, over rolling three to five year periods.	Management Fees: \$2,240,224
<b>Benchmark:</b> One Month London Interbank Offered Rate (LIBOR)	Operating Expenses: \$651,869
Number of Advisors: 5 external	Expense Ratio: 0.12%

#### **Description of the Fund**

The Liquidity Fund is structured into three distinct tiers to balance the need for liquidity with the need for positive investment returns.

1. The first tier is the most active portion of the LF and requires the highest liquidity. Tier I funds are invested in high quality money market instruments, which are considered the most liquid short-term assets.

2. The second tier slightly extends duration and credit quality for a higher expected return than Tier I. Investments include money market instruments, Government and agency paper, and high quality corporate and other short duration fixed income securities.

3. Global exposure in the third tier of the LF provides diversification. Short-to-medium term high quality foreign government bonds are held in this tier, in addition to foreign currencies.

#### **Portfolio Characteristics**

The Liquidity Fund investments include U.S. Treasury and government agency securities, commercial paper, certificates of deposit, repurchase agreements, asset-backed securities, mortgage-backed securities, domestic and foreign corporate bonds, foreign sovereign debt and currencies. (See Figure 2-4.) As of June 30, 2017, the average maturity of the LF was 475 days and the average quality rating was AA-2. (See Figure 2-5.)

#### **Market Review**

Three month Treasury yields rose from a first quarter low of 18 basis points to end the fiscal year at 1.03 percent and Libor also moved higher. For fiscal year 2017, the 2-year Treasury yield rose 78 basis points to 1.36 percent while the 10-year Treasury yield rose 81 basis points to 2.28 percent. The two-year Treasury yield more than doubled since the shock of the U.K. Brexit vote in June 2016. After bottoming in July, Treasury yields rose steadily as investors anticipated the Federal Reserve rate hike and then rates spiked with the presidential election in November. The Fed increased overnight lending rates by 25 basis points on three occasions during the fiscal period, with the Fed Funds target range ending the fiscal year at 1.0 percent to 1.25 percent. Inflation in the U.S. remained benign and unemployment dropped to 4.3 percent, the lowest rate since 2001, both indications of a further strengthening economy. Increases in European consumer confidence and business expectations helped the Euro reach a 52-week high and European sovereign debt yields moved higher. During this period of rising rates, non-Treasury sectors outperformed due to their income advantage as well as a tightening of spreads. Performance for the year ending June 30, 2017 for the Bank of American Merrill Lynch 1-3 Year Treasury Index was negative 11 basis points. Sector performance within the 1-3 year maturities showed corporates, asset-backed, agency, and municipal securities outperforming with excess returns over Treasuries of 156, 121, 31 and 41 basis points, respectively. A majority of emerging market currencies appreciated between 5 percent and 10 percent against the U.S. dollar.

#### **Performance Summary**

For the fiscal year ended June 30, 2017, the LF generated a return of .96 percent, outperforming one month LIBOR's return by 24 basis points. For the three- and five- year periods ending June 30th, the Fund returned 18 basis points and 35 basis points, versus 40 and 32 basis points, respectively, for each time period for one month LIBOR. The cumulative total returns of the LF for the three-, five- and ten-year periods were .55 percent, 1.75 percent, and 10.27 percent, respectively. (See Figure 2-6.)

#### **Risk Profile**

Given the LF's investment policies and objectives, the Fund is exposed to some risks. Interest rate risk is somewhat mitigated by the Fund's 475 days average maturity and credit risk is moderated by investments being concentrated in high quality securities. Other potential risks include currency risk, reinvestment risk and inflation risk. Counter party risk is managed by dealing only with reputable, high quality firms.

Figure 2-1



TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund CIF - Combined Investment Funds





Figure 2-2

LIQUIDITY FUND Risk Profile at June 30, 2017 <sup>(1)</sup>					
Relative Volatility	10.14				
Standard Deviation	0.71				
R2	0.30				
Beta	0.13				
Alpha	0.03				
	Profile at June 30, 2017 <sup>(1)</sup> Relative Volatility Standard Deviation R2 Beta	Profile at June 30, 2017 (1)Relative Volatility10.14Standard Deviation0.71R20.30Beta0.13			

(1) Based upon returns over the last five years.





Repurchase Agreements.

#### Figure 2-5

LIQUIDITY FUND Comprehensive Profile						
	Number		Average	Average		
Date	of Issues	Yield <sup>(1)</sup>	Maturity	Quality		
2017	788	0.96%	475 days	AA-2		
2016	776	0.68%	387 days	AA-2		
2015	742	-1.07%	347 days	AA-2		
2014	767	0.54%	343 days	AA-2		
2013	495	0.66%	631 days	AA+		
2012	329	-0.14%	482 days	AA-2		
2011	337	1.20%	321 days	AA-1		
2010	244	0.98%	202 days	AA-1		
2009	162	1.54%	36 days	AA-2		
2008	71	4.59%	39 days	A-1+/AA+		

(1) Represents annual total return of the Fund for year ended June 30.

#### Figure 2-7



#### Figure 2-9

	Net Asset	% of
Investment Advisors	Value	Fund
State Street Global Advisors	\$1,542,288,102	52.83%
Payden & Rygel	548,314,753	18.78%
PIMCO	431,429,437	14.78%
Lazard	99,657,597	3.41%
Colchester Global Investors Ltd.	297,752,345	10.20%
Other (1)	338	0.00%
Total LF	\$2,919,442,572	100.00%

 Other Represents cash equivalents, terminated advisors and other assets.

#### Figure 2-6

LIQUIDITY FUND Periods ending June 30, 2017				
	1 YR	3 YRS	5 YRS	10 YRS
Compounded, Annual Tot	al Retur	'n (%)		
LF	0.96	0.18	0.35	0.98
LIBOR 1 MONTH INDEX	0.72	0.40	0.32	0.80
Cumulative Total Return (	%)			
LF	0.96	0.55	1.75	10.27
LIBOR 1 MONTH INDEX	0.72	1.20	1.59	8.25

#### Figure 2-8

LIQUIDITY FUND Investment Tiers at June 30, 2017				
Investments	Net Asset Value	% of Fund		
Tier I	\$1,542,288,102	52.83%		
Tier II	979,744,528	33.56%		
Tier III	397,409,942	13.61%		
Total LF	\$2,919,442,572	100.00%		

#### Figure 2-10

<b>LIQUIDITY FUND</b> Ten Largest Holdings* at June 30, 2017					
Security Name Ma	aturity Date	Market Value	%		
CITIGROUP GLOBAL TRI REPO	7/3/2017	\$ 79,000,000	2.70%		
FEDERAL NATL MTG ASSN DISC	7/3/2017	55,995,567	1.92%		
WAL MART STORES DISC	7/10/2017	39,988,111	1.37%		
U S TREASURY NOTE	12/31/2018	36,072,120	1.23%		
MERRILL LYNCH TRI REPO	7/3/2017	33,000,000	1.13%		
KELLS FDG LLC 144A DISC	9/12/2017	29,901,667	1.02%		
REPUBLIC OF POLAND GVMT	7/25/2019	25,889,189	0.89%		
U S TREASURY NOTE	2/15/2018	25,665,985	0.88%		
NEW ZEALAND GVMT BO REGS	3/15/2019	25,546,107	0.87%		
NATIONAL SEC CORP DISC	7/13/2017	24,988,229	0.86%		
Top Ten		\$376,046,975	12.87%		

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

# atternative investment fund

#### Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Alternative Investment Fund (AIF) is to invest CRPTF assets in investment strategies that offer the potential to enhance overall portfolio expected returns, reduce risk, or a combination of both in a variety of market conditions. Additionally, the AIF is expected to provide diversification benefits and a degree of inflation protection. The AIF serves as a vehicle for strategies that are not easily classified, categorized, or described in the other Combined Investment Funds. Hybrid strategies that cut across multiple asset classes are also considered part of the opportunity set.

Date of Inception: February 1, 2011

**Performance Objective:** To outperform the 90 day T-Bill Rate ("T-Bills") by 300 basis points net of all expenses.

Benchmark: 90 Day T-Bills

Number of Partnerships: 10 external

\* Expense ratio is calculated using the management fee and operating expense totals.

#### **Description of the Fund**

The AIF represents a unique investment exposure that differs from traditional, long-only funds. The strategies employed within the AIF represent a broad set of investment styles, mandates and products that focus primarily on the liquid equity, fixed income and derivatives markets, and may also include allocations to non-traditional investments, including illiquid securities and investments. AIF strategies may target absolute returns without reference to a traditional benchmark using a wide range of investment tools such as short-selling, leverage, derivatives and complex securities.

The AIF may invest in strategies that do not fit the constraints of existing Combined Investment Funds. Such strategies could include, but are not limited to, absolute return strategies, managed futures strategies, commodities, real assets and other alternative asset strategies.

The AIF mandate is executed through external investment advisors and money managers who actively manage fund of funds portfolios or through direct investments in single manager funds.

#### **Portfolio Characteristics**

As of June 30, 2017, the AIF was invested in six absolute return oriented fund of hedge funds, including two fund of funds participating in the Connecticut Horizon Fund program, with a combined market value of \$1.85 billion. The portfolio also includes three real asset oriented private equity style funds that invest in energy infrastructure with a combined market value of \$122.7 million and a European distressed credit partnership with a market value of \$10.7 million.

#### **Market Review**

The hedge fund industry experienced improved performance for the trailing 12 months ending June 30, 2017 driven by gains in equity sensitive strategies such as equity long/short and event driven funds as equity markets rallied. From a sector perspective, financials, and healthcare continued to drive positive performance and from a geographic perspective international exposure (i.e., Asia and Emerging Markets) out-performed U.S. exposure. With improved performance has come improved investor sentiment and positive flows into the market segment with investors refocusing on more traditional hedge fund products and concentrating their strategy decisions.

Total Net Position: \$2,027,956,500 Expensed Management Fees: \$0 Capitalized and Netted Fees: \$11,042,680 Operating Expenses: \$995,988 Expense Ratio: 0.05%

- Equity long/short managers benefited from positive equity beta, as stocks have rallied strongly since the elections in Nov 2016, and more alpha generation opportunities as dispersion in returns across stocks widened during 2017.
- Event driven managers, which lagged in 2016, performed well in 2017 due to an increase in M&A activity and stronger credit performance.
- Credit/distressed managers benefited from tighter yield spreads in 2017, particularly within the energy and metals/mining sectors with the retail sector continuing to lag.
- Market neutral strategies posted modest performance; low and stable volatility made it a challenge to managers that are long volatility. Fixed income relative value and statistical arbitrage managers also performed better.
- Convertible arbitrage managers posted solid returns during the fiscal year due to strong equity and credit markets.

Real asset investment activity rebounded during the first half of calendar year 2017 given the stable commodity price environment combined with profitable drilling and production of crude oil in the Permian Basin and mid-to-large size energy companies rationalizing non-core assets. During this same period energy IPO activity among upstream, midstream, and downstream companies rebounded from the multi-year low that occurred in 2016. In total, \$4.2 billion of IPO issuance occurred during the first half of 2017 compared to a total of \$1.2 billion in all of 2016.

#### **Performance Summary**

For the fiscal year ended June 30, 2017, the AIF generated a return of 8.51 percent, net of all expenses, which outperformed the 90-day Treasury bill return of 0.49 percent by 802 basis points. As of June 30, 2017, the trailing three- and five-year net annualized returns of the AIF were 2.22 percent and 3.92 percent, respectively. These returns outperformed the compounded 90-day Treasury bill return of 0.23 percent and 0.17 percent by 199 and 375 basis points, respectively.

Within the AIF, the fund of hedge funds portfolio returned 8.45 percent as of June 30, 2017. The consolidated hedge fund portfolios outperformed their fund of funds peer group (Hedge Fund Research, Inc. Fund of Funds Composite Index), which increased by 6.29 percent over the same period. It outperformed the broader Hedge Fund Research, Inc. Fund Weighted Composite Index, which increased by 7.98 percent. Within the AIF, the real assets portfolio returned 22.15 percent as of June 30, 2017.

#### **Risk Profile**

Given the AIF's investment policy and objectives, the Fund is exposed to several forms of risk. These include, but are not limited to, risks attendant with alternative investments, such as management, operations and product risk, overall liquidity risk, leverage, short selling, derivative use, and transparency. Assuming these risks as part of a prudent, total portfolio strategy assists the AIF in achieving its investment objectives.

#### Figure 3-1



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 3-3



#### Figure 3-5

#### ALTERNATIVE INVESTMENT FUND Investment Advisors at June 30, 2017

Investment Advisor	Net Asset Value	% of Fund
Arclight Energy Partners Fund V	\$36,994,556	1.82%
Arclight VI	49,413,209	2.44%
EIG Energy Fund XV LP	36,262,167	1.79%
Marathon European Credit Opportunity	10,702,910	0.53%
Prudence Crandall I Permal LP	608,296,503	30.00%
Prudence Crandall II Prisma LP	319,006,097	15.73%
Prudence Crandall III Rock Creek LP	309,983,386	15.28%
Prudence Crandall IV K2 LP	305,672,773	15.07%
THOMAS WELLES FUND I	87,595,523	4.32%
THOMAS WELLES FUND II	87,245,454	4.30%
Other (1)	176,783,922	8.72%
Total	\$2,027,956,500	100.00%

#### Figure 3-2

#### ALTERNATIVE INVESTMENT FUND Periods ending June 30, 2017

	, 00, 2017					
	1 YR	3 YRS	5 YRS			
Compounded, Annual Total Return (%)						
AIF	8.51	2.22	3.92			
90 Day T-Bill	0.49	0.23	0.17			
Cumulative Total Ref	turn (%)					
AIF	8.51	6.82	21.17			
90 Day T-Bill	0.49	0.70	0.87			

#### Figure 3-4



Figure 3-6

ALTERNATIVE INVESTMENT FUND Ten Largest Holdings\* at June 30, 2017

Partnership Name	Туре	Market Value	%
PC I Permal LP	Hedge F-o-F	\$608,296,503	30.01%
PC II Prisma LP	Hedge F-o-F	319,006,097	15.74%
PC III Rock Creek LP	Hedge F-o-F	309,983,386	15.29%
PC IV K2 LP	Hedge F-o-F	305,672,773	15.08%
Thomas Welles Fund I	Hedge F-o-F	87,595,523	4.32%
Thomas Welles Fund II	Hedge F-o-F	87,245,454	4.31%
Arclight Energy Prtnrs V	Real Assets	49,413,209	2.44%
Arclight Energy Prtnrs V	Real Assets	36,994,556	1.83%
EIG Energy Fund XV LP	Real Assets	36,262,167	1.79%
Marathon Euro Credit Opp	Opportunistic	10,702,910	0.53%
Top Ten		\$1,851,172,578	91.34%

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

(1) Other represents cash equivalents and other net assets.

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COMBINED INVESTMENT FUNDS 2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT
# Rutual equity fund

#### Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Mutual Equity Fund (MEF) is to (1) achieve a long term, real rate of return significantly above the inflation rate; and (2) provide a source of diversification from other asset classes within the CRPTF during different economic environments.

Date of Inception: July 1, 1972

**Total Net Position:** \$7,022,130,703

Management Fees: \$13,261,733

**Performance Objective:** A net return that, at a minimum, matches the benchmark over rolling three- to five-year periods.

Benchmark: Russell 3000 Index

Number of Advisors: 6

Operating Expenses: \$7,952,650 Expense Ratio: 0.31%

## **Description of the Fund**

The MEF assets are allocated across the U.S. stock market to ensure diversification by market capitalization and investment style, such as value and growth. The MEF may opportunistically invest up to 30 percent of assets to take advantage of shifts in the investment landscape or opportunities that offer diversification and/or risk-return benefits, and may include investments in any market capitalization and/or investment style as well as an allocation to stocks outside the U.S.

## **Portfolio Characteristics**

The MEF invests primarily in the common stock of U.S. corporations. The largest industry weightings at June 30, 2017 were financials (20.1 percent), followed by information technology (19.5 percent) and health care (14.1 percent) (See Figure 4-3).

The MEF's ten largest holdings, aggregating 14.8 percent of Fund investments, included a variety of blue chip companies and were broadly diversified, with the largest holding of 2.7 percent in Apple Inc. (See Figure 4-9).

## **Market Review**

In the months leading up to the November elections, U.S. equities remained relatively flat due to political uncertainty and concerns about the timing of upcoming Federal Reserve interest rate increases. Following the election, U.S. equities soared higher amid hopes for rollback of regulatory reform, tax code changes, and increased infrastructure spending that could lead to stronger economic growth and corporate profits.

The U.S. stock market, as measured by the Russell 3000 index, increased 18.5 percent. Within the Russell 3000, small capitalization companies outperformed mid- and large capitalization companies. In the small cap space, growth and value stocks performed about the same, where in the large- and mid-caps growth stocks outperformed value stocks. The technology sector was the best performing sector in the index with a 34.8 percent return, followed by financial services with a return of 27.6 percent. The worst performing sectors were energy and utilities with a return of -4.7 and -2.0 percent, respectively.

## **Performance Summary**

For Fiscal Year 2017, the MEF generated a return of 19.26 percent, net of all expenses, which outperformed the Russell 3000 Index return by 75 basis points (See figure 4-4). As of June 30, 2017, the MEF

compounded net annualized total returns, for the trailing three-, five- and ten-year periods were 9.20 percent, 14.60 percent and 6.71 percent, respectively.

## **Risk Profile**

Based on returns over the last five years, MEF has exhibited a similar degree of risk as that of its benchmark, the Russell 3000 Index. With a relative volatility of 0.99, the MEF's volatility is approximately the same as the market. The Fund's active return, or its excess returns over the last five years, adjusted for risk, has been a 0.01 (See figure 4-2).

#### Figure 4-1



TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 4-3

#### **MUTUAL EQUITY FUND**

Fiscal 2017 Industrial Sector vs. Index (%) Based on Investments in Securities, at Value <sup>(1)</sup>

MEF	Russel 3000
% of Mrkt	%of Mrkt
Value	Value
5.1	5.6
5.1	3.9
11.4	10.9
13.5	13.8
6.7	7.2
14.1	13.9
20.1	21.3
19.5	18.2
4.5	5.2
100.0	100.0
	% of Mrkt Value 5.1 5.1 11.4 13.5 6.7 14.1 20.1 19.5 4.5

(1) Excludes the Liquidity Fund.

#### Figure 4-5



#### Figure 4-2

0.99
9.63
1.00
0.99
0.01

(1) Based upon returns over the last five years.

#### Figure 4-4

Figure 4-6

MUTUAL EQUITY FUND Periods ending June 30, 2017									
	1 YR	3 YRS	5 YRS	10 YRS					
Compounded, Annual	Total Return (	%)							
MEF	19.26	9.20	14.60	6.71					
Russell 3000	18.51	9.10	14.59	7.26					
Cumulative Total Retur MEF Russell 3000	n (%) 19.26 18.51		97.63 97.53						

#### **MUTUAL EQUITY FUND** Components of Total Return (\$ in millions) by Fiscal Year \$2,000.0 \$1,648.7 \$1.520.8 \$1,500.0 \$1.217.7 \$1.181.5 \$1,000.0 \$777.3 \$500.0 \$0.0 \$114.3 \$191.2 \$477.5 -\$500.0 -\$1.000.0 -\$1,500.0 (\$1,223.0) -\$2,000.0 -\$2.500.0 08 09 10 11 12 17 13 14 15 16 Capital Appreciation Income

STATE OF CONNECTICUT, OFFICE OF THE TREASURER, DENISE L. NAPPIER

#### Figure 4-7

## MUTUAL EQUITY FUND

Comprehensive Profile for the Fiscal Years ending June 30,

	20	17	20	16	20	15	20	14	2	013
	MEF	Russell	MEF	Russell	MEF	Russell	MEF	Russell	MEF	Russell
# of Issues	1,756	3,000	1,706	3,000	1,807	3,000	1,806	3,000	1,721	3,000
Cap (\$ Bil)	\$137.0	\$140.2	\$114.1	\$114.6	\$108.1	\$108.9	\$102.1	\$101.7	\$85.5	\$85.8
P/E	25.0	24.3	22.8	22.1	22.0	21.7	21.2	20.8	19.3	19.2
Div Yield	1.73%	1.89%	1.92%	2.06%	1.81%	1.93%	1.74%	1.84%	1.90%	2.10%
ROE	16.2%	16.2%	16.6%	16.4%	17.7%	17.5%	16.9%	17.0%	17.3%	17.8%
P/B	3.0	3.0	2.6	2.4	2.8	2.8	2.8	2.7	3.8	3.7
Cash & Equiv.	5.7%	0.0%	1.2%	0.0%	1.1%	0.0%	0.9%	0.0%	0.8%	0.0%

Source: Custodian Bank

#### Figure 4-8

MUTUAL EQUITY FUND Investment Advisors at June 30, 2017							
Investment Advisor	Net Asset Value	% of Fund					
Large Cap	\$5,317,010,424	75.72%					
T. Rowe Price Associates	2,265,341,959	32.26%					
State Street Global Advisors	3,051,668,465	43.46%					
All Cap	629,717,239	8.97%					
Capital Prospects	324,236,955	4.62%					
FIS Group, Inc.	305,480,284	4.35%					
Small/Mid Cap	733,833,239	10.45%					
Frontier Capital Mgmt Co	408,898,925	5.82%					
Bivium	324,934,314	4.63%					
Other (1)	341,569,801	4.86%					
TOTAL MEF	\$7,022,130,703	100.00%					

Figure 4-9

MUTUAL EQUITY FUND Ten Largest Holdings* at June 30, 2017							
Security Name		Market Value	%				
Apple Inc	Information Tech	\$190,196,701	2.71%				
Microsoft Corp	Information Tech	149,416,390	2.12%				
Amazon.Com Inc	Consumer Discr	107,485,752	1.53%				
Facebook Inc	Information Tech	104,412,031	1.49%				
Exxon Mobil Corp	Energy	90,102,430	1.28%				
Johnson & Johnson	Health Care	87,638,818	1.25%				
JPMorgan Chase & C	oFinancials	87,365,421	1.24%				
Alphabet Inc-CL C	Information Tech	74,943,872	1.07%				
Alphabet Inc-CL A	Information Tech	74,259,120	1.06%				
Wells Fargo & Co	Financials	70,976,110	1.01%				
Top Ten	\$1	,036,796,645	14.76%				

\* A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

(1) Other represents cash equivalents and other net assets.

# core fixed income fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Core Fixed Income Fund (CFIF) is to: (1) achieve a long-term real rate of return above the inflation rate; (2) generate a stream of income and (3) provide a source of diversification from other asset classes within the CRPTF during different economic environments.

Date of Inception: November 1, 2007

**Performance Objective:** A net return that matches its benchmark, over rolling three-to-five year periods.

Benchmark: Barclays U.S. Aggregate Bond Index

Number of Advisors: 7 External

Total Net Position: \$2,452,383,489

Expensed Management Fees: \$2,602,485 Capitalized and Netted Fees: \$919,783 Net Operating Expenses: \$1,648,294 Expense Ratio: 0.17%

## **Description of the Fund**

The CFIF assets are invested across debt instruments issued by the U.S. Government and its agencies, U.S. or international corporations, high quality quasi or sovereign debt and any other public or private U.S. regulated debt securities. The CFIF may invest up to 30 percent of its assets opportunistically to take advantage of shifts in the investment landscape or opportunities which offer diversification and/or risk-return benefits.

## **Portfolio Characteristics**

At the end of fiscal 2017, the composition of the CFIF was: corporate bonds 21.9 percent, mortgagebacked securities 5.5 percent, U.S. Treasuries 20.3 percent, asset-backed securities 3.3 percent, and government agency securities 20.7 percent. The remaining assets were invested in the Liquidity Fund and other assets, including two opportunistic funds valued at \$566,040,052. As of June 30, 2017, the CFIF was overweight government agency securities, asset backed securities, and opportunistic investments compared to the Barclays U.S. Aggregate Bond Index, and underweight mortgage-backed securities, U.S. Treasury, and corporate bonds. (See Figure 5-4.) Fifty eight percent of the CFIF was invested in AAArated securities. (See Figure 5-5.) The duration of the Fund was 6.15 years, compared to 6.09 years for the benchmark. The yield to maturity was 2.91 percent for the CFIF versus 2.46 percent for the Barclays U.S. Aggregate Bond Index. (See Figure 5-11.)

## **Market Review**

The Barclays U.S. Aggregate Index had a 31 basis point loss for the fiscal year ending June 30, 2017, as rising bond yields more than offset the impact of coupon income and spread tightening. The negative return of 2.5 percent during the first half of the fiscal year was driven by the sell-off in rates after the U.S. presidential election. Reflationary trends emerged with stronger nominal growth, higher inflation expectations and the potential for fiscal policy to replace monetary policy as a driver of growth. Yields across the curve rose 60 to 90 basis points in the aftermath of the election as investors priced in the potential impact from a large infrastructure plan, tax code changes and relaxed regulatory reform. In December, the Federal Reserve began a normalization of monetary policy starting with the first of three rate hikes made during the fiscal year.

U.S Treasury securities lost 4.1 percent while investment grade credit sustained only 1.5 percent loss between July and December. In the second half of the fiscal year the core fixed income market generated a gain of 2.3 percent. The yield curve flattened during this period reflecting the lack of progress on stated legislative priorities. Inflation expectations declined as the U.S. economy expanded at its weakest pace in over three years causing yields for bonds with five or more years to maturity to decline materially, thereby erasing some of the losses of the first half of the fiscal period. Treasuries gained 1.9 percent during the period while investment grade credit was up 3.8 percent. Corporate bonds were the top performers, followed by taxable municipal bonds.

In the persistent low interest rate environment investors continued to seek higher yields and spread products and lower rated bonds outperformed.

## **Performance Summary**

For the fiscal year ended June 30, 2017 the CFIF outperformed the Barclays U.S. Aggregate Bond Index by 220 basis points, generating a 1.89 percent net return compared to a -0.31 percent return for the benchmark. As of June 30, 2017, the CFIF's net annualized total returns for the trailing three and five-year periods were 2.40 percent and 2.25 percent, respectively, slightly underperforming the benchmark by 8 and 4 basis points, respectively. The cumulative total returns of the Fund were 7.36 percent over the past three years and 11.74 percent for the five-year period ending June 30th. (See Figure 5-8.)

## **Risk Profile**

Given the CFIF's investment policies and objectives, the Fund is exposed to several forms of risk, such as credit default risk, interest rate risk, liquidity risk, inflation risk, reinvestment risk, counter party risk and geopolitical risk. These risks are monitored on an ongoing basis, and actions are taken to mitigate identified risks. External rating agencies assign credit ratings to individual securities reflecting their views of the underlying firm's credit worthiness or the underlying assets in the case of securitized debt. As of fiscal year end, over half of the CFIF was rated AAA.

#### Figure 5-1



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 5-3



(1) Computed without the effect of Cash and other assets.

#### Figure 5-5



(1) Represents securities for which ratings are unavailable.

#### Figure 5-2

CORE FIXED INCOME FUNDRisk Profile at June 30, 2017 <sup>(1)</sup>Relative Volatility0.86Standard Deviation2.45R20.93Beta0.83Alpha0.04

(1) Based upon returns over the last five years.

#### Figure 5-4

CORE FIXED INCOME FUND Distribution by Sector at June 30, 2017 Based on Investments in Securities, at Value								
	CFIF	Barclays Aggregate	Variance					
Treasury	20.3%	37.0%	-16.7%					
Agency	20.7%	3.5%	17.2%					
Corporate	21.9%	25.3%	-3.5%					
Mortgage-Backed	5.5%	28.2%	-22.7%					
Asset-Backed	3.3%	0.5%	2.8%					
Other <sup>(1)</sup>	<u>28.3%</u>	<u>5.5%</u>	22.8%					
TOTAL	100.0%	100.0%						
-								

(1) Other category includes opportunistic assets, Liquidity Fund and other assets.



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#### Figure 5-7

<b>CORE FIXED INCOME FUND</b> Duration Distribution at June 30, 2017 Based on Investments in Securities, at V	/alue
0-3 Years 3-5 Years 5-7 Years 7-10 Years 10+ Years Undetermined <sup>(1)</sup> Total	22.0% 31.0% 16.3% 10.1% 11.8% 8.8% 100.0%

<sup>(1)</sup> Represents securities for which the duration could not be calculated by the custodian.

#### Figure 5-9



Figure 5-8

CORE FIXED INCOME FUND Periods ending June 30, 2017								
	1 YR	3 YRS	5 YRS	10 YRS				
Compounded, Annual Total Return (%)Compounded, Annual Total Return (%)CFIF1.892.402.254.31*Barclays Aggregate-0.312.482.214.48								
Cumulative Total Return (%) CFIF 1.89 7.36 11.74 52.46* Barclays Aggregate -0.31 7.63 11.57 54.97								

\*Represents historical returns at the portfolio composite level.

#### Figure 5-10

CORE FIXED INCOME FUND Investment Advisors at June 30, 2017								
Investment Advisors	Net Asset Value	% of Fund						
State Street Global Advisors	\$251,945,275	10.27%						
BlackRock Financial Management, Inc.	528,277,226	21.54%						
Wellington	538,592,555	21.96%						
Conning-Goodwin Capital	378,359,692	15.43%						
Progress	118,900,899	4.85%						
Prudence Crandall Fund III Opportunistic	279,748,952	11.41%						
Prudence Crandall Fund IV Opportunistic	286,291,100	11.67%						
Other (1)	70,267,790	2.87%						
TOTAL CFIF	\$2,452,383,489	100.00%						

(1) Other represents Liquidity Fund, other assets and terminated advisor balances.

#### Figure 5-11

## CORE FIXED INCOME FUND Comprehensive Profile

for the Fiscal Year ending June 30										
	20			2016		015	20			)13
	CFIF	BC AGG								
# of Issues	4,129	9,355	3,844	9,804	3,448	9,496	3,080	8,818	3,227	8,382
Average Coupon	3.37%	3.11%	3.35%	3.21%	3.54%	3.31%	3.47%	3.41%	3.60%	3.50%
Yield Maturity	2.91%	2.46%	2.20%	1.74%	2.59%	2.29%	2.31%	2.10%	2.30%	2.30%
Average Maturity	8.40	8.00	7.78	7.85	8.73	7.57	8.05	7.29	7.20	6.90
Modified Duration	6.15	6.09	5.86	5.76	6.15	5.72	5.85	5.58	5.50	5.20
Average Quality	AA-2	AA-2								
Liquidity Fund	5.8%	0.0%	3.8%	0.0%	7.2%	0.0%	6.5%	0.0%	8.4%	0.0%

#### Figure 5-12

#### **CORE FIXED INCOME FUND** Ten Largest Holdings\* at June 30, 201

Ien Largest Holdings* at June 30, 2017			
		Market	
Security Name	Maturity	Value	%
U S TREASURY NOTE	5/31/2019	\$28,565,703	1.10%
U S TREASURY NOTE	6/30/2021	23,957,381	0.92%
FNMA TBA	8/1/2047	22,865,082	0.88%
U S TREASURY NOTE	4/30/2019	19,478,964	0.75%
U S TREASURY NOTE	5/15/2027	18,276,965	0.70%
U S TREASURY NOTE	2/28/2022	17,120,691	0.66%
FNMA TBA	7/1/2047	15,375,669	0.59%
GNMA TBA	7/20/2047	15,219,885	0.59%
FHLM TBA	8/1/2047	15,176,512	0.58%
U S TREASURY NOTE	8/15/2025	12,795,841	0.49%
Top Ten		\$188,832,693	7.26%

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

#### Figure 5-13

	6/30/17	3/31/17	12/31/16	9/30/16	6/30/16
CORE FIXED INCOME	3.24	3.29	3.93	3.33	3.48
Barclays Aggregate	2.92	2.94	2.97	2.87	2.90
Barclays Treasury	2.05	2.03	2.01	1.92	1.92
Barclays Agency	2.16	2.17	2.06	2.03	2.09
Barclays Mortgage	3.44	3.46	3.48	3.44	3.48
Barclays Corporate	3.69	3.75	3.81	3.66	3.74
Barclays Asset Backed	1.97	1.90	1.90	1.86	2.04

(1) Current Yield represents annual coupon interest divided by the market value of securities.

## inflation linked bond fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Inflation Linked Bond Fund (ILBF) is to (1) achieve a long- term, real rate of return above the inflation rate; (2) provide protection against rampant inflation; and (3) offer a source of diversification relative to other asset classes within the CRPTF during different economic environments.

Date of Inception: November 1, 2007	Total Net Position: \$1,344,025,745
<b>Performance Objective:</b> A net return, which matches the benchmark, over rolling three-to five-year periods.	Management Fees: \$2,613,172
<b>Benchmark:</b> Barclays World Government Inflation-Linked Bond Index	Net Operating Expenses: \$2,552,771
Number of Advisors: 3 external	Expense Ratio: 0.39%

## **Description of the Fund**

Inflation linked bonds are high-quality securities issued primarily by governments in their home country currencies. While the benchmark for this Fund is unhedged, investment managers have discretion to hedge foreign currency exposure back to the U.S. dollar. Inflation-linked bonds carry a fixed interest rate and the principal of the bonds is adjusted semi-annually for any rise or decline in the inflation rate. (During fiscal year 2015, three firms were hired to invest in global inflation-linked bonds, replacing the firms who previously managed U.S. inflation-linked bonds.)

## **Portfolio Characteristics**

At June 30, 2017, the ILBF was well diversified with issues of inflation-linked and nominal sovereign bonds from eight countries plus the United Kingdom and the Eurozone. (See Figure 6-3.) The average coupon of this Fund was 1.41 percent compared to 1.15 percent for the benchmark. Duration of the ILBF at 10.85 years was shorter than the 12.55 years of the benchmark. Credit quality of this Fund matched the benchmark at AA-2 on June 30, 2017. (See Figure 6-9.)

## **Market Review**

The Barclays World Government Inflation Linked Bond Index posted a return of 0.81 percent for the fiscal year ending June 30, 2017. Hawkish central banks and political developments dominated markets and signs of global reflation appeared early in the period. Inflation markets broadly outperformed through the first three quarters of fiscal year 2017, with strong inflows into the asset class, especially in the U.S. Treasury Inflation Protected Securities (TIPS). Ten year TIPS' breakeven rates rallied as high as 2.08 percent before reversing to a low of 1.67 percent in June 2017. Post-election, U.S. inflation breakevens widened 30 basis points and then gave back 24 basis points by the end of the fiscal year. Fiscal policy delays, ongoing monetary tightening and weaker CPI data contributed to a tapering of inflation-linked inflows. After widening earlier in the year, global breakevens narrowed, weighed by increased energy volatility and central bank agression. While the U.S. Treasury nominal yield curve flattened in response to persistence from the Federal Reserve Bank, U.S. TIPS real rates lagged, although the breakeven curve did also flatten. In Germany, real rates followed nominals steeper on improved economic outlook but also lagged, steepening the breakeven curve in the process. The U.K real curve was mixed, following nominals flatter on initial recession concerns after

the Brexit vote before steepening on rising near-term inflation concerns after the sharp Sterling sell-off. Emerging markets benefitted from low and stable inflation and from a declining U.S. dollar through the last half of the fiscal year.

## **Performance Summary**

For the fiscal year ended June 30, 2017 the ILBF underperformed the Barclays World Government Inflation-Linked Bond Index by 15 basis points, generating a 0.66 percent net return compared to a 0.81 percent return for the benchmark. During the three- and five-year periods ending June 30th, assets then invested primarily in U.S. inflation-linked bonds, generated annualized returns of 0.01 percent and -0.05 percent, compared with the benchmark returns of 0.09 percent and -0.06 percent, respectively. The cumulative total returns of the Fund were 0.03 percent over the past three years and -0.26 percent for the five-year period ending June 30th. (See Figure 6-7.)

## **Risk Profile**

Given the ILBF's investment policies and objectives, the Fund is exposed to various risks such as interest rate risk, deflation risk, currency risk, geopolitical risk, and credit risk.

#### Figure 6-1



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 6-3

## INFLATION LINKED BOND FUND

Distribution by Country at June 30, 2017 Based on Investments in Securities, at Value

	E	3C World Gov	't
	ILBF	Infl Linked	Variance*
U.S.	41.2%	43.8%	-2.6%
U.K.	18.7%	28.9%	-10.3%
Eurozone	17.2%	20.1%	-2.9%
Mexico	3.9%	0.0%	3.9%
Brazil	0.0%	0.0%	0.0%
Canada	1.2%	2.1%	-0.9%
South Africa	1.6%	0.0%	1.6%
Japan	1.3%	2.2%	-0.9%
Australia	4.8%	1.2%	3.6%
New Zealand	5.6%	0.5%	5.1%
Other	1.7%	1.2%	0.5%
Liquidity Fund	<u>2.8%</u>	<u>0.0%</u>	2.8%
TOTAL	100.0%	100.0%	

\* Results may be rounded.

#### Figure 6-5



\*Note: Ending weights





Computed without the effect of Cash and other assets.
Figure 6-4

## INFLATION LINKED BOND FUND

Distribution by Quality Rating at June 30, 2017 Based on Investments in Securities, at Value

AAA	49.1%
AA-1 to AA-3	29.6%
A-1 to A-3	7.1%
BAA-1 to BAA-3	9.4%
Less than BAA-1	2.0%
Liquidity Fund (1)	2.8%
Total	100.0%

(1) Represents monies invested in Cash Equivalents.

#### Figure 6-6

INFLATION LINKED BOND FUND Duration Distribution at June 30, 2017 Based on Investments in Securities, at Value 0-3 Years 14.6% 3-5 Years 12.6% 5-7 Years 13.6% 7-10 Years 16.7% 10+ Years 39.7% Liquidity Fund (1) 2.8% 100.0% Total

(1) Represents monies invested in Cash Equivalents.

Figure 6-8

#### Figure 6-7

INFLATION LINKED BO Periods ending June 30		ND		
	1 YR	3 YRS	5YRS	10YRS
Compounded, Annual To ILBF BC World Gov't Infl Linked Bond Index <sup>(1)</sup>	0.66	<b>n (%)</b> 0.01 0.09	-0.05 -0.06	4.30* 4.10
Cumulative Total Return ILBF BC World Gov't Infl Linked Bond Index <sup>(1)</sup>	<b>0</b> .66	0.03	-0.26	52.35* 49.52

 The benchmark was changed during Fiscal Year 2015 from BC U.S. TIPS to BC World Government Inflation Linked Bond Index.
\*Represents historical returns at the portfolio composite level.



\*Note: 2015 and forward the Benchmark is BC World Government Inflation Linked Bond Index. For prior years the benchmark is BC U.S. TIPS Index.

#### Figure 6-9

#### INFLATION LINKED BOND FUND Comprehensive Profile for the Fiscal Year ending June 30

	<u>2017</u>				<u>2</u> (	2015		<u>2014</u>		<u>2013</u>	
	ILBF	BC World Gov't Infl	ILBF	BC World Gov't Infl	ILBF	Barclays US TIPS	ILBF	Barclays US TIPS	ILBF	Barclays US TIPS	
		00711111	ILDI	00011111	ILDI	001110	ILDI	001110	ILDI	00 111 0	
# of Issues	382	136	587	134	418	131	37	35	33	34	
Average Coupon	1.41%	1.15%	1.65%	1.23%	2.08%	1.35%	1.53%	1.22%	1.45%	1.39%	
Average Maturity	11.70	13.68	13.71	13.49	12.63	13.40	8.68	8.57	8.79	8.70	
Modified Duration	10.85	12.55	11.73	12.36	11.32	12.07	7.31	7.72	8.20	7.96	
Average Quality	AA-2	AA-2	AA-2	AA-1	AA-2	AA-1	AAA	AAA	AAA	AAA	
Liquidity Fund(1)	2.8%	0.0%	3.1%	0.0%	2.4%	0.0%	5.6%	0.0%	3.6%	0.0%	

(1) Ending Weights

Figure 6-10

INFLATION LINKED BOND FUND Investment Advisors at June 30, 2017							
Investment Advisors		Net Asset Value	% of Fund				
BlackRock	\$	515,186,615	38.33%				
Colchester		610,713,250	45.44%				
New Century		189,191,788	14.08%				
Other <sup>(1)</sup>		28,934,092	2.15%				
TOTAL ILBF	\$1	,344,025,745	100.00%				

(1) Other represents Liquidity Fund, other assets and terminated advisor balances.

#### Figure 6-11

Ten Largest Holdings <sup>(1)</sup> at June 30, 2017								
		Market						
Security Name	Maturity	Value	%					
US TREAS-CPI INFLAT	4/15/2029	\$ 59,556,259	4.47%					
US TREAS-CPI INFLAT	4/15/2019	54,596,993	4.10%					
ITALY GOVERNMENT BOND	9/15/2023	51,492,593	3.86%					
US TREAS-CPI INFLAT	1/15/2027	51,404,516	3.86%					
US TREAS-CPI INFLAT	7/15/2022	46,737,288	3.51%					
US TREAS-CPI INFLAT	2/15/2042	43,573,827	3.27%					
US TREAS-CPI INFLAT	4/15/2022	38,739,825	2.91%					
NEW ZEALAND GOVERNMENT BOND	9/20/2030	35,925,949	2.69%					
FRANCE GOVERNMENT BOND	7/25/2040	34,993,349	2.62%					
UNITED KINGDOM GILT INFLA REGS	3/22/2044	33,235,116	2.49%					
Top Ten		\$450,255,715	33.78%					

 A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

## emerging market debt fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Emerging Market Debt Fund (EMDF) is to (1) achieve long-term, real rate of return above the inflation rate and (2) provide some diversification relative to other asset classes within CRPTF given the different global economic environments.

Date of Inception: November 1, 2007

**Performance Objective:** A net return that exceeds the benchmark by 100 basis points, over rolling three- to five-year periods.

**Total Net Position:** \$1,637,181,016

Management Fees: \$5,645,057

**Operating Expenses:** \$515,572

**Benchmark:** J.P. Morgan Emerging Markets Bond Index Global Diversified (JPM EMBI GD) (50%) J.P. Morgan Government Bond Index Emerging Markets Global Diversified (JPM GBI EM GD) (50%)

Number of Advisors: 4 external

Expense Ratio: 0.39%

## **Description of the Fund**

The EMDF invests primarily in debt instruments issued by governments and companies operating in developing countries as identified by the benchmark, the World Bank, or the United Nations. The EMDF is generally weighted 50 percent to U.S. dollar-denominated securities and 50 percent to securities issued in local currencies. For performance measurement purposes, the dollar-denominated securities are benchmarked to the JPM EMBI GD and the local currency securities are benchmarked to the JPM GBI EM GD.

## **Portfolio Characteristics**

The EMDF is well diversified with broad geographic and currency exposures. Latin America and Europe have the highest representation; while the Middle East and Africa have the lowest exposure, relatively consistent with the benchmark. (See Figure 7-3.) The Fund had an overall yield to maturity of 6.72 percent compared to the EMBI benchmark yield of 5.58 percent. The average quality of EMDF was BA-1 versus the EMBI benchmark average of BAA-3. The duration of the EMDF was 5.69 years versus 5.96 years for the benchmark. (See Figure 7-11.)

## **Market Review**

Emerging Market Debt (EMD) investments were positive contributors to fiscal year performance. Developing countries enjoyed a broadly supportive external environment, including solid economic activity in developed countries and a cyclical improvement in Chinese data. Growth trends began to recover and external accounts continued to mend. Inflation declined notably in several large emerging countries allowing central banks to lower interest rates. The favorable emerging market debt environment attracted robust inflows into the asset class during the fiscal year.

The U.S. dollar-denominated emerging market debt, as measured by the JPM EMBI GD, returned 6.0 percent during fiscal year 2017. The return was primarily based on yield. EMD credit spreads declined by 80 basis points, but that was fully offset by rising U.S. Treasury yields. Non-investment grade credit outperformed investment grade bonds due to higher yield and greater spread tightening. Regionally, Africa and the Middle East delivered outsized performance, reflective of the higher tolerance for idiosyncratic risk among investors over the period.

In local currency markets, total return was starkly different depending on the currency of measurement. The JP Morgan GBI EM GD index returned 6.4 percent, driven mostly by coupon income. The market yield

declined 15 basis points during the fiscal year, but a small currency translation loss back to the U.S. largely offset this. The currency performance factor split the universe with half benefitting from stronger currencies relative to the U.S. dollar, and half experiencing weaker currencies. Most countries produced a positive total return with the exceptions of Turkey, the Philippines and Malaysia. In contrast, South Africa returned over 20 percent in U.S. dollar terms, generating two thirds of the return from a strengthening currency. Russia also delivered outsized returns as very high real interest rates attracted investors to the local market.

## **Performance Summary**

For the fiscal year ended June 30 2017, the EMDF generated a return of 9.11 percent, net of all expenses, outperforming the benchmark return of 6.26 percent by 285 basis points. As of June 30, 2017, the EMDF compounded net annualized returns for the three- and five-year periods were 2.25 percent, and 3.07 percent, respectively, versus 1.28 percent and 2.83 percent for the blended benchmark. The cumulative returns of the EMDF for the three- and five-year periods were 6.90 percent and 16.34 percent, respectively, outperforming the benchmark returns of 3.89 percent and 14.96 percent. (See Figure 7-7).

## **Risk Profile**

Given the EMDF's investment policies and objectives, the Fund is exposed to multiple types of risk. These risks include, but are not limited to, credit risk, currency risk, interest rate risk, liquidity risk, inflation risk and geopolitical risk. Approximately half of the Fund is rated as investment grade.

#### Figure 7-1



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 7-3

#### EMERGING MARKET DEBT FUND Distribution by Region at June 30, 2017

	EMDF	50% JPM EMB GD/ 50% JPM GBI EM GD	l Variance
Asia	16.4%	17.8%	-1.4%
Africa	9.2%	9.2%	0.0%
Europe	31.2%	32.1%	-0.9%
Latin America	35.9%	33.4%	2.5%
Middle East	4.4%	7.5%	-3.1%
United States (1)	<u>2.9%</u>	<u>0.0%</u>	2.9%
TOTAL	100.0%	100.0%	

(1) Mainly Liquidity Fund holdings.

Figure 7-5



#### \*Liquidity Fund and other assets.

#### COMBINED INVESTMENT FUNDS 2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT

#### Figure 7-2



(1) Computed without the effect of Cash and other assets.

#### Figure 7-4

<b>EMERGING MARKET DEBT FUND</b> Distribution by Quality Rating at June 30, 2017 Based on Investments in Securities, at Value						
	Aaa	0.7%				
	AA-1 to AA3	0.2%				
	A-1 to A-3	13.9%				
	BAA-1 to BAA3	32.3%				
	Less than BAA-3	44.7%				
	Not Rated <sup>(1)</sup>	8.2%				
	Total	100.0%				

(1) Represents securities for which ratings are unavailable.

#### Figure 7-6

<b>EMERGING MARKET DEBT FUND</b> Duration Distribution at June 30, 2017 Based on Investments in Securities, a	
0-3 Years	19.4%
3-5 Years	27.4%
5-7 Years	19.5%
7-10 Years	17.4%
10+ Years	11.9%
Undetermined <sup>(1)</sup>	1.5%
Liquidity Fund (2)	2.9%
Total	100.0%

(1) Represents securities for which the duration could not be calculated by the custodian.

(2) Represents monies invested in the Liquidity Fund and other assets.

#### Figure 7-7

EMERGING MARKET DI Periods ending June 30, 2		JND						
	1 YR	3 YRS	5YRS	10 YRS				
Compounded, Annual Total Return (%)								
EMDF	9.11	2.25	3.07	5.87*				
50% JPM EMBI GD/								
50% JPM GBI EM GD	6.26	1.28	2.83	6.08				
Cumulative Total Return (%)								
EMDF	9.11	6.90	16.34	76.86*				
50% JPM EMBI GD/								
50% JPM GBI EM GD	6.26	3.89	14.96	80.48				

\* Represents historical returns at the portfolio composite level.

Figure 7-9

EMERGING MARKET DEBT F Investment Advisors at June 30	_		
Investment Advisors		Net Asset Value	% of Fund
Ashmore Investment Mgt. Ltd.	\$	576,148,444	35.19%
Payden & Rygel		556,352,645	33.98%
Fidelity Institutional Asset			
Mgt. Trust Co.		478,378,770	29.22%
Stone Harbor Investment Partners		13,909,252	0.85%
Other <sup>(1)</sup>		12,391,905	0.76%
TOTAL EMDF	\$1	,637,181,016	100.00%

(1) Liquidity Fund, other assets and terminated advisor balances.

#### Figure 7-8



#### Figure 7-10

EMERGING MARKET Ten Largest Holdings* a			
Security Name	Maturity	Market Value	%
Brazil Notas Do Tesouro	1/1/2021	\$ 34,209,134	2.14%
South Africa Gvmt Bond	2/28/2031	24,959,057	1.56%
Colombia Gvemt Bond	5/4/2022	21,040,245	1.32%
Brazil Notas Do Tesouro	1/1/2023	20,080,271	1.26%
Mexican Bonds	6/10/2021	19,666,840	1.23%
Colombia Gvmt Bond	7/24/2024	14,238,523	0.89%
Russian Gvmt Bond	4/14/2021	14,064,928	0.88%
Brazil Notas Do Tesouro	1/1/2025	14,038,676	0.88%
Brazil Notas Do Tesouro	1/1/2027	13,457,482	0.84%
JPM Chase Bank NA	9/17/2026	13,271,837	0.83%
Top Ten		\$ 189,026,993	11.83%

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

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**EMERGING MARKET DEBT FUND** Comprehensive Profile for the Fiscal Years ending June 30

	2017		20	2016		2015		2014		2013	
	EMDF	EMBI									
# of Issues	1,114	818	978	714	968	686	880	631	866	368	
Yield to Maturity	6.72%	5.58%	7.56%	5.81%	8.54%	6.68%	5.32%	5.86%	6.66%	5.82%	
Average Maturity	8.69	9.11	9.25	9.28	9.23	9.23	7.57	8.60	10.31	12.52	
Modified Duration	5.69	5.96	6.30	6.02	6.17	5.87	5.69	5.74	6.06	7.10	
Average Quality	BA-1	BAA-3	BA-1	BAA-3	BA-1	BAA-2	BAA-3	BAA-2	BAA-2	BAA-2	
Liquidity Fund*	2.9%	0.0%	2.7%	0.0%	3.0%	0.0%	3.2%	0.0%	1.6%	0.0%	

\* Note: Ending Weights

## high yield debt fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the High Yield Debt Fund (HYDF) is to (1) achieve a long-term, real rate of return above the inflation rate; and (2) provide diversification to other asset classes within the CRPTF under different economic environments.

Date of Inception: November 1, 2007	Total Net Position: \$2,044,334,030
<b>Performance Objective:</b> A net return that matches its benchmark, over rolling three- to five-year periods.	Management Fees: \$4,896,835
Benchmark: Citigroup U.S. High Yield Market Capped Index	Operating Expenses: \$2,966,738
Number of Advisors: 9 external	Expense Ratio: 0.41%

## **Description of the Fund**

The HYDF invests primarily in debt instruments rated below-investment grade by one or more nationally recognized rating agencies.

## **Portfolio Characteristics**

The HYDF is well diversified across a range of corporate high yield bonds and bank loans. These securities are predominantly U.S. based. The Fund's average quality rating was B-1 on June 30, 2017, matching the average quality of the benchmark, and had a yield to maturity of 5.51 percent compared to 6.02 percent yield for the benchmark. As of June 30, 2017, the duration of the HYDF was 4.84 years, compared to the benchmark duration of 4.88 years. (See Figure 8-10.)

## **Market Review**

Strong demand from investors, weak new issuance, improved commodity prices, U.S. economic growth and positive earnings expectations, as well as an accommodating global central bank landscape over the past fiscal year, contributed to a rally in the U.S. high yield market. Spreads tightened approximately 230 basis points over the period. Pessimism about oil supply, Chinese growth, U.S. dollar strength, and U.S. growth eased dramatically, allowing the market to return to more normal valuations. During the fi rst half of the fi scal year, investor sentiment was supported by the prospects of rollback of regulatory reform, tax code changes and increased infrastructure spending. However, optimism waned with legislative issues. In June 2017, the action of the U.S Federal Reserve Bank to raise rates despite a weaker than expected Consumer Price Index (CPI) increase, along with an indication the Fed might reduce its balance sheet faster than expected, put pressure on the high yield market in the last month of the fi scal year. The best performing sectors over the period were energy refi ners and metals & mining, while the healthcare and pharmaceuticals sectors performed poorly. At the end of June 2017, the par-weighted U.S. high yield default rate declined to 1.5 percent from 3.56 percent at the beginning of the fi scal year.

## **Performance Summary**

For the fiscal year ended June 30, 2017, the HYDF generated a return of 12.59 percent, net of all expenses, outperforming the Citigroup U.S. High Yield Market Capped Index return of 12.09 percent by 50 basis points. Cumulative net total returns over the three-year and five-year periods ending June 30th were 10.77 percent and 35.00 percent, respectively, for the Fund, and 12.10 percent and 35.94 percent, respectively, for the benchmark. (See Figure 8-8.)

## **Risk Profile**

Given the HYDF's investment policies and objective, the Fund is exposed to several forms of risk. These risks include, but are not limited to, credit default risk, interest rate risk, liquidity risk, pre-payment risk, reinvestment risk and inflation risk. In addition, the Fund is occasionally exposed to political, economic and currency risk resulting from investments in international high yield securities. The average quality of the Fund is B-1, which matches the benchmark.





TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund





Figure 8-2

 H YIELD DEBT FUND Profile at June 30, 2017 <sup>(1)</sup>		
Relative Volatility Standard Deviation R2 Beta Alpha	0.97 5.24 0.98 0.96 -0.14	

(1) Based upon returns over the last five years.

Figure	8-4
--------	-----

HIGH YIELD DEBT Distribution by Secto Based on Investmer	or at June 30	· ·	e
	HYDF	Citigroup	Variance
Treasury	2.7%	0.0%	2.7%
Agency	0.0%	0.0%	0.0%
Corporate	81.8%	100.0%	-18.2%
Mortgage-Backed	0.0%	0.0%	0.0%
Asset-Backed	0.0%	0.0%	0.0%
Other (1)	15.5%	0.0%	15.5%
TOTAL	100.0%	100.0%	

(1) Other category includes non fixed-income securities such as common and preferred stock and convertible securities, Real Estate Investment Trust, Business Development Corporation, Liquidity Fund and other assets.

#### Figure 8-5

## HIGH YIELD DEBT FUND

Distribution by Quality Rating at June 30, 2017 Based on Investments in Securities, at Value

2.7%
3.1%
30.1%
38.8%
16.3%
0.3%
8.7%
100.0%

(1) Represents securities for which ratings are unavailable.

#### Figure 8-7

Figure 8-9

HIGH YIELD DEBT FUND Duration Distribution at June 30, 2017 Based on Investments in Securities, a	
0-3 Years	27.0%
3-5 Years	33.0%
5-7 Years	16.8%
7-10 Years	7.1%
10+ Years	2.7%
Unknown <sup>(1)</sup>	5.9%
Liquidity Fund <sup>(2)</sup>	7.5%
Total	100.0%

(1) Represents securities for which the duration could not be calculated by the custodian.

(2) Represents monies invested in the Liquidity Fund.

#### **HIGH YIELD DEBT FUND** Annual Total Returns by Fiscal Year 29.0% 24.0% 19.0% 14.0% 9.0% 4.0% -1.0% -6.0% 17 08 09 10 11 12 13 14 15 16 ■HYDF Citigroup High Yield

#### Figure 8-6



#### Figure 8-8

HIGH YIELD DEBT FUR Periods ending June 30									
	1 YR	3 YRS	5 YRS	10 YRS					
Compounded, Annual Total Return (%)									
HYDF	12.59	3.47	6.19	6.77*					
Citigroup High Yield Market Capped Index	12.09	3.88	6.33	7.17					
Cumulative Total Return	(%)								
HYDF Citigroup High Yield	12.59	10.77	35.00	92.46*					
Market Capped Index	12.09	12.10	35.94	99.91					

\*Represents historical returns at the portfolio composite level.

#### Figure 8-10

	<u>20</u>	<u>2017</u>		<u>2017</u> <u>2016</u>		<u>2</u>	<u>2015</u>		<u>2014</u>		<u>013</u>
	HYDF	Citigroup		<u>Citigroup</u>	HYDF	Citigroup	HYDF	Citigroup	HYDF	Citigroup	
# of Issues	1,354	2,043	1,016	2,179	972	2,220	884	2,183	740	1,752	
Average Coupon	5.60%	6.45%	5.67%	6.54%	5.80%	6.73%	5.88%	7.08%	6.90%	7.60%	
Yield Maturity	5.51%	6.02%	6.87%	7.32%	6.34%	6.77%	5.13%	5.73%	6.90%	7.00%	
Average Maturity	5.33	5.71	6.17	5.64	6.29	5.74	5.99	5.04	7.30	5.30	
Modified Duration	4.84	4.88	5.12	4.77	5.36	4.95	5.42	5.12	5.60	4.40	
Average Quality	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-1	B-2	B-2	
Liquidity Fund*	7.5%	0.0%	4.4%	0.0%	4.6%	0.0%	6.6%	0.0%	6.1%	0.0%	

\*Note: Ending Weights

#### Figure 8-11

HIGH YIELD DEBT FUND		
Investment Advisors at June 30	), 2017	
Investment Advisors	Net Asset Value	% of Fund
Loomis Sayles & Co., Inc.	\$381,183,907	18.65%
Stone Harbor Investment Partners	20,153,947	0.99%
Shenkman Capital Management, I	nc. 232,440,304	11.37%
Oaktree Capital Management, L.L.	.C. 7,466,324	0.36%
AllianceBernstein, LP	283,040,061	13.84%
DDJ Capital Management, LLC	160,811,548	7.87%
Columbia Management Investmen	ıt	
Advisers, LLC	369,708,326	18.08%
Nomura Corporation Research		
& Asset Management, Inc.	444,026,436	21.72%
TCG BDC, Inc.	57,625,395	2.82%
Other (1)	87,877,782	4.30%
TOTAL HYDF	\$2,044,334,030	100.00%

(1) Other represents Liquidity Fund, other assets and terminated advisor balances.

#### Figure 8-12

HIGH YIELD DEBT FUND Ten Largest Holdings* at June 30, 2017				
Security Name	Maturity	Market Value	%	
US Treasury Note	5/31/2019	\$11,357,448	0.56%	
Dish Network Corp. 144A	8/15/2026	10,973,125	0.54%	
Indonesia Gvmnt Bond	1/15/2024	9,802,538	0.48%	
New Albertson's Inc.	8/1/2029	9,239,250	0.45%	
Micron Technology. Inc.	11/15/2043	8,510,625	0.42%	
Tenet Healthcare Corp.	11/15/2031	8,263,440	0.41%	
Tenet Healthcare Corp.	6/15/2023	7,962,000	0.39%	
Morgan Stanley	11/16/2018	7,887,460	0.39%	
Transdigm Inc.	7/15/2024	7,749,945	0.38%	
Sprint Capital Corp.	11/15/2028	7,747,643	0.38%	
Top Ten		\$89,493,474	4.40%	

\* A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

## developed market international stock fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Developed Markets International Stock Fund (DMISF) is to (1) achieve a long-term, real rate of return above the U.S. inflation rate; and (2) provide additional measures of diversification to other asset classes within the CRPTF under different economic scenarios.

Date of Inception: November 1, 2007

**Performance Objective:** A net return that matches the benchmark, over rolling three- to five-year periods.

**Total Net Position:** \$6,381,040,191

Management Fees: \$21,770,263

**Benchmark:** Morgan Stanley Capital International Europe, Australasia and Far East Investable Market Index (MSCI EAFE IMI) <sup>(1)</sup> 50% Hedged

Number of Advisors: 10 external

Operating Expenses: \$2,113,677 Expense Ratio: 0.41%

(1) The CRPTF signed a licensing agreement with MSCI to provide benchmark data commencing in fiscal year 2015. For the three, five and ten year performance periods, the CRPTF is using the prior benchmark, S&P/Citigroup Broad Market Index Europe, Pacific and Asia Composite Index 50% Hedged.

## **Description of the Fund**

DMISF assets are allocated across foreign developed equity markets to provide diversification by country, market capitalization and style. Non-U.S. equities are issued by companies domiciled outside of the United States. The DMISF may invest up to 30 percent of assets opportunistically to take advantage of shifts in the investment landscape, or opportunities that offer diversification and/or risk-return benefits within non-U.S. equity markets.

## **Portfolio Characteristics**

At fiscal year-end, the DMISF was invested in the developed markets across Europe, Asia and Australia, with the two largest allocations in Japan (22.0 percent) and the United Kingdom (14.8 percent) (see Figure 9.5). The portfolio's largest country overweight positions relative to the benchmark were Canada (1.9 percent vs. the benchmark's 0.0 percent) and the Netherlands (4.5 percent vs. the benchmark's 3.3 percent). The largest underweights were the United Kingdom (14.8 percent vs. the benchmark's 17.8 percent) and Japan (22.0 percent vs. the benchmark's 17.8 percent) and Japan (22.0 percent vs. the benchmark's 24.4 percent).

## **Market Review**

International developed equities posted strong positive returns for the fiscal year. The local currency return versus the market was 180 basis points higher than the U.S. dollar return. The primary reason for the lower return after conversion to USD was a very weak Yen. The developed foreign markets have benefited from improving macroeconomic trends, continued European Central Bank (ECB) stimulus, and election results in several countries that reflected a rejection of extremist candidates.

Overall, the MSCI EAFE index returned 20.3 percent in U.S. dollar terms. Value stocks significantly outperformed growth stocks by 930 basis points and small capitalization stocks outperformed large capitalization stocks during the year. From a region standpoint, MSCI Europe returned 21.1 percent and MSCI Pacific returned 19.3 percent. Within Europe, Austria returned 65.0 percent and Spain returned 38.4 percent. For the developed Asian markets, Hong Kong lead the way with a return of 24.0 percent. Every sector within the MSCI EAFE generated a positive return for the year.

The best performing sectors were financials (38.1 percent) and information technology (35.9 percent). The worst performing sectors were telecommunication services (2.2 percent) and health care (6.4 percent).

## **Performance Summary**

For the fiscal year ended June 30, 2017, the DMISF generated a return of 24.81 percent, net of all expenses, which outperformed the benchmark return of 22.41 percent by 240 basis points (See Figure 9.3). As of June 30, 2017, the DMISF compounded net annualized total returns, for the trailing three-, five- and ten-year periods were 5.30 percent, 11.86 percent, and 2.80 percent, respectively. The returns outperformed the DMISF's benchmark for the three-, five- and ten-year periods.

The cumulative returns of the DMISF for the three-, five-, and ten-year periods were 16.74 percent, 75.15 percent, and 31.87 percent, respectively.

## **Risk Profile**

Given the DMISF's investment policies and objectives, the Fund is exposed to several forms of risk. These include, but are not limited to, political and economic risk, currency risk, market risk, and individual company risk. A 50 percent currency hedging strategy is employed to reduce the portfolio's currency risk over time. The Fund's volatility over a five year period is only slightly lower than the market at 0.96. On a risk adjusted basis, the Fund has generated excess return of 0.72, which indicates that it is producing a higher risk adjusted return than the benchmark.

#### Figure 9-1



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 9-3

DEVELOPED MARKET Periods ending June 3		ATIONAL	STOC	K FUND
	1 YR	3 YRS	5YRS	010YRS
Compounded, Annual	Fotal Retur	n (%)		
DMISF	24.81	5.30	11.86	2.80*
MSCI EAFE				
IMI 50% Hedged	22.41	4.85	11.14	2.25
Cumulative Total Retur DMISF MSCI EAFE IMI 50% Hedged	<b>n (%)</b> 24.81 22.41	16.74 15.28	75.15 69.54	

\*Represents historical returns at the portfolio composite level.

## Figure 9-2

**DEVELOPED MARKETS INTERNATIONAL STOCK FUND** Risk Profile at June 30, 2017 <sup>(1)</sup>

ſ	Relative Volatility	0.96
	Standard Deviation R2	9.99 0.98
	Beta	0.98
	Alpha	0.72

(1) Based upon returns over the last five years.





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#### Figure 9-5

#### **DEVELOPED MARKETS INTERNATIONAL STOCK FUND** Diversification by Benchmark Country at June 30, 2017<sup>(1)</sup>

	DMISF % of Net Assets 6/30/17	Benchmark % of Net Assets 6/30/17	Variance
Japan	22.0	24.4	-2.4
United Kingdom	14.8	17.8	-3.0
Korea	0.1	0.0	0.1
Hong Kong	3.1	3.3	-0.2
United States	0.2	0.0	0.2
France	9.7	9.6	0.1
Germany	9.3	9.1	0.2
Switzerland	8.6	8.0	0.6
Australia	5.4	6.9	-1.6
China	0.3	0.0	0.3
Netherlands	4.5	3.3	1.1
Italy	2.5	2.5	0.0
Spain	3.0	3.3	-0.3
Sweden	3.0	3.3	-0.3
Singapore	1.5	1.4	0.1
Canada	1.9	0.0	1.9
Turkey	0.1	0.0	0.1
Other	10.0	7.1	2.9
Japan United Kingdom Korea Hong Kong United States France Germany Switzerland Australia China Netherlands Italy Spain Sweden Singapore Canada Turkey <u>Other</u> <b>Total</b>	100.0	100.0	

Figure 9-6

#### **DEVELOPED MARKETS INTERNATIONAL STOCK FUND** Investment Advisors at June 30, 2017

Investment Advisor	Net Asset Value	% of Fund
Index	\$2,243,712,419	35.16%
State Street Global Advisors	2,243,712,419	35.16%
Core	1,698,253,096	26.61%
AQR Capital Management	779,558,778	12.21%
Acadian Asset Management	774,528,461	12.14%
Progress	144,165,857	2.26%
Active-Growth	914,303,822	14.33%
MFS Institutional Advisors, Inc.	914,303,822	14.33%
Active-Value	511,113,008	8.01%
Grantham, Mayo, Van Otterloo	511,113,008	8.01%
Small Cap	999,897,967	15.67%
Schroder Investment Mgmt.	360,217,280	5.64%
DFA	316,886,481	4.97%
William Blair & Company	322,794,206	5.06%
Other (1)	13,759,879	0.22%
TOTAL DMISF	\$6,381,040,191	100.00%
	\$6,001,040,101	100.00

(1) Other represents Liquidity Fund, other assets and terminated advisor balances, as well as, currency overlay balances for the DMISF (managed by First Quadrant).

(1) Based upon currency exposures of the underlying securities.

Figure 9-7

<b>DEVELOPED MARKETS INTERNA</b> Ten Largest Holdings* at June 30		FUND	
Security Name	Country	Market Value	%
Nestle SA REG	Switzerland	\$106,804,410	1.68%
Roche Holding AG Genusschein	Switzerland	70,831,897	1.12%
HSBC Holdings PLC	United Kingdom	60,715,152	0.95%
Bayer AG REG	Germany	56,241,204	0.88%
ING GROEP NV	Netherlands	55,237,133	0.87%
Novartis AG REG	Switzerland	53,980,181	0.85%
WPP PLC	United Kingdom	42,269,383	0.67%
SAP SE	Germany	41,733,731	0.66%
Reckitt Benckiser Group PLC	United Kingdom	38,499,656	0.61%
AIA Group Ltd.	Hong Kong	37,963,666	0.60%
TOP TEN		\$564,276,413	8.89%

\* A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

## emerging markets international stock fund

### Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Emerging Markets International Stock Fund (EMISF) is to (1) achieve a long-term, real rate of return above the U.S. inflation rate; and (2) provide additional measures of diversification within the CRPTF under different economic scenarios.

Date of Inception: November 1, 2007Total Net Position: \$3,015,322,058Performance Objective: A net return that matches<br/>the benchmark, over rolling three- to five-year periods.Management Fees: \$13,891,017Benchmark: Morgan Stanley Capital International Emerging<br/>Markets Investable Market Index (MSCI EM IMI)(1)Operating Expenses: \$3,301,344Number of Advisors: 3 externalExpense Ratio: 0.63%

(1) The CRPTF signed a licensing agreement with MSCI to provide benchmark data commencing in fiscal year 2015. For the three, five and ten year performance periods, the CRPTF is using the prior benchmark, S&P/Citigroup Broad Market Index Europe, Pacific and Asia Composite Index 50% Hedged.

## **Description of the Fund**

EMISF assets are allocated across foreign emerging equity markets and are diversified by market, capitalization and style. Emerging market equities are defined as common stocks issued by companies domiciled in developing countries, including the 23 companies in the MSCI EM IMI.

## **Portfolio Characteristics**

At fiscal year-end, the EMISF's portfolio holdings were diversified over a number of emerging market countries (see Figure 10.6). Notable overweight positions versus the benchmark include Hong Kong (8.2 percent versus the benchmark's 0.0 percent) and Turkey (3.5 percent versus the benchmark's 1.2 percent). Underweight positions include China (12.2 percent versus the benchmark's 26.9 percent), South Africa (2.9 percent versus the benchmark's 6.4 percent), and Malaysia (0.5 percent versus the benchmark's 2.5 percent) (See Figure 10.6).

## **Market Review**

Emerging market equities initially lost value in the wake of the U.S.election, primarily due to uncertainty over U.S. foreign and trade policy and the prospect of tighter U.S.dollar liquidity. However, a steady recovery in global growth, receding trade policy concerns, and U.S. dollar weakness supported a strong rebound in emerging market equities. The MSCI Emerging Market IMI index returned 22.8 percent for the fiscal year.

The emerging Asian region returned 26.0 percent outperforming emerging Europe, which had a return of 13.7 percent. Taiwan lead the emerging Asian markets with a return of 31.9 percent, followed by China, which returned 30.1 percent. South Korea also had a strong return of 28.8 percent. Within the emerging Europe region, Greece lead with a return of 54.3 percent, followed by Poland, which returned 47.3 percent.

The best performing sectors within the emerging market was information technology (45.3 percent) and materials (27.3 percent). The worst performing sectors were health care (0.50 percent) and consumer staples (2.6 percent).

## **Performance Summary**

For the fiscal year ended June 30, 2017, the EMISF generated a return of 23.00 percent, net of all expenses, which outperformed the benchmark return of 22.82 percent by 18 basis points (See Figure 10.4). As of June 30, 2017, the EMISF compounded net annualized total returns, for the trailing three-, five- and ten-year periods were 2.06 percent, 4.14 percent, and 1.57 percent, respectively. The returns outperformed the EMISF's benchmark for the three- and five-year periods.

The cumulative returns of the EMISF for the three-, five-, and ten-year periods were 6.29 percent, 22.48 percent, and 16.85 percent, respectively.

## **Risk Profile**

Given the EMISF's investment policies and objectives, the Fund is exposed to several forms of risk. These include, but are not limited to, political and economic risk, currency risk, market risk, and individual company risk. Based on returns over the last five years, the Fund's risk profile equaled that of the benchmark as evidenced by a relative volatility of 1.00. The EMISF's annualized alpha over the five-year period was 0.05, indicating that the fund slightly outperformed the benchmark for the five years on a risk adjusted basis (see Figure 10.2).

#### Figure 10-1



TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 10-3

## EMERGING MARKETS INTERNATIONAL STOCK FUND Fiscal Year 2017 Economic Sector vs. Index (%)

	EM	MSCI	Vari-
	ISF	Index	ance
Energy	4.8	6.0	-1.2
Materials	6.0	7.7	-1.7
Industrials	3.5	7.0	-3.5
Consumer Discretionary	9.8	11.4	-1.6
Consumer Staples	7.9	6.8	1.1
Health Care	1.3	3.2	-1.9
Financials	26.5	21.8	4.7
Information Technology	27.2	25.1	2.1
Telecommunication Servic	es 6.9	4.9	2.0
Utilities	1.3	2.8	-1.5
Commingled Fund	0.0	0.0	0.0
Preferred Stock	0.0	0.0	0.0
Private Placement	0.0	0.0	0.0
Other	3.2	3.3	-0.1
Liquidity Fund	<u>1.6</u>	0.0	1.6
	100.0	100.0	

#### Figure 10-2

#### **EMERGING MARKETS INTERNATIONAL STOCK FUND** Risk Profile at June 30, 2017 <sup>(1)</sup>

1.00 13.97 0.98
0.00
0.90
0.99
0.05

(1) Based upon returns over the last five years.

#### Figure 10-4

#### EMERGING MARKETS INTERNATIONAL STOCK FUND Periods ending June 30, 2017

	1 YR	3 YRS	5 YRS	10 YRS		
Compounded, Annual Total Return (%)						
EMISF	23.00	2.06	4.14	1.57*		
MSCI EMERGING						
MARKETS IMI INDEX	22.82	1.03	4.09	2.09		
Cumulative Total Return	(%)					
EMISF	23.00	6.29	22.48	16.85*		
MSCI EMERGING						
MARKETS IMI INDEX	22.82	3.12	22.19	23.03		

\*Represents historical returns at the portfolio composite level.

#### Figure 10-5



#### Figure 10-6

### **EMERGING MARKETS INTERNATIONAL STOCK FUND** Diversification by Benchmark Country at June 30, 2017 <sup>(1)</sup>

	EMISF	Benchmark
	Percent of	Percent of
	Net Assets	Net Assets
	6/30/17	6/30/17
Brazil	8.4%	6.3%
Korea	16.9	15.7
Hong Kong	8.2	0.0
Russia	4.5	2.8
China	12.2	26.9
Taiwan	13.1	13.2
United States	2.3	0.0
Mexico	3.1	3.6
Thailand	3.8	2.4
South Africa	2.9	6.4
Turkey	3.5	1.2
Indonesia	2.0	2.5
Malaysia	0.5	2.5
India	9.6	9.5
Philippines	1.4	1.2
United Kingdom	0.6	0.0
Other Countries	7.0	5.8
Total	100.0%	100.0%

(1) Includes Liquidity Fund and cash equivalents at each country level.

#### Figure 10-8

Security Name	Country	Market Value	%
Taiwan Semiconductor			
Manufacture	Taiwan	\$144,116,447	4.80%
Samsung			
Electronics Co LTD	Republic of Korea	a 118,333,698	3.94%
Tencent Holdings LTD	China	99,104,743	3.30%
China Mobile LTD	Hong Kong	87,839,679	2.92%
Alibaba Group Holding LTD	Cayman Islands	78,380,838	2.61%
HDFC Bank LTD	India	67,396,532	2.24%
AIA Group LTD	Hong Kong	60,241,795	2.01%
China Construction			
Bank Corp	China	59,665,286	1.99%
Samsung Electronic Co			
LTD GDR	Republic of Korea	a 57,735,096	1.92%
Hon Hai Precision			
Industry Co	Taiwan	45,240,693	1.51%
Top Ten		\$818,054,807	27.24%

 A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

#### Figure 10-7

#### EMERGING MARKETS INTERNATIONAL STOCK FUND Investment Advisors at June 30, 2017

Investment Advisor	Net Asset Value	% of Fund
Grantham, Mayo, Van Otterloo	\$798,499,456	26.48%
Aberdeen Asset Management	943,572,024	31.29%
Schroders Investment Mgt	1,263,640,304	41.91%
Other (1)	9,610,274	0.32%
TOTAL EMISF	\$3,015,322,058	100.00%

(1) Other represents Liquidity Fund, other assets and terminated advisor balances.



#### Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Real Estate Fund (REF) is to 1) provide diversification to the overall CRPTF investment program, 2) preserve investment capital, 3) generate attractive risk-adjusted rates of return, 4) provide consistent current income and 5) act as a hedge against inflation under different economic scenarios.

Date of Inception: July 1, 1982	Total Net Position: \$2,248,480,820
<b>Performance Objective:</b> A net return that matches the benchmark over rolling	Management Fees (1): \$9,398,239
three-to-five year periods.	Capitalized and Netted Fees: \$14,315,279
<b>Benchmark:</b> National Council of Real Estate Investment Fiduciaries - National Properties Index	Operating Expenses: \$1,007,389
("NCREIF-NPI")	Expense Ratio: 0.47%
Number of Investment Partnerships: 42	

(1) See note 1 to the Financial Statements for a discussion of similar fees incurred at the investment level.

### **Description of the Fund**

The REF is the vehicle by which the CRPTF makes investments in the real estate asset class. The REF may invest in real estate properties, real estate related equity investments, or real estate related debt and mortgages. The REF consists of a number of investment strategies and vehicles including externally managed commingled funds, open-end funds, separate accounts, publically traded real estate securities, limited partnerships, and other indirect ownership structures managed by professional real estate investment managers.

## **Portfolio Characteristics**

As of June 30, 2017, the portfolio was approximately 25.9 percent invested in close-end fund vehicles, 60.7 percent in open-end funds, and 13.3 percent held in two separate accounts, in which the REF holds 100 percent ownership interest in properties within the portfolio. These separate account vehicles are managed by external managers and employ a core investment strategy. The majority of investments in the REF are comprised of commingled private equity funds vehicles in which the CRPTF holds limited partnership interests. These commingled funds employ three main real estate investment sub-asset classes: core, value-add, and opportunistic strategies. In accordance with the Investment Policy Statement, leverage levels in the REF shall not exceed 60 percent, and investments are diversified across geography and property types, with approximately 94.7 percent located in the markets within the United States and 5.3 percent to real estate markets abroad.

As of June 30, 2017, the REF allocation to sub-strategies was 60.4 percent to core, 22.1 percent to value-Aad and 13.7 percent to opportunistic. The portfolio is well diversified geographically. While the National Properties Index (NPI) remains the tracked real estate investments benchmark, the CRPTF at any given time may be tactically under- or over-weight in specific property types, regions, vintage years or other characteristics of the index.

## **Market Review**

The U.S. economy continues to grow at a steady pace. Total employment is up 1.3 percent year-overyear and property values across all sectors have increased. Cap rate spreads versus U.S. Treasuries are at or slightly higher than long term averages and capital flows into real estate are slowing. As the current economic cycle matures, future returns in real estate are expected to moderate.

Market fundamentals in most real estate sectors were strong during the fiscal year, while reduced transaction volumes indicate that capital market activity may decrease in all but a few key markets going forward. Fundraising by private real estate managers fell by 24 percent in the last year but there is a significant amount of capital that has not been deployed.

Industrial properties were the most favored real estate sector, driven primarily by fulfillment and warehousing demand. Investor appetite for multi-family properties has subsided, except in select urban subsectors. After a multi-year run as a top real estate sector, office now is near the bottom and the retail sector continues to suffer, as large department and apparel brick and mortar stores close and mid-priced retailers face competition from e-commerce and discount retailers. Finally, commercial real estate transaction activity continues to decline.

## **Performance Summary**

For fiscal year 2017 the Fund generated a total fiscal year to date return of 7.4 percent net of all expenses, outperforming its benchmark NCREIF-NPI, which posted a gross return of 7.3 percent. The one-year return reflects an ongoing positive trend in the REF portfolio, which can be attributed to recent accretive commitments to open-ended core and core-plus funds, as well as a number of new value-add strategies in the Fund.

For the trailing three-five-and ten-year periods, the REF's compounded annual returns, net of all expenses, were 10.6 percent, 10.5 percent, and 2.2 percent, respectively (See Figure 11.8). Longer-term portfolio returns continue to lag the benchmark, with five-and ten-year returns underperforming by 16 basis points and 454 basis points, respectively. However, since the Great Recession, REF's net returns have outperformed the gross benchmark in five of the past seven calendar years. The Fund has continued to invest through the recent real estate cycle, with new commitments in value-add and opportunistic strategies during the fiscal year, which has helped to maintain diversification in the fund.

## **Risk Profile**

The REF takes both a total portfolio and asset class specific approach to risk management. Risk is managed at the portfolio level through diversification and strategic asset allocation and the implementation of strategy. Risks attendant to alternative investments, such as management, operations, local/regional property markets, and liquidity risk, are managed at the asset class level with additional risk management focused on financing, geography, and property type risks specific to a fund manager's portfolio investments.

The REF has lower volatility than NPI, as expected (See Figure 11.2) largely due to allocations to core funds, which generally have lower leverage than value-add and opportunistic strategies and have reduced risk. Also, the REF's core sub-portfolio, which most closely tracks NPI, has a leveraged amount of approximately 35.1 percent. NPI is comprised of a portfolio of 6,000+ properties, many of which are levered, but for purposes of constructing the NPI benchmark, are de-levered for the index. The REF volatility is typical and not excessive relative to a benchmark comprised of unlevered core properties.



TERF - Teachers' Retirement Fund SERF - State Employees' Retirement Fund CMERF - Connecticut Municipal Employees' Retirement Fund

#### Figure 11-3

#### **REAL ESTATE FUND** Investments Analysis (1)

At	No. of REF Investments	REF Book Value	REF Market Value
6/30/2017	42 \$	\$1,917,730,506	\$2,156,493,225
6/30/2016	42	1,798,740,547	2,065,132,526
6/30/2015	38	1,646,736,485	1,732,052,523
6/30/2014	33	1,398,172,794	1,429,069,066
6/30/2013	30	1,366,354,620	1,227,275,238
6/30/2012	36	1,376,611,668	1,180,717,977
6/30/2011	36	1,310,614,926	1,057,213,580
6/30/2010	35	1,097,439,251	715,310,010
6/30/2009	34	996,474,812	745,643,849
6/30/2008	31	920,921,272	968,885,960

(1) Number of investments in annuities, partnerships, corporations, and trusts, excluding the Liquidity Fund.

#### Figure 11-5



(1) Liquidity Fund and other monetary assets.

## Figure 11-2

<b>REAL ESTATE FUND</b> Risk Profile at June 30, 2017 <sup>(1)</sup>					
	Relative Volatility	1.00			
	Standard Deviation	4.32			
	R2	0.21			
	Beta	-0.45			
	Alpha -0.16				

(1) Based upon returns over the last five years.

#### Figure 11-4



(1) Liquidity Fund and Other Net Assets

#### Figure 11-6

#### **REAL ESTATE FUND** Distribution by Geographic Location at June 30, 2017 Based on Investments in Securities, at Value

	REF	NCREIF	Variance	
East	27.4%	33.2%	-5.8%	
Midwest	9.6%	8.6%	1.0%	
South	25.4%	19.8%	5.6%	
West	31.7%	38.4%	-6.7%	
International	5.3%	0.0%	5.3%	
Other Net Asset	<u>0.6%</u>	<u>0.0%</u>	0.6%	
	100.0%	100.0%		

COMBINED INVESTMENT FUNDS 2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT

#### Figure 11-7

#### REAL ESTATE FUND

Diversification by Property Type at June 30, 2017 Based on Investments in Securities, at Value

	REF	NCREIF	Variance
Apartment	24.8%	24.3%	0.5%
Industrial	20.0%	14.2%	5.7%
Office	22.6%	36.8%	-14.2%
Retail	20.6%	23.8%	-3.2%
Hotel	4.0%	0.9%	3.1%
Other Net Assets(1)	<u>8.0%</u>	<u>0.0%</u>	8.0%
	100.0%	100.0%	

(1) Includes senior living, real estate/mixed use and land.

#### Figure 11-9



Figure 11-8

#### **REAL ESTATE FUND** Periods ending June 30, 2017

	1 YR	3 YRS	5 YRS	10 YRS	
Compounded, Annual	Total Retur	n (%)			
REF	7.38	10.58	10.53	2.18	
NCREIF Property	7.27	10.58	10.69	6.72	
Cumulative Total Retu	rn (%)				
REF	7.38	35.22	64.99	24.01	
NCREIF Property	7.27	35.23	66.16	91.58	





#### Figure 11-11

## **REAL ESTATE FUND**

## Funds at June 30, 2017

	Net Asset	% of
Fund	Value	Fund
AEW Partners III	\$270,172	0.01%
American Realty Advisors	90,401,538	4.02%
Apollo Real Estate	205,358	0.01%
Blackstone Real Estate Partner Europe III		1.52%
Blackstone Real Estate Spec Sit II LP	2,180,550	0.10%
Blackstone Real Estate VI LP	20.576.572	0.91%
Blackstone Real Estate Partners VIII LP	47,335,962	2.10%
Blackstone Real Estate Partners EURO V	, ,	0.19%
Canyon Johnson Urban Fund II	150,125	0.01%
Canyon Johnson Urban Fund II	447,568	0.02%
Capri Select Income II LLC	60.778	0.00%
Clarion Lion Industrial Trust	116,734,432	5.19%
Colony Realty Partners II LP	9,143,800	0.41%
Cornerstone Patriot Fund LP	293,039,605	13.03%
Covenant Apartment Fund V LP	339,907	0.02%
Covenant Apartment Fund VI	187,454	0.02 %
Covenant Apartment Fund VIII	20,879,913	0.01%
Crow Hidgs Realty Partners VII LP	56,054,600	2.49%
Cypress Acquisition Prtnrs Retail FD LP	50,654,012	2.45%
Gerding Edlen Green Cities II	31,154,380	1.39%
Gerding REF III	32,708,305	1.45%
Hart Realty Advisors	197,380,637	8.78%
IL & FS India Realty Fund II LLC	25,244,922	1.12%
JP Morgan Strategic Property	85,542,816	3.80%
Landmark RE Partners VII LP	19,942,161	0.89%
Lone Star Real Estate Part II LP	11,907,393	0.53%
Macfarlane Urban Real Estate Fund II LP	2,654,118	0.33%
Prime Property Fund LLC	263,749,584	11.73%
PRISA	200,459,653	8.92%
Rockwood Capital Fund V	151,000	0.01%
Rockwood Capital VI Limited Partnership	323,897	0.01%
Rockwood Capital VI Limited Partnership		0.90%
Starwood Opportunity Fund VII	15,357,828	0.68%
Starwood Opportunity Fund VIII	10,340,094	0.46%
Starwood Opportunity Fund IX	33,857,966	1.51%
Starwood Opportunity Fund X	71,224,496	3.17%
UBS-Trumbull Property Income	59,078,880	2.63%
UBS-Trumbull Property G&I (TPG)	67,163,079	2.00%
UBS-Trumbull Property Fund LP	86.612.748	3.85%
Urban Strategy America Fund LP	28,574,190	1.27%
USAA Eagle RE Fund	136,225,933	6.06%
WLR IV PPIP Co Invest LP	9,434,720	0.00%
Other (1)	91,987,594	4.09%
	\$2,248,480,820	100.00%

(1) Other represents moneys earmarked for distribution to participants, reinvestment and expenses as well as terminated advisor balances.

#### Figure 11-13

REAL ESTAT	EFUND		
New Investme	nts Made in Fisca	al Year 2017 (in Ex	xcess of \$3 Million)

Partnership Name	Commitment Amount	Investment Type
Blackstone Real Estate Partners Europe V	\$50 million	Opportunistic
Gerding Edlen Green Cities II, LP	50 million	Value-Add
Starwood Opportunity Fund XI Global, LP	<u>50 million</u>	Opportunistic
Total	\$150 million	

#### Figure 11-12

#### **REAL ESTATE FUND**

Ten Largest Holdings\* at June 30, 2017

		Market	
Property Name	Туре	Value	%
Cornerstone Patriot Fund LP	Core	\$293,039,605	13.07%
Prime Property Fund LLC	Core	263,749,584	11.76%
PRISA	Core	200,459,653	8.94%
Hart Realty Advisors	Core	197,380,637	8.80%
USAA Eagle RE Fund	Core	136,225,933	6.07%
Clarion Lion Industrial Trust	Value Addeo	116,734,432	5.21%
American Realty Advisors	Core	90,401,538	4.03%
UBS-Trumbull			
Property Fund LP	Core	86,612,748	3.86%
JP Morgan Strategic Property	Core	85,542,816	3.81%
Starwood Opportunity Fund X	Opportunistic	71,224,496	3.18%
Top Ten	\$1	,541,371,442	68.73%

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

# private investment fund

## Fund Facts at June 30, 2017

**Investment Strategy/Goals:** The purpose of the Private Investment Fund (PIF) is to: 1) earn returns in excess of the public equity markets, 2) generate attractive risk-adjusted rates of return, and 3) provide diversification for the CRPTF under different economic environments.

Date of Inception: July 1, 1987

**Performance Objective:** A net return that outperforms the Standard & Poor Index (S&P 500) over rolling ten year periods.

Benchmark: S&P 500

Number of Partnerships: 61

Total Net Position: \$2,990,442,381 Management Fees<sup>(1)</sup>: \$2,656,009 Capitalized and Netted Fees: \$27,118,524 Operating Expenses: \$2,159,547 Expense Ratio: 0.17%

<sup>(1)</sup>See Note 1 to the Financial Statements for a discussion of similar fees incurred at the investment level. \*Expense ratio is calculated using the management fee and operating expense totals.

## **Description of the Fund**

The PIF invests in externally managed funds that are executing strategies divided into two sub-asset classes: venture capital and corporate finance. Venture capital invests equity into young or development stage companies. Corporate finance encompasses several underlying strategies, including leveraged buyout, mezzanine debt, and special situations.

## **Portfolio Characteristics**

The PIF invests in private equity funds either directly as a Limited Partner to a specific fund or indirectly as a Limited Partner to a fund of funds vehicle. Fund-of-funds invest in multiple private equity partnerships that invest in underlying companies and are typically used to execute a strategic objective within the PIF. Private equity investments include two general areas of strategic focus.

## **Corporate Finance**

- Buyout focused investments are defined as controlling or majority investments in private equity or equity-like securities of more established companies on the basis of the company's asset value and/or cash flow.
- Mezzanine debt focused investments are defined as investments in securities located between equity and senior debt in the company's capital structure. Mezzanine debt investments offer higher current income than senior debt securities and often offer equity participation features that may take the form of warrants or contingent equity interests.
- Special situation focused investments are defined as investments in a variety of securities (debt, preferred equity and/or common equity) in portfolio companies at a variety of stages of development.
- International private equity focused investments are defined as investments in private equity or equity-like securities in companies located outside the continental United States. International private equity investments provide the benefit of geographic and economic diversification and may include exposure to higher growth economies in select markets.

## Venture Capital

 Venture capital focused investments can be narrowly defined as investments in private equity or equity-like securities of developing companies in need of growth or expansion capital. These investments can range from early-stage financing, where a company has little more than a marketable idea, to expansion financing, where a company has a marketable product but requires additional capital to bring the product to market.

The PIF had 61 active funds and aggregate capital commitments totaling \$8.6 billion as of June 30, 2017. Approximately 84 percent, or \$7.2 billion, had been "drawn down" for investment purposes as of that date while the balance of approximately \$1.4 billion, or 16 percent, was committed but not drawn (See Figure 13-6).

## **Market Review**

Despite potential headwinds from uncertainties surrounding economic trends, major elections in the U.S. and Europe, and growing geopolitical risks, global market conditions continued to be favorable and accommodative to the private equity industry. A robust fundraising market combined with access to low cost debt continued to provide managers with ample capital for investment. However, high valuations have presented challenges to private equity managers seeking to deploy capital into new investments.

Fundraising for global private equity totaled \$363.3 billion during the fiscal year representing a 20 percent increase from the prior year. Notably, fiscal year 2017 saw the largest ever European and Asian buyout funds raised, highlighting the trend of increasing investor interest in proven managers investing globally. Buyout funds raised \$225.9 billion in the fiscal year, representing 62 percent of total capital raised, while venture capital funds raised \$73.5 billion, or just over 20 percent of all capital raised globally.

Global buyout and venture capital investment activity in the fiscal year was down from the prior year as managers exhibited discipline in a high valuation cycle while facing continued competition from strategic buyer and public market exit alternatives. More than \$335 billion was invested in close to 4,200 private equity-backed buyout transactions, with aggregate deal value and volume down 12 percent and 1 percent, respectively, from the prior year. The U.S. continued to hold a dominant share of global buyout activity, representing 56 percent of total deal value. Private equity-backed buyout exits generated \$309 billion of value during the year, a decline of 16 percent from the previous year.

Venture capital managers invested \$136 billion globally during the fiscal year, representing a decline of 14 percent from the prior year. The number of investments also declined 14 percent year over year with more than 10,600 venture investments made globally. Venture capital activity in the U.S. represented 42 percent of global venture transactions, down from 40 percent in the prior year. Greater China represented the second most active market with 21 percent of all venture deals closed during the year, outpacing Europe for the second consecutive year.

## **Performance Summary**

For the fiscal year ended June 30, 2017, PIF generated a net compounded annual rate of return of 10.97 percent (See Figure 13-5). This return was measured using a time weighted return calculation methodology.

While short-term returns are reviewed, longer term (e.g., 10 years) returns are more meaningful in evaluating private equity portfolio performance. Long-term horizons better reflect the illiquid nature of PIF's holdings and the time it takes for investments to realize their potential. PIF's performance is benchmarked against the S&P 500. Over the last 10 years through June 30, 2017, PIF's performance has exceeded that of the S&P 500 by 233 basis points on a compounded annual basis (See Figure 13-5).

The institutional standard for measuring private equity performance is the Internal Rate of Return (IRR). IRR is a dollar-weighted annualized return that considers both cash flows and time. Since its inception in 1987, PIF has generated a 9.2 percent IRR. A tool commonly used by institutional investors to benchmark IRR performance is the public market equivalent (PME). From inception through June 30, 2017, PIF has generated 213 basis points of annual performance in excess of its S&P 500 PME.

During Fiscal Year 2017, ten new partnership commitments were made to eight managers (See Figure 13-10).

PIF's risk profile is complex given the valuation judgments and liquidity constraints placed on it consistent with an alternative investment strategy. Over the last five years, PIF's volatility relative to its benchmark has been 0.53 with a correlation of 0.00. Over the last five years, the Fund has returned an annual alpha, or return relative to that predicted by its benchmark, of -2.78 (See Figure 13.2).
# Figure 13-1 PRIVATE INVESTMENT FUND Ownership Analysis at June 30, 2017 (\$ in millions) CMERF \$256.6 SERF \$1,196.6 TERF \$1,448.9 Other \$88.3

TERF - Teachers' Retirement Fund

SERF - State Employees' Retirement Fund

CMERF - Connecticut Municipal Employees' Retirement Fund Figure 13-3

### PRIVATE INVESTMENT FUND Distribution by Industry at June 30, 2017 Based on Investments in Securities, at Value Media Materials 2.4% Energy Other Net Assets 2.0% 0.2% 1.5% Financial Technology Services 15.9% 6.9% Healthcare 10.5% Telecommunications 0.2% Diversified 30.9% Consumer 19.8% Industrial 9.7%

(1) Data for Private Equity Funds held in PIF; excludes Liquidity Fund and other PIF Assets.

### Figure 13-5

PRIVATE INVESTM Periods ending June				
	1 YR	3 YRS	5 YRS 1	I0 YRS
Compounded, Annu		• • •	44.05	0.54
PIF S & P 500	10.97 17.90	11.27 9.61		
Cumulative Total Re	turn (%)			
PIF	10.97	37.77	75.09	147.98
S & P 500	17.90	31.70	97.92	100.08
Calculated with time we	piahted return	methodo	loav	

Figure	13-2

# PRIVATE INVESTMENT FUNDRisk Profile at June 30, 2017 (1)Relative Volatility0.53Standard Deviation4.99R20.00Beta0.00Alpha-2.78

(1) Based upon quarterly returns over the last five years.

### Figure 13-4

<b>PRIVATE INVESTMENT FUND</b> Distribution by Geographic Location at June 30, 2017 Based on Investments in Securities, at Value					
Region	%				
Northeast (Excludes Connecticut)	17.1%				
International	8.2%				
West Coast	20.3%				
Other Assets & Liabilities	0.2%				
Southeast	16.7%				
Mid-Atlantic	3.9%				
MidWest	11.2%				
Southwest	11.1%				
Connecticut	10.5%				
Northwest	0.8%				
TOTAL	100.00%				

 Data for Private Equity Funds held in PIF; excludes Liquidity Fund and other PIF Assets.

Figure 13-6



Calculated with time weighted return methodology.

STATE OF CONNECTICUT, OFFICE OF THE TREASURER, DENISE L. NAPPIER



Figure 13-8



Figure 13-9

		Market	
Partnership Name	Partnership Type	Value	%
FAIRVIEW CONSTITUTION III LP	Fund of Funds	\$315,539,659	10.62%
FAIRVIEW CONSTITUTION IV LP	Fund of Funds	139,545,704	4.70%
STEPSTONE PIONEER CAPITAL II LP	Fund of Funds	132,208,263	4.45%
FS EQUITY PARTNERS VI	Buyout	124,505,984	4.19%
FAIRVIEW CONSTITUTION II LP	Fund of Funds	90,387,736	3.04%
APOLLO INVESTMENT FUND VIII LP	Special Situations	86,564,648	2.92%
NUTMEG OPPORTUNITIES FUND LP	Fund of Funds	83,953,234	2.83%
YUCAIPA AMERICAN ALLIANCE FUND II	Buyout	81,384,745	2.74%
PEGASUS PARTNERS V LP	Special Situations	81,157,517	2.73%
VISTA EQUITY PARTNERS FUND IV	Buyout	73,479,303	2.47%
Top Ten	· <b>,</b> · · ·	\$1,208,726,793	40.69

A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

Figure 13-10

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Partnership Name	Commitment Amount	Investment Type	Investment Date
JFL Equity Investors IV, L.P.	\$75 million	Buyout	11/15/2016
Vista Equity Partners Fund VI, L.P.	100 million	Buyout	11/16/2016
Leeds Equity Partners VI, L.P.	50 million	Buyout	11/25/2016
Constitution Fund V, LLC - Series A	130 million	Fund-of-Funds	12/30/2016
Constitution Fund V, LLC - Series B	20 million	Fund-of-Funds	12/30/2016
Ironwood Mezzanine Fund IV, L.P.	50 million	Special Situations	5/19/2017
Apollo Investment Fund IX, L.P.	125 million	Buyout	5/31/2017
Nutmeg Opportunities Fund II, LLC	150 million	Fund-of-Funds	6/9/2017
Altaris Constellation Partners IV, L.P.	10 million	Buyout	6/30/2017
Altaris Health Partners IV, L.P.	40 million	Buyout	6/30/2017
Total:	\$750 million	-	

### Figure 13-11

# PRIVATE INVESTMENT FUND

	Net Asset	% of	GarMark Partners II LP	9,581,994	0.32
nvestment Advisor	Value	Fund		46,579,869	1.56
Buyout	\$1,090,300,470	36.46%	Gilbert Global Equity Partners	44,851,779	1.50
AIG Altaris Health Partners II	14,208,866	0.47%	Pinebridge Global Emerging Markets Fund		0.06
AIG Altaris Health Partners III	29,429,972	0.98%	Fund of Funds	1,010,862,137	33.80
Boston Ventures VII	43,313,369	1.45%	Connecticut Horizon Legacy	5,860,236	0.20
Charterhouse Equity Partners IV	4,037,714	0.13%	CT Growth Capital	7,830,409	0.26
Court Square Capital Partners II	27,058,106	0.90%	CS/CT Cleantech Opp Fund	8,123,759	0.27
Court Square Capital Partners III LP	16,688,090	0.56%	CT Emerging M-2 Pvt Equity	73,164,810	2.45
Ethos Private Equity Fund V	5,324,415	0.18%	Fairview Constitution II LP	90,387,736	3.02
FS Equity Partners V	6,508,219	0.22%	Fairview Constitution III	315,539,659	10.55
FS Equity Partners VI	124,505,984	4.16%	Fairview Constitution IV LP	139,545,704	4.67
GENNX360 Capital Partners II	18,646,010	0.62%	JP Morgan Nutmeg I	83,953,234	2.81
Hicks, Muse Tate & Furst Equity Fund III	3,551,237	0.12%	Landmark Equity Partners XIV LP	38,412,767	1.28
ICV Partners II LP	8,962,675	0.30%	Landmark Equity Partners XV LP	37,475,763	1.25
JFL Equity Investors III, LP	50,122,324	1.68%	Stepstone Pioneer Capital I LP	19,007,759	0.64
JFL IV	26,233,339	0.88%	Stepstone Pioneer Capital II LP	132,208,263	4.42
KKR 2006 Fund	64,659,031	2.16%	Constitution Fund V	22,556,900	0.75
KKR Millennium Fund	9,244,888	0.31%	The Constitution Liquidating Fund	36,795,138	1.23
Leeds Equity Partners V LP	32,509,095	1.09%	Special Situations	452,045,315	15.12
Leeds VI	9,898,141	0.33%	Apollo Investment Fund VIII LP	86,564,648	2.90
Nogales Investors Fund II	1,685,506	0.06%	Castlelake II LP	45,509,284	1.52
RFE Investment Partners VII	44,319,391	1.48%	Clearlake Capital Partners III LP	64,676,117	2.16
RFE Investments Partners VIII	22,912,390	0.77%	Clearlake IV	48,347,212	1.62
TA XI, L.P.	66,429,959	2.22%	Levine Leichtman Capital Partners	20,220,581	0.68
Thomas H. Lee Equity Fund VI	65,215,336	2.18%	Levine Leichtman Capital Partners V LP	64,570,094	2.16
Vista Equity Partners Fund III	22,508,517	0.75%	Pegasus Partners IV	29,311,713	0.98
Vista Equity Partners Fund IV	73,479,303	2.46%	Pegasus Partners V	81,157,517	2.71
Vista Equity Partners Fund VI	46,933,363	1.57%	WLR Recovery Fund IV	11,688,149	0.39
Wellspring Capital Partners V	36,761,719	1.23%	Other <sup>(1)</sup>	333,947,837	11.17
Welsh Carson Anderson & Stowe X LP	18,865,693	0.63%	SUBTOTAL PIF	\$2,990,442,381	100.00
Welsh Carson Anderson & Stowe XI	68,992,263	2.31%			
WCAS XII, LP	31,951,782	1.07%			
Yucaipa American Alliance Fund II LP	81,384,745	2.72%			
Yucaipa III	13,959,028	0.47%			
Venture Capital	9,014,785	0.30%			
Crescendo III	1,156,486	0.04%	I		
Syndicated Communications V	7,858,299	0.26%			
Mezzanine	47,691,968	1.59%			
Audax Mezzanine III Limited Partnership	38,109,974	1.27%			

(1) Other includes partnerships with nonmaterial balances, as well as moneys earmarked for distribution to participants, reinvestment, expenses and other net assets.

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF EXPENSES IN EXCESS OF \$5,000 <sup>(1)</sup> FISCAL YEAR ENDED JUNE 30, 2017

		Contract	Aggregate Comp. Paid	Status at June 30,
Name of Firm	Description of Services	Date	Ontract Date         Comp. Paid in FY 2017           Jul-05         \$2,673,611           Jul-05         1,729,334           Jul-05         1,465,004           Oct-10         \$2,552,740           Mar-96         \$266,819           Jov-08         4,342,761           \$13,030,268           Mar-96         \$1,161,626           Jov-08         4,342,761           \$13,030,268           Mar-96         \$100,000           Jov-97         \$51,055           Jul-05         406,597           Aar-96         100,000           Jov-97         808,017           \$3,027,295         \$3,027,295           Gep-14         \$950,053           Jov-14         1,413,852           Gep-14         \$950,053           Jov-14         1,413,852           Gep-14         \$950,053           Jov-77         2,139,429           Joct-07         2,139,429           Joct-07         1,191,463           \$5,451,459         \$3,1470           Jar-96         \$92,160           eb-17         18,170           Jar-96         \$92,160           eb-17         1,69,	2017
INVESTMENT ADVISORY SERVICES				
Domestic Equity Investment Advisory Service				
Bivium Capital Partners, LLC	Equity Advisor	Jul-05		Active
Capital Prospects LLC	Equity Advisor	Jul-05		Active
FIS Group Inc.	Equity Advisor	Jul-05		Active
Frontier Capital Management Co.LLC	Equity Advisor	Oct-10	\$2,552,740	Active
State Street Global Advisors	Equity Advisor	Mar-96	\$266,819	Active
T. Rowe Price Associates, Inc.	Equity Advisor	Nov-08	4,342,761	Active
Total Domestic Equity Advisor Compensation	1		\$13,030,268	
Core Fixed Income Investment Advisory Serv	ices			
Blackrock Financial Management	Core Income Advisor	Mar-96	\$1,161,626	Active
Goodwin Capital Advisors(Phoenix)	Core Income Advisor	Nov-97	551,055	Active
Progress Investment Management	Core Income Advisor	Jul-05		Active
State Street Global Advisors	Core Income Advisor	Mar-96		Active
Wellington Asset Management	Core Income Advisor	Nov-97		Active
Total Core Fixed Income Advisor Compensati				. 101170
•				
Inflation Linked Bond Investment Advisory Se BlackRock Financial Management, Inc	ervices Inflation Income Advisor	Sen 11	\$950 053	Active
Colchester Global Investors Limited	Inflation Income Advisor	•	. ,	Active
New Century Advisors, LLC Total Inflation Linked Bond Advisor Compens	Inflation Income Advisor	Sep-14		Active
Total Initiation Linked Bond Advisor Compens	allon		\$2,734,951	
Emerging Market Debt Investment Advisory S				
Ashmore Investment Management Limited	Emerging Market Income Advisor			Active
BlackRock Institutional Trust Co.	Transition Manager	May-96		Terminated
Payden & Rygel	Emerging Market Income Advisor			Active
Pyramis Global Advisors	Emerging Market Income Advisor	Oct-07	2,139,429	Active
Stone Harbor Investment Partners	Emerging Market Income Advisor	Oct-07	1,191,463	Terminated
Total Emerging Market Debt Advisor Compens	sation		\$5,451,459	
High Yield Debt Advisory Services				
DDJ Capital Management	High Yield Income Advisor	Nov-16	\$226,313	Active
Loomis Sayles & Co., Inc.	High Yield Income Advisor	Mar-96	892,160	Active
Nomura	High Yield Income Advisor	Feb-17	18,170	Active
Oaktree Capital Management	High Yield Debt Advisor	Mar-96		Terminated
Shenkman Capital Management	High Yield Debt Advisor	Dec-07		Active
Stone Harbor Investment Partners	High Yield Debt Advisor	Oct-07		Active
Total High Yield Debt Advisor Compensation				
Liquidity Fund Advisory Services				
Colchester Global Investors Limited	Liquidity Fund Advisor	May-09	\$691.033	Active
Lazard Asset Management LLC	Liquidity Fund Advisor	-		Active
Pacific Investment Management Co. LLC	Liquidity Fund Advisor	-		Active
Payden & Rygel	Liquidity Fund Advisor			Active
State Street Global Advisors	Liquidity Fund Advisor			Active
Total Liquidity Fund Advisor Compensation		Mai -00		7.0070
	mant Advisory Comisso			
Developed Market International Equity Investi Acadian Asset Management	International Equity Advisor	Sen-06	\$2 228 775	Active
AQR Capital Management, LLC	International Equity Advisor	•		Active
Dimensional Fund Advisors LP				
	International Equity Advisor			Active
First Quadrant LP	International Equity Advisor			Active
Grantham, Mayo, Van Otterloo & Co	International Equity Advisor	Mar-96		Active
MFS Institutional Advisors	International Equity Advisor	Aug-03		Active
Progress Investment Management	International Equity Advisor	Jul-05		Active
Schroder Investment Management	International Equity Advisor	Sep-03		Active
State Street Global Advisors	International Equity Advisor	Mar-96		Active
William Diair & Company LLC	International Equity Advisor	Mar-09	2,278,159	Active
William Blair & Company, LLC Total Developed Market International Equity A		Ivial 00	2,210,100	7101170

# SCHEDULE OF EXPENSES IN EXCESS OF \$5,000 <sup>(1)</sup> (Continued) FISCAL YEAR ENDED JUNE 30, 2017

Name of Firm	Description of Services	Contract Date	Aggregate Comp. Paid in FY 2017	Status at June 30, 2017
Emerging Market International Equity Advisory	Services			
Aberdeen Asset Management INC	International Equity Advisor	Jul-09	\$4,405,400	Active
Grantham, Mayo, Van Otterloo & Co	International Equity Advisor	Feb-00	3,935,600	Active
Schroder Investment Management	International Equity Advisor	Jan-10	4,965,684	Active
Total Emerging Market International Equity Adv			\$13,306,684	
Alternative Investment Advisory Services (2)				
ArcLight Energy Partners Fund VI	Alternative Investment Advisor	Jul-15	\$1,245,940	Active
EIG Energy Fund XV, LP	Alternative Investment Advisor	Apr-11	295,468	Active
Total Alternative Investment Advisor Compensa	ation		\$1,541,408	
Real Estate Investment Advisory Services (2)				
American Realty Advisors	Real Estate Advisor	Mar-12	\$498,867	Active
Blackstone Real Estate Advisors Europe	Real Estate Advisor	Nov-08	371,936	Active
Blackstone Real Estate Partners VI	Real Estate Advisor	Aug-07	316,496	Active
Blackstone Real Estate Partners VIII	Real Estate Advisor	Mar-15	1,500,000	Active
Canyon Johnson Urban Fund III, LP	Real Estate Advisor	Feb-08	7,671	Active
Clarion Lion Industrial Trust LP	Real Estate Advisor	Sep-14	1,229,044	Active
Cornerstone Patriot Fund, LP	Real Estate Advisor	Dec-07	1,788,872	Active
Crow Holdings Capital Partners LLC	Real Estate Advisor	Nov-14	1,687,500	Active
Cypress Retail Fund LP	Real Estate Advisor	May-13	703,204	Active
Gerding Elden Fund Management, LP	Real Estate Advisor	May-14	1,570,438	Active
Hart Realty Advisors, Inc. (CORE)	Real Estate Advisor	Nov-11	1,531,417	Active
JP Morgan Investment Mgmt.	Real Estate Advisor	May-14	845,664	Active
Rockwood Capital Partners Fund VII	Real Estate Advisor	Jun-06	18,249	Active
UBS Trumbull Property Growth & Income Fund LP		Nov-13	672,452	Active
UBS Trumbull Property Fund LP	Real Estate Advisor	Nov-13	825,750	Active
UBS Trumbull Property Income Fund, LP Total Real Estate Advisor Compensation	Real Estate Advisor	Nov-13	470,124 <b>\$14,037,685</b>	Active
· · · · · · · · · · · · · · · · · · ·			+;;	
Private Investment Advisory Services (2) AIG Altaris Healthcare Partners III, LP	Private Investment Advisor	Oct-07	\$800,970	Active
Apollo Advisors VIII, LP	Private Investment Advisor	Nov-13	732,161	Active
Audax Mezzanine Fund III, LP	Private Investment Advisor	May-10	376,599	Active
Boston Ventures LP VII	Private Investment Advisor	May-07	118,236	Active
Clearlake Capital Partners III, LP	Private Investment Advisor	Nov-12	203,547	Active
Clearlake Capital Partners IV, LP	Private Investment Advisor	Aug-15	559,859	Active
Connecticut Growth Capital, LLC	Private Investment Advisor	Dec-15	727,857	Active
Constitution Fund V, LLC	Private Investment Advisor	Dec-16	1,209,962	Active
Constitution Liquidating Fund, LP	Private Investment Advisor	Jul-87	108,303	Active
Court Square Capital Partners III	Private Investment Advisor	May-13	681,203	Active
CT Horizon Legacy Fund LP Total	Private Investment Advisor	Jun-08	50,000	Active
Ethos Capital Fund V, LP	Private Investment Advisor	Aug-06	70,132	Active
Fairview Constitution II, LP	Private Investment Advisor	May-05	468,149	Active
Fairview Constitution III, LP	Private Investment Advisor	Jun-07	1,050,000	Active
Fairview Constitution IV, LP	Private Investment Advisor	Dec-11	975,000	Active
FS Equity Partners V, LP	Private Investment Advisor	Mar-04	36,469	Active
FS Equity Partners VI, LP	Private Investment Advisor	Mar-04	253,951	Active
Garmark Partners, II LP	Private Investment Advisor	Jun-95	63,213	Active
GCM Grosvenor -CT Cleantech				
(formerly CS/CT Cleantech)	Private Investment Advisor	Jul-07	132,014	Active
GenNx360 Capital Partners II, LP	Private Investment Advisor	Mar-14	378,023	Active
JFL Equity Investors IV, L.P.	Private Investment Advisor	Sep-16	1,654,984	Active
JFL Investors III, LP	Private Investment Advisor	Aug-11	444,394	Active
KKR Associates 2006 Fund, LP	Private Investment Advisor	May-07	143,682	Active
KKR Millennium Fund LP	Private Investment Advisor	Jul-01	8,738	Active
KKR2006 Fund	Private Investment Advisor	Mar-09	222,550	Active
Leeds Equity Partners VI, L.P.	Private Investment Advisor	Nov-16	387,971	Active
Levine Leichtman Capital Partners IV, LP	Private Investment Advisor	Jul-08	73,628	Active
Levine Leichtman Capital Partners V, LP	Private Investment Advisor	Aug-12	1,142,351	Active
	Private Investment Advisor	Nov-07	436,264	Active

# SCHEDULE OF EXPENSES IN EXCESS OF \$5,000 (1) (Continued) FISCAL YEAR ENDED

Name of Firm	Description of Services	Contract Date	Aggregate Comp. Paid in FY 2017	Status at June 30, 2017
Nutmeg Opportunities Fund LP	Private Investment Advisor	Nov-06	645,000	Active
Pegasus Investors IV, LP	Private Investment Advisor	Aug-07	450,458	Active
Pegasus Investors V, LP	Private Investment Advisor	May-12	936,723	Active
RFE Associates VIII, LP	Private Investment Advisor	Apr-12	201,093	Active
StepStone Pioneer Capital Buyout Fund I, LP	Private Investment Advisor	May-05	40,875	Active
StepStone Pioneer Capital Buyout Fund II, LP	Private Investment Advisor	Jun-06	449,712	Active
Syncom Partners V, LP	Private Investment Advisor	Apr-06	19,651	Active
THL Equity Advisors VI, LLC	Private Investment Advisor	Aug-07	384,423	Active
vista Equity Partners III, LP	Private Investment Advisor	Feb-12	99,720	Active
Vista Equity Partners IV, LP	Private Investment Advisor	May-12	1,078,025	Active
Vista Equity Partners VI, LP	Private Investment Advisor	Nov-16	1,611,047	Active
Yuciapa American Alliance Fund III, LP	Private Investment Advisor	Jul-15	290,624	Active
Total Private Equity Advisor Compensation			\$19,717,560	
TOTAL COMPENSATION TO INVESTMENT AD	VISORS		\$101,317,957	
Custody Services		0.440		
Bank of New York Mellon TOTAL CUSTODY SERVICES COMPENSATIO	Master Custodian	Oct-13	\$1,742,861 <b>\$1,742,861</b>	Active
			ψ1,7 <del>7</del> 2,001	
				<b>A</b>
Cliffwater LLC	Consultant - Alternative Investment		\$535,000	Active
Hewitt EnnisKnupp, Inc.	Consulting - Pension Funds	Aug-11	596,192	Active
Hudepohl & Associates Inc	Consultant -Executive Search	Jul-12	87,367	Active
Mercer Investment Consulting, INC	Consultant - Strategic Asset Study		30,000	Active
Stepstone Group LP	Consultant -Private Investment	Oct-15	877,310	Active
The Townsend Group, Inc.	Consultant -Pension Funds	Mar-08	312,500	Active
TOTAL CONSULTING SERVICES COMPENSA	TION		\$2,438,369	
MISCELLANEOUS SERVICES A & A Office Systems.	Photocopier Lease	N/A	\$7,590	Active
Advanced Corporate Networking	•	N/A N/A	16,348	Active
Advanced Corporate Networking Anderson Kill P.C.	Computer Equipment	Dec-11		
	Legal Services On-Line Information service	N/A	10,549	Active Active
Bloomberg Finance LP			65,980	
CERES, Inc.	Dues	N/A	5,000	Active
Corporate Governance Consulting	Corporate Governance Services	N/A	9,045	Active
Council of Institutional Investors	Dues	N/A	30,000	Active
Day Pitney LLP	Legal Services	Mar-12	55,304	Active
Financial Recovery Technologies LLC	Subscription	N/A	29,167	Active
Institutional Limited Partners	Subscription	N/A	7,000	Active
Institutional Shareholder Services	Proxy Voting	Nov-99	83,140	Active
IW Financial		N/A	7,500	Active
MaCantan 9 English	Subscription			
0	Legal Services	Dec-11	49,759	Active
MCI Worldcom International Inc	Legal Services Telecomm Services	Dec-11 N/A	7,767	Active
MCI Worldcom International Inc Murphy Security Services LLC	Legal Services Telecomm Services Premises Security Services	Dec-11 N/A May-10	7,767 11,518	Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications	Legal Services Telecomm Services Premises Security Services Telecomm Services	Dec-11 N/A May-10 N/A	7,767 11,518 10,225	Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services	Dec-11 N/A May-10 N/A Dec-16	7,767 11,518 10,225 8,342	Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12	7,767 11,518 10,225 8,342 34,366	Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A	7,767 11,518 10,225 8,342 34,366 10,361	Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11	7,767 11,518 10,225 8,342 34,366 10,361 16,849	Active Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription Legal Services Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076	Active Active Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren Shipman & Goodwin LLP	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Subscription Legal Services Legal Services Legal Services Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11 Mar-12	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076 9,791	Active Active Active Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren Shipman & Goodwin LLP Snet	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Subscription Legal Services Legal Services Legal Services Telecomm Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11 Mar-12 N/A	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076 9,791 15,330	Active Active Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren Shipman & Goodwin LLP Snet Squire Patton Boggs	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription Legal Services Legal Services Legal Services Telecomm Services Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11 Mar-12 N/A Sep-10	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076 9,791 15,330 36,046	Active Active Active Active Active Active Active Active Active Active
McCarter & English MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren Shipman & Goodwin LLP Snet Squire Patton Boggs State Street Bank & Trust	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription Legal Services Legal Services Telecomm Services Legal Services Subscription	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11 Mar-12 N/A	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076 9,791 15,330 36,046 167,000	Active Active Active Active Active Active Active Active Active Active
MCI Worldcom International Inc Murphy Security Services LLC Nextel Communications Nossaman Orrick, Herrington, & Sutcliffe PRI Association Pullman & Comley, LLC Reinhart Boerner Vandeuren Shipman & Goodwin LLP Snet Squire Patton Boggs	Legal Services Telecomm Services Premises Security Services Telecomm Services Legal Services Legal Services Subscription Legal Services Legal Services Legal Services Telecomm Services Legal Services	Dec-11 N/A May-10 N/A Dec-16 Jun-12 N/A Dec-11 Dec-11 Mar-12 N/A Sep-10	7,767 11,518 10,225 8,342 34,366 10,361 16,849 66,076 9,791 15,330 36,046	Active Active Active Active Active Active Active Active Active Active

### SCHEDULE OF EXPENSES IN EXCESS OF \$5,000 <sup>(1)</sup> (Continued) FISCAL YEAR ENDED JUNE 30, 2017

Name of Firm	Description of Services	Contract Date	Aggregate Comp. Paid in FY 2017	Status at June 30, 2017
West Group	Subscription	N/A	9,680	Active
TOTAL MISCELLANEOUS SER	VICES COMPENSATION		\$849,397	
GRAND TOTAL		\$	6106,348,583	

(1) Expenses are presented on a cash basis.

(2) Alternative Investment Management fees for the Alternative Investment Fund, Private Investment Fund and the Real Estate Fund include capitalized fees and expensed fees. Capitalized fees are part of the cost of the investment and become a component of unrealized gain (loss). Capitalized fees are disclosed in Note 1 of the Combined Investment Funds Financial Statements. Expensed fees which are not part of the cost of the investment are recorded in the Statement of Operations.

### SCHEDULE OF BROKERAGE COMMISSIONS FOR THE FISCAL YEAR ENDED JUNE 30, 2017

ALLEN & CORPANY LC, LEDES (TY)         985.2         2,3,4,400         0.00         CITCROUP GRI MITS ALLETYN URK         8,1,0,1,1,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,								
ALES SEC ALS MORESE, FLAL STOCKMEN         S2012         Intel and O         CITEMAN N. HENRE MORE CONS.         3246 STOC ALS MORE CONSTRAINTS         32	Broker Name				Proker Name			
ABS SECS GLO.         2.938.07         16138600         0.01         CTRANK YMARC         4.944         5.718.00         0.01           ABS SECS GLO.         CTRANK YMARC         4.932.00         0.00								
ABRAMED CLEARNED BANK KW, AMSTELDAM         768,00         57,1700         0.00         CTILBANK, WIRKE         44.02         5.00,00         0.00           AMRAND, MORKANS, BRISSANK         1.04,131         17700.00         0.00         CTILBANK, WIRKE         3.30         4.450.00         0.00           APPCX CLEARND, CONTONATION DALLAS         M. 48         23.547.00         CTILBANK, WIRKES ALLON, MARSHELL, MAR						- / -		
ABRANGE DURGENDE, BERSENNE         1.9.8.3.1         1.7.08.200.0         CTERDEUP OGL MATS AUSTRALLPT, SYNEY         22.3.3         4,48.5.0         0.0           ALES ACCAMPANT LIC, BRENY CITY         10.8.3         2.1.0.0.0         CTERDEUP OGL MATS AUSTRALLPT, SYNEY         22.3.1         0.0           ALES ACCAMPANT LIC, BRENY CITY         10.8.3         2.1.0.0.0         CTERDEUP OGL MATS AUSTRALLPT, SYNEY         21.4.428.51         0.0           BREE YG CALLE, LOS ANCELES         2.4.282.7         3.8.00.0         CLE SAULTELON MARKET SIT LIC NON         21.4.28.23         3.8.00.0         0.0           BREE YG CALLE, LOS ANCELES         2.4.28.27         3.8.00.0         CLE SAULTELON MARKET SIT LIC NON         2.5.3.23         1.0.0.0         0.00           BREC YG CALLE, LOS ANCELES         2.4.28.27         7.7.00         0.0         COMMERCIA LIC, NEW YORK         7.2.3         7.2.3.00         0.00           BREC YG CALLE, LOS ANCELES         2.4.28.27         7.7.00         0.0         COMMERCIA LIC, NEW YORK         7.2.3         9.0.00         0.00           BREC YG CALLE, LOS ANCELES         2.4.28.27         7.7.00         0.0         CARLETINE MARKET NEW YORK         7.2.3         9.0.000         0.0         CHART HULLANDE NEW YORK         7.2.3.0         0.0.0         0.0.0         0.0.0         0.0.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
APEX CLEARING CORPORATION DALLAS         9148         23,720         0.00         CITCROUP GRI MCT NON. NEW YORK         0.0147.1         0.37,701.00         0.02           APERACH CLEARING CORPORATION DALLAS         91497.2         1.490.210         0.00 </td <td>ABN AMRO MORGANS, BRISBANE</td> <td></td> <td></td> <td></td> <td>. ,</td> <td>29.30</td> <td></td> <td>0.01</td>	ABN AMRO MORGANS, BRISBANE				. ,	29.30		0.01
ALJERBACH (DAWNSON & CONG. BREEY OTY         1980.00         6,000.00         CONTROLE ON TERSALADION, NEW YORK         24,467.30         21,468.30.00         0.00           AURONALE PARTERES LLC, NAMHULE         EYT 55         22,350.00         0.00         CONTROLE PARTERES LLC, NAMHULE         EYT 55         22,350.00         0.00           AURO DEL TALLA CL, NAK, ALLEN LLC, NAMHULE         EYT 55         22,350.00         0.00         CONTROLE PARTERES LLC, NAMHULE         EYT 55         22,350.00         0.00           AURO DE ALCOL NG, ALLENAMULE         EYT 55         32,800.00         0.00         CONTROLE ALCOL NG, ALLENBEY CUTY         1,300.00         0.00           AURO DE ALCOL NG, ALLENAMULE         EYT 55         32,800.00         0.00         CONTROLE ALCOL NG, ALLENBEY CUTY         1,340.00         0.00           AURO DE ALCOL NG, ALLENAMU TORK         6,200.71         34,200.00         0.00         CONTROLE ALCOL NG, ALLENBEY CUTY         1,340.00         0.00           AURO DE ALLENAMU TORK         5,844.40         2,845.40         0.00         CONTROLE ALCOL NG, ALLENBEY CUTY         1,340.00         0.00           AURO DE ALLENAMU TORK         3,844.00         0.00         CENTRU HUMAN SECS, SHALENAMU TORK, MARKANAU TORK, MARKA	ALLEN & COMPANY LLC, JERSEY CITY							
AUXIMALE INTERES LC. NARCHES         17:55         23,1000         0.00         CDRRADP CLOAK MARCTS LTD. LONGON         235,852.00         0.00           BARG, ROCLEL, DAVIALLES         1,242.25         77,702.00         0.00         CSR SECURITIES N. LERES CHY         15.15.0         222.35.10         0.00           BARG, ROCLETY M. S.C. INC., MUNUREE         2,472.57         77,702.00         0.00         CSR SECURITIES N. LERES CHY         1.75.20         222.55.10         0.00           BARG, ROCLETY M. S.C. INC., MUNUREE         4,803.37         736,402.00         CONCREGNE ACTIVE CAMERING         7.72.80         1.71.600         0.00           BARCO TINUS AN, NEW YORK         6,022.71         622,77.20         0.01         CONREGNE MARCTE LL. NEW YORK         7.72.80         1.00         0.00           BARCO TINUS AN, A. SM FFANCOSCA.         6,432.9         7.77.00.00         0.00         CERET YONNAS SEC.5 (20.01         1.23.45.9         50.37.70         0.00           BARCU AND RELADONC         1.83.55         1.77.00.00         0.00         CERET YONNAS SEC.5 (20.01         1.23.45.90         0.00         CERET YONNAS SEC.5 (20.01         1.23.45.90         0.00         CERET YONNAS SEC.5 (20.01         1.24.44         1.22.65.60         0.00         CERET YONNAS SEC.5 (20.01         1.24.45.0         1.22.65.60								
BRIEF COLLIC. LOS ANGELES         1.249.20         79.07520         000         CLS SECURITES NC., RESEVCITY         15.30         5.88.000         0.00           BAND, ORDET WAS, S.R. ROD IN, MUXAMER         2.120.11         5.80.001         0.00         CLS-AUSTALLAPY ID, SYNFY         7.322.2         2.225.000         0.00           BAND, ORDET WAS, S.R. NON INSERDENT, S.T. RURSET WAS, S.R. NON INSERDENT, S.R. RURSET WAS, RURSET WAS, S.R. RURSET WAS, RURSET WAS, RURSET WAS, S.R. RURSET WAS, RURSET WAS, S.R. RURSET WAS, RU								
BARDB, DRDERT V & CO NIC, MUNUMLEE         24,712.57         714,702.00         0.00         CLARAUSTRALLAPTY TUD, SYNEY         4,752.20         22,225,310.00         0.00           BARKO DT FORTULAS, R. RODE JAMERTING         4,706.27         352,000         0.00         CCAMARAS PUNCTRALERAPY CUT         10.07.7         332,000         0.00           BARKO TURI, S.A., NEW YORK         4,706.27         152,924.00         0.00         COMERGE LLI, NEW YORK         72,24         74,400.00         0.02           BARKO TURI, S.A., NEW YORK         152,944.6         2,715,20         0.00         COMERGE LLI, NEW YORK         72,24         74,400.00         0.00           BARKO TAMARDER, NEW YORK         152,944.6         2,715,40         0.00         COMERGE LLI, NEW YORK         2,246.4         174,848.00         0.00           BARKU SANTANDER, NEW YORK         1,853,84.0         0.00         CREET YURAN SECS, SIANARORE         14,44.4         132,254.00         0.00           BARKU SANTANDER, NEW YORK         1,853,84.0         3,84.00         0.00         CREET YURAN SECS, SIANARORE         14,44.10         122,654.00         0.00           BARCU YAS RUR LL, NEW YORK         1,854.40         3,84.00         0.00         CREET YURAN SECS, SIANARORE         14,44.10         122,654.00         0.00         CREET YURANO								
BANCO DE INVESTMENTUS DE ANTIN         \$,410.3         738.400.0         0.00         CONCORDIA SA CAWAC, BIO DE ANFIRO         \$21.00         127.880.00         0.00           BANCO TAULIA, SA PULLO         4,803.28         802.71.30         0.00         CONCORDILL, NEW YORK         17.28.50         0.00         0.00           BANCO TAULIA, SA PULLO         4,803.28         802.71.30         0.00         CONCORDE LL, NEW YORK         17.28.60         0.00         0.00           BANK OVARDELL, CAUDAN DE MARCO LL, NEW YORK         1.23.43.9         75.700.00         0.00         CREDIT LYONMAS SEC. SEQUAL HUM, MANRAHAR ANDI, CAUDA SEC. SEQUAL HUM, MANRAHAR ANDI, CAUDA SEC. SEQUAL HUM, MANRAHAR ANDI, CAUDA HUM, HUM, MANRAHAR ANDI, CAUDA HUM, HUM, HUM, HUM, HUM, HUM, HUM, HUM,	BAIRD, ROBERT W & CO INC, MILWAUKEE			0.04	CLSA AUSTRALIA PTY LTD, SYDNEY	8,735.25	2,225,301.00	0.00
BARCD TAUL SA, NEW YORK         CD02 r1         592 (47:00         CONVERGE LLC, NEW YORK         7.228         7.41:000         0.02           BARCD SAMADEER, NEW YORK         15,234,43         2,471,821:00         0.00         CONVERSIONE (NEW YORK         4,444:17         174,358:00         0.00           BARCD SAMADEER, NEW YORK         15,234,44         2,471,821:00         0.00         CONVERSIONE (NEW YORK         4,444:17         174,358:00         0.00           BARCD SAMADEER, NEW YORK         16,064:49         15,334,80         0.00         CENEDT LYONNAIS SECS ASAL, HONK KON         12,444:43         12,221:55:00         0.00           BARCLY SR PL C, NEW YORK         18,345         2,846,000         CENEDT SUBSE (NEW INNERATE IL LEWERT IN INNERATE IL LEWERT INNERATE INNERATE IL LEWERT INNE	BANCO BTG PACTUAL SA, RIO DE JANEIRO							
BANCO TALLA SAD PALLO         468.39         602.71:00         0.00         CORMERSTORE MACROLL, NEW YORK         1.726.93         71.40.00         0.00           BANC SANTANDER, LA CO LTD, ZURCH         1.479.12         153.440.00         0.00         CORMERSTORE MACROLL, NEW YORK         2.288.44         172.126.00         0.00           BANC JAVITAGEL, LA CO LTD, ZURCH         1.479.12         153.540.00         0.00         CRASE HALLUM, MINELAPOLIS         2.288.44         172.126.00         0.00           BANC JAVITAGEL, LA CO LTD, ZURCH         3.484.44         172.126.00         0.00         CERDIT LYONMAS SECS.340.41 HON KONO         1.22.04.500.00         0.00           BARCLAYS DERVIC, MEY ORK         3.344.47         1.52.35         2.41.02.00         CERDIT SUBSE, FIOL LANDORN         2.25.48         1.72.60         0.01           BARCLAYS DERVIC, MEY ORK         8.23.75         2.10.20         CERDIT SUBSE, FIOL LANDORN         2.25.84         1.72.60         0.01           BARCLAYS DERVIC, MER CORRING, MERCEGASI         8.25.85.83         3.83.861.00         0.01         CERDIT SUBSE, FIOL LANDORN         2.24.73.60         0.01           BARCLAYS DERVIC, NEW YORK         8.25.87         9.71.73.78.78.00         0.00         CERDIT SUBSE, FIOL LANDORN         2.24.71.80         7.71.77.78.78.00         0.00         CER								
BANCD SANTANDEE, NEW YORK         15:824.45         2.47.821:00         0.00         COWEN AND COMMANY LLC. NEW YORK         4.44:17         174.580.00         0.00           BARK / VONTGES LC LOT D. JURICH         1.47.91.00         0.00         CREEDT LYDANUS ESC, STOLL HUM YORK         12.33.19         157.120.00         0.00           BARK / VONTGES LC, LONDON         1.83.25.30         1.57.00.00         0.00         CREEDT LYDANUS ESC, STOLL HUM YORK         174.370.00         0.00           BARC / XR SR PLC, NEW YORK         3.34.54         8.30.55.00         0.00         CREEDT LYDANUS ESC, STOLL HUM YORK         3.44.00.00         0.00         CREEDT SUBSE (EUROPE), LONDON         3.4307.16         5.361.850.00         0.00           BARCL XR S AVEL, LONDON (BARCCA)         1.72         3.361.750         0.00         CREEDT SUBSE (EUROPE), LONDON         3.461.00         0.00         CREEDT SUBSE (EUROPE), LONDON         3.461.00         0.00         0.00         CREEDT SUBSE (EUROPE), LONDON         3.461.00         0.00	· · · · · · · · · · · · · · · · · · ·						-,	
BARK J, VONTOBEL & CO LTD. JUNICH         14,479.12         19,449.00         0.10         CRAIC HALLUM, MUNRAPICUIS         2.286.44         77,88.00         0.00           BARK OF AMERICA, NARIS         CIMON         3.084.45         15,34.86.00         0.00         CREDIT LYDANAS SEC 3.46.01, MOK KING (2.344.46         15,321.65.00         0.00           BARKUE MARIAS, NARIS         CIMON         3.084.44         15,336.00         0.00         CREDIT LYDANAS SEC 3.46.01, MOK KING (2.344.46         15,321.65.00         0.00           BARKUE X SANT, MARIS         CIMON         3.384.47.00         CREDIT SUBSE (HIGNER) HERE         4.44.23         0.00         CREDIT SUBSE (HIGNER) HERE         5.41.48         7.475.50         0.00           BARKUAYS CAPITAL LE, LENESY CITY         15.75         2.100.00         0.00         CREDIT SUBSE (HIGNER) HERE         4.14.8         7.475.50         0.00           BARKUAYS CAPITAL LE, LENESY CITY         10.44.23         0.310.00         0.00         CREDIT SUBSE MINITER HERE HONG KONG         2.228.64         7.475.50         0.00           BARKUAYS CAPITAL LE, LENESY CITY         10.44.23         0.310.00         0.00         CREDIT CORPORE         1.00.00         1.00.00         1.00.00         1.00.00         1.00.00         1.00.00         1.00.00         1.00.00         1.00.00	BANCO SANTANDER, NEW YORK							
BANQUE FANIDES, FANIS         8,086.40         1,883,586.00         CREDIT LYONNUS SECS, GUANA, HONKONG         1,24,44         13,221,554.00         0,00           BARCLAYS BR PLC, NEW YORK         3,345.40         83,855.00         0,00         CREDIT SUBSE EUROPEL, LONKONG         3,367.40         5,367.66         0,00           BARCLAYS BR PLC, NEW YORK         3,345.40         83,855.00         0,00         CREDIT SUBSE EUROPEL, LONKONG         3,367.40         6,367.77           BARCLAYS CAPTRA, LE, JERSEY CITY         10,446.27         67,107.00         CREDIT SUBSE EUROPEL, SOULT         5,469.77         5,697.650.00         0,00           BARCLAYS CAPTRA, LE, JERSEY CITY         10,446.27         67,107.00         CREDIT SUBSE EUROPKIC (SUBJ)         11,441.30         7,757.550.00         0,00           BARCLAYS CAPTRA, LE, JERSEX CHANDAN         112,84         3,760.20         CREDIT SUBSE EWROPKIC (SUBJ)         11,44         168,220.00         0,00           BART SECURITIS, CHANDAN         112,84         3,770         3,770         2,710.00         CREDIT SUBSE EWROPKIC (SUBJ)         11,44         168,220.00         0,00           BERT SECURITIS, SECURITIS, CHANDAN         17,220         3,780.00         0,00         CREDIT SUBSE EWROPKIC (SUBJ)         11,45         160,200.00         0,00           BERT SECURIT	BANK J VONTOBEL & CO LTD, ZURICH			0.10	CRAIG HALLUM, MINNEAPOLIS	2,286.64	77,689.00	0.03
BARCLAYS BK PLC WHOLESABLE LONDON         1863.16         28.44.00.00         CheDIT LYONNAUS SECS. SINALPORE         148.44.75         15.064.500         0.00           BARCLAYS BK PLC. NEW YORK         33.40         85.36.07.70         0.01         CREDIT SUBSE (EUROPE), SECUL         20.546.60         0.01           BARCLAYS CAPTAL. INC. ALE NEW JERSEY         10.57         2.100.01         CREDIT SUBSE (H) LUTED LUNG KONG         20.546.80         20.01           BARCLAYS CAPTAL. INC. ALE NEW JERSEY         10.57         2.100.01         CREDIT SUBSE (H) LUTED LUNG KONG         124.313.97         7.737.780         0.00           BARCLAYS CAPTAL. I.E. JERSEN CHILLE,	BANK OF AMERICA, N.A, SAN FRANCISCO,CA							
BARCUARS CHATLA NO.2. HEAV LORK         3,34,30         63,05,00         0.04         CPEDIT SUBSE (EUROPE), LONDON         34,377.4         5,661,856.00         0.01           BARCUARS CAPITAL NO.2. HEAV LERRY         11,373         2,000.0         0.01         CPEDIT SUBSE (EUROPE), SEOUL         20,054.60         32,075.00         0.01           BARCUARS CAPITAL NO.2. HEAV LERRY CITY         11,32         2,000.00         0.01         CPEDIT SUBSE (EUROPE), SEOUL         43,65         17,755.00         0.00           BARCUARS CAPITAL NEW YORK         25,827         3,27,47.00         0.00         CPEDIT SUBSE CHATCHON         14,369.77         16,960.00         0.01           BARCUARS CAPITAL, NEW YORK         3,780.00         0.02         CSL STOCKREACHER LIMITED, LANDON         42,68         16,000.00         0.01           BEAT SECURITIES, LLC, RICHAMON         112,80         3,780.00         0.02         CSL STOCKREACHER LIMITED, LANDON         44,83         66,007.00         0.01 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
BARCLAYS CAPITAL INC.LE. NEW JERSEY         44.12.30         6.396,077.00         100         CREDIT SUISSE (FUNDPE) SECUL         20.844.60         28.87.210         0.27           BARCLAYS CAPITAL LG, JERSEY CITY         10.446.29         651,019.00         000         CREDIT SUISSE (FUNDPE) SECUL         20.844.60         7.736,736.00         000           BARCLAYS CAPITAL LG, JERSEY CITY         10.446.29         651,019.00         000         CREDIT SUISSE AUSTRALLE (CAUNON         24.24.63.00         651,031.00         000           BARCHAYS CAPITAL LG, JERSEY CITY         10.446.29         7.736,736.00         000         000         CRESIT DIFERSE INVERSE, HUNDRING AUSTRALE         0.736,736.00         000         000         000         CRESIT DIFERST CITY         64.36         616,077.00         001         000         000         CRESIT DIFERST CITY         63.376.00         000         000         000         CRESIT DIFERST CITY         63.078.00         000         000         000         000         CRESIT DIFERST CITY         63.078.00         000         000         000         000         000         000         000         000         000         000         000         000         000         000         000         000         000         000        000         000         0								
BARCLAYS CAPTIAL INC. LERSEY CITY         15.75         2,100.00         0.00         CREDIT SUISSE (HK) LIMITED, HONG KONG         22,72.33         14,728,358.00         0.00           BARCLAYS CAPTIAL, LONDON (BARCGB3)         25,656,08         338,064.00         0.00         CREDIT SUISSE ALSY CAPTIAL, LONDON (ARACGB3)         14,728,758.00         0.01           BARCLAYS CAPTIAL, LONDON (BARCGB3)         25,656,08         338,064.00         0.00         CREDIT SUISSE, SAD PAULO         3,687.77         559,104.00         0.01           BARCLAYS CAPTIAL, LONDON (BARCGB3)         CARDO         17,270.00         0.00         CREDIT SUISSE, CARDON         14.86         10,200.00         0.00           BARCLAYS CAPTIAL, LONDON (FARCGBA)         ALADON         47,724.00         0.00         CREDIT SUISSE, CARDON         47,736.80         10,000         0.								
BARCLAYS CAPITAL LONDON (BARCOBS3)         25.866 08         3.838.04 00         00         CREDIT SUISSE, BARCY ASSORATES, CHICAGO         1,07.87.786.00         0.00           BARRIANS CAPITAL, LONDON         2.49.6         1,08.10         0.02         0.00         CREDIT SUISSE, BARCH ASSOCATES, CHICAGO         1,08.10         0.02           BARRINGTON RESEARCH ASSOCATES, CHICAGO         1,72.71         37.87.00         0.00         CREST DEPOSITORY LTD, LONDON         2.49.6         1,08.10         0.00           BELTONE SEC BROKERAGE S.A.E. CAIRO         0.72.7         34,08.00         0.00         CUITTOME ACO, JERSIEV CHICAG, BERLIN, SATSIB         616.007.00         0.01           BERNERER CORSELRA CEL HAMBURG         3,72.42         3.08.80.00         0.00         CARNEGER AS, ELCHANDRO         5.47.31.6         616.007.00         0.01           BELOONEERT TADEEDOCK LONDON         7.72.6         1.21.51.00         0.00         DAVISSCOM AS CONTRACT, SOURCE C. 20.71.7         8.00.00         0.01           BLOONEERT TADEEDOCK LONDON         7.72.6         1.21.51.00         0.00         DBV VSCRRS RESCHICE LONDON         4.72.6         1.21.51.00         0.00         DBV VSCRRS RESCHICE LONDON         7.72.6         1.72.60         0.00         DBV VSCRRS RESCHICE LONDON         7.72.6         1.72.60         0.00         DBV VSCRRS RESCHICE	BARCLAYS CAPITAL INC, JERSEY CITY					22,726.38	14,726,535.00	
BARCLAYS CAPITAL, NEW YORK         822.79         247.247.00         CREDIT DUISSE, SAO PAULO         3.686.77         996, 14.00         0.01           BARRINSTOR NEGRACHASSCOLLAGO         112.29         3.700.00         0.03         CRESIT DEPOSITOR LID, LONDON         24.89         1,001.00         0.02           BBRT SECURITIES, LLC, RICHMOND         112.28         3.700.00         0.03         CRESIT DEPOSITOR LAD, CANSCR FARGE, S.A. L         0.01         0.02         CRESIT DEPOSITOR LAD, CANSCR FARGE, S.A. L         0.01         0.01         0.02         0.01         0.02         0.01 <t< td=""><td>BARCLAYS CAPITAL LE, JERSEY CITY</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	BARCLAYS CAPITAL LE, JERSEY CITY							
BARRINGTON RESEARCH ASSOCIATES, CHICAGO         1,127 p1         37,597 00         0.03         CREST DEPOSITORY LID, LONDON         24.96         1,081 00         0.00         0.01         DEVENDERS SUMPLY         53.76         3,189 00         0.02         0.01         DEVENDERS SUMPLY         53.76         3,189 00         0.02         0.01         DEVENDERS SUMPLY         53.76         53.76         53.760         61.00         DEVENDERS SUMPLY         53.77         13.02         0.03         DEVENDERS SUMPLY         53.77         13.02.00         0.01         DARSOCI SUMPLY         53.77         13.07.00         0.01         DARSOCI SUMPLY         53.73.74         0.02         DARSOCI SUMPLY         53.77         13.07.00         0.01         DARSOCI SUMPLY         53.77         10.00         DARSOCI SUMPLY         50.03.14.00         0.01         DARSOCI SUMPLY         50.03.14.00         0.01         DARSOCI SUMPLY         50.03.14.00         0.01         DARSOCI SUMPLY         50.03.00         0.01         DARSOCI SUMPLY         50.02.00         0.03         DEV SUMPLY<								
BBAT SECURTIES, L.C., RICHMOND         112.40         3.780.00         0.00         CSL STOCKBROKENES LALC, LAGOS         11.45         190.220.00         0.00           BERTONES EG CRAKTRAGE S.A.C., CAIRO         7.27         3.488.053.00         0.01         CUTTORE G.O., DERSEY CITY         6.78         3.188.00         0.02           BERDENES IN SANCRAVER VORK         7.866.09         3.048.120.00         0.02         DARMA SECS HK, LID, HONK KONG         1.3676.44         15.033.144.00         0.03           BLOOMERGT TRADEBOOK, LLONDON         47.25         1.121.370         0.00         DAWA SECS AMER INC, NEW YORK         2.211.45         1.867.520         0.01           BLOOMERGT TRADEBOOK, LLONDON         47.25         1.213.270         0.04         DAWA SECS AMER INC, NEW YORK         2.211.45         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.01         0.02         0.01         <			,					
BEREPRISEIG GOSSLER & OLE, HAMBURG         94,732,43         3,88,853.00         0.01         DCARWEDIE AB, STOCKNIM         5,473.64         616,007.00         0.01           BERNSTEIN SANGARDE G & C. O., NEW YORK         52,27         1,982.00         0.03         DAWN SECS (HK) LT, NEW YORK         2,307.84         0.00           BLOOMEREGT TRADEBOOK, LONDON         472.65         1,215.370         0.00         DAWN SECS (HK) LT, NEW YORK         2,211.87         0.00           BLOOMEREGT TRADEBOOK, LONDON         472.65         1,212.93         0.00         DAWN SECS (HK) LT, NEW YORK         2,211.87         0.00           BLO MERET TRADEBOK, LONDON         472.65         1,212.93         1,722.98         2,372.17         185.00.00         0.01           BMP ARIBAS PERCERINE SEC ITL HONK KONG         1,942.86         1,942.86         1,942.86         0.02         DEN YORK         2,372.17         85.80.00.00         0.03           BMP PARIBAS SEC SEVS LING NORN (NR NGR NGR SCH SC SVSL, NORN NARCH RAS, SCH SCH LINDN (DEUTSCHE RAS, SCL SCH	BB&T SECURITIES, LLC, RICHMOND							
BERNSTEIN SANFORD C.S.C., NEW YORK         79,856.00         30.463,128.00         DARWO SECURTIES COLT. SEOUL         4913.44         190,780.00         0.03           BLOOMERGT TRADEBOOK LL, ONDON         472.85         1,215,137.00         0.00         DAWA SECS AMER INC, NEW YORK         2,316.30         0.01           BLOOMERGT TRADEBOOK L, NEW YORK         7,120.98         233,753.00         0.00         DAWA SECS AMER INC, NEW YORK         2,215.79         55.000.00         0.01           BIND CARTIAL MARKETS CORP. NEW YORK         7,120.98         233,753.00         0.03         DEN VICRERS SEC TPL LID, SINGAPORE         2,312.17         88.000.00         0.03           BINP PARIBAS PRECENNE SEC LIN, NEW YORK         2,102.00         7.000.00         0.03         DEN VICRES CENEDTEANK, OSL         5.327         1.8,40.00         0.03           BINP PARIBAS PRIME BROCKEAGLE, LERKEY CUTY         6.00         2.000.00         0.00         DELVISCHE KANK CORE, SANKEL ONA         2.27.14         2.804.00         0.00           BINP PARIBAS PRIME BROCKEAGLE, NEW YORK         2.2666.81         9.356.33.10         0.00         DEUTSCHE KEN TEOL, INMARCE INMARCE, SANKEL ONA         2.27.14         2.809.80         0.00           BINP PARIBAS PRIME BROCKEAGLE, NEW YORK         1.266.83         0.01         DEUTSCHE KEN TEN CONNARCE CENTANERY CHARGEN         2.27	BELTONE SEC BROKERAGE S.A.E, CAIRO	67.27	34,939.00	0.00		63.78	3,189.00	0.02
BLOOMBERG TRADEBOOK, LUC, NEW YORK         5.23         1.92.00         0.03         DAWAS SECS (HK, ITV, INORG KONG         13.87.94.00         5.033,184.00         0.00           BLOOMBERG TRADEBOOK, LONDON         472.66         1.51,51.73.00         0.04         DAWAS SECS (HK, ITV, ORK         2.24.80.26         0.04           BLOOMBERG TRADEBOOK, NEW YORK         2.21.114         571,10.90         0.04         DAWAS SECS (HK, ITV, ORK         2.24.80.26         0.01           BIN PARIBAS PERCERINE SEC LTD, HONK KONG         19.42.96         19.90,59.01         0.00         DBW VICKERS SEC JTE, SINGAPORE         2.37.17         78.80.00         0.03           BIN PARIBAS PRIME BROKERAGE, INC.NEW YORK         2.100         7.000.00         0.00         DBW VICKERS SEC JTE, SINGAPORE         2.37.1         78.80.00         0.03           BIN PARIBAS SEC SIVES, SINGAROPRE         2.2066 ft         53.63.71.00         0.00         DEUTSCHE BAK SLE BARKC, COPENHAGEN         1.31.81.93         4.64.44.00.00         0.00           BIN PARIBAS SEC SIVES, SINGAN CONG         2.45.3         2.711.300         0.00         DEUTSCHE BAK SLE BARKC, CINNON         2.210.47         2.980.84.00         0.01           BIN CONVERGESC SIVES, SINGAN CONG         2.45.3         2.711.300         0.00         DEUTSCHE BAK SLE DARCELONA         2.421.60 <td< td=""><td>BERENBERG GOSSLER &amp; CIE, HAMBURG</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	BERENBERG GOSSLER & CIE, HAMBURG							
BLOOMBERG TRADEBOOK, LONDON         +72.65         1215,137.00         0.00         DAWAS SECS ÄMER NO, NEW YORK         22.415.45         56,002.00         0.04           BLOOMBERG TRADEBOOK, NEW YORK         7,120.89         233,753.00         0.03         DAWAS SECS ÄMER NU YORK         2.215.79         65,002.00         0.04           BMO CAPITAL, MARKETS CORP, NEW YORK         7,120.89         233,753.00         0.03         DBM YOCKRES SEC PTE LTD, SINGAPORE         2.372.17         85,000.00         0.03           BINP PARIBAS PRIME BROKERAGE, JERSEY CITY         6.00         200.00         0.03         DEN NARKE DAWK, CORENAGEN         2.118.9         7,182.00         0.03           BINP PARIBAS SEC SYS, SLONDARPORE         22.696.61         9.350.31.00         0.00         DEUTSCHE BAKK SLARCLONA         2.77.4         6,141.00         0.00           BINP PARIBAS SEC SYS, SLONDARV         1,300.63         5.55,74.00         0.00         DEUTSCHE BK KITC LONDAN UREUTGSZZEED)         2.2495.84.00         0.00           BINY CONVERCES LEXCUTION SOL, NEW YORK         4.017.55         5.01.33.01         0.00         DEUTSCHE BK KITC LONDAN UREUTGSZZEED)         2.249.74         6.444.09.00         0.00           BINY CONVERCES LEXCUTION SOL, NEW YORK         4.057.55         37.181.00         0.00         DEUTSCHE MK MERPHYL         4.445								
BLOOMBERG TRADEBOOK NEW YORK         22,114         571,1080         0.04         MAVIDSON(D, A)& CON, NEW YORK         2,217         56,002,00         0.04           BND PARIBAS PERCERNIS SEC LTD, HONK KONG         19,4298         15,005,811.00         0.00         DBS VICKERS SEC PLTD, NONK KONG         19,4298         15,005,811.00         0.00         DBS VICKERS SEC PLTD, NONK KONG         2,402,80         17,8352.00         0.01           BNP PARIBAS PRIME BROKERAGE, INC. NEW YORK         21000         7,000.00         0.03         DEN NORSKE CAREDITANL, OSLO         52,27         28,364.00         0.00           BNP PARIBAS SEC SVSS, LONDON (PARGEL)         2,119.05         555,774.00         0.00         DEUTSCHE BAK SLE BANK, COPENHAGEN         2,210.47         2,260,34         0.01           BNP PARIBAS SEC SVSS, LONDON (PARGEL)         2,119.10         556,774.00         0.00         DEUTSCHE BAK SLE BANK, COPENHAGEN         2,210.47         2,260,34         0.01           BNP OARIBAS SEC SVSS, LONDON (PARGEL)         2,713,300         0.00         DEUTSCHE BAK SLE BANK, COND (NUNSCUSS3)         114,373,33         46,644,090.0         0.01           BNP OARIBAS SEC SVSS, LONDON (PARGEL)         2,761,370.00         0.00         DEUTSCHE BK KAS LONDON (DUTGRE22EC)         2,212.01         2,240.01         0.01           BNY CONVERGEC SERVEX, SVNFY <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
BNP PARIBAS PERGGNIES SEC LTD, HONG KONG         19.49.69         16.905.991.00         0.000         DBS VICKERS SEC PTE LTD, SINGAPORE         2.372.17         88.000.00         0.000           BNP PARIBAS PRIME BROKERAGE_IMES NEW YORK         210.00         7.000.00         0.000         DEN DARKE BANK, COPENNAGEN         2.118.00         0.000           BNP PARIBAS SEC SVCS, LONDON (PARBGR2L)         2.19.05         55.672.00         0.000         DEUTSCHE BANK, SAE, BARCELONA         2.77.4         6.141.00         0.000           BNP PARIBAS SEC SVCS, LONDON (PARBGR2L)         2.19.05         55.672.00         0.000         DEUTSCHE BANK, SAE, BARCELONA         2.27.4         6.441.00.000           BNP PARIBAS SECURTIES SVCS, HONG KONG         5.45.33         2.761.300.00         0.000         DEUTSCHE BK KALLON (PUNCBUSCB32)         11.437.83         46.644.009.00         0.01           BNY CONVERGEX EXECUTION SOL, NEW YORK         10.575.54         313.181.00         0.030         DEUTSCHE BK KALLD, HONG KONG         4.445.65         340.815.00         0.010           BRADEOSC SIA CTWL, SAO PAULO         2.976.49         370.881.00         0.010         DEVALSENCE, SAULTD, HONG KONG         4.445.65         340.815.00         0.010           BRADEOSCO SIA CTWL, SAO PAULO         2.976.49         370.881.00         0.01         DEVALSENCE, MANILTONK KAL	BLOOMBERG TRADEBOOK, NEW YORK							
BNP PARILAS PRIME BROKERAGE. JERSEY CITY         6.00         200.00         0.03         DEN DANISKE BARK, COPENHAGEN         2,118.89         73,132.00         0.03           BNP PARILAS PRIME BROKERAGE.INC.NEW YORK         210.00         7,000.00         DEN NORSKE CREDITEANK, COSLO         527         28,364.00         0.00           BNP PARILAS SEC SNES, SNDAPP         2,119.05         536,872.00         0.00         DEUTSCHE BARK, SAE, BARCELONA         27.74         6,141.00         0.00           BNP PARILAS SEC SNES, SNDNEY         1,300.68         555,744.00         0.00         DEUTSCHE BK R, GL, LONDON         2,230.47         2,899.384.00         0.01           BNY CONVERGEX EXECUTION SOL, NEW YORK         46,017.05         5,061.133.00         0.01         DEUTSCHE BK R, SCINK, VINSUCUS3)         144,373.84         4,946.00         0.01           BNY CONVERGEX, NEW YORK         40,017.05         5,061.133.00         0.01         DEUTSCHE BK R, SCINK, NARORKAULO         2,976.40         370.881.00         0.01         DEVARISHER SEC SINC, NAROR AULO         2,976.40         370.881.00         0.01         DEVARISHER SEC SINC, NARORA ORE         1,278.38         915.80.00         0.00           BRADESCO SA, CTVM, SAO PAULO         2,976.40         370.811.00         0.01         DEVARISHER SEC SINC, NARORAPEL         1,278.00         0.03	BMO CAPITAL MARKETS CORP, NEW YORK	7,120.98	233,753.00	0.03		2,402.80		
BNP PARIBAS PRIME BROKEPAGE INC. NEW YORK         21 00         7,000.00         000         DEN NORSKE CRUTS AS, MAGAORE         22,896.40         0.00           BNP PARIBAS SEC SWCS AS, INGAPORE         22,896.41         3,303.310.00         000         DEUTSCHE BANK SAE BARCELONA         27.44         6,411.00         0.00           BNP PARIBAS SEC SWCS AS, INGAPORE         1,300.68         555,744.00         000         DEUTSCHE BANK SAE BARCELONA         27.44         7,416,500.00         0.00           BNP PARIBAS SECS SERVS, SUNGKY KONG         5,245.33         2,761,300.00         000         DEUTSCHE BKNETEL SEC, SUNK Y, MASCUBAS         46,644.098.00         0.00           BNY CONVERGEX, NEW YORK         46,017.05         313,181.00         003         DEVTSCHE BCASLA TUT, HONG KONG         4,445.58         349.815.00         0.01           BNADESCO SA, CTWM, SAO PAULO         2,395.32         21,132.00         0.01         DEN NOR MARETS CUSTOV, SOL         2,18.8         915.800.00         0.00           BRADESCO SA, CTWM, SAO PAULO         2,305.32         21,132.00         0.01         DEN NOR MARETS CUSTOV, SOL         2,18.8         91,580.00         0.02           BRADESCO SA, CTWM, SAO PAULO         2,305.32         20,132.00         0.01         DEVTSCHE BKNETS LANAITON HUK PANTLC, MINREASA BALLON         1,47.88         99	BNP PARIBAS PEREGRINE SEC LTD, HONG KONG							
BNP PARIBAS SEC SRVS S. SINGAPORE         22.886.61         9.350.31.00         000         DEUTSCHE BKAG, LONDON         27.74         6,141.00         0.00           BNP PARIBAS SEC SYCS, LONDON (PARGEG2L)         1.100.68         5538.72.00         000         DEUTSCHE BKAG, LONDON         25.357         37.1650.00.00         0.00           BNP PARIBAS SECS SERVS, SYDNEY         1.300.68         55.794.00         000         DEUTSCHE BKAG, LONDON         22.210.47         2.899.384.00         0.01           BNY CONVERGEX EXECUTION SOL, NEW YORK         16.075.5         5.061.833.00         001         DEUTSCHE BKAG, CNO, VI (WMSCUBSEC, SYDNEY         34.87         4.946.00         0.01           BNY CONVERGEX, NEW YORK         10.757.5         313.181.00         001         DEVTSCHE BKAGAN GRENELY KEMEEN), AMSTERDAM         172.60         15.820.00         0.01           BRADESCO SA, CTWM, SAO PAULO         2.093.52         21.132.00         001         DEVTACHE BKAG, CINCAPERLY KEMEEN), AMSTERDAM         172.60         15.820.00         0.02           BRADESCO SA, CTWM, SAO PAULO         2.093.52         21.132.00         0.01         DEVTACHE BKAG, PARTNERS, JERSEY CITY         13.86.86         39.433.00         0.02           BRADESCO SA, CTWM, SAO PAULO         2.026.27         780.00         0.02         CANTA MARTNERS, JERSEY CITY <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
BNP PARIBAS SEC SVCS, LONDON (PARGB2L)         2,119.05         558,872.00         Dou         DEUTSCHE BK AG, LONDON         2,538.79         37,185,000.00         Dou           BNP PARIBAS SECS SERVS, SYDNEY         1,300.86         555,740.00         000         DEUTSCHE BK INTL CU, LONDON (DEUTGB2ZEC)         2,210.47         2,269.384.00         0.01           BNP CONVERGEX EXECUTION SOL, NEW YORK         46,017.05         5,661.330.00         DEUTSCHE BK INTL CU, LONDON (DEUTGSCHE BK INTL CKENPS), LONDOK KONG         4,445.88         349,815.00         0.01           BNY CONVERGEX, NEW YORK         10,575.54         313,181.00         0.01         DEUTSCHE BK INTL KEMPENJ, MANTERDAM         172.80         15,820.00         0.01           BRADESCO SA CTVM, SAO PAULO         2,978.40         370.811.00         0.01         DMK MARTERS SEC, SINGARY KEMPENJ, MANTERDAM         172.80         15,820.00         0.01           BRADESCO SA CTVM, SAO PAULO         2,978.00         0.41         DOUGHERTY & COMPANY LLC, MINNEAPOLIS         1,496.70         47,385.00         0.02           BRADESCO SA CTVM, SAO PAULO         3,205.22         221.800         0.01         DMK MARKETS CUSTODY, OSLO         120.88         343.310         0.01           BRADESCO SAC TYM, LORP FI, NEW YORK         31.20         740.00         0.20         DOVLING & APRTIAL LORREPT LISC, MA								
BNP PARIBAS SECURTIES SVCS, HOMG KONG         5,245.33         2,761.300.00         0.00         DEUTSCHE BK SECS INC, NY (NWSCUS33)         114,373.83         464.40,990.00         0.00           BNY CONVERGEX, NEW YORK         10,575.54         313,181.00         0.01         DEUTSCHE MGRAM GRENFELL SEC, SYNCH*         34.85         34.84,150.00         0.01           BRADESCO SA, CTVM, SAO PAULO         2,963.40         370.801.00         0.01         DEXIA BK (FORMERY KEMPEN), MANSTERDAM         175.60         15.820.00         0.01           BRADESCO SA, CTVM, SAO PAULO         2,963.01         2.40.800.00         0.01         DMR NORMERY KEMPEN, MANSTERDAM         175.80         915.800.00         0.00           BRADACCRT CAPTTAL LOC, JERSEY CITY         35.82         2.11.20         0.01         DNR NORMERTS, CUSTOV, OSLO         2.10.80         0.01           BROCKHOUSE AND COOPER, MONTREAL         2.013.71         127.400.00         0.02         ED AND FINAL CAMPERS, JERSEY CITY         1.88.86         39.43.00         0.03           CARLES ANK REXELTS, CHICAGO         4,116.03         263.790.00         0.02         ED AND FINAL CARTTAL MARKETS, LONDON         3,171.10         1.78.496.00         0.03           CANACCORD GENUITY LIN LEVYORK         2.48.23         69.661.00         0.03         EXANE, FANRIESEN, FRANCUEL         38.	BNP PARIBAS SEC SVCS, LONDON (PARBGB2L)							
BNY CONVERGEX EXECUTION SOL, NEW YORK         46,017.05         5.061 833.00         0.01         DEUTSCHE MORGAN GRENFELL SEC, SYDNEY         34.87         4.946.00         0.01           BRY CONVERGEX, NEW YORK         10.575         5.061 833.00         0.01         DEUTSCHE SEC SIA LTD, HONG KONG         4.445.58         349.815.00         0.01           BRADESCO SIA CTVM, SAO PAULO         2.976.49         370.881.00         0.01         DEVIS (FORMERLY KEMPEN), AMSTERDAM         172.60         15.820.00         0.00           BRADESCO SIA CTVM, SAO PAULO         2.976.49         370.881.00         0.01         DIN NOR MARKETS CUSTODY, OSLO         210.80         13.173.00         0.02           BROALOCAT CAPITAL LIC, JERSEY CITY         305.52         2.921.85.00         0.01         DOWLING & PARTHERS, JERSEY CITY         748.58         39.433.00         0.40           BROCHOLUSE COMUNT KOR, MONTREAL         2.013.74         127.490.00         0.02         DARXEL HAMLTON LIC, JERSEY CITY         748.58         39.433.00         0.04           CARLES BANK DEUTSCHLAND, GERMANY         98.14         280.00         0.03         ERSTE LESPARKASSEN, PRAGUE         389.93         2.937.00         0.02           CANACCORD GENUITY IN, LONDON         2.761.84         237.643.00         0.03         ERSTE LARANREPS N.CO.ARINEPDI	BNP PARIBAS SECS SERVS, SYDNEY		555,794.00					
BAY CONVERCEX, NEW YORK         10,575.54         313,181.00         DEUXS/DELESEC ASIALTD, HONG KONG         4,445.58         349,815.00         0.01           BRADESCO S/A CTVM, SAO PAULO         2,093.01         240,800.00         0.01         DEVIXA BK (FORMERLY KEMPEN), AMSTERDAM         172.60         158,200         0.00           BRADESCO S/A CTVM, SAO PAULO         2,093.01         240,800.00         0.01         DMG N PARTNERS SEC, SINGAPORE         1.278.38         915.800.00         0.02           BROADCORT CAPITAL LOR, JERSEY CITY         306.32         21,132.00         0.01         DOUGHERTY & COMPANY LIC, MINEAPOLIS         1.446.70         47,866.00         0.02           BROADCORT CAPTAL CORP, MONTREAL         2,013.74         127,400.00         0.02         DOUGHERTY & COMPANY LIC, MINEAPOLIS         1.446.70         47,866.00         0.03           CARBERA CAPITAL MARKETS, CHICAGO         4,116.03         283,790.00         0.02         ERSTE EK SPRATKOSEN, PRAGUE         389.30         0.00           CANACCORD GENUITY LIN, CNEY YORK         2,248.23         69,661.00         0.03         EXANFREPP)         4,03.17         209,585.00         0.02           CANTOR CLEARING SERV, NEW YORK         10,106.99         1,039,802.00         0.01         FBN SECURTIES INC, LERSEY CITY         47,34         45,580.00 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>								
BRADESCOS A CTVM, SAO PAULO         2376.49         370.881.00         001         DEXIA BR (FORMERLY KEMPEN), AMSTERDAM         172.60         15.20.00         0.01           BRADESCO S/A CTVM, SAO PAULO         2,093.01         240,800.00         0.01         DMS (MG N PARTNERS, SEC, SINGAPORE         1.278.38         915,800.00         0.00           BROADCORT CAPITAL LIC, JERSEY CITY         306.32         21,132.00         0.01         DNB NOR MARKETS CUSTODY, OSLO         210.80         13,173.00         0.02           BROCAHOUSE AND COOPER, MONTREAL         2,013.71         127.400.00         0.02         DOWLING & PARTNERS, JERSEY CITY         1.388.68         394.330         0.04           DOCKOUSE AND COOPER, MONTREAL         2,013.71         127.400.00         0.02         DOWLING & PARTNERS, JERSEY CITY         1.388.68         394.330         0.04           CARERA CAPITAL MARKETS, CHICAGO         4,163         285.790.00         0.02         EDA DF AMA CAPITAL MARKETS, CHICAGO         399.93         2.937.00         0.03           CANACCORD GENUITY INC NEY YORK         2,428.23         69.661.00         0.33         EXAME, PARIS (EXAMERPP)         4.063.17         209.585.00         0.02           CANTOC CLEARING SERVICE, NEW YORK         10.09.89         1.039.802.00         0.03         FINACLAPSEY CITY         4.744 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
BRADESCO S/A CT/M. SAO PAULO         2.093.01         240.800.00         0.01         DNR PARTNERS SEC, SINGAPORE         1.278.38         915.800.00         0.00           BREAN CAPTALLC, JERSEY CITY         305.32         21.132.00         0.04         DNB NOR MARKETS CUSTOPY, OSL.0         21.08         1.373.00         0.02           BROACHOUSE AND COOPER, MONTREAL         2.013.74         127.400.0         0.02         DOUGHERTY & COMPANY LLC, MINNEAPOLIS         1.486.70         47.896.00         0.03           BROCKHOUSE AND COOPER, MONTREAL         2.013.74         127.400.00         0.02         DOUGHERTY & COMPANY LLC, MINNEAPOLIS         1.496.70         47.896.00         0.03           CABEERA CAPITAL MARKETS, CHICAGO         4.116.03         263.790.00         0.02         ERSTE KK SPARKASSEN, PARGUE         38.93         2.937.00         0.13           CANACCORD GENUITY LIN, CNEY YORK         2.248.23         69.661.00         0.03         ERSTE KK SPARKASSEN, PARGUE         38.93         2.937.00         0.03           CANTOR CLEARING SERV, NEW YORK         10.06 .99         1.039.802.00         0.03         FINARCIAL MARKETS & CO, ARLINGTON         2.931.20         154.388.00         0.02           CANTOR CLEARING SERVICE, NEW YORK         10.975.60         437.196.00         0.03         FINARCIAL BROKERAGE GROUP (FBG), CAIRO	· · · · · · · · · · · · · · · · · · ·							
BROADCORT CAPITAL CORP FI, NEW YORK         31.20         78.00         0.04         DOUGHERTY & COMPANY LLC, MINNEAPOLIS         1.496.70         47.896.00         0.03           BROCKHOUSE AND COOPER, MONTREAL         2,013.74         127,400.00         0.02         DOWLING & PARTNERS, JERSEY CITY         1.388.86         39,433.00         0.04           GABERRA CAPITAL MARKETS, CHICAGO         3,205.25         292,185.00         0.02         EDAND F MAN CAPITAL MARKETS, LONDON         3,171.10         1.799,409.00         0.00           CARDECRA CAPITAL MARKETS, CHICAGO         4,116.03         263,730.00         0.02         EDAND F MAN CAPITAL MARKETS, LONDON         3,171.10         1.799,409.00         0.03           CANACCORD GENUITY INC, NEY YORK         2,482.23         66,661.00         0.03         ERSTE BK SCHTY, SCHTY         4,98.17         209,585.00         0.02           CANACCORD GENUITY INC, NEY YORK         10,106.99         1.039,802.00         0.01         FBR CAPITAL MARKETS & C.O, ARLINGTON         2,912.0         154,358.00         0.02           CANTOR CLEARING SERV, NEW YORK         16.60         830.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         328.98         12,766.00         0.03           CANTOR FIZGERALD & CONC, NEW YORK         16.63.9         150,508.00         0.02         FIRST CLEARING	BRADESCO S/A CTVM, SAO PAULO					1,278.38	915,800.00	0.00
BROCKHOUSE AND COOPER, MONTREAL         2,013.74         127,400.00         0.02         DOWLING & PARTNERS, JERSEY CITY         1.388.86         39,433.00         0.04           BTIG LLC, SAN FRANCISCO         3,205.25         292,185.00         0.01         DEXEL HAMILTON LLC, JERSEY CITY         748.58         29,330.00         0.03           CABRERA CAPITAL MARKETS, CHICAGO         4,116.03         263,790.00         0.02         ED AND F MAN CAPITAL MARKETS, LONDON         3,171.10         1,799,409.00         0.00           CANACCORD GENUITY ICN, CNEY YORK         2,482.23         69,661.00         0.03         EXAME, PARIS (EXAMRRPP)         4,083.17         209,580.00         0.03           CANTOR CLEARING SERV, NEW YORK         10,106.99         1,039,802.00         0.01         FBR CAPITAL MARKETS & CO, ARLINGTON         2,931.20         154,358.00         0.02           CANTOR CLEARING SERV, NEW YORK         16.60         830.00         0.02         FIGR PARTNERS LIC, ATLANTA         1,473.00         0.03           CANTOR CLEARING SERV, NEW YORK         16.60         830.00         0.02         FIRST ALTANTA         1,473.00         0.03           CANTOR CLEARING SERV, ORD         247.55         15,449.00         0.02         FIRST NERS LIC, ATLANTA         1,477.00         0.03           CANTOR FITZGERALD	BREAN CAPITAL LLC, JERSEY CITY							
BTIG LLC, SAN FRANCISCO         3,205.25         292,185.00         0.01         DREXEL HAMILTON LLC, JERSEY CITY         748.58         29,330.00         0.03           CABRERA CAPITAL MARKETS, CHICAGO         4,116.03         263,790.00         0.02         ED AND F MAN CAPITAL MARKETS, LONDON         3,171.10         1,799,409.00         0.00           CANACCORD GENUITY INC.NEY YORK         2,448.23         69,661.00         0.03         EXANE, PARSI (EXANFRPP)         4,063.17         209,585.00         0.02           CANACCORD GENUITY INC.NEY YORK         2,451.30         0.01         FBN SECURITIES INC, LERSEY CITY         47.34         1,543.00         0.03           CANTOR CLEARING SERVI, NEW YORK         10,069.99         1.039,802.00         0.01         FBN CAPITAL MARKETS & CO, ARLINGTON         2,931.20         154,358.00         0.02           CANTOR FITZGERALD & CO INC, NEW YORK         16.60         80.00         0.02         FIG PARTNERS LLC, ATLANTA         1,473.05         45,300.00         0.03           CANTOR FITZGERALD EUROPE, LONDON         287.25         15,449.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         382.98         12,766.00         0.03           CARNEGIE BSG SLTD, HELSINKI (LOASFIHI)         9.019.23         207,093.00         0.04         FIOW CORRETORA DE MERCADORIAS, SAO PAULO         18						,		
CABRERA CAPITAL MARKETS, CHICAGO         4,116.03         263,790.00         0.02         ED AND F MAN CAPITAL MARKETS, LONDON         3,171.10         1,799,400.00         0.00           CACEIS BANK DEUTSCHLAND, GERMANY         98.14         286.00         0.34         ERSTE BK SPARKASSEN, PRAGUE         389.93         2,937.00         0.13           CANACCORD GENUITY INC, NEW YORK         2,751.84         237,543.00         0.01         FBN SECURITIES INC, JERSEY CITY         47.94         1,598.00         0.02           CANTOR CLEARING SERVICE, NEW YORK         10,016.99         1,039,802.00         0.02         FIR SECURITIES INC, JERSEY CITY         47.94         1,598.00         0.03           CANTOR CLEARING SERVICE, NEW YORK         10,075.60         437,196.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         32.88         1,2768.00         0.03           CANTOR FITZGERAL D & CO INC, NEW YORK         550.90         27.545.00         0.02         FIRST CLEARING LIC, RICHMOND         5,465.19         174,772.00         0.03           CARNEGIE BANK AS, COPENHAGEN         2,468.75         150.49.00         0.02         FIRST CLEARING LIC, RICHMOND         5,465.19         174,772.00         0.03           CARNEGIE BANK AS, COPENHAGEN         2,468.75         160.00.00         0.02         FIRST CLEARING LIC, RICHMOND	· ·							
CACELS BANK DEUTSCHLAND, GERMANY         98.14         286.00         0.34         ERSTE BK SPARKASSEN, PRAGUE         389.93         2,937.00         0.13           CANACCORD GENUITY INC.NEY YORK         2,248.23         69,661.00         0.03         EXANE, PARIS (EXANFRPP)         4,063.17         209,585.00         0.02           CANACCORD GENUITY INC.NEY YORK         10,09.99         1,039,802.00         0.01         FBR SECURTIES INC, JERSEY CITY         47.94         1,599.00         0.03           CANTOR CLEARING SERV.NEW YORK         10,016.99         1,039,802.00         0.01         FBR CAPITAL MARKETS & CO, ARLINGTON         2,931.20         154,358.00         0.03           CANTOR FITZGERALD & CO INC, NEW YORK         10,975.60         437,196.00         0.03         FIRST ANLYSIS SECS CORP. CHICAGO         382.98         12,766.00         0.03           CANTOR FITZGERALD EUROPE, LONDON         287.25         15,449.00         0.02         FIRST ALAYIAYSIS SECS CORP. CHICAGO         382.98         12,766.00         0.03           CARNEGIE BANK AS, COPENHAGEN         2,046.87         49,343.00         0.04         FIRST NZ CAP SECS, WELLINGTON         154.21         167,969.00         0.00           CARNEGIE ESC LTD, HELSINKI (CASFFIH1)         9,019.23         207,093.00         0.04         FIRST NZ CAP SECS, WELLINGTON		-,						
CANACCORD GENUITY LTD, LONDON         2,751.84         237,543.00         0.01         FBN SECURITIES INC, JERSEY CITY         47.94         1,598.00         0.03           CANTOR CLEARING SERV, NEW YORK         10,106.99         1,039,602.00         0.01         FBN SECURITIES INC, JERSEY CITY         47.94         1,598.00         0.03           CANTOR CLEARING SERV, NEW YORK         10,075.60         437,196.00         0.03         FINANCIAL BROKERAGE GROUP (FBG), CAIRO         13.55         1,951.00         0.01           CANTOR FITZGERALD E UROPE, LONDON         287.25         15,449.00         0.02         FIRST CLEARING LIC, RICHMOND         5,465.10         12,766.00         0.03           CAPITAL INSTUTUTONAL SVCS, NEW YORK         505.00         27,654.00         0.02         FIRST CLEARING LLC, RICHMOND         5,465.10         12,7760.00         0.03           CARNEGIE BANK AS, COPENHAGEN         2,466.75         150,508.00         0.02         FIRST CLEARING LIC, RICHMOND         5,452.01         12,7760.00.00         0.00           CARNEGIE ESC LTD, HELSINKI (CASFFIH1)         9.019.23         207,093.00         0.04         FOW CORRETORA DE MERCADORIAS, SAO PAULO         13,600.00         0.01           CALEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOLUS BANK, TRONDHEIM	CACEIS BANK DEUTSCHLAND, GERMANY				ERSTE BK SPARKASSEN, PRAGUE			0.13
CANTOR CLEARING SERV, NEW YORK         10,106.99         1,039,802.00         0.01         FBC CAPITAL MARKETS & CO, ARLINGTON         2,931.20         154,358.00         0.02           CANTOR CLEARING SERVICE, NEW YORK         16.60         830.00         0.02         FIG PARTNERS LLC, ATLANTA         1,473.05         45,300.00         0.03           CANTOR FITZGERALD & CO INC, NEW YORK         10,975.60         437,196.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         382.98         12,766.00         0.03           CAPITAL INSTITUTIONAL SVCS, NEW YORK         550.90         27,545.00         0.02         FIRST CLEARING LLC, RICHMOND         5,465.19         174,772.00         0.03           CARNEGIE SAN, OSLO         2,466.57         49,343.00         0.04         FIRST NZ CAP SECS, WELLINGTON         515.21         167,969.00         0.00           CARNEGIE SECS LD, HELSINKI (CASFFIH1)         9,019.23         207,093.00         0.04         FOX RIVER EXECUTION TECH,LLC,JERSY CITY         930.48         22,712.00         0.04           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJ SECURTIES INC, JERSEY CITY         908.48         22,712.00         0.00           CHEEVERS & CO. INC, CHICAGO         1,884.00         832.93.00         0.00         GOLDMAN SACHS AUSTRALLA PTY L	CANACCORD GENUITY INC.NEY YORK				,			
CANTOR CLEARING SERVICE, NEW YORK         16.60         830.00         0.02         FIG PARTNERS LLC, ATLANTA         1.473.05         45,300.00         0.03           CANTOR FITZGERALD & CO INC, NEW YORK         10,975.60         437,195.00         0.03         FINANCIAL BROKERAGE GROUP (FBG), CAIRO         13.55         1,981.00         0.01           CANTOR FITZGERALD & UROPE, LONDON         287.25         15,449.00         0.02         FIRST NANLYSIS SECS CORP, CHICAGO         382.98         12,766.00         0.03           CAPITAL INSTITUTIONAL SVCS, NEW YORK         550.90         27,545.00         0.02         FIRST NZ CAP SECS, WELLINGTON         515.21         167,969.00         0.00           CARNEGIE BANK AS, COPENHAGEN         2,046.75         150,508.00         0.02         FIRST NZ CAP SECS, WELLINGTON         515.21         167,969.00         0.00           CARNEGIE BANK AS, COPENHAGEN         2,046.75         49,343.00         0.04         FOCURETORA DE MERCADRIAS, SAO PAULO         13.63         13,000.00         0.01           CARNEGIE BANK AS, COPENHAGEN         1,919.23         207,093.00         0.04         FOX RIVER EXECUTION TECH, LLC, JERSEY CITY         93.00         18,600.00         0.02           CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         30,942,115.00         0.00         GOLDMAN SACHS SAIS								
CANTOR FITZGERALD & CO INC, NEW YORK         10,975.60         437,196.00         0.03         FINANCIAL BROKERAGE GROUP (FBG), CAIRO         13.55         1,951.00         0.01           CANTOR FITZGERALD EUROPE, LONDON         287.25         15,449.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         382.98         12,766.00         0.03           CAPITAL INSTITUTIONAL SVCS, NEW YORK         550.90         27,545.00         0.02         FIRST CLEARING LLC, RICHMOND         5,465.19         174,772.00         0.03           CARNEGIE ASA, OSLO         2,468.75         150.508.00         0.02         FIRST NZ CAP SECS, WELLINGTON         156.21         167,969.00         0.00           CARNEGIE BANK AS, COPENHAGEN         2,046.57         49,343.00         0.04         FLOW CORRETORA DE MERCADORIAS, SAO PAULO         136.39         13,000.00         0.01           CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,081.00         0.01         FOX RIVER EXECUTION TECH,LLC, JERSEY CITY         908.48         22,712.00         0.00           CELEADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJI SECURITIES         3,438.70         2,711.80.00         0.00           CHEEVERS & CO INC, CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD								
CANTOR FITZGERALD EUROPE, LONDON         287.25         15,449.00         0.02         FIRST ANALYSIS SECS CORP, CHICAGO         382.98         12,766.00         0.03           CAPITAL INSTITUTIONAL SVCS, NEW YORK         550.90         27,545.00         0.02         FIRST CLEARING LLC, RICHMOND         5465.19         174,772.00         0.03           CARNEGIE ASA, OSLO         2,468.75         150,508.00         0.02         FIRST NZ CAP SECS, WELLINGTON         545.21         167,969.00         0.00           CARNEGIE BANK AS, COPENHAGEN         2,046.57         49,343.00         0.04         FLOW CORRETORA DE MERCADDRIAS, SAO PAULO         136.39         13,000.00         0.01           CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOX RIVER EXECUTION TECH,LLC,JERSEY CITY         93.00         18,600.00         0.01           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJ SECURITIES         3,438.70         2,711,830.00         0.00           CHEEVERS & CO INC, CHICAGO         1,688.00         83,325.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812.92         1,974,688.00         0.00           CHEEVERS & CO INC, CHICAGO         1,688.00         8432.908.00         0.00         GOLDMAN SACHS AUST ASIA SEC LTD, HON								
CARNEGIE ASA, OSLO         2,468.75         150,508.00         0.02         FIRST NZ CAP SECS, WELLINGTON         515.21         167,969.00         0.00           CARNEGIE BANK AS, COPENHAGEN         2,046.57         49,343.00         0.04         FLOW CORRETORA DE MERCADORIAS, SAO PAULO         136.39         13,000.00         0.01           CARNEGIE SECS LTD, HELSINKI (CASFFIH1)         9,019.23         207,093.00         0.04         FOK US BANK, TRONDHEIM         1,966.07         119,200.00         0.02           CASTLEGOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOX RIVER EXECUTION TECH,LLC, JERSEY CITY         908.48         22,712.00         0.04           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJI SECURITIES INC, JERSEY CITY         908.48         22,712.00         0.04           CHEEVERS & CO, INC, CHICAGO         16,881.00         83,235.00         0.00         GOLDMAN SACHS AUSTRALLA PTY LTD, HONG KONG         812.92         1,974,688.00         0.00           CHINA INTL CAP CORP LTD, BEIJING         714.07         326,594.00         0.00         GOLDMAN SACHS AUSTRALLA PTY LTD, MELBOURN         8356.74         165,848.00         0.01           CIBC WORLD MARKETS CORP, NEW YORK         640.00         160.00.00         0.04 <td< td=""><td>CANTOR FITZGERALD EUROPE, LONDON</td><td></td><td></td><td></td><td>FIRST ANALYSIS SECS CORP, CHICAGO</td><td>382.98</td><td></td><td>0.03</td></td<>	CANTOR FITZGERALD EUROPE, LONDON				FIRST ANALYSIS SECS CORP, CHICAGO	382.98		0.03
CARNEGIE BANK AS, COPENHAGEN         2,046.57         49,343.00         0.04         FLOW CORRETORA DE MERCADORIAS, SAO PAULO         136.39         13,000.00         0.01           CARNEGIE SECS LTD, HELSINKI (CASFFIH1)         9,019.23         207,093.00         0.04         FOKUS BANK, TRONDHEIM         1,966.07         119,200.00         0.02           CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOX RIVER EXECUTION TECH,LLC,JERSEY CITY         93.00         18,600.00         0.01           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJI SECURITIES INC, JERSEY CITY         908.48         22,712.00         0.04           CLEIFIN CAPITAL SA CORREDORES, SANTIAGO         16,241.35         3,942,115.00         0.00         GK GOH SECURITIES         3,438.70         2,711,836.00         0.00           CHEEVERS & CO INC, CHICAGO         78.66         9,100.00         0.01         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         8.58         88,782.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00	CAPITAL INSTITUTIONAL SVCS, NEW YORK							
CARNEGIE SECS LTD, HELSINKI (CASFFIH1)         9,019.23         207,093.00         0.04         FOKUS BANK, TRONDHEIM         1,966.07         119,200.00         0.02           CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOX RIVER EXECUTION TECH,LLC, JERSEY CITY         93.00         18,600.00         0.01           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJ SECURITIES INC, JERSEY CITY         98.48         22,712.00         0.00           CELFIN CAPITAL SA CORREDORES, SANTIAGO         16,241.35         3,942,115.00         0.00         GK GOH SECURITIES         3,438.70         2,711,836.00         0.00           CHEEVERS & CO. INC, CHICAGO         72.86         9,100.00         0.01         GOLDMAN SACHS &CO,NY         227,858.39         112,079,727.00         0.00           CHEEVERS & CO. INC, CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812.92         1,974,688.00         0.00           CHINA INTL CAP CORP LTD, BEIJING         714.07         326,594.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.01           CIBC WORLD MAKRETS CORP, NEW YORK         640.00         16,000.00         0.04         GOLDMAN SACHS E								
CASTLEOAK SEC/CANTOR FITZGERALD & CO, NY         3,123.19         307,801.00         0.01         FOX RIVER EXECUTION TECH,LLC, JERSEY CITY         93.00         18,600.00         0.01           CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJ ISECURITIES INC, JERSEY CITY         93.00         18,600.00         0.01           CELFIN CAPITAL SA CORREDORES, SANTIAGO         16,241.35         3,942,115.00         0.00         GK GOH SECURITIES         3,438.70         2,711,836.00         0.00           CHEEVERS & CO INC, CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812,23         112,079,727.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         88.58         88,782.00         0.00           CHEW WORLD MARKETS CORP, NEW YORK         640.00         16,600.00         0.00         GOLDMAN SACHS ASIA SEC LTD, NELBOURN         83.56         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,800.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN	· · · · · · · · · · · · · · · · · · ·							
CELADON FINANCIAL GROUP, LLC, NEW YORK         404.60         47,600.00         0.01         FUJI SECURITIES INC, JERSEY CITY         908.48         22,712.00         0.04           CELFIN CAPITAL SA CORREDORES, SANTIAGO         16,241.35         3,942,115.00         0.00         GK GOH SECURITIES         3,438.70         2,711,836.00         0.00           CHEEVERS & CO INC, CHICAGO         72.86         9,100.00         0.01         GOLDMAN SACHS & CO, NY         227,858.93         112,079,727.00         0.00           CHEEVERS & CO.INC, CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         88.58         88,782.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         83.58         88,782.00         0.00           CHEW WORLD MARKETS CORP, NEW YORK         640.00         16,600.00         0.04         GOLDMAN SACHS INSTL, LONDON (SCILGBLY)         2,866.74         468,840.0         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGBLY)         4,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN S								
CHEEVERS & CO INC, CHICAGO         72.86         9,100.00         0.01         GOLDMAN SACHS & CO, NY         227,858.93         112,079,727.00         0.00           CHEEVERS & CO. INC., CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812.92         1,974,688.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812.92         1,974,688.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS DASALIS PTY LTD,MELBOURN         83,59.01         872,208.00         0.01           CIBC WORLD MAKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,0	CELADON FINANCIAL GROUP, LLC, NEW YORK	404.60		0.01		908.48	22,712.00	0.04
CHEEVERS & CO. INC., CHICAGO         1,688.00         83,235.00         0.02         GOLDMAN SACHS ASIA SEC LTD, HONG KONG         812.92         1,974,688.00         0.00           CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.00           CHINA INTL CAP CORP LTD, BEIJING         714.07         326,6544.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         83,59.01         872,208.00         0.01           CIBC WORLD MARKETS CORP, NEW YORK         640.00         16,000.00         0.04         GOLDMAN SACHS INCL, CNONTO         8,366.74         165,848.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSLGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, LONDON (GSLGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, NY         1,454.65         29,093.00         0.02           CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00								
CHINA INTL CAP CORP HK SECS, HONG KONG         13,552.35         8,492,908.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.00           CHINA INTL CAP CORP LTD, BEIJING         714.07         326,594.00         0.00         GOLDMAN SACHS AUSTRALIA PTY LTD,MELBOURN         88.58         88,782.00         0.01           CIBC WORLD MARKETS CORP, NEW YORK         640.00         16,600.00         0.04         GOLDMAN SACHS DO BRASIL, SAO PAULO         8,359.01         872,208.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS EXECUTION & CLEARING, NY         2,366.74         165,848.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, NY         1,454.65         29,093.00         0.05           CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00         GOLDMAN SACHS INTL, TORONTO (GSCI)         2,197.88         111,100.00         0.02           CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
CHINA INTL CAP CORP LTD, BEIJING         714.07         326,594.00         0.00         GOLDMAN SACHS DO BRASIL, SAO PAULO         8,359.01         872,208.00         0.01           CIBC WORLD MARKETS CORP, NEW YORK         640.00         16,000.00         0.04         GOLDMAN SACHS DO BRASIL, SAO PAULO         8,359.01         872,208.00         0.01           CIBC WORLD MARKETS CORP, NEW YORK         640.00         16,000.00         0.04         GOLDMAN SACHS EXECUTION & CLEARING, NY         2,366.74         165,848.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,860.21         6,084,704.00         0.01           CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00         GOLDMAN SACHS INTL, TORONTO (GSCI)         2,197.88         111,100.00         0.02           CIMB INVESTMENT BK BERHAD, KUALA LUMPUR         2,934.98         3,804,307.00         0.00         GODDBODY STOCKBROKERS, DUBLIN         1,027.34         293,556.00         0.00           CIMB SECURITIES (USA), INC, NEW YORK         104.50         103,063.00								
CIBC WORLD MARKETS CORP, NEW YORK         640.00         16,000.00         0.04         GOLDMAN SACHS EXECUTION & CLEARING, NY         2,366.74         165,848.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS EXECUTION & CLEARING, NY         2,366.74         165,848.00         0.01           CIBC WORLD MKTS INC, TORONTO         3,619.72         175,751.00         0.02         GOLDMAN SACHS INTL, LONDON (GSILGB2X)         54,860.21         6,084,704.00         0.01           CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, NY         1,454.65         29,093.00         0.05           CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00         GOLDMAN SACHS INTL, TORONTO (GSCI)         2,197.88         11,100.00         0.02           CIMB INVESTMENT BK BERHAD, KUALA LUMPUR         2,934.98         3,804,307.00         0.00         GODDBODY STOCKBROKERS, DUBLIN         1,027.34         293,556.00         0.00           CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00         GODDBODY STOCKBROKERS, DUBLIN         1,57.55         258,960.00         0.01           CITIBANK (COR), NEW YORK         104.50         103,063.00         0.02         GREEN	CHINA INTE CAP CORP LITD, BEIJING							
CIBC WORLD MKTS INC, TORONTO (WGDB)         851.01         62,000.00         0.01         GOLDMAN SACHS INTL, NY         1,454.65         29,093.00         0.05           CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00         GOLDMAN SACHS INTL, TORONTO (GSCI)         2,197.88         111,100.00         0.02           CIMB INVESTMENT BK BERHAD, KUALA LUMPUR         2,934.98         3,804,307.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,027.34         293,556.00         0.00           CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,557.95         258,960.00         0.01           CITIBANK (COR), NEW YORK         104.50         103,063.00         0.00         GORDON HASKETT CAP CORP, NJ         295.48         29,612.00         0.03           CITIBANK CUSTODIAL, TORONTO (CITC)         49.85         2,200.00         0.02         GREEN STREET ADVISORS, JERSEY CITY         1,248.47         40,749.00         0.03	CIBC WORLD MARKETS CORP, NEW YORK							
CIMB GK SECURITIES PTE LTD, SINGAPORE         47.75         10,502.00         0.00         GOLDMAN SACHS INTL, TORONTO (GSCI)         2,197.88         111,100.00         0.02           CIMB INVESTMENT BK BERHAD, KUALA LUMPUR         2,934.98         3,804,307.00         0.00         GODDBODY STOCKBROKERS, DUBLIN         1,027.34         293,556.00         0.00           CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,557.95         258,960.00         0.01           CITIBANK (COR), NEW YORK         104.50         103,063.00         0.00         GORDON HASKETT CAP CORP, NJ         925.48         29,612.00         0.03           CITIBANK CUSTODIAL, TORONTO (CITC)         49.85         2,200.00         0.02         GREEN STREET ADVISORS, JERSEY CITY         1,248.47         40,749.00         0.03	CIBC WORLD MKTS INC, TORONTO							
CIMB INVESTMENT BK BERHAD, KUALA LUMPUR         2,934.98         3,804,307.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,027.34         293,556.00         0.00           CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,557.95         258,960.00         0.01           CITIBANK (COR), NEW YORK         104.50         103,063.00         0.00         GORDON HASKETT CAP CORP, NJ         925.48         29,612.00         0.03           CITIBANK CUSTODIAL, TORONTO (CITC)         49.85         2,200.00         0.02         GREEN STREET ADVISORS, JERSEY CITY         1,248.47         40,749.00         0.03								
CIMB SECURITIES (USA), INC, NEW YORK         918.31         297,028.00         0.00         GOODBODY STOCKBROKERS, DUBLIN         1,557.95         258,960.00         0.01           CITIBANK (COR), NEW YORK         104.50         103,063.00         0.00         GORDON HASKETT CAP CORP, NJ         925.48         29,612.00         0.03           CITIBANK CUSTODIAL, TORONTO (CITC)         49.85         2,200.00         0.02         GREEN STREET ADVISORS, JERSEY CITY         1,248.47         40,749.00         0.03								
CITIBANK (COR), NEW YORK         104.50         103,063.00         0.00         GORDON HASKETT CAP CORP, NJ         925.48         29,612.00         0.03           CITIBANK CUSTODIAL, TORONTO (CITC)         49.85         2,200.00         0.02         GREEN STREET ADVISORS, JERSEY CITY         1,248.47         40,749.00         0.03								
	CITIBANK (COR), NEW YORK				GORDON HASKETT CAP CORP, NJ			0.03
CITIBANK LTD, MELBOURNE         5.93         19,772.00         0.00         GREEN STREET TRADING LLC, NEW YORK         1,589.49         50,988.00         0.03	CITIBANK CUSTODIAL, TORONTO (CITC)							
	CITIBANK LTD, MELBOURNE	5.93	19,772.00	0.00	GREEN STREET TRADING LLC, NEW YORK	1,589.49	50,988.00	0.03

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF BROKERAGE COMMISSIONS (Continued) FOR THE FISCAL YEAR ENDED JUNE 30, 2017

Broker Name	\$ Commission	Shares/ Par Value	Avg Comm	Broker Name	\$ Commis	Shares/ sion Par Value	Avg Comm
	596.12		0.02	LUMINEX TRADING AND ANALYTICS, BOSTON	166.14	66,449.00	0.00
GUGGENHEIM CAPITAL MKT LLC, JERSEY CITY GUZMAN & COMPANY, CORAL GABLES	33.58	26,256.00 1,679.00	0.02	M RAMSEY KING SECURITIES INC, BROOKLYN	2,306.28	47,076.00	0.00
HAITONG INTL SEC CO LTD, HONG KONG	3,508.29	3,633,000.00	0.00	MACQUARIE BANK LIMITED, SYDNEY	8,444.83	2,145,415.00	0.00
HANWHA SECS CO LTD, SEOUL	1,068.97	88,910.00	0.01	MACQUARIE BANK LTD, HONG KONG	33,487.82	19,072,487.00	0.00
HC ISTANBUL MENKUL DEGERLER, ISTANBUL	3,573.67	662,614.00	0.01	MACQUARIE BANK LTD, SYDNEY	828.73 12,722.64	157,500.00	0.01 0.02
HILLTOP SECURITIES INC, DALLAS HONG KONG & SHANGHAI BKG CORP, HONG KONG	6,771.44 6,176.84	207,769.00 2,185,900.00	0.03 0.00	MACQUARIE CAPITAL (USA) INC., NEW YORK MACQUARIE CAPITAL LTD, LONDON	1,973.36	832,435.00 124,025.00	0.02
HSBC BANK PLC (MIDLAND BK)(JAC), LONDON	47,794.09	6,694,119.00	0.00	MACQUARIE SECS (SINGAPORE), SINGAPORE	191.87	205,400.00	0.00
HSBC BROKERAGE (USA) INC., NEW YORK	67.50	4,500.00	0.02	MACQUARIE SECURITIES LTD, AUCKLAND	126.03	44,379.00	0.00
HSBC JAMES CAPEL, SEOUL	10,515.79	360,607.00	0.03	MACQUARIE SECURITIES LTD, SEOUL	6,726.25	264,980.00	0.03
HSBC SECS INC, NEW YORK	10,327.70	7,866,625.00	0.00	MACQUARIE SECURITIES(USA)INC JERSEY CITY MAINFIRST BANK AG,FRANKFURT AM MAIN	1,414.61 3,166.22	50,166.00 32,232.00	0.03 0.10
HSBC SECURITIES (USA) INC, NEW YORK HSBC,(ALL HK OFFICES & HEAD OFFICE), HK	6,752.34 2,070.19	335,099.00 6,536,904.00	0.02 0.00	MALAYAN BANKING, KUALA LUMPUR	2,430.01	730,964.00	0.10
ICAP DO BRASIL DTVM LTDA, RIO DE JANEIRO	1,214.95	91,010.00	0.01	MAXIM GROUP, JERSEY CITY	1,509.98	48,782.00	0.03
ICBC FINCL SVCS, NEW YORK	4,156.44	232,427.00	0.02	MAYBANK INV BANK BERHAD, KUALA LUMPUR	260.14	239,848.00	0.00
ICHIYOSHI SEC CO LTD, TOKYO	230.80	8,600.00	0.03	MEDIOBANCA SPA, MILANO	3,014.75	135,191.00	0.02
INSTINET AUSTRALIA CLEARING SERV, SYDNEY INSTINET CANADA, TORONTO	7,844.47 555.39	2,340,818.00 99,280.00	0.00 0.01	MERLIN SECURITIES LLC, JERSEY CITY MERRILL LYNCH & CO INC ATLAS GLOBAL, NY	817.98 3,649.76	109,055.00 211,917.00	0.01 0.02
INSTINET CANADA, TORONTO	27,025.44	2,675,458.00	0.01	MERRILL LYNCH BROADCORT CAP, NEW YORK	468.25	46,825.00	0.02
INSTINET CORP, NY	10,219.17	604,843.00	0.02	MERRILL LYNCH GILTS LTD, LONDON	37,353.88	15,122,864.00	0.00
INSTINET EUROPE LIMITED, LONDON	109,401.09	59,192,492.00	0.00	MERRILL LYNCH INTL LONDON EQUITIES	173,884.88	75,259,143.00	0.00
INSTINET PACIFIC LTD, HONG KONG		36,843,561.00	0.00	MERRILL LYNCH PIERCE FENNER SMITH INC NY	197,363.93	85,991,863.00	0.00
INSTINET, SINGAPORE INVESTEC HENDERSON CROSTHWAITE,LONDON	674.95 4,346.56	253,300.00 156,411.00	0.00 0.03	MERRILL LYNCH PIERCE FENNER, WILMINGTON MERRILL LYNCH PROFESSIONAL CLRG, PURCHAS	44,647.75 294.25	7,477,591.00 8,758.00	0.01 0.03
INVESTEC HENDERSON CROSTRIVALTE, LONDON	4,346.56 7,505.79	406,398.00	0.03	MERRILL LYNCH PROFESSIONAL CLRG, FORCHAS	3,714.21	364,100.00	0.03
INVESTEC SECURITIES LTD, JOHANNESBURG	7,350.38	644,260.00	0.02	MIRAE ASSET SEC (HK) LTD,HONG KONG	2,244.16	1,187,853.00	0.00
INVESTMENT TECHNOLOGY GROUP LTD, DUBLIN	45,103.28	7,564,407.00	0.01	MIRAE ASSET SECURITIES, SEOUL	5,044.94	217,480.00	0.02
INVESTMENT TECHNOLOGY GROUP, NEW YORK	2,238.10	84,993.00	0.03	MISCHLER FINL/EQUITIES, CORONA DELMAR	1,491.38	55,505.00	0.03
IPOPEMA SECURITIES S.A., WARSZAWA ISI GROUP INC, NY	230.27 5,796.85	1,507.00 213,827.00	0.15 0.03	MITSUBISHI UFJ SECS INTL PLC, LONDON MITSUBISHI UFJ SECURITIES, NEW YORK	626.84 10,704.09	29,300.00 597,700.00	0.02 0.02
ITAU USA SECURITIES INC, NEW YORK	622.55	80,340.00	0.03	MIZUHO SECURITIES ASIA, HONG KONG	10,704.05	4,100.00	0.02
ITG AUSTRALIA LTD, MELBOURNE	13,596.07	5,920,562.00	0.00	MIZUHO SECURITIES USA INC. NEW YORK	3,118.44	320,637.00	0.01
ITG CANADA CORP, TORONTO	3,006.71	176,515.00	0.02	MIZUHO SECURITIES USA INC, NEW YORK	6,695.72	199,889.00	0.03
ITG HONG KONG LIMITED, HONG KONG		11,658,328.00	0.00	MKM PARTNERS LLC, GREENWICH	5,237.98	185,014.00	0.03
ITG INC, NEW YORK ITG INC, NY	34,049.58 256.77	3,399,678.00 75,513.00	0.01 0.00	MORGAN STANLEY & CO INC, NY MORGAN STANLEY & CO INTL LTD, SEOUL	197,873.43 16,077.85	51,791,725.00 352,755.00	0.00 0.05
IXIS SECURITIES, PARIS	1,261.82	36,503.00	0.00	MORGAN STANLEY & CO, LONDON (MSLNGB2X)	50,770.35	8,811,681.00	0.00
J & E DAVY, DUBLIN	2,213.45	361,453.00	0.01	MORGAN STANLEY DEAN WITTER, SYDNEY	372.37	294,026.00	0.00
J P MORGAN SEC LTD/STOCK LENDING, LONDON	4,433.15	317,011.00	0.01	MS SECS SVCS INC INTL, BROOKLYN	49.82	41,244.00	0.00
J P MORGAN SEC, SYDNEY	1,064.92 97,407.86	519,586.00	0.00 0.01	NATIONAL FINL SVCS CORP, NEW YORK NATIONAL SECS CO LTD, BANGKOK	60,173.12 7,783.19	2,664,276.00 5,265,565.00	0.02 0.00
J P MORGAN SECS LTD, LONDON J P MORGAN SECURITIES INC, BROOKLYN	97,407.86 12,303.76	19,063,974.00 1,020,419.00	0.01	NBCN INC, TORONTO (NBCS)	799.98	52,974.00	0.00
J.P. MORGAN CLEARING CORP, NEW YORK		14,044,025.00	0.02	NEEDHAM AND COMPANY LLC, JERSEY CITY	650.11	18,317.00	0.04
J.P. MORGAN SECURITIES, HONG KONG		15,244,204.00	0.00	NESBITT BURNS, TORONTO (NTDT)	1,438.97	171,777.00	0.01
JANNEY MONTGOMERY SCOTT, PHILADELPHIA	2,233.10	70,472.00	0.03	NOMURA FINANCIAL & INVESTMENT, SEOUL	13,003.88	696,845.00	0.02
JEFFERIES & CO INC, NEW YORK JEFFERIES & CO LTD, LONDON		15,828,537.00 12,657,833.00	0.01 0.00	NOMURA SECS INTL, LONDON NORDEA BANK FINLAND PLC,HELSINKI	104.75 1,992.73	14,200.00 217,866.00	0.01 0.01
JEFFERIES HONG KONG LIMITED, HONG KONG	1,580.19	834,796.00	0.00	NORDEA BARREN MEAND FEO, HELSING	296.65	53.016.00	0.01
JMP SECURITIES, SAN FRANCISCO	1,598.83	53,124.00	0.03	NORTH SOUTH CAPITAL LLC, JERSEY CITY	1,108.93	85,474.00	0.01
JOHNSON RICE & COMPANY LLC, NEW ORLEANS	545.00	25,382.00	0.02	NORTHLAND SECS INC, JERSEY CITY	555.29	17,344.00	0.03
JONES & ASSOC, WESTLAKE VILLAGE	1,823.60	51,427.00	0.04	NUMIS SECURITIES INC., NEW YORK	7,111.60	946,900.00	0.01
JONESTRADING INSTL SVCS LLC, WESTLAKE JP MORGAN SECS (FAR EAST) LTD, SEOUL	3,591.55 7,566.89	137,601.00 281,669.00	0.03 0.03	NUMIS SECURITIES LTD, LONDON ODDO ET CIE, PARIS	809.80 1,146.27	162,337.00 62,605.00	0.00 0.02
JP MORGAN SECS, SINGAPORE	297.14	45,200.00	0.00	OPPENHEIMER & CO INC, NEW YORK	10,371.26	321,205.00	0.03
JPMORGAN CHASE BK, DALLAS	1,239.64	225,689.00	0.01	ORIEL SECURITIES LTD, LONDON	75.99	13,000.00	0.01
JPMORGAN SECURITIES INC, NEW YORK	40,855.73	7,049,515.00	0.01	OSK INVESTMENT BANK BERHAD, KUALA LUMPUR	7,576.79	3,691,046.00	0.00
KAS BANK NV, AMSTERDAM	470.84 5 707 04	15,876.00	0.03	PANMURE GORDON & CO LTD, LONDON PAREL, PARIS	2,108.50 7,526.58	585,340.00 268,179.00	0.00 0.03
KEB SALOMON SMITH BARNEY SECS, SEOUL KEEFE BRUYETTE AND WOODS, JERSEY CITY	5,707.04 715.01	31,658.00 19,877.00	0.18 0.04	PEEL HUNT LLP, LONDON	3,279.49	1,612,878.00	0.03
KEPLER EQUITIES, PARIS	893.78	23,682.00	0.04	PENSERRA SECURITIES, NEW YORK	6,144.13	649,502.00	0.01
KEYBANC CAPITAL MARKETS INC, JERSEY CITY	7,727.62	217,870.00	0.04	PEREGRINE SECS PHILIPPINES INC, MANILA	1,574.39	3,737,310.00	0.00
KEYBANC CAPITAL MARKETS INC, NEW YORK	6,198.61	293,577.00	0.02	PERSHING LLC, JERSEY CITY		1,001,286,472.63	0.00
KIM ENG SEC LTD, HONG KONG KIM ENG SECS PT, JAKARTA	225.68 654.26	74,400.00 15,826,300.00	0.00 0.00	PERSHING SECURITIES LIMITED, LIVERPOOL PERSHING SECURITIES LTD, LONDON	24.96 11,585.17	4,097.00 2,178,613.00	0.01 0.01
KING (CL) & ASSOCIATES, ALBANY	654.26 13,813.31	435,725.00	0.00	PIPER JAFFRAY & CO, MINNEAPOLIS	20,346.34	617,243.00	0.01
KNIGHT CAPITAL EUROPE LTD, LONDON	4,588.10	1,334,845.00	0.00	PT. MANDIRI SEKURITAS, JAKARTA	622.94	97,500,600.00	0.00
KNIGHT CLEARING SERVICES LLC, JERSEY CIT	2,596.49	336,071.00	0.01	RAYMOND JAMES & ASSOC INC, ST PETERSBURG	41,815.38	1,317,788.00	0.03
	162.00	21,600.00	0.01	RBC CAPITAL MARKETS LLC, NEW YORK	58,990.95	3,580,135.00	0.02
KNIGHT EQUITY MARKETS L.P., JERSEY CITY	92.57 11.051.36	4,697.00	0.02	RBC DOMINION SECS INC, TORONTO (DOMA) REDBURN PARTNERS LLP, LONDON	8,201.35 1 408 21	342,250.00 314 425 00	0.02
KOREA INVESTMENT AND SEC CO.LTD,SEOUL LARRAIN VIAL, SANTIAGO	11,051.36 33.96	459,391.00 253,082.00	0.02 0.00	REDBURN PARTNERS LLP, LONDON RENAISSANCE CAPITAL LTD, LONDON	1,408.21 9,119.58	314,425.00 797,550.00	0.00 0.01
LEERINK SWANN & CO, JERSEY CITY	692.32	17,308.00	0.00	ROTH CAPITAL PARTNERS LLC, IRVINE	73.10	1,990.00	0.04
LIBERUM CAPITAL INC, NEW YORK	2,302.49	162,024.00	0.01	ROYAL BANK OF CANADA EUROPE LTD, LONDON	1,071.93	123,177.00	0.01
LIQUIDNET CANADA INC, TORONTO	3,600.42	240,529.00	0.01	S G WARBURG, SEOUL	13,598.17	892,318.00	0.02
LIQUIDNET EUROPE LIMITED, LONDON	375.21	21,980.00	0.02 0.02	SAMSUNG SECS, SEOUL SAMUEL A. RAMIREZ & COMPANY INC, JERSEY	259.43 288.34	1,034.00 38,451.00	0.25 0.01
LIQUIDNET INC, NEW YORK LOOP CAPITAL MARKETS, JERSEY CITY	10,032.02 12,517.05	449,985.00 790,480.00		SANDLER O'NEILL & PARTNERS LP, NEW YORK	200.34 1,811.90	54,220.00	0.01
	,	, /00.00	0.02		.,	1,220.00	2.00

COMBINED INVESTMENT FUNDS 2017 COMPREHENSIVE ANNUAL FINANCIAL REPORT

### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF BROKERAGE COMMISSIONS (Continued) FOR THE FISCAL YEAR ENDED JUNE 30, 2017

Broker Name SANFORD C BERNSTEIN & CO INC, LONDON SANTANDER CENTRAL HISPANO INVT, MADRID SANTANDER INVESTMENT SECS, JERSEY CITY SCB SECURITIES CO LTD, BANGKOK SCOTIA CAPITAL (USA) INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SEC (LONDON) LTD, LONDON SG SEC (LONDON) LTD, LONDON SG SEC (LONDON) LTD, LONDON SG SEC URITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM SMBC NIKKO SECURITIES LTD, WAN CHAI	Commission 16,766.64 6,364.50 816.11 9,604.85 780.07 1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57 2,558.28	Par Value           1,479,269.00           3,383,341.00           108,814.00           14,648,976.00           12,751.00           2,259,776.00           98,716.00           46,843.00           59,936.00           6,521,345.00           11,353,890.00           2,029,500.00           45,129.00	Comm 0.01 0.00 0.01 0.00 0.06 0.00 0.01 0.01	Broker Name	Commission	Par Valu
SANTANDER CENTRAL HISPANO INVT, MADRID SANTANDER INVESTMENT SECS, JERSEY CITY SCB SECURITIES CO LTD, BANGKOK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	6,364.50 816.11 9,604.85 780.07 1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	3,383,341.00 108,814.00 14,648,976.00 2,259,776.00 98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.00 0.01 0.00 0.06 0.00 0.01 0.03 0.01 0.00			
SANTANDER CENTRAL HISPANO INVT, MADRID SANTANDER INVESTMENT SECS, JERSEY CITY SCB SECURITIES CO LTD, BANGKOK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	6,364.50 816.11 9,604.85 780.07 1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	3,383,341.00 108,814.00 14,648,976.00 2,259,776.00 98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.00 0.01 0.00 0.06 0.00 0.01 0.03 0.01 0.00			
SCB SECURITIES CO LTD, BANGKOK SCOTIA CAPITAL (USA) INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	9,604.85 780.07 1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	14,648,976.00 12,751.00 2,259,776.00 98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.00 0.06 0.00 0.01 0.03 0.01 0.03			
SCOTIA CAPITAL (USA) INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	780.07 1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	12,751.00 2,259,776.00 98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.06 0.00 0.01 0.03 0.01 0.00			
SCOTIA CAPITAL INC, NEW YORK SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	1,389.06 809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	2,259,776.00 98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.00 0.01 0.03 0.01 0.00			
SCOTIA CAPITAL MKTS, TORONTO SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	809.21 506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	98,716.00 46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.01 0.01 0.03 0.01 0.00			
SEAPORT GROUP SECS LLC, NEW YORK SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	506.79 1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	46,843.00 59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.01 0.03 0.01 0.00			
SG AMERICAS SECURITIES LLC, NEW YORK SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	1,754.62 39,364.89 27,318.80 1,828.61 541.04 3,019.57	59,936.00 6,521,345.00 11,353,890.00 2,029,500.00	0.03 0.01 0.00			
SG SEC (LONDON) LTD, LONDON SG SECURITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	39,364.89 27,318.80 1,828.61 541.04 3,019.57	6,521,345.00 11,353,890.00 2,029,500.00	0.01 0.00			
SG SECÚRITIES, HONG KONG SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	27,318.80 1,828.61 541.04 3,019.57	11,353,890.00 2,029,500.00	0.00			
SHENYIN WANGUO SECS LTD, HONG KONG SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	1,828.61 541.04 3,019.57	2,029,500.00				
SHORE CAPITAL STOCKBROKERS, LONDON SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	541.04 3,019.57		0.00			
SIDOTI & CO LLC, NEW YORK SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	3,019.57	45,129.00	0.01			
SKANDINAVISKA ENSKILDA BANKEN, COPENHAGE SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM		89,587.00	0.01			
SKANDINAVISKA ENSKILDA BANKEN, LONDON SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM		31,370.00	0.03			
SKANDINAVISKA ENSKILDA BANKEN, STOCKHOLM	3,350.33	148,140.00	0.02			
	3,867.16	187,764.00	0.02			
	1,479.03	60,300.00	0.02			
SMBC SECURITIES, INC NEW YORK	2,876.25	239,300.00	0.02			
SOCIETE GENERALE LONDON BRANCH, LONDON	30,872.90	8,130,255.00	0.00			
SOFTLOGIC STOCKBROKERS PVT LTD, COLUMBO	125.74	1,734,386.00	0.00			
STANDARD BANK, LONDON	4,932.34	519,824.00	0.00			
STATE STREET BROKERAGE SVCS, BOSTON	3,619.08	150,211.00	0.02			
STATE STREET GLOBAL MARKETS LLC, BOSTON	8,055.11	464,152.00	0.02			
STEPHENS INC, LITTLE ROCK	26,787.38	1,004,648.00	0.03			
STIFEL NICOLAUS	43,111.04	1,877,287.00	0.02			
STURDIVANT & CO INC, BROOKLYN	1,604.92	41,248.00	0.04			
SUNTRUST CAPITAL MARKETS INC, ATLANTA	4,359.24	123,331.00	0.04			
SVENSKA HANDELSBANKEN, STOCKHOLM	3,897.58	148,103.00	0.03			
FELSEY ADVISORY GROUP LLC, DALLAS	1,365.93	136,593.00	0.01			
THE BANK OF NEW YORK MELLON, BRUSSELS	433.38	4,000.00	0.11			
FONG YANG SECURITIES INC, SEOUL	1,609.97	122,818.00	0.01			
FORONTO DOMINION SEC, TORONTO	5,468.02	200,932.00	0.03			
JBS EQUITIES, LONDON	13,861.93	21,479,278.00	0.00			
JBS SECS SINGAPORE PTE LTD	315.11	1,687,800.00	0.00			
JBS SECURITIES CANADA, TORONTO (BWIT)	2,907.67 91.26	364,737.00	0.01 0.00			
JBS SECURITIES HONG KONG LTD, HONG KONG		538,000.00				
JBS SECURITIES LLC, STAMFORD JBS WARBURG ASIA LTD, HONG KONG	131,095.07 57,843.21	19,187,022.00 49,361,730.00	0.01 0.00			
JBS WARBURG ASIA LTD, HONG KONG JBS WARBURG AUSTRALIA EQUITIES, SYDNEY	379.95	73,905.00	0.00			
JBS WARBURG, LONDON	90,252.10	15,448,512.00	0.01			
/TB BANK EUROPE PLC, LONDON	1,246.78	215,297.00	0.01			
WEDBUSH MORGAN SECS INC, LOS ANGELES	12,472.69	488,270.00	0.03			
WEEDEN & CO, GREENWICH	1,605.79	303,000.00	0.01			
NEEDEN & CO, NEW YORK	13,447.55	688,394.00	0.02			
WELLS FARGO SECURITIES LLC, CHARLOTTE	3,803.43	117,311.00	0.03			
WELLS FARGO SECURITIES LLC, CHARLOTTE	9,660.35	342,475.00	0.03			
WILLIAM BLAIR & CO, CHICAGO	26,756.06	991,262.00	0.03			
WILLIAMS CAPITAL GROUP LP, JERSEY CITY	3,777.75	183,481.00	0.02			
WINTERFLOOD SECS, LONDON	346.87	235,558.00	0.00			
NOLFE TRAHAN SECURITIES, NEW YORK	238.14	7,938.00	0.03			
WOORI INVESTMENT & SECURITIES, SEOUL	1,257.52	34,460.00	0.04			
	197.30	18,500.00	0.01			
AMNER & COMPANY INC, JERSEY CITY	1,656.62	165,662.00	0.01			
OTAL \$5	,307,689.62					

### COMBINED INVESTMENT FUNDS TOTAL NET POSITION VALUE BY PENSION PLANS AND TRUST FUNDS JUNE 30, 2017

Retirement Funds	Net Position Value
Teachers' Retirement Fund	\$17,126,802,473
State Employees' Retirement Fund	11,955,374,580
Municipal Employees' Retirement Fund	2,441,303,399
State Judges' Retirement Fund	210,022,249
The Probate Court Retirement Fund	95,047,753
State's Attorneys Retirement Fund	1,798,493
Non-retirement Trust Funds	
Soldiers' Sailors' & Marines' Fund	75,901,175
Police & Firemans' Survivors' Benefit Fund	32,348,872
Connecticut Arts Endowment Fund	19,953,445
School Fund	11,629,717
Ida Eaton Cotton Fund	2,577,251
Hopemead State Park Fund	3,797,945
Andrew C. Clark Fund	1,212,149
Agricultural College Fund	660,208
OPEB Fund	569,440,305
TOTAL	\$32,547,870,014

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF NET POSITION BY INVESTMENT FUND JUNE 30, 2017

	LIQUIDITY FUND	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOMI FUND	INFLATION E LINKED BONE FUND	EMERGING MARKET DEBT FUND
ASSETS						
Investments in Securities, at Fair Value	9					
Liquidity Fund	\$-	\$175,615,507	\$411,748,512	\$150,040,141	\$37,703,198	\$46,741,492
Cash Equivalents	278,764,721	-	-	-	(252,453)	(3,886)
Asset Backed Securities	168,082,920	-	-	87,031,155	754,194	243,071
Government Securities	559,446,428	-	-	529,464,895	1,287,875,567	1,269,152,678
Government Agency Securities	177,510,219	-	-	538,674,404	-	-
Mortgage Backed Securities	138,464,921	-	-	142,114,126	-	-
Corporate Debt	1,516,216,033	-	-	568,908,990	6,861,510	281,596,010
Convertible Securities	-	-	-		-	451,587
Common Stock	-	-	6,405,918,911	-	-	-
Preferred Stock	-	-	-	3,249,926	-	-
Real Estate Investment Trust	-	-	208,297,032	15,930,248	-	-
Business Development Corportati	on -	-	200,207,002	-	-	-
Mutual Fund	83,711,810	_	_	_	_	_
Limited Liability Corporation	00,711,010	_	_	_	_	
Trusts	-	-	-	-	-	-
Limited Partnerships	-	- 1.851.172.578	522.410	566.040.052	-	-
Total Investments in Securities,	-	1,001,172,070	522,410	300,040,052	-	
at Fair Value	2,922,197,052	2,026,788,085	7,026,486,865	2,601,453,937	1,332,942,016	1,598,180,952
Cash	773,510	879,077	-	213,629	4,411,429	10,563,267
Receivables						
	070 000 704				500 004 040	407 540 004
Foreign Exchange Contracts Interest Receivable	379,980,784	246.052	-	- 11.385.574	562,361,240 5,062,569	407,548,634
	7,913,403	346,952	238,115	11,305,574	5,062,569	32,050,510
Dividends Receivable	-	-	6,534,504	-	-	-
Due from Brokers	2,638,439	-	8,903,416	165,083,958	3,106,066	13,078,672
Foreign Taxes	108,918	-	-	62	202,682	393,200
Securities Lending Receivable	-	-	403,930	47,271	51,388	23,274
Reserve for Doubtful Receivables		-	(116,467)	(1,131,504)	(41,211)	(310,733)
Total Receivables	390,641,544	346,952	15,963,498	175,385,361	570,742,734	452,783,557
Invested Securities Lending Collateral	-	-	778,701,169	181,891,304	243,894,815	26,952,510
Prepaid Expenses	-	-	-	-	-	-
Total Assets	3,313,612,106	2,028,014,114	7,821,151,532	2,958,944,231	2,151,990,994	2,088,480,286
LIABILITIES Payables						
Foreign Exchange Contracts	382,335,862	-	-	-	560,202,201	404,692,049
Due to Brokers	5,663,928	_	16,763,588	324,074,399	3,261,423	18,520,963
Income Distribution	5,665,013		10,700,000	524,074,000	5,201,425	10,520,505
Other Payable	5,005,015	-	217,027	-	-	-
Total Payables	393,664,803		16,980,615	324,074,399	563,463,624	423,213,012
Securities Lending Collateral	333,004,003	-	778,701,169	181,891,304	243,894,815	26,952,510
Accrued Expenses	504,731	57,614	3,339,045	595,039	606,810	1,133,748
Total Liabilities	394,169,534	57,614		506,560,742	807,965,249	451,299,270
NET POSITION HELD IN TRUST	334,109,334	57,014	799,020,829	500,500,742	007,900,249	401,200,270
FOR PARTICIPANTS	\$2,919,442,572	\$2,027,956,500	\$7,022,130,703	\$2,452,383,489	\$1,344,025,745	\$1,637,181,016
Units Outstanding	3,011,742,648	1,669,963,862	3,795,772	18,611,754	8,614,288	9,396,762
Not Position Value and Podematica						
Net Position Value and Redemption Price per Unit	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
-						

# SCHEDULE OF NET POSITION BY INVESTMENT FUND (Continued) JUNE 30, 2017

HIGH YIELD- DEBT FUND	DEVELOPED MARKET INTERNATIONAL STOCK FUND	EMERGING MARKET INTERNATIONAL STOCK FUND	REAL L ESTATE FUND	PRIVATE INVESTMENT FUND	ELIMINATION ENTRY	TOTAL	
\$152,617,846	\$124,308,159	\$49,157,004	\$86 164 893	\$300 771 938	\$(1,534,868,690)	\$ -	
610,705	4,174,606	φ+0,107,00+ -	φ00,104,000 -	-	φ(1,004,000,000) -	283,293,693	
(1,188,521)	-, 17-,000	_	_	_	_	254,922,819	
55,774,495	_	_		_	_	3,701,714,063	
55,774,455	-	-	-	-	-	716,184,623	
-	-	-	-	-	-		
4 000 050 004	-	-	-	-	-	280,579,047	
1,663,650,234	-	-	-	-	-	4,037,232,777	
51,210,909	-	-	-	-	-	51,662,496	
8,521,335	6,130,006,652	2,771,214,754	-	11,562,335	-	15,327,223,987	
16,577,131	17,937,060	39,394,345	-	-	-	77,158,462	
29,312,900	65,429,565	269,088	-	-	-	319,238,833	
57,625,395	-	-	-	-	-	57,625,395	
-	2,451,911	142,751,332	-	-	-	228,915,053	
-	-	-	-	1,156,486	-	1,156,486	
-	-	-	-	-	-	-	
-	-	-	2,156,493,225	2,657,239,167	-	7,231,467,432	
2,034,712,429	6,344,307,953	3,002,786,523	2,242,658,118	2,970,729,926	(1,534,868,690)	32,568,375,166	
5,250,944	35,520,404	6,870,072	6,287,724	19,147,886	(773,510)	89,144,432	
4,784,055	6,824,683,902	4,875,995	_	_	(379,463,230)	7,804,771,380	
28,248,645	306,230	120,288	324,874	554,207	(7,913,403)	78,637,964	
32,844	13,049,783	14,823,666	524,074	554,207	(7,010,400)	34,440,797	
		3,259,480	-	-	(2 630 420)		
10,953,685	54,797,252		-	-	(2,638,439)	259,182,529	
447	15,319,064	232,043	-	-	(108,918)	16,147,498	
279,715	248,037	184,066	-	-	-	1,237,681	
(604,309)	(1,988,266)	(463,451)		-	-	(4,655,941)	
43,695,082	6,906,416,002	23,032,087	324,874	554,207	(390,123,990)	8,189,761,908	
523,258,667	62,998,657	203,064,465	-	-	-	2,020,761,587	
-	-	-	-	1,073,767		1,073,767	
2,606,917,122	13,349,243,016	3,235,753,147	2,249,270,716	2,991,505,786	(1,925,766,190)	42,869,116,860	
4 700 000	0.040.004.000	4 000 070			(000 005 000)	7 040 007 540	
4,782,933	6,842,394,088	4,896,272	-	-	(382,335,862)	7,816,967,543	
33,319,404	57,190,282	10,472,823	-	-	(5,663,928)	463,602,882	
-	-	-	-	-	(2,631,802)	3,033,211	
-	-	-	-	-	-	217,027	
38,102,337	6,899,584,370	15,369,095	-	-	(390,631,592)	8,283,820,663	
523,258,667	62,998,657	203,064,465	-	-	-	2,020,761,587	
1,222,088	5,619,798	1,997,529	789,896	1,063,405	(265,107)	16,664,596	
562,583,092	6,968,202,825	220,431,089	789,896	1,063,405	(390,896,699)	10,321,246,846	
\$2,044,334,030	\$6,381,040,191	\$3,015,322,058	\$2,248,480,820	\$2,990,442,381	l \$(1,534,869,491	) \$32,547,870,014	
13,200,858	11,879,604	7,145,303	42,108,577	38,044,338			
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60			_

### SCHEDULE OF CHANGES IN NET POSITION BY INVESTMENT FUND FOR THE FISCAL YEAR ENDED JUNE 30, 2017

ADDITIONS	LIQUIDITY FUND	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEB FUND
OPERATIONS						
Investment Income						
Dividends	\$-	\$3,675,456	\$130,853,122	\$7,415	\$459	\$-
Interest	47,272,487	2,775,092	1,557,805	53,982,946	846,960	100,777,661
Other Income	13,908	23,518	1,272,856	608,095	17,231	17,312,548
Securities Lending	-	-	11,869,343	1,699,211	2,876,399	332,417
Total Income	47,286,395	6,474,066	145,553,126	56,297,667	3,741,049	118,422,626
Expenses						
Investment Advisory Fees	2,240,224	-	13,261,733	2,602,485	2,613,172	5,645,057
Custody and Transfer Agent Fees	160,666	188,495	703,492	244,697	136,366	156,178
Professional Fees	51,404	573,708	228,862	51,521	27,929	41,474
Security Lending Fees		575,700	652,152	77,010	93,113	24,477
Security Lending Rebates			5,348,677	929,110	1,945,268	87,652
Investment Expenses	- 12,774	10,433	42,193	38,683	172.699	24.068
Total Expenses	2,465,068	772,636	20,237,109	3,943,506	4,988,547	5,978,906
otal Expenses	2,403,008	112,030	20,237,109	3,943,500	4,900,047	5,976,900
let Investment Income	44,821,327	5,701,430	125,316,017	52,354,161	(1,247,498)	112,443,720
let Increase (Decrease) in the Fair Value of Investments and Foreign Currency	(16,931,128)	147,986,010	1,093,439,042	(9,942,660)	10,408,838	24,349,950
let Increase (Decrease) in Net Position Resulting from Operations	27,890,199	153,687,440	1,218,755,059	42,411,501	9,161,340	136,793,670
Jnit Transactions						
Purchase of Units by Participants	10,670,233,604	73,221,868	25,848,399	50,171,440	13,067,857	9,119,611
OTAL ADDITIONS	10,698,123,803	226,909,308	1,244,603,458	92,582,941	22,229,197	145,913,281
DEDUCTIONS Administrative Expenses: Salary and Fringe Benefits	(427,025)	(223,352)	(977,274)	(307,273)	(177,396)	(181,723
Distributions to Unit Owners: Income Distributed	(44,443,763)	-	-	-	-	-
Jnit Transactions Redemption of Units by Participants	(9,713,904,136)	(3,070,100)	(863,600,297)	(46,756,545)	-	(6,331,026
TOTAL DEDUCTIONS	(9,758,774,924)	(3,293,452)	(864,577,571)	(47,063,818)	(177,396)	(6,512,749
Change in Net Position Held in Trust						
for Participants	939,348,879	223,615,856	380,025,887	45,519,123	22,051,801	139,400,532
let Position- Beginning of Period	1,980,093,693	1,804,340,644	6,642,104,816	2,406,864,366	1,321,973,944	1,497,780,484
et Position- End of Period	\$2,919,442,572	\$2,027,956,500	\$7,022,130,703	\$2,452,383,489	\$1,344,025,745	\$1,637,181,016
other Information: Inits						
Purchased	10,973,461,035	64,193,409	15,479	386,610	85,657	55,127
Redeemed	(9,988,401,748)	(2,675,765)	(501,504)		,	(38,165
Net Increase (Decrease)	985,059,287	61,517,644	(486,025)	28,747	85,657	16,962
			(	_ >,	,	. 0,002

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF CHANGES IN NET POSITION BY INVESTMENT FUND (Continued) FOR THE FISCAL YEAR ENDED JUNE 30, 2017

HIGH YIELD- DEBT FUND	DEVELOPED MARKET INTERNATIONAL STOCK FUND	EMERGING MARKET INTERNATIONA STOCK FUND	REAL L ESTATE FUND	PRIVATE INVESTMENT FUND	ELIMINATION ENTRY	TOTAL	
\$11,598,458 113,359,654	\$174,761,976 2,398,866	\$57,931,072 1,084,545	\$84,913,699 2,100,048	\$46,647,278 3,795,686	\$- (21,418,902)	\$510,388,935 308,532,848	
1,323,824 5,104,339	114,531 2,781,738	22,788 2,461,290	28,768	395,527 -	(6,302)	21,127,292 27,124,737	
131,386,275	180,057,111	61,499,695	87,042,515	50,838,491	(21,425,204)	867,173,812	
4,896,835	21,770,263	13,891,017	9,398,241	2,656,009	(1,015,033)	77,960,003	
195,000	602,595	471,686	310,010	375,200	(72,797)	3,471,588	
47,359	129,903	63,664	449,555	1,210,185	(23,291)	2,852,273	
325,031 1,854,032	247,612 305,614	157,117 890,121	-	-	-	1,576,512 11,360,474	
289,911	157,154	1,393,591	- 12,410	- 160,850	(5,788)	2,308,978	
7,608,168	23,213,141	16,867,196	10,170,216	4,402,244	(1,116,909)	99,529,828	
123,778,107	156,843,970	44.632.499	76,872,299	46,436,247	(20,308,295)	767,643,984	
101,465,790	1,125,951,807	522,156,606	38,116,638	288,361,287	7,380,915	3,332,743,095	
225,243,897	1,282,795,777	566,789,105	114,988,937	334,797,534	(12,927,380)	4,100,387,079	
13,149,010	17,140,296	7,204,576	66,607,366	35,661,283	(8,294,409,208)	2,687,016,102	
238,392,907	1,299,936,073	573,993,681	181,596,303	370,458,817	(8,307,336,588)	6,787,403,181	
(255,405)	(670,799)	(325,165)	(235,414)	(413,312)	193,483	(4,000,655)	
-	-	-	-	-	20,137,221	(24,306,542)	
(16,952,242)	(142,029,995)	(41,816,972)	(139,968,974)	(149,413,229)	7,666,697,785	(3,457,145,731)	
(17,207,647)	(142,700,794)	(42,142,137)	(140,204,388)	(149,826,541)	7,687,028,489	(3,485,452,928)	
221,185,260	1,157,235,279	531,851,544	41,391,915	220,632,276	(620,308,099)	3,301,950,253	
823,148,770	5,223,804,912	2,483,470,514	2,207,088,905	2,769,810,105	(914,561,392)	29,245,919,761	
044,334,030	\$6,381,040,191	\$3,015,322,058	\$2,248,480,820	\$2,990,442,381	\$(1,534,869,491)	\$32,547,870,014	
87,988	37,301	19,508	1,291,886	489,630			
(116,161)	(296,111)	(110,695)	(2,788,325)	(2,128,299)			
(28,173)	(258,810)	(91,187)	(1,496,439)	(1,638,669)			

### SCHEDULE OF CHANGES IN NET POSITION BY INVESTMENT FUND FOR THE FISCAL YEAR ENDED JUNE 30, 2016

ADDITIONS OPERATIONS Investment Income Dividends Interest Other Income Securities Lending Total Income Expenses Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses Total Expenses	\$ 26,545,360 3,647 - 26,549,007 1,537,535 45,602 32,873 - - 72,372 1,688,382 24,860,625	\$4,592,789 924,448 - - 5,517,237 - 215,561 613,483 - - 13,999 843,043	\$128,695,580 775,588 2,812,646 10,003,339 142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966 17,994,312	\$188 56,716,843 495,044 1,046,315 58,258,390 2,592,136 267,116 56,812 58,626 460,056 8,500	\$ - 1,885,985 - 1,680,725 3,566,710 2,280,298 125,742 27,247 62,343 1,057,297	\$ - 143,311,719 4,313,152 359,452 147,984,323 3,837,786 144,601 33,011 34,670 12,757
Investment Income Dividends Interest Other Income Securities Lending Total Income Expenses Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	26,545,360 3,647 26,549,007 1,537,535 45,602 32,873 - - 72,372 1,688,382	924,448 - - 5,517,237 - 215,561 613,483 - - 13,999 843,043	775,588 2,812,646 10,003,339 142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966	56,716,843 495,044 1,046,315 58,258,390 2,592,136 267,116 56,812 58,626 460,056	1,885,985 1,680,725 3,566,710 2,280,298 125,742 27,247 62,343	143,311,719 4,313,152 359,452 147,984,323 3,837,786 144,601 33,011 34,670
Dividends Interest Other Income Securities Lending <b>Total Income</b> <b>Expenses</b> Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	26,545,360 3,647 26,549,007 1,537,535 45,602 32,873 - - 72,372 1,688,382	924,448 - - 5,517,237 - 215,561 613,483 - - 13,999 843,043	775,588 2,812,646 10,003,339 142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966	56,716,843 495,044 1,046,315 58,258,390 2,592,136 267,116 56,812 58,626 460,056	1,885,985 1,680,725 3,566,710 2,280,298 125,742 27,247 62,343	143,311,719 4,313,152 359,452 147,984,323 3,837,786 144,601 33,011 34,670
Interest Other Income Securities Lending <b>Total Income</b> <b>Expenses</b> Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	26,545,360 3,647 26,549,007 1,537,535 45,602 32,873 - - 72,372 1,688,382	924,448 - - 5,517,237 - 215,561 613,483 - - 13,999 843,043	775,588 2,812,646 10,003,339 142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966	56,716,843 495,044 1,046,315 58,258,390 2,592,136 267,116 56,812 58,626 460,056	1,885,985 1,680,725 3,566,710 2,280,298 125,742 27,247 62,343	143,311,719 4,313,152 359,452 147,984,323 3,837,786 144,601 33,011 34,670
Securities Lending Total Income Expenses Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	3,647 - 26,549,007 1,537,535 45,602 32,873 - - 72,372 1,688,382	215,561 613,483 - - 13,999 843,043	2,812,646 10,003,339 142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966	495,044 1,046,315 58,258,390 2,592,136 267,116 56,812 58,626 460,056	1,680,725 3,566,710 2,280,298 125,742 27,247 62,343	4,313,152 359,452 147,984,323 3,837,786 144,601 33,011 34,670
Total Income Expenses Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	1,537,535 45,602 32,873 - - - 72,372 1,688,382	215,561 613,483 - - 13,999 843,043	142,287,153 13,228,298 749,893 264,026 701,246 2,990,883 59,966	58,258,390 2,592,136 267,116 56,812 58,626 460,056	3,566,710 2,280,298 125,742 27,247 62,343	147,984,323 3,837,786 144,601 33,011 34,670
Expenses Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	1,537,535 45,602 32,873 - - - 72,372 1,688,382	215,561 613,483 - - 13,999 843,043	13,228,298 749,893 264,026 701,246 2,990,883 59,966	2,592,136 267,116 56,812 58,626 460,056	2,280,298 125,742 27,247 62,343	3,837,786 144,601 33,011 34,670
Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	45,602 32,873 - - 72,372 1,688,382	613,483 - - - - - - - - - - - - - - - - - - -	749,893 264,026 701,246 2,990,883 59,966	267,116 56,812 58,626 460,056	125,742 27,247 62,343	144,601 33,011 34,670
Investment Advisory Fees Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	45,602 32,873 - - 72,372 1,688,382	613,483 - - - - - - - - - - - - - - - - - - -	749,893 264,026 701,246 2,990,883 59,966	267,116 56,812 58,626 460,056	125,742 27,247 62,343	144,601 33,011 34,670
Custody and Transfer Agent Fees Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	45,602 32,873 - - 72,372 1,688,382	613,483 - - - - - - - - - - - - - - - - - - -	749,893 264,026 701,246 2,990,883 59,966	267,116 56,812 58,626 460,056	125,742 27,247 62,343	144,601 33,011 34,670
Professional Fees Security Lending Fees Security Lending Rebates Investment Expenses	32,873 - - 72,372 1,688,382	613,483 - - - - - - - - - - - - - - - - - - -	264,026 701,246 2,990,883 59,966	56,812 58,626 460,056	27,247 62,343	33,011 34,670
Security Lending Fees Security Lending Rebates Investment Expenses	72,372 1,688,382	13,999 843,043	701,246 2,990,883 59,966	58,626 460,056	62,343	34,670
Security Lending Rebates Investment Expenses	1,688,382	843,043	2,990,883 59,966	460,056	,	
Investment Expenses	1,688,382	843,043	59,966		1,001,201	I des a de la sera de
	1,688,382	843,043			677,354	100,893
· _	24,860,625			3,443,246	4,230,281	4,163,718
	24,860,625					
Net Investment Income		4,674,194	124,292,841	54,815,144	(663,571)	143,820,605
Net Increase (Decrease) in the Fair Value) of Investments and Foreign Currency		(108,780,398)	(8,764,298)	28,333,543	29,877,580	(58,123,703)
Net Increase (Decrease) in Net Position Resulting from Operations	13,924,867	(104.106.204)	115,528,543	83,148,687	29,214,009	85,696,902
Resulting from Operations	13,924,007	(104,100,204)	110,020,040	03, 140,007	29,214,005	00,000,002
Unit Transactions Purchase of Units by Participants	7,876,647,399	95,771,498	36,280,951	35,482,297	165,326,702	9,496,930
TOTAL ADDITIONS	7,890,572,266	(8,334,706)	151,809,494	118,630,984	194,540,711	95,193,832
DEDUCTIONS Administrative Expenses: Salary and Fringe Benefits	(270,687)	(271,189)	(1,185,700)	(407,561)	(196,997)	(238,334)
Distributions to Unit Owners: Income Distributed	(24,272,621)	-	-	-	-	-
Unit Transactions Redemption of Units by Participants	(8,079,489,731)	(8,487,904)	(279,384,694)	(148,326,233)	(3,149,355)	(11,753,875)
TOTAL DEDUCTIONS	(8,104,033,039)	(8,759,093)	(280,570,394)	(148,733,794)	(3,346,352)	(11,992,209)
Change in Net Position Held in Trust for Participants	(213,460,773)	(17,093,799)	(128,760,900)	(30,102,810)	191,194,359	83,201,623
		1,821,434,443	6,770,865,716	2,436,967,176	1,130,779,585	1,414,578,861
Net Position- End of Period	\$1,980,093,610 \$	\$1,804,340,644	\$6,642,104,816	\$2,406,864,366	\$1,321,973,944	\$1,497,780,484
Other Information: Units						
Purchased	8,075,012,237	82,949,169	25,101	282,187	1,087,346	65,636
	(8,283,939,204)	(7,373,331)	(184,532)	(1,168,906)	(21,090)	(76,803)
Net Increase (Decrease)	(208,926,967)	75,575,838	(159,431)	(886,719)	1,066,256	(11,167)

### SCHEDULE OF CHANGES IN NET POSITION BY INVESTMENT FUND (Continued) FOR THE FISCAL YEAR ENDED JUNE 30, 2016

HIGH YIELD- DEBT FUND	DEVELOPED MARKET INTERNATIONAL STOCK FUND	EMERGING MARKET INTERNATIONA STOCK FUND	REAL L ESTATE FUND	COMMERCIAL MORTGAGE FUND		ELIMINATION ENTRY	TOTAL
\$8,541,540	\$162,777,688	\$54,678,155	\$78,117,664	\$-	\$22,550,020	\$-	\$459,953,624
109,098,735	1,346,352	5,511,628	1,079,732	ψ 136	1,891,043	(11,814,073)	337,273,496
62,838	559	1,905		-	26	(1,623)	7,688,194
2,906,369	3,103,844	1,980,794	-	-	-	-	21,080,83
120,609,482	167,228,443	62,172,482	79,197,396	136	24,441,089	(11,815,696)	825,996,152
5,689,980	21,720,999	13,834,642	7,554,325	-	3,039,252	(684,283)	74,630,968
186,649	779,277	218,278	244,560	1	327,285	(20,295)	3,284,27
40,587	163,611	68,746	539,176	-	1,555,243	(14,630)	3,380,18
243,093	305,401	169,128	-	-	-	-	1,574,50
475,436	49,822	289,513	-	-	-	-	5,335,76
13,596 6,649,341	<u>168,859</u> 23,187,969	1,330,774 15,911,081	14,166 8,352,227	- 1	20,618 4,942,398	(32,209) (751,417)	2,448,888
113,960,141	144,040,474	46,261,401	70,845,169	135	19,498,691	(11,064,279)	735,341,57
113,300,141	,0+0,+7+	40,201,401	70,040,109	100	19,490,091	(11,004,279)	733,341,370
(115,157,340)	(552,420,065)	(212,309,468)	115,122,056	(15,453)	169,119,347	3,937,225	(720,116,73
(1,197,199)	(408,379,591)	(166,048,067)	185,967,225	(15,318)	188,618,038	(7,127,054)	15,224,83
60,674,737	42,596,214	193,164,163	131,094,177	-	16,552,234	(6,198,705,861)	2,464,381,54
59,477,538	(365,783,377)	27,116,096	317,061,402	(15,318)	205,170,372	(6,205,832,915)	2,479,606,37
(292,321)	(854,845)	(336,036)	(285,970)	(2,836)	(380,666)	120,470	(4,602,672
-	-	-	-	-	-	10,802,583	(13,470,03
(10,302,127)	(318,801,669)	(16,597,298)	(27,923,172)	(14,400)	(330,071,249)	6,151,711,283	(3,082,590,42
(10,594,448)	(319,656,514)	(16,933,334)	(28,209,142)	(17,236)	(330,451,915)	6,162,634,336	(3,100,663,13
48,883,090 774,265,680	(685,439,891) 5,909,244,803	10,182,762 2,473,287,752	288,852,260 1,918,236,645	(32,554) 32,637	(125,281,543) 2,895,091,648	(43,198,579) (871,362,813)	(621,056,75 29,866,976,51
823,148,770	\$5,223,804,912		\$2,207,088,905		\$2,769,810,105	\$(914,561,392)	, , ,
. , , -			· · · · · · · · · · · · · · · · · · ·				
452,139	98,517	595,224	2,730,330	-	245,166		
(75,718)	<u>(716,920)</u> (618,403)	(50,439)	<u>(586,760)</u> 2,143,570	(968)	(5,015,234)		
376,421		544,785	/ 14.3.5/()	(968)	(4,770,068)		

### COMBINED INVESTMENT FUNDS SCHEDULE OF INVESTMENT ACTIVITY BY PENSION PLAN FOR THE FISCAL YEAR ENDED JUNE 30, 2017

Book Value at June 30, 2017         \$881.272.631         \$905,068,000         \$457,248,501         \$936,267,199         \$498,447,781         \$651,600,289           Shares Outstanding         906,755.632         863,067,538         2.060,969         8,665,858         3,774,653         5,264,498           Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           State Employees' Retirement Fund Box Value at June 30, 2016         \$351,715,827         \$568,420,000         \$310,398,658         \$752,304,161         \$539,055,068         \$318,201,035           Shares Purchased         255,078,273         32,200,000         -         (18,000,000)         - <th>-</th> <th>Liquidity Fund</th> <th>ALTERNATIVE INVESTMENT FUND</th> <th>MUTUAL EQUITY FUND</th> <th>CORE FIXED INCOME FUND</th> <th>INFLATION LINKED BOND FUND</th> <th>EMERGING MARKET DEBT FUND</th>	-	Liquidity Fund	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEBT FUND
Market Value at June 30, 2016         \$522,661,146         \$941,316,173         \$3,721,807,837         \$1,150,153,590         \$585,087,153         \$840,642,760           Shares Purchased         (1,252,169,726         27,20,000         (28,000,000)         (28,000,00,00)         (28,000,00,00)							
Shares Purchased         1,925,169,726         27,20,000         -							
Shares Redeemed         (1669,522,425)         (580,000,000)         (28,000,000)         -           Gain(LOss) on Shares Redeemed         (4,229,549)         504,950,202         4,847,800         -           Net Investment Income Distributed         (15,178,473)         -         -         -           Changes in Market Value of Fund Shares         (2,105,766)         79,568,233         11,11,859,404         \$588,932,014         \$917,223,989           Book Value at June 30, 2017         \$881,272,631         \$905,058         2,060,969         8,665,858         3,774,663         5,244,498           Market Value at June 30, 2017         \$881,272,631         \$905,068,000         \$412,723,899         \$131.77         \$156.02         \$174,23           Shares Outstanding         906,755,632         863,067,538         2,060,969         8,665,858         3,774,663         \$18,201,035           Market Value per Share         \$0.97         \$1.21         \$1,849,99         \$131.77         \$156.02         \$174,23           Shares Redeemed         (19,013,262)         \$22,670,200,000         \$310,396,665         \$316,201,035           Shares Redeemed         (3,049,182)         206,173,414         2,905,009         -         -           Returos Capital         (3,049,182)         208,173,	· · ·			\$3,721,807,837	\$1,150,153,590	\$585,087,153	\$840,642,760
Gain (Loss) on Shares Redeemed Net Investment Income Earned Changes in Market Value of Fund Shares (2,105,766)         15,178,473         504,950,202         4,847,800         -           Market Value of Fund Shares Changes in Market Value of Fund Shares (2,105,766)         156,008,894         14,858,014         3,844,861         76,581,229           Market Value at June 30, 2017         \$578,966,312         \$10,48,084,411         \$3,812,766,933         \$1,111,859,400         \$588,932,014         \$917,223,989           Book Value at June 30, 2017         \$881,272,631         \$905,068,000         \$445,248,601         \$936,267,199         \$498,447,711         \$661,600,289           Shares Outstanding         906,755,632         863,067,538         2,060,969         8,665,858         3,774,653         5,264,488           Market Value per Share         \$311,71         \$1,849,99         \$131,77         \$516,002,209         \$11,213,232         \$10,398,658         \$775,204,161         \$539,955,068         \$318,201,035           Shares Redeemed         (191,013,926)         -         (235,000,000)         (18,000,000)         -         -         -           Net Investment Income Earned         (3,049,182)         -         -         -         -         -         -         -         -         -         -         -         -	Shares Redeemed			(580,000,000)	(28,000,000)	-	-
Changes in Market Value of Fund Shares         (2,105,766)         79,568,238         166,008,894         14,858,014         3,844,861         76,581,229           Market Value at June 30, 2017         \$878,966,312         \$1,048,064,411         \$3,812,766,933         \$1,141,859,404         \$588,932,014         \$917,223,989           Book Value at June 30, 2017         \$881,272,631         \$905,068,000         \$467,248,501         \$936,267,199         \$498,447,781         \$651,600,289           Shares Outstanding         906,755,632         863,067,538         2,060,969         8,665,858         3,774,653         5,264,498           Market Value per Share         \$0.97         \$1.21         \$1,849,99         \$131,77         \$156.02         \$174,23           Shares Redeemed         (250,76,273         32,200,000         (235,000,000)         (18,000,000)         -         -           Returns of Capital         (3,049,182)         208,173,41         2,905,096         \$664,844         -	Gain/(Loss) on Shares Redeemed		-	504,950,202	4,847,800	-	-
Book Value at June 30, 2017         \$881.272.631         \$905,068,000         \$457.248,501         \$936,267,199         \$498,447,781         \$651,600,289           Shares Outstanding         906,755.632         863,067,538         2.060,969         8,665,558         3,774,653         5,264,498           Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           State Employees' Retirement Fund Book Value at June 30, 2016         \$351,715,827         \$568,420,000         \$310,398,658         \$752,304,161         \$539,055,068         \$318,201,035           Shares Purchased         250,078,273         32,200,000         -         (18,000,000)         - </td <td></td> <td></td> <td>- 79,568,238</td> <td>- 166,008,894</td> <td>- 14,858,014</td> <td>- 3,844,861</td> <td>- 76,581,229</td>			- 79,568,238	- 166,008,894	- 14,858,014	- 3,844,861	- 76,581,229
Shares Outstanding         906,755,632         863,067,538         2,060,969         8,665,858         3,774,653         5,264,498           Market Value per Share         \$0.97         \$1.21         \$1,849,99         \$131.77         \$156.02         \$174.23           State Employees' Retirement Fund Book Value at June 30, 2016         \$351,715,827         \$5888,420,000         \$310,399,658         \$752,304,161         \$539,055,068         \$318,201,035           Shares Purchased         \$235,078,820         \$8262,360,495         \$2,429,010,702         \$889,231,302         \$604,482,740         \$442,660,632           Shares Purchased         (191,013,926)         -         (235,000,000)         -         <	Market Value at June 30, 2017 =	\$878,966,312	\$1,048,084,411	\$3,812,766,933	\$1,141,859,404	\$588,932,014	\$917,223,989
Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           State Employees' Retirement Fund Book Value at June 30, 2016         \$3351,715,827         \$2626,360,495         \$2,429,010,702         \$889,231.302         \$604,482,740         \$442,660,632           Shares Purchased         \$3351,715,827         \$226,730,0495         \$2,429,010,702         \$889,231.302         \$604,482,740         \$442,660,632           Shares Purchased         \$25,078,2873         32,200,000         (18,000,000)         - <t< td=""><td>Book Value at June 30, 2017 =</td><td>\$881,272,631</td><td>\$905,068,000</td><td>\$457,248,501</td><td>\$936,267,199</td><td>\$498,447,781</td><td>\$651,600,289</td></t<>	Book Value at June 30, 2017 =	\$881,272,631	\$905,068,000	\$457,248,501	\$936,267,199	\$498,447,781	\$651,600,289
State Employees' Retirement Fund Book Value at June 30, 2016         \$351,715,827         \$588,420,000         \$310,398,658         \$752,304,161         \$539,055,068         \$318,201,035           Shares Purchased         20,507,8273         32,200,000         -<	Shares Outstanding =	906,755,632	863,067,538	2,060,969	8,665,858	3,774,653	5,264,498
Book Value at June 30, 2016         \$351,715,827         \$588,420,000         \$311,298,658         \$752,304,161         \$539,055,068         \$318,201,035           Market Value at June 30, 2016         \$345,957,820         \$626,630,495         \$2,429,010,702         \$889,231,302         \$604,482,740         \$442,606,632           Shares Purchased         (191,013,926)         -         (235,000,000)         (18,000,000)         -         -           Returns of Capital         -         -         -         -         -         -           Net Investment Income Earned         (6,264,344         - </td <td>Market Value per Share =</td> <td>\$0.97</td> <td>\$1.21</td> <td>\$1,849.99</td> <td>\$131.77</td> <td>\$156.02</td> <td>\$174.23</td>	Market Value per Share =	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
Shares Purchased       255,078,273       32,200,000       -						\$539,055,068	\$318,201,035
Shares Redeemed       (191,013,926)       -       (235,000,000)       (18,000,000)       -       -         Returns of Capital       -       -       208,173,414       2,905,009       -       -         Other Net Investment Income Earned       6,264,344       -       -       -       -       -         Net Investment Income Distributed       (6,264,344)       -       -       -       -       -         Changes in Market Value of Fund Shares       417,607       53,962,761       244,256,483       12,361,049       3,972,318       40,325,683         Market Value at June 30, 2017       \$407,390,592       \$712,523,256       \$2,646,440,599       \$886,497,360       \$608,455,058       \$482,986,315         Book Value at June 30, 2017       \$412,730,992       \$620,620,000       \$283,572,072       \$737,209,170       \$539,055,068       \$318,201,035         Shares Outstanding       420,270,630       586,742,290       1,430,518       6,727,851       3,899,782       2,772,148         Market Value pr Share       \$0.97       \$1.21       \$1,849.99       \$131,77       \$156.02       \$174,23         Market Value at June 30, 2016       \$60,726,701       \$179,542,868       \$366,090,812       \$178,740,77       \$190,918,687       \$178,502,735 </td <td>Market Value at June 30, 2016</td> <td></td> <td></td> <td>\$2,429,010,702</td> <td>\$889,231,302</td> <td>\$604,482,740</td> <td>\$442,660,632</td>	Market Value at June 30, 2016			\$2,429,010,702	\$889,231,302	\$604,482,740	\$442,660,632
Returns of Capital Gain/(Loss) on Shares Redeemed       (3,049,182)       -       208,173,414       2,905,009       -       -         Net Investment Income Earned Net Investment Income Distributed       (6,264,344       -       -       -       -         Market Value at June 30, 2017       \$407,390,592       \$712,523,256       \$2,464,440,599       \$886,497,360       \$608,455,058       \$442,986,315         Book Value at June 30, 2017       \$412,730,992       \$620,620,000       \$283,572,072       \$737,209,170       \$539,955,068       \$318,201,035         Shares Outstanding       420,270,630       586,742,290       1,430,518       6,727,851       3,899,782       2,772,148         Market Value per Share       \$0.97       \$1.21       \$1,849.99       \$131.77       \$156.02       \$174,23         Muncipal Employees' Retirement Fund Book Value at June 30, 2016       \$61,212,324       \$166,583,433       \$66,713,141       \$154,655,334       \$94,209,092       \$156,218,869         Market Value per Share       (55,202,633)       (2,769,359)       (39,941,684)       (146,022)       -       -       -         Book Value at June 30, 2016       \$61,737,128       2,105,019       7,545,579       10,874,509       8,674,361       4,623,694         Gain/(Loss) on Shares Redeemed       (503,1			32,200,000	-	-	-	-
Gain/(Loss) on Shares Redeemed       (3,049,182)       -       208,173,414       2,905,009       -       -         Net Investment Income Distributed       (6,264,344)       -		(191,013,926)	-	(235,000,000) -	(18,000,000) -	-	-
Changes in Market Value of Fund Shares417,60753,962,761244,256,48312,361,0493,972,31840,325,683Market Value at June 30, 2017\$407,390,592\$712,523,256\$2,646,440,599\$886,497,360\$608,455,058\$482,986,315Book Value at June 30, 2017\$412,730,992\$620,620,000\$283,572,072\$737,209,170\$539,055,068\$318,201,035Shares Outstanding420,270,630586,742,2901,430,5186,727,8513,899,7822,772,148Market Value per Share\$0.97\$1.21\$1,849,999\$131,77\$156,02\$174,23Municipal Employees' Retirement Fund Book Value at June 30, 2016\$61,212,324\$166,583,433\$66,713,141\$154,655,334\$94,209,092\$156,218,869Shares Purchased61,737,1282,105,0197,545,57910,874,5098,674,3614,623,694Shares Redeemed(55,202,633)(2,759,359)(39,41,684)(146,022)Gain/(Loss) on Shares Redeemed(503,130)256,17132,850,49320,546-848,428Net Investment Income Earned1,057,869Net Investment Income Earned(1,057,869)Net Investment Income Distributed(1,057,869) <td>Gain/(Loss) on Shares Redeemed Net Investment Income Earned</td> <td>6,264,344</td> <td>-</td> <td>208,173,414</td> <td>2,905,009</td> <td>-</td> <td>-</td>	Gain/(Loss) on Shares Redeemed Net Investment Income Earned	6,264,344	-	208,173,414	2,905,009	-	-
Book Value at June 30, 2017         \$412,730,992         \$620,620,000         \$283,572,072         \$737,209,170         \$539,055,068         \$318,201,035           Shares Outstanding         420,270,630         586,742,290         1,430,518         6,727,851         3,899,782         2,772,148           Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           Municipal Employees' Retirement Fund Book Value at June 30, 2016         \$61,212,324         \$166,583,433         \$66,713,141         \$154,655,334         \$94,209,092         \$156,218,869           Market Value at June 30, 2016         \$61,737,128         2,105,019         7,545,579         10,874,509         8,674,361         4,623,694           Shares Redeemed         (55,202,633)         (2,759,359)         (39,941,684)         (146,022)         -         (5,440,687)           Returns of Capital         -         -         -         -         -         -           Net Investment Income Earned         1,057,869         - <td></td> <td></td> <td>- 53,962,761</td> <td>- 244,256,483</td> <td>- 12,361,049</td> <td>- 3,972,318</td> <td>40,325,683</td>			- 53,962,761	- 244,256,483	- 12,361,049	- 3,972,318	40,325,683
Shares Outstanding         420,270,630         586,742,290         1,430,518         6,727,851         3,899,782         2,772,148           Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           Municipal Employees' Retirement Fund Book Value at June 30, 2016         \$61,212,324         \$166,583,433         \$66,713,141         \$154,655,334         \$94,209,092         \$156,218,869           Market Value at June 30, 2016         \$61,737,128         \$179,542,868         \$356,009,812         \$178,734,077         \$109,918,687         \$178,502,735           Shares Purchased         61,737,128         \$2,105,019         7,545,579         10,874,509         8,674,361         4,623,694           Shares Redeemed         (55,202,633)         (2,759,359)         (39,941,684)         (146,022)         -         (5,440,687)           Returns of Capital         -	Market Value at June 30, 2017	\$407,390,592	\$712,523,256	\$2,646,440,599	\$886,497,360	\$608,455,058	\$482,986,315
Market Value per Share         \$0.97         \$1.21         \$1,849.99         \$131.77         \$156.02         \$174.23           Municipal Employees' Retirement Fund Book Value at June 30, 2016         \$61,212,324         \$166,583,433         \$66,713,141         \$154,655,334         \$94,209,092         \$156,218,869           Market Value at June 30, 2016         \$60,726,701         \$179,542,868         \$356,090,812         \$178,734,077         \$109,918,687         \$178,502,735           Shares Purchased         61,737,128         2,105,019         7,545,579         10,874,509         8,674,361         4,623,694           Shares Redeemed         (55,202,633)         (2,759,359)         (39,941,684)         (146,022)         -         (5,440,687)           Returns of Capital         -	Book Value at June 30, 2017 =	\$412,730,992	\$620,620,000	\$283,572,072	\$737,209,170	\$539,055,068	\$318,201,035
Municipal Employees' Retirement Fund Book Value at June 30, 2016         \$61,212,324         \$166,583,433         \$66,713,141         \$154,655,334         \$94,209,092         \$156,218,869           Market Value at June 30, 2016         \$60,726,701         \$179,542,868         \$356,090,812         \$178,734,077         \$109,918,687         \$178,502,735           Shares Purchased         61,737,128         2,105,019         7,545,579         10,874,509         8,674,361         4,623,694           Shares Redeemed         (55,202,633)         (2,759,359)         (39,941,684)         (146,022)         -         (5,440,687)           Returns of Capital         - <td>Shares Outstanding =</td> <td>420,270,630</td> <td>586,742,290</td> <td>1,430,518</td> <td>6,727,851</td> <td>3,899,782</td> <td>2,772,148</td>	Shares Outstanding =	420,270,630	586,742,290	1,430,518	6,727,851	3,899,782	2,772,148
Book Value at June 30, 2016       \$61,212,324       \$166,583,433       \$66,713,141       \$154,655,334       \$94,209,092       \$156,218,869         Market Value at June 30, 2016       \$60,726,701       \$179,542,868       \$356,090,812       \$178,734,077       \$109,918,687       \$178,502,735         Shares Purchased       61,737,128       2,105,019       7,545,579       10,874,509       8,674,361       4,623,694         Shares Redeemed       (55,202,633)       (2,759,359)       (39,941,684)       (146,022)       -       (5,440,687)         Returns of Capital       -	Market Value per Share =	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
Market Value at June 30, 2016       \$60,726,701       \$179,542,868       \$356,090,812       \$178,734,077       \$109,918,687       \$178,502,735         Shares Purchased       61,737,128       2,105,019       7,545,579       10,874,509       8,674,361       4,623,694         Shares Redeemed       (55,202,633)       (2,759,359)       (39,941,684)       (146,022)       -       (5,440,687)         Returns of Capital       -       -       -       -       -       -       -         Gain/(Loss) on Shares Redeemed       (503,130)       256,171       32,850,493       20,546       -       848,428         Net Investment Income Earned       1,057,869       -<							
Shares Purchased61,737,1282,105,0197,545,57910,874,5098,674,3614,623,694Shares Redeemed(55,202,633)(2,759,359)(39,941,684)(146,022)-(5,440,687)Returns of CapitalGain/(Loss) on Shares Redeemed(503,130)256,17132,850,49320,546-848,428Net Investment Income Earned1,057,869Net Investment Income Distributed(1,057,869)Changes in Market Value of Fund Shares12,82114,425,43734,132,1493,221,803929,45815,321,892Market Value at June 30, 2017\$66,770,887\$193,570,136\$390,677,349\$192,704,913\$119,522,506\$193,856,062Book Value at June 30, 2017\$67,243,689\$166,185,264\$67,167,529\$165,404,367\$102,883,453\$156,250,304Shares Outstanding68,881,920159,399,408211,1781,462,486766,0581,112,656							
Shares Redeemed       (55,202,633)       (2,759,359)       (39,941,684)       (146,022)       -       (5,440,687)         Returns of Capital       -							, , ,
Returns of Capital       -						8,674,361	
Gain/(Loss) on Shares Redeemed       (503,130)       256,171       32,850,493       20,546       -       848,428         Net Investment Income Earned       1,057,869       -		(55,202,033)	(2,759,359)	(39,941,004)	(140,022)	-	(5,440,007)
Net Investment Income Distributed Changes in Market Value of Fund Shares         (1,057,869) 12,821         -         <	Gain/(Loss) on Shares Redeemed	· · · /	- 256,171 -	- 32,850,493 -	20,546	-	- 848,428 -
Book Value at June 30, 2017         \$67,243,689         \$166,185,264         \$67,167,529         \$165,404,367         \$102,883,453         \$156,250,304           Shares Outstanding         68,881,920         159,399,408         211,178         1,462,486         766,058         1,112,656	Net Investment Income Distributed	(1,057,869)	۔ 14,425,437	۔ 34,132,149	- 3,221,803	- 929,458	- 15,321,892
Shares Outstanding         68,881,920         159,399,408         211,178         1,462,486         766,058         1,112,656	Market Value at June 30, 2017	\$66,770,887	\$193,570,136	\$390,677,349	\$192,704,913	\$119,522,506	\$193,856,062
	Book Value at June 30, 2017	\$67,243,689	\$166,185,264	\$67,167,529	\$165,404,367	\$102,883,453	\$156,250,304
Market Value per Share \$0.97 \$1.21 \$1,849.99 \$131.77 \$156.02 \$174.23	Shares Outstanding =	68,881,920	159,399,408	211,178	1,462,486	766,058	1,112,656
	Market Value per Share =	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23

HIGH YIELD DEBT	DEVELOPED MARKET INTERNATIONAL	EMERGING MARKET INTERNATIONAL	REAL ESTATE			
FUND	STOCK FUND	STOCK FUND	FUND	FUND	TOTAL	
735,399,049	\$1,591,488,148	\$905,417,118	\$1,047,240,158	\$1,342,629,595	\$9,771,669,535	
867,182,093	\$2,882,041,042	\$1,365,932,645	\$1,186,792,255	\$1,413,947,520	\$15,584,564,214	
007,102,095	92,002,041,042	φ1,303,932,0 <del>4</del> 3	50,000,000	15,000,000	2,017,369,726	
-	- (110,000,000)	(20,000,000)	(110,000,000)	(142,000,000)	(2,659,529,245)	
_	(110,000,000)	(20,000,000)	(110,000,000)	(142,000,000)	(2,000,020,240)	
_	54,523,544	7,772,306	12,105,802	7,815,066	587,785,171	
-	-	-	12,100,002	7,010,000	15,178,473	
-	-	-	_	-	(15,178,473)	
107,282,285	645,244,020	303,232,833	47,912,634	154,185,365	1,596,612,607	
074 464 279	\$3,471,808,606	\$1,656,937,784	\$1,186,810,691	\$1,448,947,951	¢17 126 902 472	
974,464,378					\$17,126,802,473	
735,399,049	\$1,536,011,692	\$893,189,424	\$999,345,960	\$1,223,444,661	\$9,717,295,187	
6,292,400	6,463,478	3,926,388	22,226,078	18,433,482	1,846,930,974	
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60		
494,458,589	\$1,008,726,606	\$616,857,122	\$720,514,538	\$1,042,956,083	\$6,743,607,687	
569,912,171	\$1,940,894,238	\$920,911,372	\$804,708,147	\$1,062,573,026	\$10,636,702,645	
-	-	-	-	-	287,278,273	
-	-	-	(28,000,000)	-	(472,013,926)	
-	-	-	-	-	-	
-	-	-	2,698,144	-	210,727,385	
-	-	-	-	-	6,264,344	
-	-	-	-	-	(6,264,344)	
70,505,837	481,620,190	211,488,681	39,715,695	134,053,899	1,292,680,203	
640,418,008	\$2,422,514,428	\$1,132,400,053	\$819,121,986	\$1,196,626,925	\$11,955,374,580	
494,458,589	\$1,008,726,606	\$616,857,122	\$695,212,682	\$1,042,956,083	\$6,769,599,419	
4,135,365	4,510,004	2,683,409	15,340,163	15,223,460	1,063,735,620	
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60		
φ134.00	\$557.14	\$422.00	\$33.40	\$78.00		
283,166,613	\$158,851,301	\$120,265,307	\$132,567,364	\$204,757,966	\$1,599,200,744	
311,907,135	\$296,145,316	\$155,137,550	\$158,659,157	\$226,658,160	\$2,212,023,198	
3,567,713	3,054,452	2,714,964	3,899,041	7,802,537	116,599,087	
(14,906,610)	(26,199,954)	(17,825,211)	(1,758,930)	(6,560,131)	(170,741,221)	
- 2,127,120	- 14,269,696	- 5,413,536	- 312,294	- 762,945	- 56,358,099	
-	-	-	-	-	1,057,869	
-	-	-	-	-	(1,057,869)	
35,554,270	58,471,469	28,674,936	8,428,975	27,891,026	227,064,236	
338,249,628	\$345,741,069	\$174,115,775	\$169,540,537	\$256,554,537	\$2,441,303,399	
273,954,836	\$149,975,585	\$110,568,596	\$135,019,769	\$206,763,317	\$1,601,416,709	
2,184,176	643,667	412,596	3,175,082	3,263,881	241,513,109	
	0-0,007	· · · · · · · · · · · · · · · · · · ·			271,010,100	
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60		

_	Liquidity Fund	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEBT FUND
Probate Court Retirement Fund						
Book Value at June 30, 2016	\$2,208,581	\$4,066,303	\$1,888,918	\$6,572,589	\$3,703,566	\$6,037,437
Market Value at June 30, 2016	\$2,210,362	\$4,439,889	\$14,089,176	\$7,955,807	\$4,349,058	\$7,062,632
Shares Purchased	5,165,911	33,838	294,543	431,225	277,076	157,668
Shares Redeemed	(4,965,112)	(113,277)	(1,772,992)	(72,022)	-	(292,128)
Returns of Capital	- (12,170)	-	-	-	-	-
Gain/(Loss) on Shares Redeemed Net Investment Income Earned	(13,178)	11,338	1,541,541	12,934	-	51,515
Net Investment Income Distributed	42,348 (42,348)	-	-	-	-	-
Changes in Market Value of Fund Shares	(8,023)	348,211	- 1,090,150	- 130,159	36,994	583,646
	(0,023)	540,211		150,155	50,554	303,040
Market Value at Jun. 30, 2017 =	\$2,389,960	\$4,719,999	\$15,242,418	\$8,458,103	\$4,663,128	\$7,563,333
Book Value\Cost at Jun 30, 2017	\$2,396,202	\$3,998,202	\$1,952,010	\$6,944,726	\$3,980,642	\$5,954,492
Shares Outstanding	2,465,522	3,886,782	8,239	64,191	29,887	43,411
Market Value per Share	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
Judges' Retirement Fund						
Book Value at June 30, 2016	\$5,401,499	\$14,257,508	\$6,171,614	\$13,156,352	\$8,021,331	\$13,225,425
Market Value at June 30, 2016	\$5,351,878	\$15,383,376	\$30,509,429	\$15,314,244	\$9,418,320	\$15,295,144
Shares Purchased	4,589,155	184,312	697,050	980,803	781,254	409,354
Shares Redeemed	(4,105,233)	(181,208)	(3,359,348)	-	-	(422,079)
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(44,183)	17,511	2,716,471	-	-	71,838
Net Investment Income Earned	91,888	-	-	-	-	-
Net Investment Income Distributed	(91,888)	-		-	-	-
Changes in Market Value of Fund Shares	1,201	1,244,502	3,037,815	279,074	80,291	1,318,926
Market Value at Jun. 30, 2017 =	\$5,792,818	\$16,648,493	\$33,601,417	\$16,574,121	\$10,279,865	\$16,673,183
Book Value\Cost at Jun 30, 2017	\$5,841,238	\$14,278,123	\$6,225,787	\$14,137,155	\$8,802,585	\$13,284,538
Shares Outstanding	5,975,965	13,709,555	18,163	125,785	65,887	95,697
Market Value per Share	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
State's Attorneys' Retirement Fund						
Book Value at June 30, 2016	\$21,556	\$-	\$150,681	\$313,066	\$23,165	\$71,208
Market Value at June 30, 2016	\$21,531	\$-	\$451,020	\$359,202	\$30,743	\$93,625
Shares Purchased	25,925	-	10,974	41,392	4,139	5,079
Shares Redeemed	(23,486)	-	(27,798)	-	-	(488)
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(110)	-	19,220	-	-	107
Net Investment Income Earned	350	-	-	-	-	-
Net Investment Income Distributed	(350)	-	-	-	-	-
Changes in Market Value of Fund Shares	(60)	-	67,111	6,721	267	8,556
Market Value at Jun. 30, 2017 =	\$23,800	\$-	\$520,527	\$407,315	\$35,149	\$106,879
Book Value\Cost at Jun 30, 2017 =	\$23,885	\$-	\$153,077	\$354,458	\$27,304	\$75,906
Shares Outstanding	24,549	-	281	3,091	225	613
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$156.02	\$174.23
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IIGH YIELD DEBT FUND	DEVELOPED MARKET INTERNATIONAL STOCK FUND	EMERGING MARKET INTERNATIONAL STOCK FUND	REAL ESTATE FUND	PRIVATE INVESTMENT FUND	TOTAL	
*11 007 050	¢5,000,500	¢4 544 000	¢5 400 000	¢7 740 704	¢c0 004 470	
<u>\$11,907,950</u>	\$5,930,520	\$4,514,920	\$5,420,982	\$7,749,704	\$60,001,470	
\$13,222,483	\$12,554,291	\$6,138,198	\$6,277,593	\$8,968,014	\$87,267,503	
114,469	20,296	85,778	64,849	210,979	6,856,632	
(785,529)	(1,180,896)	(769,390)	(70,449)	(289,485)	(10,311,280)	
117,521	710,666	260,469	10,663	45,200	2,748,669	
· -	-	-	· -	· -	42,348	
-	-	-	-	-	(42,348)	
1,470,476	2,349,103	1,078,419	332,042	1,075,052	8,486,229	
\$14,139,420	\$14,453,460	\$6,793,474	\$6,614,698	\$10,009,760	\$95,047,753	
\$11,354,411	\$5,480,586	\$4,091,777	\$5,426,045	\$7,716,398	\$59,295,491	
91,302	26,908	16,098	123,877	127,344	6,883,562	
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60		
	¢40 707 000	¢10,000,040	¢14 004 000	¢40.045.000	¢430.000.050	
524,197,972	\$13,707,636	\$10,030,843 \$13,293,411	\$11,881,609	\$18,245,063 \$19,419,905	\$138,296,852 \$189,678,051	
526,724,528	\$25,374,142		\$13,593,674			
289,437	316,157	243,620	365,818	696,683	9,553,643	
(1,157,890)	(2,205,269)	(1,491,584)	(129,072)	(515,071)	(13,566,754)	
168,028	1,195,409	482,817	- 18,044	41,960	4,667,895	
-	-	-	-	-	91,888	
-	-	-	-	-	(91,888)	
3,068,048	5,056,476	2,447,259	733,409	2,422,413	19,689,414	
\$29,092,151	\$29,736,915	\$14,975,523	\$14,581,873	\$22,065,890	\$210,022,249	
\$23,497,547	\$13,013,933	\$9,265,696	\$12,136,399	\$18,468,635	\$138,951,636	
187,856	55,361	35,487	273,083	280,722	20,823,562	
\$154.86	\$537.14	\$422.00	\$53.40	\$78.60		
\$135,799	\$302,966	\$111,881	\$-	\$-	\$1,130,322	
\$155,725	\$325,295	\$108,515	\$-	\$-	\$1,545,656	
6,383	8,654	3,779	-	-	106,325	
(3,575)	(16,255)	(8,682)	-	-	(80,284)	
- 613	3,528	600	-	-	- 23,958	
-	-	-	-	-	350	
-	-	-	-	-	(350)	
18,473	78,027	23,743	-	-	202,838	
\$177,619	\$399,249	\$127,955	\$-	\$-	\$1,798,493	
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\$139,220	\$298,893	\$107,578	\$-	\$-	\$1,180,321	
1,147	743	303	-	-	30,953	
\$154.86	\$537.14	\$421.99	\$-	\$-		

_	Liquidity Fund	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEBT FUND
Soldiers' Sailors' & Marines' Fund						
Book Value at June 30, 2016	\$1,663,581	\$-	\$3,813,553	\$40,220,699	\$-	\$-
Market Value at June 30, 2016	\$1,657,084	\$-	\$10,964,998	\$49,150,682	\$-	\$-
Shares Purchased	1,933,535	-	169,381	1,204,183	-	-
Shares Redeemed	(1,811,072)	-	(1,622,773)	(333,399)	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(12,094)	-	1,111,105	62,462	-	-
Net Investment Income Earned	31,317	-	-	-	-	-
Net Investment Income Distributed	(31,317)	-	-	-	-	-
Changes in Market Value of Fund Shares	(4,692)	-	925,941	800,829	-	-
Market Value at June 30, 2017	\$1,762,761	\$-	\$11,548,652	\$50,884,757	\$-	\$-
Book Value at June 30, 2017	\$1,773,950	\$-	\$3,471,266	\$41,153,945	\$-	\$-
Shares Outstanding	1,818,492	-	6,243	386,177	-	-
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$-	\$-
Endowment for the Arts						
Book Value at June 30, 2016	\$562,671	\$-	\$1,860,242	\$10,961,402	\$-	\$-
Market Value at June 30, 2016	\$561,912	\$-	\$2,854,297	\$12,795,813	\$-	\$-
Shares Purchased	431,571	-	44,604	270,638	-	-
Shares Redeemed	(397,379)	-	(404,456)	-	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(3,700)	-	163,442	-	-	-
Net Investment Income Earned	9,011	-	-	-	-	-
Net Investment Income Distributed	(9,011)	-	-	-	-	-
Changes in Market Value of Fund Shares	(1,246)	-	358,113	223,311	-	-
Market Value at June 30, 2017 =	\$591,158	\$-	\$3,016,000	\$13,289,762	\$-	\$-
Book Value at June 30, 2017 =	\$593,163	\$-	\$1,663,832	\$11,232,040	\$-	\$-
Shares Outstanding	609,849	-	1,630	100,859	-	-
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$-	\$-
Agricultural College Fund						
Book Value at June 30, 2016	\$625	\$-	\$-	\$588,958	\$-	\$-
Market Value at June 30, 2016	\$627	\$-	\$-	\$661,986	\$-	\$-
Shares Purchased	249,719	-	-	700	-	-
Shares Redeemed	(250,250)	-	-	(14,000)	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	56	-	-	1,653	-	-
Net Investment Income Earned	51	-	-	-	-	-
Net Investment Income Distributed	(51)	-	-	-	-	-
Changes in Market Value of Fund Shares	(1)	-	-	9,718	-	-
Market Value at June 30, 2017 =	\$151	\$-	\$-	\$660,057	\$-	\$-
Book Value at June 30, 2017 =	\$150	\$-	\$-	\$577,311	\$-	\$-
Shares Outstanding	156	-	-	5,009	-	-
Market Value per Share	\$0.97	\$-	\$-	\$131.77	\$-	\$-

IGH YIELD DEBT	DEVELOPED MARKET INTERNATIONAL	EMERGING MARKET INTERNATIONAL	REAL ESTATE	PRIVATE INVESTMENT		
FUND	STOCK FUND	STOCK FUND	FUND	FUND	TOTAL	
\$-	\$6,260,250	\$3,074,967	\$-	\$-	\$55,033,050	
\$-	\$7,640,490	\$2,908,875	\$-	\$-	\$72,322,129	
-	30,394	-	-	-	3,337,493	
-	(948,943)	(398,873)	-	-	(5,115,060)	
-	-	-	-	-	-	
-	288,436	21,317	-	-	1,471,226	
-	-	-	-	-	31,317	
-	-	-	-	-	(31,317)	
-	1,556,911	606,398	-	-	3,885,387	
\$-	\$8,567,288	\$3,137,717	\$-	\$-	\$75,901,175	
\$-	\$5,630,137	\$2,697,411	\$-	\$-	\$54,726,709	
-	15,950	7,435	-	-	2,234,297	
	A=== · ·	A 100	<u>.</u>	<u> </u>		
\$-	\$537.14	\$422.00	\$-	\$-		
\$-	\$1,634,006	\$802,298	\$-	\$-	\$15,820,619	
\$-	\$1,989,091	\$757,469	\$-	\$-	\$18,958,582	
-	31,208	-	-	-	778,021	
-	(262,788)	(101,742)	-	-	(1,166,365)	
-	-	-	-	-	-	
-	76,129	5,227	-	-	241,098	
-	-	-	-	-	9,011	
-	-	-	-	-	(9,011)	
-	403,510	158,421	-	-	1,142,109	
\$-	\$2,237,150	\$819,375	\$-	\$-	\$19,953,445	
\$-	\$1,478,555	\$705,783	\$-	\$-	\$15,673,373	
	4,165	1,942			718,445	
	.,	.,• .=				
\$-	\$537.14	\$422.00	\$-	\$-		
\$-	\$-	\$-	\$-	\$-	\$589,583	
\$-	\$-	\$-	\$-	\$-	\$662,613	
-	-	-	-	-	250,419	
-	-	-	-	-	(264,250)	
-	-	-	-	-	-	
-	-	-	-	-	1,709	
-	-	-	-	-	51	
-	-	-	-	-	(51)	
-	-	-	-	-	9,717	
\$-	\$-	\$-	\$-	\$-	\$660,208	
\$-	\$-	\$-	\$-	\$-	\$577,461	
-	-	-	_	_	5,165	
\$-	\$-	\$-	\$-	\$-	-	
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	Liquidity Fund	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEBT FUND
Ida Eaton Cotton Fund		_			_	_
Book Value at June 30, 2016	\$72,818	\$-	\$55,610	\$1,423,036	\$-	\$-
Market Value at June 30, 2016	\$72,552	\$-	\$368,527	\$1,652,115	\$-	\$-
Shares Purchased	54,865	-	-	68,709	-	-
Shares Redeemed	(50,868)	-	(47,249)	(32,716)	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(170)	-	40,930	4,199	-	-
Net Investment Income Earned	1,064	-	-	-	-	-
Net Investment Income Distributed	(1,064)	-	-	-	-	-
Changes in Market Value of Fund Shares	(21)	-	27,353	24,236	-	-
Market Value at Jun. 30, 2017 =	\$76,358	\$-	\$389,561	\$1,716,543	\$-	\$-
Book Value\Cost at Jun 30, 2017 ==	\$76,645	\$-	\$49,291	\$1,463,228	\$-	\$-
Shares Outstanding =	78,770	-	211	13,027	-	-
Market Value per Share	\$0.97	\$-	\$1,849.98	\$131.77	\$-	\$-
Andrew Clark Fund						
Book Value at June 30, 2016	\$34,241	\$-	\$26,244	\$683,969	\$-	\$-
Market Value at June 30, 2016	\$34,125	\$-	\$173,327	\$777,028	\$-	\$-
Shares Purchased	25,802	-	-	32,316	-	-
Shares Redeemed	(23,923)	-	(22,222)	(15,386)	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(76)	-	19,241	1,682	-	-
Net Investment Income Earned	498	-	-	-	-	-
Net Investment Income Distributed	(498)	-	-	-	-	-
Changes in Market Value of Fund Shares	(15)	-	12,875	11,694	-	-
Market Value at Jun. 30, 2017	\$35,913	\$-	\$183,221	\$807,334	\$-	\$-
Book Value\Cost at Jun 30, 2017	\$36,044	\$-	\$23,263	\$702,581	\$-	\$-
Shares Outstanding	37,047	-	99	6,127	-	-
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$-	\$-
School Fund						
Book Value at June 30, 2016	\$327,138	\$-	\$262,055	\$6,398,092	\$-	\$-
Market Value at June 30, 2016	\$327,034	\$-	\$1,662,675	\$7,450,995	\$-	\$-
Shares Purchased	302,425	-	29,539	306,110	-	-
Shares Redeemed	(282,364)	-	(246,075)	(143,000)	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	(2,025)	-	209,406	19,685	-	-
Net Investment Income Earned	5,271	-	-	-	-	-
Net Investment Income Distributed	(5,271)	-	-	-	-	-
Changes in Market Value of Fund Shares	(784)	-	102,586	111,015	-	-
Market Value at Jun. 30, 2017 =	\$344,286	\$-	\$1,758,131	\$7,744,805	\$-	\$-
Book Value\Cost at Jun 30, 2017 =	\$345,174	\$-	\$254,925	\$6,580,887	\$-	\$-
Shares Outstanding =	355,177	-	950	58,777	-	-
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$-	\$-

EMERGING MARKET REAL PRIVATE FERNATIONAL ESTATE INVESTMENT	
TOCK FUND FUND FUND TOT	<u>۹L</u>
<b>\$103,524 \$- \$- \$1,864</b> ,	
\$97,798 \$- \$- \$2,447,	
541 128,	
(13,448) (177,9	46)
	-
516 - 55,	
	064
(1,0	
20,424 124,	101
\$105,831 \$- \$- \$2,577,	251
\$91,133 \$- \$- \$1,870,	268
	796
\$422.00 \$- \$-	
\$48,713 \$- \$- \$891,	
\$46,000 \$- \$- \$1,151,	
	268
(6,325) (83,6	89)
	-
	679 408
	498
	98)
9,608 58,	623
\$49,777 \$- \$- \$1,212,	149
\$42,882 \$- \$- \$894,	116
118 43,	644
\$422.02 \$- \$-	
\$464,811 \$- \$- \$8,410,	513
\$440,729 \$- \$- \$11,039,	724
1,965 - 658,	
(61,157) - (887,7	
	-
4,291 278,	
5,	271
(5,2	71)
91,979 541,	
\$477,807 \$- \$- \$11,629,	717
\$409,910 \$- \$- \$8,459,	
1,132 418,	465
\$422.00 \$- \$-	

_	LIQUIDITY FUND	ALTERNATIVE INVESTMENT FUND	MUTUAL EQUITY FUND	CORE FIXED INCOME FUND	INFLATION LINKED BOND FUND	EMERGING MARKET DEB1 FUND
Hopemead Fund						
Book Value at June 30, 2016 _	\$107,262	\$-	\$121,477	\$2,112,694	\$-	\$-
Market Value at June 30, 2016	\$104,725	\$-	\$531,961	\$2,384,788	\$-	\$-
Shares Purchased	8,653	-	8,313	102,318	-	-
Shares Redeemed	(5)	-	(66,018)	-	-	-
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	-	-	52,142	-	-	-
Net Investment Income Earned	1,810	-	-	-	-	-
Net Investment Income Distributed	(1,810)	-	-	-	-	-
Changes in Market Value of Fund Shares _	(851)	-	47,679	42,466	-	-
Market Value at June 30, 2017 =	\$112,522	\$-	\$574,077	\$2,529,572	\$-	\$-
Book Value at June 30, 2017	\$115,910	\$-	\$115,914	\$2,215,012	\$-	\$-
Shares Outstanding	116,079	-	310	19,198	-	-
Market Value per Share	\$0.97	\$-	\$1,849.99	\$131.77	\$-	\$-
Police & Fireman's Survivors' Benefit Fund	I					
Book Value at June 30, 2016	\$844,392	\$2,512,535	\$2,421,698	\$1,787,696	\$988,897	\$1,608,228
Market Value at June 30, 2016	\$830,373	\$2,606,706	\$4,882,409	\$2,018,359	\$1,134,959	\$2,016,003
Shares Purchased	221,654	69,723	133,482	171,073	117,769	68,368
Shares Redeemed Returns of Capital	(97,038)	(16,257)	(461,253)	-	-	(29,639)
Gain/(Loss) on Shares Redeemed	(2,115)	1,028	253,382	-	-	7,089
Net Investment Income Earned	14,746	1,020	200,002			7,003
Net Investment Income Distributed	(14,746)		_	_		
Changes in Market Value of Fund Shares	(4,827)	214,736	673,666	37,373	10,032	178,225
Market Value at June 30, 2017	\$948,047	\$2,875,936	\$5,481,686	\$2,226,805	\$1,262,760	\$2,240,046
Book Value at June 30, 2017	\$966,893	\$2,567,029	\$2,347,309	\$1,958,769	\$1,106,666	\$1,654,046
- Shares Outstanding	978,022	2,368,252	2,963	16,900	8,093	12,857
 Market Value per Share	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23
OPEB Fund						
Book Value at June 30, 2016	\$17,995,995	\$34,645,576	\$58,907,226	\$83,829,083	\$7,420,991	\$11,046,190
Market Value at June 30, 2016	\$18,014,431	\$34,691,137	\$68,707,646	\$88,224,378	\$7,552,284	\$11,506,953
Shares Purchased	120,830,054	11,428,977	16,914,935	35,687,465	3,213,259	3,855,448
Shares Redeemed	(119,453,734)	-	(628,430)	-	-	(146,006)
Returns of Capital	-	-	-	-	-	-
Gain/(Loss) on Shares Redeemed	1,705	-	124,577	-	-	7,684
Net Investment Income Earned	96,692	-	-	-	-	-
Net Investment Income Distributed	(96,692)	-	-	-	-	-
Changes in Market Value of Fund Shares	(24,940)	3,414,155	14,811,404	2,110,795	109,722	1,307,130
Market Value at June 30, 2017 =	\$19,367,516	\$49,534,269	\$99,930,132	\$126,022,638	\$10,875,265	\$16,531,209
Book Value at June 30, 2017	\$19,374,020	\$46,074,553	\$75,318,308	\$119,516,548	\$10,634,250	\$14,763,316
Shares Outstanding =	19,979,842	40,790,038	54,017	956,417	69,703	94,882
Market Value per Share	\$0.97	\$1.21	\$1,849.99	\$131.77	\$156.02	\$174.23

DEVEL IELD MAR T INTERNA ID STOCK	TIONAL	EMERGING MARKET INTERNATIONAL STOCK FUND	REAL ESTATE FUND	PRIVATE INVESTMENT FUND	TOTAL	
1D 310CK	FUND	STOCKFUND	FUND	FUND	IUIAL	
	06,401	\$149,036	\$-	\$-	\$2,796,870	
\$- \$3	70,711	\$141,172	\$-	\$-	\$3,533,357	
-	5,816	644	-	-	125,744	
- (4	1,260)	(16,650)	-	-	(123,933)	
-	-	-	-	-	-	
-	12,163	901	-	-	65,206	
-	-	-	-	-	1,810	
-	-	-	-	-	(1,810)	
-	78,387	29,890	-	-	197,571	
\$- \$4	25,817	\$155,957	\$-	\$-	\$3,797,945	
	· ·	· · ·			ψ0,707,040	
\$- \$2	83,120	\$133,931	\$-	\$-	\$2,863,887	
-	793	370		-	136,749	
\$- \$	537.14	\$422.00	\$-	\$-		
¥ ¥		+ -==:00	¥	¥		
9,118 \$3,8	10,630	\$2,351,151	\$1,712,631	\$2,252,618	\$23,359,594	
	94,938	\$2,288,615	\$2,047,397	\$3,217,470	\$28,587,494	
, , ,	,			143,783		
	64,788	58,208	87,965	,	1,193,833	
(20	85,796)	(228,401)	(10,524)	(48,542)	(1,276,086)	
- 5,208	- 64,537	- 18,958	- 1,850	- 14,889	374,826	
3,200	04,557	10,950	1,000	14,009	14,746	
-	-	-	-	-		
-	-	400.050	-	-	(14,746)	
4,971 9	53,039	490,252	112,234	399,104	3,468,805	
8,828 \$4,8	91,506	\$2,627,632	\$2,238,922	\$3,726,704	\$32,348,872	
0,020 01,0		<i><b>Q</b>2,021,002</i>	<i>\\\\\\\\\\\\\</i>	\$6,126,161	<i>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</i>	
2,710 \$3,6	54,159	\$2,199,916	\$1,791,922	\$2,362,748	\$23,652,167	
4,724	9,107	6,227	41,930	47,411	3,516,484	
54.86 \$	537.14	\$422.00	\$53.40	\$78.60		
φ	007.14	φ+22.00	<u> </u>	\$70.00		
8,840 \$50,0	42 600	¢15 501 510	400 176 00F	¢27 040 000	\$365,195,984	
	42,690 39,458	<u>\$15,591,512</u> \$15,268,165	<u>\$28,476,985</u> \$35,010,682	\$27,940,896 \$35,026,010	\$395,435,514	
			12,189,692		242,720,313	
	84,375	4,094,821	12,109,092	11,807,298		
- (66	84,185)	(895,506)	-	-	(121,807,861)	
-	- 85,357	- 67,615	-	-	- 286,938	
-	00,007	07,010	-	-	280,938 96,692	
-	-	-	-	-	(96,692)	
- 5,639 14,7	-	4 063 303	- 2,371,739	- 5,677,306	52,805,401	
14,7	10,148	4,062,303	2,371,739	5,077,500	52,005,401	
3,998 \$78,5	35,153	\$22,597,398	\$49,572,113	\$52,510,614	\$569,440,305	
2,829 \$63,0	28,237	\$18,858,442	\$40,666,677	\$39,748,194	\$486,395,374	
£,020 003,0	-0,201	ψ10,000,442	φ <del>τ</del> υ,000,077	ψυυ, 1 τυ, 194	φ+00,030,074	
3,888 1	46,209	53,548	928,365	668,039	64,024,949	
54.86 \$	537.14	\$422.00	\$53.40	\$78.60	\$8.89	

### **COMBINED INVESTMENT FUNDS**

### LIST OF INVESTMENT ADVISORS AND NET ASSETS UNDER MANAGEMENT

			Net Assets	Percent
	Investment		Under	of Fund
Name of Fund	Strategy		Management	Total
LIQUIDITY (LF)				
State Street Global Advisors	Active	\$	1,542,288,102	52.83%
Payden & Rygel	Active	Ψ	548,314,753	18.78%
PIMCO	Active		431,429,437	14.78%
Lazard	Active		99,657,597	3.41%
Colchester Global Investors Ltd.	Active		297,752,345	10.20%
Other <sup>(1)</sup>			338	0.00%
SUBTOTAL LF		\$	2,919,442,572	100.00%
MUTUAL EQUITY FUND (MEF)				
Large Cap		\$	5,317,010,424	75.72%
Large Cap I. Rowe Price Associates	Enhanced Index	Ψ		
	Enhanced - Index		2,265,341,959	32.26%
State Street Global Advisors	Passive - Indexed		3,051,668,465	43.46%
All Cap			629,717,239	8.97%
Capital Prospects	Active		324,236,955	4.62%
FIS Group, Inc.	Active		305,480,284	4.35%
Small/Mid Cap			733,833,239	10.45%
Frontier Capital Mgmt Co	Active		408,898,925	5.82%
			· · ·	
Bivium	Active		324,934,314	4.63%
Other <sup>(1)</sup>			341,569,801	4.86%
SUBTOTAL MEF		\$	7,022,130,703	100.00%
CORE FIXED INCOME FUND (CFIF)				
State Street Global Advisors	Passive	\$	251,945,275	10.27%
	Active	Ψ	528,277,226	21.54%
BlackRock Financial Management, Inc.				
Vellington	Active		538,592,555	21.96%
Conning-Goodwin Capital	Active		378,359,692	15.43%
Progress	Active		118,900,899	4.85%
Prudence Crandall Fund III Opportunistic	Active		279,748,952	11.41%
Prudence Crandall Fund IV Opportunistic	Active		286,291,100	11.67%
Other <sup>(1)</sup>			70,267,790	2.87%
SUBTOTAL CFIF		\$	2,452,383,489	100.00%
			· •	
	A	•	E4E 400 04E	00.000/
BlackRock	Active	\$	515,186,615	38.33%
Colchester	Active		610,713,250	45.44%
New Century	Active		189,191,788	14.08%
Other <sup>(1)</sup>			28,934,092	2.15%
SUBTOTAL ILBF		\$	1,344,025,745	100.00%
EMERGING MARKET DEBT FUND (EMDF) Ashmore Investment Mgt. Ltd.	Active	\$	576,148,444	35.19%
	Active	Ψ	556,352,645	33.98%
Payden & Rygel			· · ·	
Fidelity Institutional Asset Mgt. Trust Co.	Active		478,378,770	29.22%
Stone Harbor Investment Partners	Active		13,909,252	0.85%
Other <sup>(1)</sup>			12,391,905	0.76%
SUBTOTAL EMDF		\$	1,637,181,016	100.00%
HIGH YIELD DEBT FUND (HYDF)				
	Active	¢	391 192 007	19 650/
Loomis Sayles & Co., Inc.		\$	381,183,907	18.65%
Stone Harbor Investment Partners	Active		20,153,947	0.99%
Shenkman Capital Management, Inc.	Active		232,440,304	11.37%
Daktree Capital Management, L.L.C.	Active		7,466,324	0.36%
AllianceBernstein, LP	Active		283,040,061	13.84%
DDJ Capital Management, LLC	Active		160,811,548	7.87%
Columbia Management Investment Advisers, LLC	Active		369,708,326	18.08%
Nomura Corporation Research &			000,100,020	10.00 /0
Asset Management, Inc.	Active		444,026,436	21.72%
FCG BDC, Inc.	Active		57,625,395	2.82%
			87,877,782	<b>4.30%</b>
Othor (1)				
Other <sup>(1)</sup> SUBTOTAL HYDF		\$	2,044,334,030	100.00%

### COMBINED INVESTMENT FUNDS

# LIST OF INVESTMENT ADVISORS AND NET ASSETS UNDER MANAGEMENT (Continued)

Name of Fund	Investment Strategy		Net Assets Under Management	Percent of Fund Total
DEVELOPED MARKET INTERNATIONAL STO				
Index		\$	2,243,712,419	35.16%
State Street Global Advisors	Index-Passive	Ψ	2,243,712,419	35.16%
Core			1,698,253,096	26.61%
AQR Capital Management	Active		779,558,778	12.21%
Acadian Asset Management	Active		774,528,461	12.14%
Progress	Active		144,165,857	2.26%
Active-Growth			914,303,822	14.33%
MFS Institutional Advisors, Inc.	Active		914,303,822	14.33%
Active-Value			511,113,008	8.01%
Grantham, Mayo, Van Otterloo	Active		511,113,008	8.01%
Small Cap			999,897,967	15.67%
Schroder Investment Mgmt.	Active		360,217,280	5.64%
DFA	Active		316,886,481	4.97%
William Blair & Company	Active		322,794,206	5.06%
Other <sup>(1)</sup>	Active		13,759,879	0.22%
SUBTOTAL DMISF		\$	6,381,040,191	100.00%
		Ψ	0,001,070,131	100.0070
EMERGING MARKET INTERNATIONAL STOC	. ,	•		04 0004
Aberdeen Asset Management	Active	\$	943,572,024	31.29%
Schroders Investment Mgt	Active		1,263,640,304	41.91%
Grantham, Mayo, Van Otterloo	Active		798,499,456	26.48%
Other <sup>(1)</sup>			9,610,274	0.32%
SUBTOTAL EMISF		\$	3,015,322,058	100.00%
REAL ESTATE FUND (REF)				
AEW Partners III	Active	\$	270,172	0.01%
American Realty Advisors	Active		90,401,538	4.02%
Apollo Real Estate	Active		205,358	0.01%
Blackstone Real Estate Partner Europe III LP	Active		34,225,710	1.52%
Blackstone Real Estate Spec Sit II LP	Active		2,180,550	0.10%
Blackstone Real Estate VI LP	Active		20,576,572	0.91%
Blackstone Real Estate Partners VIII LP	Active		47,335,962	2.10%
Blackstone Real Estate Partners EURO V	Active		4,173,260	0.19%
Canyon Johnson Urban Fund II	Active		150,125	0.01%
Canyon Johnson Urban Fund III	Active		447,568	0.02%
Capri Select Income II LLC	Active		60.778	0.00%
Clarion Lion Industrial Trust	Active		116,734,432	5.19%
Colony Realty Partners II LP	Active		9,143,800	0.41%
Cornerstone Patriot Fund LP	Active		9,143,800 293,039,605	13.03%
Covenant Apartment Fund V LP	Active		293,039,605 339,907	0.02%
				0.02%
Covenant Apartment Fund VI	Active		187,454 20 879 913	
Covenant Apartment Fund VIII Crow Hldgs Realty Partners VII LP	Active		20,879,913	0.93%
	Active		56,054,600	2.49%
Cypress Acquisition Prtnrs Retail FD LP	Active		50,654,012	2.25%
Gerding Edlen Green Cities II	Active		31,154,380	1.39%
Gerding REF III	Active		32,708,305	1.45%
Hart Realty Advisors	Active		197,380,637	8.78%
L & FS India Realty Fund II LLC	Active		25,244,922	1.12%
JP Morgan Strategic Property	Active		85,542,816	3.80%
Landmark RE Partners VII LP	Active		19,942,161	0.89%
Lone Star Real Estate Part II LP	Active		11,907,393	0.53%
Macfarlane Urban Real Estate Fund II LP	Active		2,654,118	0.12%
Prime Property Fund LLC	Active		263,749,584	11.73%
PRISA	Active		200,459,653	8.92%
Rockwood Capital Fund V	Active		151,000	0.01%
Rockwood Capital VI Limited Partnership	Active		323,897	0.01%
Rockwood Capital VII Limited Partnership	Active		20,343,110	0.90%
Starwood Opportunity Fund VII	Active		15,357,828	0.68%
Starwood Opportunity Fund VIII	Active		10,340,094 33,857,966	0.46%
Starwood Opportunity Fund IX				1.51%

### **COMBINED INVESTMENT FUNDS**

# LIST OF INVESTMENT ADVISORS AND NET ASSETS UNDER MANAGEMENT (Continued)

Name of Fund	Investment Strategy	Net Assets Under Management	Percent of Fund Total
Starwood Opportunity Fund X	Active	71,224,496	3.17%
UBS-Trumbull Property Income	Active	59,078,880	2.63%
UBS-Trumbull Property G&I (TPG)	Active	67,163,079	2.99%
UBS-Trumbull Property Fund LP	Active	86,612,748	3.85%
Urban Strategy America Fund LP	Active	28,574,190	1.27%
USAA Eagle RE Fund	Active	136,225,933	6.06%
WLR IV PPIP Co Invest LP	Active	9,434,720	0.42%
Other <sup>(2)</sup>	Active	91,987,594	4.09%
SUBTOTAL REF	Active	\$ 2,248,480,820	100.00%
PRIVATE INVESTMENT FUND (PIF)			
Buyout		\$ 1,090,300,470	36.46%
AIG Altaris Health Partners II	Active	14,208,866	0.47%
AIG Altaris Health Partners III	Active	29,429,972	0.98%
Boston Ventures VII	Active	43,313,369	1.45%
Charterhouse Equity Partners IV	Active	4,037,714	0.13%
Court Square Capital Partners II	Active	27,058,106	0.90%
Court Square Capital Partners III LP	Active	16,688,090	0.56%
Ethos Private Equity Fund V	Active	5,324,415	0.18%
FS Equity Partners V	Active	6,508,219	0.22%
FS Equity Partners VI	Active	124,505,984	4.16%
GENNX360 Capital Partners II	Active	124,505,984	0.62%
Hicks, Muse Tate & Furst Equity Fund III	Active	3,551,237	0.02%
ICV Partners II LP	Active	8,962,675	0.30%
JFL Equity Investors III, LP	Active	50,122,324	1.68%
			0.88%
JFL IV	Active	26,233,339	
KKR 2006 Fund	Active	64,659,031	2.16%
KKR Millennium Fund	Active	9,244,888	0.31%
Leeds Equity Partners V LP	Active	32,509,095	1.09%
Leeds VI	Active	9,898,141	0.33%
Nogales Investors Fund II	Active	1,685,506	0.06%
RFE Investment Partners VII	Active	44,319,391	1.48%
RFE Investments Partners VIII	Active	22,912,390	0.77%
TA XI, L.P.	Active	66,429,959	2.22%
Thomas H. Lee Equity Fund VI	Active	65,215,336	2.18%
Vista Equity Partners Fund III	Active	22,508,517	0.75%
Vista Equity Partners Fund IV	Active	73,479,303	2.46%
Vista Equity Partners Fund VI	Active	46,933,363	1.57%
Wellspring Capital Partners V	Active	36,761,719	1.23%
Welsh Carson Anderson & Stowe X LP	Active	18,865,693	0.63%
Welsh Carson Anderson & Stowe XI	Active	68,992,263	2.31%
WCAS XII, LP	Active	31,951,782	1.07%
Yucaipa American Alliance Fund II LP	Active	81,384,745	2.72%
Yucaipa III	Active	13,959,028	0.47%
Venture Capital		9,014,785	0.30%
Crescendo III	Active	1,156,486	0.04%
Syndicated Communications V	Active	7,858,299	0.26%
Mezzanine		47,691,968	1.59%
Audax Mezzanine III Limited Partnership	Active	38,109,974	1.27%
GarMark Partners II LP	Active	9,581,994	0.32%
International		46,579,869	1.56%
Gilbert Global Equity Partners	Active	44,851,779	1.50%
Pinebridge Global Emerging Markets Fund	Active	1,728,090	0.06%
Fund of Funds	Addive	1,010,862,137	<b>33.80%</b>
Connecticut Horizon Legacy	Active	5,860,236	0.20%
0,		5,800,230 7,830,409	
CT Growth Capital	Active	, ,	0.26%
CS/CT Cleantech Opp Fund	Active	8,123,759	0.27%
CT Emerging M-2 Pvt Equity	Active	73,164,810	2.45%
Fairview Constitution II LP	Active	90,387,736	3.02%
Fairview Constitution III	Active	315,539,659	10.55%
Fairview Constitution IV LP	Active	139,545,704	4.67%

### **COMBINED INVESTMENT FUNDS**

### LIST OF INVESTMENT ADVISORS AND NET ASSETS UNDER MANAGEMENT (Continued)

JUNE 30, 2017

Name of Fund	Investment Strategy	Net Assets Under Management	Percent of Fund Total
JP Morgan Nutmeg I	Active	83,953,234	2.81%
Landmark Equity Partners XIV LP	Active	38,412,767	1.28%
Landmark Equity Partners XV LP	Active	37,475,763	1.25%
Stepstone Pioneer Capital I LP	Active	19,007,759	0.64%
Stepstone Pioneer Capital II LP	Active	132,208,263	4.42%
Constitution Fund V	Active	22,556,900	0.75%
The Constitution Liquidating Fund	Active	36,795,138	1.23%
Special Situations	Active	452,045,315	15.12%
Apollo Investment Fund VIII LP	Active	86,564,648	2.90%
Castlelake II LP	Active	45,509,284	1.52%
Clearlake Capital Partners III LP	Active	64,676,117	2.16%
Clearlake IV	Active	48,347,212	1.62%
Levine Leichtman Capital Partners	Active	20,220,581	0.68%
evine Leichtman Capital Partners V LP	Active	64,570,094	2.16%
Pegasus Partners IV	Active	29,311,713	0.98%
Pegasus Partners V	Active	81,157,517	2.71%
VLR Recovery Fund IV	Active	11,688,149	0.39%
Other <sup>(2)</sup>		333,947,837	11.17%
SUBTOTAL PIF		\$ 2,990,442,381	100.00%
ALTERNATIVE INVESTMENT FUND (AIF)			
Arclight Energy Partners Fund V	Active	\$ 36,994,556	1.82%
Arclight VI	Active	49,413,209	2.44%
EIG Energy Fund XV Limited Partnership	Active	36,262,167	1.79%
Marathon European Credit Opportunity	Active	10,702,910	0.53%
Prudence Crandall I Permal Limited Partnership	Active	608,296,503	30.00%
Prudence Crandall II Prisma Limited Partnership	Active	319,006,097	15.73%
Prudence Crandall III Rock Creek			
Limited Partnership	Active	309,983,386	15.28%
Prudence Crandall IV K2 Limited Partnership	Active	305,672,773	15.07%
homas Welles Fund I	Active	87,595,523	4.32%
Thomas Welles Fund II	Active	87,245,454	4.30%
Other <sup>(2)</sup>		176,783,922	8.72%
SUBTOTAL AIF		\$ 2,027,956,500	100.00%
TOTAL		\$ 34,082,739,505	
Adjustments (3)		(1,534,869,491)	
GRAND TOTAL		\$ 32,547,870,014	

(1) Other represents cash equivalents, other net assets and terminated advisor balances, as well as, currency overlay balances for the DMISF.

(2) Other includes partnerships with nonmaterial balances, as well as moneys earmarked for distribution to participants, reinvestment, expenses and other net assets.

(3) Represents Elimination Entry to account for investment of Combined Investment Funds in the Liquidity Fund.

### COMBINED INVESTMENT FUNDS TOP TEN HOLDINGS\* BY FUND AT JUNE 30, 2017

# LIQUIDITY FUND

Security Name	Maturity Date	Market Value	%
CITIGROUP GLOBAL TRI REPO	7/3/2017	79,000,000	2.70%
FEDERAL NATL MTG ASSN DISC	7/3/2017	55,995,567	1.92%
WAL MART STORES DISC	7/10/2017	39,988,111	1.37%
U S TREASURY NOTE	12/31/2018	36,072,120	1.23%
MERRILL LYNCH TRI REPO	7/3/2017	33,000,000	1.13%
KELLS FDG LLC 144A DISC	9/12/2017	29,901,667	1.02%
REPUBLIC OF POLAND GOVERNMENT	7/25/2019	25,889,189	0.89%
U S TREASURY NOTE	2/15/2018	25,665,985	0.88%
NEW ZEALAND GOVERNMENT BO REGS	3/15/2019	25,546,107	0.87%
NATIONAL SEC CORP DISC	7/13/2017	24,988,229	0.86%
Top Ten		\$376,046,975	12.87%

FAIR VALUE LF

\$2,922,197,052

# ALTERNATIVE INVESTMENT FUND

Partnership Name	Partnership Type	Market Value	%
PRUDENCE CRANDALL I PERMAL	Hedge Fund-of-Funds	608,296,503	30.01%
PRUDENCE CRANDALL II PRISMA	Hedge Fund-of-Funds	319,006,097	15.74%
PRUDENCE CRANDALL III RCREEK	Hedge Fund-of-Funds	309,983,386	15.29%
PRUDENCE CRANDALL IV K2	Hedge Fund-of-Funds	305,672,773	15.08%
THOMAS WELLES FUND I	Hedge Fund-of-Funds	87,595,523	4.32%
THOMAS WELLES FUND II	Hedge Fund-of-Funds	87,245,454	4.31%
ARCLIGHT ENERGY PARTNERS VI	Real Assets	49,413,209	2.44%
ARCLIGHT ENERGY PARTNERS V	Real Assets	36,994,556	1.83%
EIG ENERGY FUND XV LP	Real Assets	36,262,167	1.79%
MARATHON EUROPEAN CREDIT OPP FUND SPC B	Opportunistic	10,702,910	0.53%
Top Ten		\$1,851,172,578	91.34%

FAIR VALUE AIF

\$2,026,788,085

# MUTUAL EQUITY FUND

Security Name	Industry Sector	Market Value	%
APPLE INC	INFORMATION TECHNOLOGY	190,196,701	2.71%
MICROSOFT CORP	INFORMATION TECHNOLOGY	149,416,390	2.12%
AMAZON.COM INC	CONSUMER DISCR	107,485,752	1.53%
FACEBOOK INC	INFORMATION TECHNOLOGY	104,412,031	1.49%
EXXON MOBIL CORP	ENERGY	90,102,430	1.28%
JOHNSON & JOHNSON	HEALTH CARE	87,638,818	1.25%
JP MORGAN CHASE & CO	FINANCIALS	87,365,421	1.24%
ALPHABET INC-CL C	INFORMATION TECHNOLOGY	74,943,872	1.07%
ALPHABET INC-CLA	INFORMATION TECHNOLOGY	74,259,120	1.06%
WELLS FARGO & CO	FINANCIALS	70,976,110	1.01%
Top Ten		\$1,036,796,645	14.76%

FAIR VALUE MEF

\$7,026,486,865

### COMBINED INVESTMENT FUNDS TOP TEN HOLDINGS\* BY FUND AT JUNE 30, 2017 (Continued)

### CORE FIXED INCOME FUND

Security Name	Coupon	Maturity	Security Type	Market Value	%
U S TREASURY NOTE	1.250	5/31/2019	U.S. Govt/Agency	28,565,703	1.10%
U S TREASURY NOTE	1.125	6/30/2021	U.S. Govt/Agency	23,957,381	0.92%
FNMA TBA	3.500	8/1/2047	U.S. Govt/Agency	22,865,082	0.88%
U S TREASURY NOTE	1.250	4/30/2019	U.S. Govt/Agency	19,478,964	0.75%
U S TREASURY NOTE	2.375	5/15/2027	U.S. Govt/Agency	18,276,965	0.70%
U S TREASURY NOTE	1.875	2/28/2022	U.S. Govt/Agency	17,120,691	0.66%
FNMA TBA	3.500	7/1/2047	U.S. Govt/Agency	15,375,669	0.59%
GNMA TBA	3.000	7/20/2047	U.S. Govt/Agency	15,219,885	0.59%
FHLM TBA	3.500	8/1/2047	U.S. Govt/Agency	15,176,512	0.58%
U S TREASURY NOTE	2.000	8/15/2025	U.S. Govt/Agency	12,795,841	0.49%
Top Ten				\$188,832,693	7.26%

FAIR VALUE CFIF

\$2,601,453,937

# INFLATION LINKED BOND FUND

Security Name	Coupon	Maturity	Security Type	Market Value	%
US TREAS-CPI INFLAT	3.875	4/15/2029	U.S. Govt/Agency	59,556,259	4.47%
US TREAS-CPI INFLAT	0.125	4/15/2019	U.S. Govt/Agency	54,596,993	4.10%
ITALY GOVERNMENT BOND	2.600	9/15/2023	Italy Govt/Agency	51,492,593	3.86%
US TREAS-CPI INFLAT	2.375	1/15/2027	U.S. Govt/Agency	51,404,516	3.86%
US TREAS-CPI INFLAT	0.125	7/15/2022	U.S. Govt/Agency	46,737,288	3.51%
US TREAS-CPI INFLAT	0.750	2/15/2042	U.S. Govt/Agency	43,573,827	3.27%
US TREAS-CPI INFLAT	0.125	4/15/2022	U.S. Govt/Agency	38,739,825	2.91%
NEW ZEALAND GOVERNMENT BOND	3.000	9/20/2030	New Zealand Govt/Agency	35,925,949	2.69%
FRANCE GOVERNMENT BOND	1.800	7/25/2040	France Govt/Agency	34,993,349	2.62%
UNITED KINGDOM GILT INFLA REGS	0.125	3/22/2044	U.K. Govt/Agency	33,235,116	2.49%
Top Ten				\$450,255,715	33.78%

# FAIR VALUE ILBF

\$1,332,942,016

# **EMERGING MARKET DEBT FUND**

Coupon	Maturity	Market Value	%
10.000	1/1/2021	34,209,134	2.14%
D 7.000	2/28/2031	24,959,057	1.56%
7.000	5/4/2022	21,040,245	1.32%
10.000	1/1/2023	20,080,271	1.26%
6.500	6/10/2021	19,666,840	1.23%
10.000	7/24/2024	14,238,523	0.89%
7.600	4/14/2021	14,064,928	0.88%
10.000	1/1/2025	14,038,676	0.88%
10.000	1/1/2027	13,457,482	0.84%
8.375	9/17/2026	13,271,837	0.83%
		\$189,026,993	11.83%
	10.000 D 7.000 7.000 10.000 6.500 10.000 7.600 10.000 10.000	10.000         1/1/2021           D         7.000         2/28/2031           7.000         5/4/2022           10.000         1/1/2023           6.500         6/10/2021           10.000         7/24/2024           7.600         4/14/2021           10.000         1/1/2025           10.000         1/1/2025           10.000         1/1/2027	10.000         1/1/2021         34,209,134           D         7.000         2/28/2031         24,959,057           7.000         5/4/2022         21,040,245           10.000         1/1/2023         20,080,271           6.500         6/10/2021         19,666,840           10.000         7/24/2024         14,238,523           7.600         4/14/2021         14,064,928           10.000         1/1/2025         14,038,676           10.000         1/1/2027         13,457,482           8.375         9/17/2026         13,271,837

### FAIR VALUE EMDF

\$1,598,180,952

### COMBINED INVESTMENT FUNDS TOP TEN HOLDINGS\* BY FUND AT JUNE 30, 2017 (Continued)

### **HIGH YIELD DEBT FUND**

Security Name	Coupon	Maturity	Market Value	%
US TREASURY NOTE	1.250	5/31/2019	11,357,448	0.56%
DISH NETWORK CORP 144A	3.375	8/15/2026	10,973,125	0.54%
INDONESIA GOVERNMENT BOND	5.875	1/15/2024	9,802,538	0.48%
NEW ALBERTSON'S INC	7.450	8/1/2029	9,239,250	0.45%
MICRON TECHNOLOGY INC	3.000	11/15/2043	8,510,625	0.42%
TENET HEALTHCARE CORP	6.875	11/15/2031	8,263,440	0.41%
TENET HEALTHCARE CORP	6.750	6/15/2023	7,962,000	0.39%
MORGAN STANLEY	4.750	11/16/2018	7,887,460	0.39%
TRANSDIGM INC	6.500	07/15/2024	7,749,945	0.38%
SPRINT CAPITAL CORP	6.875	11/15/2028	7,747,643	0.38%
Top Ten			\$89,493,474	4.40%
FAIR VALUE HYDF			\$ 2,034,712,429	

# DEVELOPED MARKET INTERNATIONAL STOCK FUND

Security Name	Country	Market Value	%
NESTLE SA REG	SWITZERLAND	106,804,410	1.68%
ROCHE HOLDING AG GENUSSCHEIN	SWITZERLAND	70,831,897	1.12%
HSBC HOLDINGS PLC	UNITED KINGDOM	60,715,152	0.95%
BAYER AG REG	GERMANY	56,241,204	0.88%
ING GROEP NV	NETHERLANDS	55,237,133	0.87%
NOVARTIS AG REG	SWITZERLAND	53,980,181	0.85%
WPP PLC	UNITED KINGDOM	42,269,383	0.67%
SAP SE	GERMANY	41,733,731	0.66%
RECKITT BENCKISER GROUP PLC	UNITED KINGDOM	38,499,656	0.61%
AIA GROUP LTD	HONG KONG	37,963,666	0.60%
Top Ten		\$564,276,413	8.89%

FAIR VALUE DMISF

\$6,344,307,953

# EMERGING MARKET INTERNATIONAL STOCK FUND

Security Name	Country	Market Value	%
TAIWAN SEMICONDUCTOR MANUFACTURE	TAIWAN	\$144,116,447	4.80%
SAMSUNG ELECTRONICS CO LTD	REPUBLIC OF KOREA	118,333,698	3.94%
TENCENT HLDGS LTD	CHINA	99,104,743	3.30%
CHINA MOBILE LTD	HONG KONG	87,839,679	2.92%
ALIBABA GROUP HOLDING LTD	CAYMAN ISLANDS	78,380,838	2.61%
HDFC BANK LTD	INDIA	67,396,532	2.24%
AIA GROUP LTD	HONG KONG	60,241,795	2.01%
CHINA CONSTRUCTION BANK CORP	CHINA	59,665,286	1.99%
SAMSUNG ELECTRONIC CO LTD GDR	REPUBLIC OF KOREA	57,735,096	1.92%
HON HAI PRECISION INDUSTRY CO	TAIWAN	45,240,693	1.51%
Top Ten		\$818,054,807	27.24%

### FAIR VALUE EMISF

\$3,002,786,523

### **COMBINED INVESTMENT FUNDS**

TOP TEN HOLDINGS\* BY FUND AT JUNE 30, 2017 (Continued)

# **REAL ESTATE FUND**

Partnership Name	Partnership Type	Market Value	%
CORNERSTONE PATRIOT FUND LP	Core	293,039,605	13.07%
PRIME PROPERTY FUND LLC	Core	263,749,584	11.76%
PRISA	Core	200,459,653	8.94%
HART REALTY ADVISORS	Core	197,380,637	8.80%
USAA EAGLE RE FUND	Core	136,225,933	6.07%
CLARION LION INDUSTRIAL TRUST	Value Added	116,734,432	5.21%
AMERICAN REALTY ADVISORS	Core	90,401,538	4.03%
UBS-TRUMBULL PROPERTY FUND LP	Core	86,612,748	3.86%
JP MORGAN STRATEGIC PROPERTY	Core	85,542,816	3.81%
STARWOOD OPPORTUNITY FUND X	Opportunistic	71,224,496	3.18%
Top Ten		\$1,541,371,442	68.73%
FAIR VALUE REF		\$2,242,658,118	
PRIVATE INVESTMENT FUND Partnership Name	Partnership Type	Market Value	%

	i artifolollip i ypo	market value	70
FAIRVIEW CONSTITUTION III LP	Fund of Funds	315,539,659	10.62%
FAIRVIEW CONSTITUTION IV LP	Fund of Funds	139,545,704	4.70%
STEPSTONE PIONEER CAPITAL II LP	Fund of Funds	132,208,263	4.45%
FS EQUITY PARTNERS VI	Buyout	124,505,984	4.19%
FAIRVIEW CONSTITUTION II LP	Fund of Funds	90,387,736	3.04%
APOLLO INVESTMENT FUND VIII LP	Special Situations	86,564,648	2.92%
NUTMEG OPPORTUNITIES FUND LP	Fund of Funds	83,953,234	2.83%
YUCAIPA AMERICAN ALLIANCE FUND II	Buyout	81,384,745	2.74%
PEGASUS PARTNERS V LP	Special Situations	81,157,517	2.73%
VISTA EQUITY PARTNERS FUND IV	Buyout	73,479,303	2.47%
Top Ten		\$1,208,726,793	40.69%

### FAIR VALUE PIF

\$2,970,729,926

\* A complete list of portfolio holdings is available upon request from the Office of the Treasurer, in accordance with the Connecticut Freedom of Information Act.

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS GLOSSARY OF INVESTMENT TERMS

- Active extension Active extension is defined as an investment strategy that allows for both long and short positions in an investment portfolio with a gross exposure above 100% of total portfolio value on an absolute basis, while maintaining a beta of one.
- Agency Securities Securities, usually bonds, issued by U.S. Government agencies. These securities have high credit ratings but are not backed by the full faith and credit of the U.S. Government.
- All-cap An investment approach that disregards market capitalization (i.e. small, medium, or large cap) in its security selection process.
- Alpha A coefficient which measures risk-adjusted performance, factoring in the risk due to the specific security, rather than the overall market. A high value for alpha implies that the stock or mutual fund has performed better than would have been expected given its beta (volatility).
- Asset Anything owned that has economic value; any interest in property, tangible or intangible, that can be used for payment of debts.
- Asset Backed Security Bonds or notes collateralized by one or more types of assets including real property, mortgages, and receivables.
- At Value A term used to denote the current value of an asset at a point in time. Generally used in presentations containing a mix of assets some of which are traded on an exchange and some that are valued on an appraisal or similar basis.
- Banker's Acceptance (BA) A high-quality, short-term negotiable discount note, drawn on and accepted by banks which are obligated to pay the face amount at maturity.
- **Basis Point (bp)** The smallest measure used in quoting yields or returns. One basis point is 0.01% of yield, 100 basis points equals 1%. For example, a yield that changed from 8.75% to 9.50% has increased by 75 basis points.
- **Benchmark** A standard unit used as the basis of comparison; a universal unit that is identified with sufficient detail so that other similar classifications can be compared as being above, below, or comparable to the benchmark.
- **Benchmark composite** A term used when reporting on a portfolio containing multiple asset classes. The composite is generally calculated as a weighted average of the benchmarks of the underlying portfolios.
- Beta A quantitative measure of the volatility of a given stock, mutual fund or portfolio relative to the overall market.
- Book Value (BV) The value of individual assets, calculated as actual cost minus accumulated depreciation. Book value may be more or less than current market value.
- Buyout See "Leveraged Buyout"
- Capital Gain (Loss) Also known as capital appreciation (depreciation), capital gain (loss) measures the increase (decrease) in valuation of an asset over time.
- Capitalized Fees Fees (and expenses) that increase the cost basis of an investment.
- Certificates of Deposit (CDs) A debt instrument issued by banks, usually paying interest, with maturities ranging from 3 months to six years.
- **Citigroup Broad Investment-Grade Bond Index (CBIG)** A market value-weighted index composed of over 4,000 individually priced securities with a quality rating of at least BBB. Each issue has a minimum maturity of one year with an outstanding par amount of at least \$25 million.
- Citigroup World Government Bond Index Non-U.S. (CWGBI) An unhedged index measuring government issues of 12 major industrialized countries.
- Close-End fund Funds that have set limits on the life of the fund and/or the total amount to be invested.
- **Coefficient of Determination (R2)** A measurement of how closely the returns of an investment portfolio and its benchmark match. An R2 of 1.0 indicates that portfolio returns perfectly match the returns of the benchmark, while a value less than 1.0 indicates that the returns of the portfolio do not match the benchmark return. The closer the value is to 1 the closer the return of the portfolio is to the benchmark.
- Collateral Assets pledged by a borrower to secure a loan or other credit, and subject to seizure in the event of default.
- **Collateralized Mortgage Obligation (CMO)** A mortgage-backed, investment-grade bond that separates mortgage pools into different maturity classes. CMO payment obligations are backed by mortgage-backed securities with a fixed maturity.
- **Commercial Paper** Short-term obligations with maturities ranging from 2 to 270 days. An unsecured obligation issued by a corporation or bank to finance its short-term credit needs.
- **Commingled fund** A fund consisting of assets from multiple investors that are blended together. A mutual fund is a common example of a commingled fund.
- **Committed capital** Money that is committed by limited partners to a private investment fund. Company risk The risk of investing in any single company's stock or bonds.
- **Compounded Annual Total Return** Compounded annual total return measures the implicit annual percentage change in value of an investment, assuming reinvestment of dividends, interest, and realized capital gains, including those attributable to currency fluctuations. In effect, compounded annual total return "smoothes" fluctuations in long-term investment returns to derive an implied year-to-year annual return.
- **Consumer Price Index (CPI)** A measure of change in the cost of a fixed basket of products and services as determined by a monthly survey of the U.S. Bureau of Labor Statistics. Components of the CPI include housing costs, food, transportation, and electricity.
- **Core real estate strategy** Lower risk, low leverage, vehicles that invest in stabilized income-producing properties that provide steady net operating income or cash flow. Properties are usually located in major regional markets, have investment grade tenants, at-market rents, and high occupancy levels.
- Cost basis The original price paid for an investment.
- **Counter-party risk** The risk to each party of a contract that the counterparty will not live up to its contractual obligations. Credit default risk The risk that a debtor will not make payments in accordance with the terms of the debt.
- Credit risk The risk that a borrower will fail to make payments in a timely manner.
- Cumulative Rate of Return A measure of the total return earned for a particular time period. This calculation measures the absolute percentage change in value of an investment over a specified period, assuming reinvestment of dividends, interest income, and realized capital gains. For example, if a \$100 investment grew to \$120 in a two-year period, the cumulative rate of return would be 20%.
- Currency exchange risk The risk that a foreign country's currency may appreciate or depreciate relative to the U. S. dollar, thus impacting the value of foreign investments.
- **Currency hedging** Transactions intended to manage the foreign exchange rate risk associated with investing in foreign securities.
- **Currency spot** A contract for the purchase or sale of a commodity, security or currency for settlement (payment and delivery) on the spot date, which is normally two business days after the trade date.
- **Current Yield** The relationship between the stated annual interest or dividend rate and the market price of a security. In calculating current yield, only income payments are considered; no consideration is given to capital gain/loss.
- **Default risk** The chance that an issuer will not make the required coupon payments or principal repayments to its debt holders.
- **Derivative** Derivatives are generally defined as contracts whose value depend on, or are derived from, the value of an underlying asset, reference rate, or index. For example, an option is a derivative instrument because its value derives from an underlying stock, stock index, commodity.
- **Discount Rate** The interest rate that the Federal Reserve charges banks for loans, using government securities or eligible paper as collateral.
- **Diversification** A portfolio strategy designed to reduce exposure to risk by putting assets in several different securities or categories of investments.
- Drawdown (a) A request for cash charged against capital committed to a limited partnership, limited liability corporation, or other like entity; (b) a decline in the current value of an investment or other asset. Duration - Duration is a measure of the price sensitivity of a fixed-income investment to a change in interest rates. (See Modified and Macaulay Duration).
- Economic risk The risk that economic activities will negatively impact an investment.
- **Enhanced indexing** Refers to the application of strategies to an index fund designed to generate higher rates of returns. Equity The ownership interest possessed by shareholders in a corporation in the form of common stock or preferred stock.
- ERISA (Employee Retirement Income Security Act) The 1974 federal law which established legal guidelines for private pension plan administration and investment practices.
- **Expense Ratio** Operating costs (including management fees) expressed as a percentage of the fund's average net assets for a given time period.
- **Fair Value** The amount at which a financial instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.
- Federal Funds Rate The interest rate that banks charge each other for the use of Federal Funds. This rate changes daily and is a sensitive indicator of general interest rate trends.

- Federal Reserve Board The seven member Board of Governors that oversees Federal Reserve Banks, establishes monetary policy and monitors the economic health of the economy.
- Fiduciary A person, company, or association holding assets in trust for a beneficiary. The fiduciary is charged with the responsibility to invest the assets prudently and solely for the beneficiary's benefit.
- Fitch Investor Services A financial services rating agency.
- Floating Rate Note A fixed principal instrument which has a long or even indefinite life and whose yield is periodically reset relative to a reference index rate to reflect changes in short- or intermediate-term interest rates.
- Forward contract A contract between two parties that requires the parties to sell or purchase an asset at a price set when the contract is entered into for settlement at a specified future date.
- Funded Capital Amount of cash invested. Geopolitical risk See "Political risk".
- **Gross Domestic Product** Total market value of goods and services produced in a country over a particular period of time, usually one year. The GDP growth rate is the primary indicator of the health of the economy.
- Hedge An investment in assets which serves to reduce the risk of adverse price movements in a security, by taking an offsetting position in a related security, such as an option or short sale.
- **Index** A benchmark of securities used as an independent representation of market performance. Example: S&P 500 index. Index Fund - A passively managed fund constructed to mirror the performance of a specific index, such as the S&P 500. Individual company risk - The risk associated with investment in the securities of any single company.
- Inflation The overall general upward price movement of goods and services in an economy, usually as measured by the Consumer Price Index and the Producer Price Index.
- Inflation risk The risk that the value of an investment will erode as a result of inflationary pressures.
- Interest rate risk The risk that changes in the general level of interest rates will adversely affect the fair value of an investment.
- Investment Income The equity dividends, bond interest, and/or cash interest paid on an investment.
- J-Curve An economic theory stating that a policy designed to have one effect will initially have the opposite effect. With regard to closed end commingled fund investments, this generally refers to a trend whereby a fund's return tends to be negative in the early years of a fund's existence until income and valuations increase in the later periods as investments mature and as the relative size of fees and other costs diminish relative to the value of invested capital.
- JP Morgan Emerging Markets Bond Index Plus (EMBI+) An index which tracks total returns for traded external debt instruments in the emerging markets. The instruments include external-currency-denominated Brady bonds, loans and Eurobonds, as well as U.S. dollar denominated local market instruments. The EMBI+ expands upon JP Morgan's original Emerging Markets Bond Index, which was introduced in 1992 and covers only Brady bonds.
- Letter of Credit An instrument or document issued by a bank, guaranteeing the payment of a customer's drafts up to a stated amount for a specified period. It substitutes the bank's credit for the buyer's and reduces the seller's risk.
- Leverage The use of borrowed funds to increase purchasing power and, ideally, to increase profitability of an investment transaction or business.
- Leveraged buyout A leveraged buyout (LBO) is an acquisition (usually of a company) financed through a combination of equity and debt and in which the cash flows or assets of the target are used to secure and repay the debt used to finance the acquisition.
- Liability The claim on the assets of a company or individual excluding ownership equity. An obligation that legally binds an individual or company to settle a debt.
- Limited Partnership A partnership formed by two or more entities with at least one limited partner and one general partner. Limited partner responsibility for debts and losses is limited to the amount of their investment in the partnership. In addition, the limited partner does not participate in the activities of the partnership. The general partner has control over the management of the partnership and has unlimited liability for partnership debt and losses.
- Liquidity risk The risk that an investment cannot be immediately liquidated unless discounted in value.
- Macaulay Duration The weighted-average term to maturity of a bond's cash flows. The weighting is based on the present value of each cash flow divided by price.
- Management risk The risks associated with ineffective, destructive or underperforming management.
- Marked-to-market pricing An accounting practice in which the price of an investment recorded within the accounting records is the market value at the end of the month.
- Market Risk The risk that fluctuations in the overall market for securities will impact an investment portfolio.

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- Market Value A security's last reported sale price or its current bid and ask prices. The price as determined dynamically by buyers and sellers in an open market.
- **Master Custodian** An entity, usually a bank, used for safekeeping of securities and other assets. May be responsible for other functions including accounting, performance measurement and securities lending.
- Maturity Date The date on which the principal amount of a bond or other debt instrument becomes payable or due. Mezzanine Debt Debt that incorporates equity-based options, such as warrants, and is subordinated debt.
- MFR Index (iMoneyNet's First Tier Institutional-only Rated Money Fund Report AveragesTM Index) An index which represents an average of the returns of institutional money market mutual funds that invest primarily in first-tier (securities rated A-1, P-1) taxable securities.
- **Modified Duration** A measure of the price sensitivity of a bond to interest rate movements. It is the primary basis for comparing the effect of interest rate changes on prices of fixed income securities.
- Money Market Fund An open-ended mutual fund that invests in commercial paper, bankers' acceptances, repurchase agreements, government securities, certificates of deposit, and other highly liquid and safe securities and pays money market rates of interest. The fund's net asset value remains a constant \$1 per share only the interest rate goes up or down.

Moody's (Moody's Investors Service) - A financial services rating agency.

- MSCI EAFE Morgan Stanley Europe Australasia Far East foreign equity index. An arithmetic value weighted average of the performance of over 900 securities on the stock exchanges of 23 countries on three continents. NCREIF (National Council of Real Estate Investment Fiduciaries) National Council of Real Estate Investment Fiduciaries) National Council of Real Estate Investment Fiduciaries, a non-profit organization established to serve the institutional real estate investment community as a non-partisan collector, processor, validator and disseminator of real estate performance information.
- Net Asset Value (NAV) The total assets (including any valuation gains or losses on investments or currencies) minus total liabilities divided by shares outstanding.
- Netted Fees Refers to instances in which investment management fees/expenses are offset against income normally distributed to investors. May also refer to practices whereby investment management fees/expenses are added to the cost basis of an investment.
- NPI NCREIF Property Index. The NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only.. Properties comprising this benchmark, which include wholly owned and joint venture investments, are held on an all-cash, non-leveraged basis, and is restricted to investment-grade, nonagricultural, and income-producing properties.
- **Open-End fund** A fund operated by an investment company in accordance with a stated set of objectives. Open-end funds raise money by periodically selling shares of the fund to the public.
- **Operations risk** The risk associated with negative operating events (net operating losses, inventory write-downs, breakdown in internal procedures, etc).
- Par Value The stated or face value of a stock or bond. While it has little significance for common stocks, for bonds, it specifies the payment amount at maturity.
- **Pension Fund** A fund set up by a corporation, labor union, governmental entity, or other organization to provide retirement income.
- Percentile A description of the percentage rank of a portfolio's performance, relative to a larger universe of portfolios. Political Risk The risk resulting from political changes or instability in a country's system of government, laws or regulation. Prepayment risk The risk associated with the prepayment of fixed income investments in a declining rate environment.
- Present Value The current value of a future cash flow or series of cash flows discounted at an appropriate interest rate or rates. For example, at a 12% interest rate, the value of one dollar a year from now has a present value of \$0.89286.
- Price/Book (P/B) A ratio showing the price of a stock divided by its book value per share. The P/B measures the multiple at which the market is capitalizing the net asset value per share of a company at any given time.
- Price/Earnings (P/E) A ratio showing the price of a stock divided by its earnings per share. The P/E measures the multiple at which the market is capitalizing the earnings per share of a company at any given time.
- **Principal** Face value of an obligation, such as a bond or a loan, that must be repaid at maturity. Product risk The risk associated with the introduction of a new product or process.
- Prudent Person Rule The standard adopted by some states to guide those fiduciaries with responsibility for investing the money of others. Such fiduciaries must act as a prudent person would be expected to act, with discretion and intelligence, to seek reasonable income, preserve capital, and, in general, avoid speculative investments.

### Purchasing power risk- See "Inflation risk"

Pure indexing - Refers to the application of strategies to an index fund designed to exactly match the returns of the portfolio benchmark.

R2 - See "Coefficient of Determination"

Real interest rate - An interest rate that has been adjusted to remove the effects of inflation.

Real rate of return - The return realized on an investment adjusted for changes due to inflation or other external effects.

- Realized Gain (Loss) A gain (loss) that has occurred financially. The difference between the principal amount received and the cost basis of an asset realized at sale.
- Reinvestment risk The risk that cash flows received from a security will be reinvested at lower rates due to declining interest rates.

**Relative Volatility** - The standard deviation of the Fund divided by the standard deviation of its selected benchmark. A relative volatility greater than 1.0 suggests comparatively more volatility in Fund returns than those of the benchmark.

- **Repurchase Agreements ("Repos")** A contract in which the seller of securities, such as Treasury Bills, agrees to buy them back at a specified time and price. Repos are widely used as a money market instrument.
- Return on Equity (ROE) Net income of a company (after payment of preferred stock dividends but before payment of common stock dividends) divided by common shareholder equity. Reverse Repurchase Agreements ("Reverse Repos") A purchase of securities with an agreement to resell them at a higher price at a specific future date.

Risk Adjusted Return - A measure of investment return which accounts for the amount of risk taken over a specified period.

**Russell 3000** - An equity index comprised of the securities of the 3,000 largest public U.S. companies as determined by total market capitalization. This index represents approximately 98% of the U.S. equity market's capitalization.

Securities Lending - A collateralized process of loaning portfolio positions to custodians, dealers, and short sellers who must make physical delivery of positions. Securities lending may reduce custody costs or enhance annual returns by a full percentage point or more in certain market environments.

Senior debt securities - Debt that must be paid off before other liabilities in the event of a business failure or bankruptcy.

- Separate accounts An investment portfolio managed by a third party investment manager in which the investor directly owns the securities within the portfolio.
- **Soft Dollars** The value of research or other services that brokerage houses and other service entities provide to a client "free of charge" in exchange for the client's brokerage.
- **S&P 500 (Standard & Poor's)** A basket of 500 stocks chosen for market size, liquidity and industry grouping, among other factors, designed to represented a US equity universe of large capitalization stocks.
- S&P Credit Ratings Service A financial services rating agency.
- **Special situations** Private equity investments in a variety of securities (Debt, Preferred Equity and/or Common Equity) in portfolio companies at a variety of stages of development (Seed, Early Stage, Later Stage).
- **Standard Deviation** A measure of the dispersion of a set of data from its mean. Often used as a measure of investment volatility or risk, it measures how much an investment return may vary from its average return.

Tail risk - The risk that a loss (or gain) would be three standard deviations from the mean or current price.

- **Treasury Bill (T-Bill)** Short-term, highly liquid government securities issued at a discount from the face value and returning the face amount at maturity.
- **Treasury Bond or Note** Debt obligations of the Federal government that make semiannual coupon payments and are sold at or near par value in denominations of \$1,000 or more.
- **Trust** A fiduciary relationship in which a person, called a trustee, holds title to property for the benefit of another person, called a beneficiary.
- **TUCS** Trust Universe Comparison Service. TUCS is a universe based upon a pooling of quarterly trust accounting data from participating banks and other organizations that provide custody for trust assets.
- **Turnover** Security purchases and sales divided by the fiscal year's average market value {(P+S)/[(BMV+EMV)/2]} for a given portfolio.

**Unhedged** - Not protected from market actions.

Un-levered - Investments made without the use of debt or debt like securities.

Unrealized Gain (Loss) - A profit (loss) that has not been realized through the sale of a security. The gain (loss) is realized when a security or futures contract is actually sold or settled.

Variable Rate Note - Floating rate notes with a coupon rate adjusted at set intervals, such as daily, weekly, or monthly, based on different interest rate indices, such as LIBOR, Fed Funds, and Treasury Bills.

- Vintage year The year in which a capital commitment is made to an investment, most often applied to real estate and private equity investments.
- **Volatility** A statistical measure of the tendency of a market price or yield to vary over time. Volatility is said to be high if the price, yield, or return typically changes dramatically in a short period of time.
- **Warrant** A security that entitles the holder to buy a specific security at a specified price within a specified time frame. Yield The income return on an investment.
- Yield Curve A graph showing the term structure of interest rates by plotting the yields of all bonds of the same quality with maturities ranging from the shortest to the longest. The Y-axis represents the interest rate and the X-axis represents time, generally with a normal curve that is convex in shape.

Zero Coupon Bond - A bond paying no interest that sells at a discount and returns principal only at maturity.

### UNDERSTANDING INVESTMENT PERFORMANCE

### Introduction

This section discusses the Treasury's approach to measuring performance, including risk and return of the Connecticut Retirement Plans and Trust Funds (CRPTF).

### **Understanding Performance**

To measure success in achieving the primary objective of the Asset Allocation Plan, the Fund's performance is evaluated in two principal areas: risk and return. The results of these reviews, coupled with information on portfolio characteristics, are used to monitor and improve the performance of the Fund's external investment managers.

To monitor and evaluate Fund performance and measurements of risk and return, CRPTF performance is compared to those of similarly structured peer groups and indices. In addition, the performance of the Combined Investment Funds (CIF) invested in by the various plans and trusts is compared to the performance of their respective benchmarks. Each CIF's benchmark is selected on the basis of portfolio composition, investment style, and objectives. The benchmark comparisons enable plan participants, the Treasurer and the Investment Advisory Council, to determine whether and by how much CIF returns exceeded or fell short of their respective benchmarks. The comparisons provide an understanding of the reason for the CIF's performance relative to their benchmarks.

Comparative performance is reviewed over both the near-term and the long-term for two reasons. First, pension management is, by its very nature, a long-term process. While both young and old employees comprise the pool of plan beneficiaries, the increasing life span of plan participants makes it important that plan assets be managed for the long term. Second, as experience has shown, results attained in the short term are not necessarily an indicator of results to be achieved over the long term. Performance must be viewed in a broad context.

Overall performance is measured by calculating monthly returns and linking them to provide one-, three-, fiveand ten-year histories of overall investment performance. Short-term performance is measured by total return over one-month, quarter-end, and trailing one-year time periods. Risk is also measured over both short- and long-term periods.

### Risk

The measurement of risk is a critical component in investment management. It is the basis for both strategic decision-making and investment evaluation. Investors assume risk to enhance portfolio returns. The primary objective is to generate returns in excess of those available in "risk-free" investments, such as Treasury Bills. The amount of excess returns varies in magnitude according to the degree of risk assumed. Many investors focus on the negative aspects of risk and in doing so forego substantial upside potential, which can significantly enhance long-term returns. Thus, while risk can never be completely eliminated from a portfolio, the prudent management of risk can maximize investment returns at acceptable levels of risk.

Risk can take several forms and include: <u>market risk</u>, the risk of fluctuations in the overall market for securities; <u>company risk</u>, the risk of investing in any single company's stock or bonds; <u>currency-exchange risk</u>, the risk that a foreign country's currency may appreciate or depreciate relative to the U.S. dollar, thus impacting the value of foreign investments; and <u>political risk</u>, risk incurred through investing in foreign countries with volatile economies and political systems.

With respect to fixed income investments, investors also assume: <u>reinvestment risk</u>, the risk that cash flows received from a security will be reinvested at lower rates due to declining interest rates; <u>credit or default risk</u>, the risk that the issuer of a fixed income security may fail to make principal and interest payments on the security; <u>interest rate risk</u>, the risk that the market value of fixed coupon bonds will decline in the event of rising market interest rates; and <u>inflation or purchasing power risk</u>, the risk that the real value of a security and its cash flows may be reduced by inflation. The level of risk incurred in fixed income investing increases as the investment time horizon is lengthened. This is demonstrated by the comparatively higher yields available on "long bonds," or bonds maturing in 20 to 30 years, versus those available on short-term fixed income securities.

### UNDERSTANDING INVESTMENT PERFORMANCE (Continued)

In the alternative investment category, risks are significantly greater than those of publicly traded investments. Assessment of progress is more tenuous and valuation judgments are more complex. The investor assumes not only <u>management, product, market, and operations risk</u>, similar to equity investing, but also assumes <u>liquidity risk</u>, the risk that one's investment cannot be immediately liquidated at other than a substantially discounted value. An additional risk to this category is transparency risk, the risk associated with not knowing the underlying investments within a portfolio.

### Volatility

To measure the effects of risk on the portfolio, the volatility of returns is calculated over time. Volatility, viewed as the deviation of returns from an average of these returns over some period of time, is measured statistically by <u>standard deviation</u>. Funds with high standard deviations are considered riskier than those with low standard deviations.

To evaluate the significance of the CIF's standard deviation, each CIF's <u>relative volatility</u>, or the ratio of the CIF's standard deviation to that of the benchmark is calculated. A relative volatility greater than 1.0 indicates that the CIF is more volatile than the benchmark while a measure less than 1.0 indicates less volatility. A relative volatility of 1.0 indicates that the volatility of the CIF is the same as the benchmark.

As an extension of standard deviation, each CIF's <u>beta</u>, (a measure of the relative price fluctuation of the CIF to its benchmark) is also calculated. The measurement of beta allows one to evaluate the sensitivity of Fund returns to given movements in the market and/or its benchmark. A beta greater than 1.0 compared to the selected market benchmark signifies greater price sensitivity while a beta less than 1.0 indicates less sensitivity.

To measure the degree of correlation between CIF returns and the benchmark, the Division calculates the <u>coefficient of determination</u>, or R2. This calculation, which is used in conjunction with beta, allows one to evaluate how much of the volatility in CIF returns is explained by returns in the selected market benchmark. An R2 of 1.0 indicates that CIF returns are perfectly explained by returns of the benchmark, while a value less than 1.0 indicates that the returns of the benchmark explain only a portion of the fund return.

Finally, to evaluate how well each of the above measures actually predicted returns of the CIF, a calculation is performed on the CIF's <u>alpha</u>. This calculation measures the absolute difference between the CIF's monthly return and that predicted by its beta. Used together, these measures provide a comprehensive view of a CIF's relative risk profile.

### Return

The Pension and Trust Funds are managed to maximize return and minimize risk. Return, viewed in this context, includes realized and unrealized gains in the market value of a security, including those attributable to currency fluctuations, as well as income distributed by a security such as dividends and interest. Return is measured through two calculations: compounded annual total return and cumulative total return.

<u>Compounded Annual Total Return</u> - This return measure evaluates performance over the short and long-term. Compounded annual total return measures the implicit annual percentage change in value of an investment, assuming reinvestment of dividends, interest, and realized and unrealized capital gains, including gains attributable to currency fluctuations. In effect, compounded annual total return "smoothes" fluctuations in long-term investment returns to derive an implied year-to-year annual return.

<u>Cumulative Total Return</u> - This calculation measures the absolute percentage change in value of an investment over a specified period, assuming reinvestment of dividends, interest income, and realized capital gains. While this calculation does not "smooth" year-to-year fluctuations in long-term returns to derive implied annual performance, cumulative total return allows one to see on an absolute basis the percentage increase in the total Fund's value over a specified time. Viewed graphically, cumulative total return shows one what a \$10 million investment in the CRPTF a set number of years ago would be worth today.



# Statistical Section



### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS STATISTICAL SECTION

This part of the Combined Investment Fund's (CIF's) comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial schedules and other supplementary information say about the overall financial health of CIF. The schedules within this statistical section comply with the requirements of GASB 44.

# **Financial Trends**

These schedules contain the ten-year trend information on the financial performance of CIF.

<u>Sc</u>	hedule	Page
0	Per share data	143
0	Schedule of rates of return	143
0	Schedule of financial ratios	143
0	Schedule of balances in Combined Investment Funds	145

# **Revenue Capacity**

Revenue capacity is not applicable to CIF.

# **Borrowing Capacity**

Borrowing capacity is not applicable to CIF.

# Demographic and Economic Information

These schedules show the breakdown between CIF funds, growth of the fund and rate of return information.

<u>Sc</u>	hedule	Page
0	Investment summary	146
0	Annual money-weighted rates of return	149

# **Operating Information**

The summary of operations schedule outlines the expenses, additions and deductions associated with the management of CIF.

Sc	hedule	Page
0	Schedule of Net Position	150

Sources: Unless otherwise noted, the information in these schedules is derived from the comprehensive annual financial reports for the relevant year.

## CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SUPPLEMENTAL SCHEDULE OF FINANCIAL HIGHLIGHTS

FISCAL YEAR ENDED JUNE 30,	2017	LIC 2016	QUIDITY FI 2015	UND 2014	2013	AI 2017	TERNAT	IVE INVE 2015	STMENT 2014	FUND 2013
PER SHARE DATA				-					-	
Net Position- Beginning of Period	\$0.98	\$0.98	\$1.00	\$1.00	\$1.00	\$1.19	\$1.19	\$1.13	\$1.06	\$1.00
INCOME FROM INVESTMENT OPERATIONS										
Net Investment Income (Loss)	\$0.02	\$0.01	\$0.01	\$0.01	\$0.01	\$-	\$-	\$-	\$-	\$-
Net Gains or (Losses) on Securities (Both Realized and Unrealized)	\$-	\$-	\$(0.02)	\$-	\$-	\$0.09	\$(0.07)	\$0.06	\$0.07	\$0.06
Total from Investment Operations	<u>φ</u> - \$0.02	<del>ہ</del> ۔ \$0.01	\$(0.02)	<del>ہ</del> ۔ \$0.01	\$0.01	\$0.09		\$0.06	\$0.07	\$0.00
ESS DISTRIBUTIONS										
Dividends from Net Investment Income	\$(0.02)	\$(0.01)	\$(0.01)	\$(0.01)	\$(0.01)	\$-	\$-	\$-	\$-	\$-
Net Position - End of Period	\$0.98	\$0.98	\$0.98	\$1.00	\$1.00	\$1.28	\$1.12	\$1.19	\$1.13	\$1.06
FOTAL RETURN	0.96%	0.68%	-1.07%	0.54%	0.66%	8.51%	-5.32%	3.98%	6.63%	6.39%
RATIOS										
Net Position - End of Period (\$000,000 Omitted)	\$2,919	\$1,980	\$2,194	\$2,188	\$2,464	\$2,028	\$1,804	\$1,821	\$1,350	\$1,248
Ratio of Expenses to Average Net Position	0.4004	0.000/	0.050	0.0.00	0.000/	0.050/		0.000/	0.000/	
(excl. sec. lending fees & rebates) Ratio of Expenses to Average Net Position	0.12% 0.12%	0.09% 0.09%	0.25% 0.25%	0.24% 0.24%	0.30% 0.30%	0.05% 0.05%	0.06% 0.06%	0.08% 0.08%	0.08% 0.08%	0.13% 0.13%
Ratio of Net Investment Income	0.1270	0.0370	0.2070	0.2470	0.50 /0	0.0070	0.0070	0.00 /0	0.0070	0.1070
(Loss) to Average Net Position	1.81%	1.18%	0.83%	0.57%	0.65%	0.29%	0.24%	0.19%	0.14%	0.31%
			TUAL EQU					RE FIXED		
SCAL YEAR ENDED JUNE 30, PER SHARE DATA	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
let Position- Beginning of Period	\$1,524.55	\$1,524.55	\$1,420.60	\$1,138.66	\$957.67	\$125.17	\$125.17	\$122.59	\$118.20	\$122.75
						·				
NCOME FROM INVESTMENT OPERATIONS let Investment Income (Loss)	\$30.79	\$28.23	\$24.23	\$21.53	\$19.49	\$2.80	\$2.86	\$2.63	\$2.91	\$3.45
let Gains or (Losses) on Securities	<i><b>Q</b></i> <b>QQQQ</b>	¢20.20	¥220	¢200	<i>Q</i> TOT TO	<b>\$</b> 2.00	<b>\$1</b> .00	<b>\$1</b> .00	¢2.0 .	<i><b>Q</b></i> <b>00</b>
(Both Realized and Unrealized)	\$267.96	\$(1.54)	\$79.72		\$180.89	\$ <u>(0.55)</u>	\$1.49	\$(0.05)	\$2.02	\$(3.83)
otal from Investment Operations ESS DISTRIBUTIONS	\$2 <u>98.75</u>	\$26.69	\$103.95	\$286.87	\$200.38	\$2.25	\$4.35	\$2.58	\$4.93	\$(0.38)
lividends from Net Investment Income	\$-	\$-	\$-	\$(4.93)	\$(19.39)	\$-	\$-	\$-	\$(0.54)	\$(4.17)
et Position - End of Period	\$1,8 <u>23.30</u>	\$1,551.24	\$1,524.55	\$1,420.60		\$1 <u>27.42</u>	\$129.52	\$125.17	\$122.59	\$118.20
OTAL RETURN	19 <u>.26%</u>	1.75%	7.32%	25.28%	21.15%	1.89%	3.46%	1.85%	4.28%	-0.24%
ATIOS										
et Position - End of Period (\$000,000 Omitted)	\$7,022	\$6,642	\$6,771	\$7,058	\$6,237	\$2,452	\$2,407	\$2,437	\$2,415	\$1,905
Ratio of Expenses to Average Net Position	0.22%	0.000/	0.22%	0.000/	0.020/	0 120/	0 1 4 9/	0.150/	0 170/	0.100/
(excl. sec. lending fees & rebates) atio of Expenses to Average Net Position	0.22%	0.23% 0.29%	0.22%	0.22% 0.23%	0.23% 0.26%	0.13% 0.17%	0.14% 0.16%	0.15% 0.16%	0.17% 0.18%	0.18% 0.21%
atio of Net Investment Income										
(Loss) to Average Net Position	1.82%	1.84%	1.65%	1.73%	1.86%	2.14%	2.25%	2.12%	2.56%	3.00%
		INFLAT		D BOND			EMER	GING MAF	RKET DEB	т
ISCAL YEAR ENDED JUNE 30,	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
ER SHARE DATA let Position- Beginning of Period	\$151.53	\$151.53	\$155.97	\$150.54	\$159.40	\$150.63	\$150.63	\$162.98	\$152 34	\$150.57
0 0	¢	<i><i><i></i></i></i>	<i><i><i>ϕ</i></i></i>	¢.00.01	<i><i><i>q</i></i> 100110</i>	• · · · · · · · · · · · · · · · · · · ·	<i><b></b></i>	<i><b></b><i></i><b></b></i>	\$10 <u>2</u> 101	<i><i><i></i></i></i>
ICOME FROM INVESTMENT OPERATIONS	¢/0 47	¢/0.44	¢/0 70)	¢4.65	¢1.60	¢11.00	¢1E 00	¢10.44	¢0.00	¢E 04
et Investment Income (Loss) et Gains or (Losses) on Securities	\$(0.17)	\$(0.11)	\$(0.76)	\$4.65	\$1.62	φ11.9b	\$15.30	\$10.11	\$8.68	\$5.21
(Both Realized and Unrealized)	<u>\$1.19</u>	\$3.58	\$(3.68)	\$1.50	\$(8.32)	\$2.59	\$(6.25)	\$(22.46)	\$1.96	\$(2.60
tal from Investment Operations	\$1.02	\$3.47	\$(4.44)	\$6.15	\$(6.70)	\$14.55	\$9.05	\$(12.35)	\$10.64	\$2.61
ESS DISTRIBUTIONS vidends from Net Investment Income	\$-	\$-	\$-	\$(0.72)	\$(2.16)	\$-	\$-	\$-	\$-	\$(0.84
let Position - End of Period	<del>ہے۔</del> \$152.55	<del>ه-</del> \$155.00		\$(0.72) \$155.97	\$150.54		<del>ه-</del> \$159.68	<del>ه-</del> \$150.63	<del>ه</del> - \$162.98	\$152.34
OTAL RETURN	0.669					9.119				
ATIOS										
ATIOS et Position - End of Period (\$000.000 Omitted)	\$1,344	\$1,322	\$1,131	\$1,079	\$888	\$1 637	\$1,498	\$1,415	\$1,514	\$1,410
Ratio of Expenses to Average Net Position	φ1,014	<i><i><i>v</i></i>,<i><i>vL</i></i></i>	ψı, ιστ	÷.,070	<b>4000</b>	÷1,007	<i>ψ</i> ., 100	<i>.,</i>	<i></i>	<i>Ţ</i> 1,110

Ratio of Expenses to Average Net Position (excl. sec. lending fees & rebates) Ratio of Expenses to Average Net Position Ratio of Net Investment Income (Loss) to Average Net Position

0.23%

0.39%

-0.11%

0.27%

-0.07%

0.36%

0.23%

0.27%

-0.50%

0.22%

0.18%

2.97%

0.13%

0.20%

1.05%

0.39% 0.30% 0.33% 0.27%

0.33%

6.45%

0.27%

5.50%

0.39% 0.30%

7.16% 9.86%

0.45%

0.45%

3.44%

Source: Amounts were derived from custodial records.

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SUPPLEMENTAL SCHEDULE OF FINANCIAL HIGHLIGHTS (Continued)

	HIGH YIELD DEBT					DEVELOPED MARKET INT				ITERNATIONAL
FISCAL YEAR ENDED JUNE 30,	2017	2016	2015	2014	2013	2017	2016	2015	2014	2013
PER SHARE DATA										
Net Position- Beginning of Period	\$138.05	\$138.05	\$139.80	\$125.63	\$121.79	\$463.22	\$463.22	\$460.14	\$378.32	\$314.31
INCOME FROM INVESTMENT OPERATIONS										
Net Investment Income (Loss)	\$9.35	\$8.72	\$8.06	\$7.86	\$8.37	\$13.00	\$11.50	\$11.36	\$13.40	\$10.35
Net Gains or (Losses) on Securities										
(Both Realized and Unrealized)	\$7.70	\$(8.96)	\$(9.81)	\$7.30	\$2.22	\$93.79	\$(44.37)	\$(8.28)	\$70.75	\$60.42
Total from Investment Operations	\$17.05	\$(0.24)	\$(1.75)	\$15.16	\$10.59	\$106.79	\$(32.87)	\$3.08	\$84.15	\$70.77
LESS DISTRIBUTIONS										
Dividends from Net Investment Income	\$-	\$-	\$-	\$(0.99)	\$(6.75)	\$-	\$-	\$-	\$(2.33)	\$(6.76)
Net Position - End of Period	\$155.10	\$137.81	\$138.05	\$139.80	\$125.63	\$570.01	\$430.35	\$463.22	\$460.14	<u>\$378.3</u> 2
TOTAL RETURN	12.59%	-0.31%	-1.31%	12.24%	8.46%	24.81%	-7.09%	0.67%	22.31%	22.56%
RATIOS										
Net Position - End of Period (\$000,000 Omitted)	\$2,044	\$1,823	\$1,774	\$1,588	\$1,248	\$6,381	\$5,224	\$5,909	\$6,135	\$5,447
Ratio of Expenses to Average Net Position										
(excl. sec. lending fees & rebates)	0.29%	0.35%	0.33%	0.35%	0.36%	0.40%	0.43%	0.40%	0.40%	0.43%
Ratio of Expenses to Average Net Position	0.41%	0.39%	0.34%	0.36%	0.39%	0.41%	0.43%	0.41%	0.40%	0.45%
Ratio of Net Investment Income										
(Loss) to Average Net Position	6.39%	6.32%	5.80%	5.91%	6.07%	2.69%	2.57%	2.46%	3.17%	3.02%

FISCAL YEAR ENDED JUNE 30,	EMERGIN 2017	IG MARKE 2016	T INTERN 2015	ATIONAL S 2014	STOCK 2013	2017	RI 2016	EAL ESTA 2015	TE 2014	2013
PER SHARE DATA Net Position- Beginning of Period	\$369.61	\$369.61	\$397.12	\$358.76	\$351.61	\$46.27	\$46.27	\$39.48	\$36.46	\$35.21
INCOME FROM INVESTMENT OPERATIONS										
Net Investment Income (Loss)	\$6.16	\$6.59	\$8.22	\$6.81	\$6.36	\$1.79	\$1.66	\$1.59	\$(0.97)	\$2.04
Net Gains or (Losses) on Securities		<b>A</b> ( <b>A A A A A</b>	<b>A</b> ( <b>A F F A</b> )		<u> </u>					<u> </u>
(Both Realized and Unrealized)	\$72.65	\$(33.01)	\$(35.73)	\$34.08	\$5.57	\$0.99	\$2.69	\$5.20	\$4.84	\$1.55
Total from Investment Operations	\$78.81	\$(26.42)	\$(27.51)	\$40.89	\$11.93	\$2.78	\$4.35	\$6.79	\$3.87	\$3.59
LESS DISTRIBUTIONS										
Dividends from Net Investment Income	\$-	\$-	\$-	\$(2.53)	\$(4.78)	\$-	\$-	\$-	\$(0.85)	\$(2.34)
Net Position - End of Period	\$448.42	\$343.19	\$369.61	\$397.12	\$358.76	\$49.05	\$50.62	\$46.27	\$39.48	\$36.46
TOTAL RETURN	23.00%	-7.15%	-6.93%	11.50%	3.29%	7.38%	11.51%	12.93%	10.66%	10.26%
RATIOS										
Net Position - End of Period (\$000,000 Omitted)	\$3,015	\$2.483	\$2,473	\$2.655	\$2,369	\$2,248	\$2,207	\$1,918	\$1,510	\$1,482
Ratio of Expenses to Average Net Position	φ0,010	Ψ2,100	φ2, πο	φ2,000	Ψ2,000	ψ <u>2</u> ,210	Ψ2,201	ψ1,010	ψ1,010	ψ1,10 <b>2</b>
(excl. sec. lending fees & rebates)	0.59%	0.64%	0.70%	0.69%	0.84%	0.47%	0.42%	0.39%	0.55%	0.35%
Ratio of Expenses to Average Net Position	0.63%	0.66%	0.71%	0.70%	0.85%	0.47%	0.42%	0.39%	0.55%	0.35%
Ratio of Net Investment Income	0.0070	0.0070	0.7170	0.7070	0.0070	0.4770	0.42/0	0.0070	0.0070	0.0070
	1.61%	1.85%	2.15%	1.81%	1.78%	3.44%	3.42%	3.69%	-2.50%	5.56%
(Loss) to Average Net Position	1.01%	1.00%	2.15%	1.01%	1.70%	3.44%	3.42%	5.09%	-2.30%	0.00%

	PRIVATE INVESTMENT				
FISCAL YEAR ENDED JUNE 30,	2017	2016	2015	2014	2013
PER SHARE DATA					
Net Position- Beginning of Period	\$65.13	\$65.13	\$54.72	\$48.06	\$49.83
INCOME FROM INVESTMENT OPERATIONS					
Net Investment Income (Loss)	\$1.18	\$0.46	\$1.31	\$4.72	\$5.51
Net Gains or (Losses) on Securities	•		•		• • •
(Both Realized and Unrealized)	\$7.62	\$4.21	\$9.10	\$2.79	\$(1.23)
Total from Investment Operations	\$8.80	\$4.67	\$10.41	\$7.51	\$4.28
LESS DISTRIBUTIONS	-				
Dividends from Net Investment Income	\$-	\$-	\$-	\$(0.85)	\$(6.05)
Net Position - End of Period	\$73.93	\$69.80	\$65.13	\$54.72	\$48.06
TOTAL RETURN	10.97%	8.87%	14.04%	16.06%	9.50%
RATIOS					
Net Position - End of Period (\$000,000 Omitted) Ratio of Expenses to Average Net Position	\$2,990	\$2,770	\$2,895	\$2,919	\$2,550
(excl. sec. lending fees & rebates)	0.17%	0.19%	0.17%	0.22%	0.29%
Ratio of Expenses to Average Net Position	0.17%	0.19%	0.17%	0.22%	0.29%
Ratio of Net Investment Income					
(Loss) to Average Net Position	1.60%	0.68%	2.20%	9.21%	11.23%

Source: Amounts were derived from custodial records.

### PENSION AND TRUST FUNDS BALANCES IN COMBINED INVESTMENT FUNDS (Dollars in Thousands) TEN YEAR COMPARISON

	20	17
	Percent of	•
Pension Plans	Total System	m Assets
Teachers' Retirement Fund	52.6%	17,126.8
State Employees' Retirement Fund	36.7%	11,955.4
Municipal Employees' Retirement Fund	7.5%	2,441.3
State Judges' Retirement Fund	0.6%	210.0
The Probate Court Retirement Fund	0.3%	95.0
State's Attorneys Retirement Fund	0.1%	1.8
Trust Funds	2.2%	717.5
	100.00%	\$ 32,547.8

—	2008 Percent of Total System Assets		
Pension Plans Teachers' Retirement Fund			
	52.6%	14,541.6	
State Employees' Retirement Fund	36.7%	9,329.7	
Municipal Employees' Retirement Fund	d 7.5%	1,627.7	
State Judges' Retirement Fund	0.3%	177.2	
The Probate Court Retirement Fund	0.6%	81.5	
State's Attorneys Retirement Fund	0.0%	0.1	
Trust Funds	2.2%	113.2	
	100.0% \$	5 25,871.0	
-			

### COMBINED INVESTMENT FUNDS INVESTMENT SUMMARY AT JUNE 30, 2017 <sup>(1)</sup>

	Liquidity Fund <sup>(2)</sup>							
	Book Value	Fair Value	% of Total Fund FV	Rate of Return				
~~								
2017	\$1,405,083,566	\$1,387,328,362	4.26%	0.96%				
2016	1,036,810,247	1,018,293,290	3.49%	0.68%				
2015	1,358,875,058	1,282,270,968	4.31%	-1.07%				
2014	1,157,564,578	1,158,961,835	3.93%	0.54%				
2013	1,062,418,543	1,041,232,312	4.01%	0.66%				
2012	772,408,827	770,217,574	3.20%	-0.14%				
2011	756,915,969	775,433,903	3.07%	1.20%				
2010	1,626,177,183	1,621,182,259	7.44%	0.98%				
2009	952,212,787	950,605,428	4.65%	1.54%				
2008	1,140,821,830	1,140,821,830	4.36%	4.59%				

# Book Fair % of Total Rate of

Value	Value	Fund FV	Return
\$4,708,963,250	\$7,026,486,865	21.57%	19.26%
4,681,029,693	6,647,482,185	22.76%	1.75%
4,584,447,046	6,784,028,571	22.80%	7.32%
4,612,970,046	7,055,012,881	23.93%	25.28%
4,664,358,346	6,236,082,798	24.07%	21.15%
5,144,712,429	6,417,508,518	26.65%	3.38%
5,327,666,479	6,634,922,151	26.28%	31.92%
5,175,570,747	5,288,853,566	24.28%	14.01%
6,019,782,554	5,588,272,211	27.35%	-28.36%
7,563,373,750	8,017,007,807	30.68%	-12.99%

### Core Fixed Income Fund

	Book Value	Fair Value	% of Total Fund FV	Rate of Return
2017	\$2,563,940,862	¢2 601 453 037	7.99%	1.89%
2016	2,442,024,334	2,490,655,941	8.53%	3.46%
2015	2,603,408,489	2,627,250,626	8.83%	1.85%
2014	2,528,639,885	2,573,846,130	8.73%	4.28%
2013	2,042,090,874	2,056,321,868	7.94%	-0.24%
2012	2,726,575,207	2,859,134,784	11.88%	7.63%
2011	2,911,577,713	3,001,125,667	11.89%	4.49%
2010	2,682,943,303	2,789,605,943	12.81%	11.81%
2009	3,400,625,343	3,215,718,047	15.74%	2.84%
2008	4,979,684,914	4,851,300,830	18.57%	5.65%

# Emerging Market Debt Fund

	Book Value	Fair Value	% of Total Fund FV	Rate of Return
2017	\$1,606,817,274	\$1,598,180,952	4.91%	9.11%
2016	1,577,124,552	1,483,772,612	5.08%	6.01%
2015	1,523,207,614	1,399,864,819	4.70%	-7.57%
2014	1,470,166,119	1,500,069,627	5.09%	6.99%
2013	1,415,363,738	1,388,070,525	5.36%	1.69%
2012	1,098,205,685	1,176,095,315	4.88%	4.78%
2011	1,012,164,604	1,141,817,330	4.52%	16.06%
2010	1,082,027,071	1,155,351,613	5.30%	23.02%
2009	1,153,012,696	1,125,226,197	5.51%	-3.62%
2008	1,006,342,436	1,040,295,964	3.98%	5.59%

### Inflation Linked Bond Fund

Book	Fair	% of Total	Rate of
Value	Value	Fund FV	Return
\$ 1,347,627,821	\$1,332,942,016	4.09%	0.66%
1,338,629,405	1,321,779,931	4.52%	2.29%
1,189,323,643	1,120,365,183	3.77%	-2.85%
1,057,661,503	1,075,489,795	3.65%	4.17%
886,052,044	879,482,495	3.39%	-4.33%
864,059,933	932,982,728	3.88%	11.91%
1,075,894,193	1,115,148,171	4.42%	7.23%
1,033,720,440	1,070,660,872	4.91%	9.48%
813,926,651	829,543,021	4.06%	-0.20%
1,152,973,047	1,162,545,028	4.45%	16.81%

### High Yield Debt Fund

Book Value	Fair Value	% of Total Fund FV	Rate of Return
\$2,027,683,334	\$2.034.712.429	6 25%	12.59%
1,905,160,587	1,808,188,496	6.19%	-0.31%
1,824,316,127	1,772,254,243	5.96%	-1.31%
1,520,226,270	1,592,980,848	5.40%	12.24%
1,261,124,831	1,267,238,204	4.89%	8.46%
693,951,103	706,123,033	2.93%	6.23%
685,595,880	710,362,023	2.81%	15.96%
659,015,939	656,175,724	3.01%	24.54%
801,755,724	718,563,903	3.52%	-4.59%
784,159,491	745,137,049	2.85%	-1.88%

# CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS COMBINED INVESTMENT FUNDS INVESTMENT SUMMARY AT JUNE 30, 2017 <sup>(1)</sup> (Continued)

### Developed Market International Stock Fund

	Book Value	Fair Value	% of Total Fund FV	Rate of Return
2017	\$5,180,435,660	\$6,344,307,953	19.48%	24.81%
2016	4,943,295,363	5,187,629,818	17.76%	-7.09%
2015	5,052,512,834	5,879,680,883	19.76%	0.67%
2014	4,806,622,148	6,101,761,491	20.70%	22.31%
2013	4,861,705,636	5,393,071,695	20.81%	22.56%
2012	4,586,337,006	4,550,036,799	18.90%	-12.48%
2011	4,684,676,553	5,391,257,095	21.35%	26.30%
2010	4,552,279,820	4,328,450,937	19.87%	11.03%
2009	4,847,669,826	4,464,491,006	21.85%	-27.98%
2008	4,879,325,913	5,077,825,949	19.43%	-14.60%

### **Emerging Market International Stock Fund**

Book	Fair	% of Total	Rate of
Value	Value	Fund FV	Return
\$2,359,195,270	\$3,002,786,523	9.22%	23.00%
2,305,345,878	2,467,083,187	8.45%	-7.15%
2,313,960,007	2,463,358,430	8.28%	-6.93%
2,278,127,868	2,645,431,257	8.97%	11.50%
2,241,227,436	2,367,182,053	9.14%	3.29%
2,086,716,284	2,216,901,370	9.21%	-14.16%
2,114,345,516	2,629,250,556	10.41%	28.55%
1,860,837,675	2,065,255,957	9.48%	25.23%
1,110,911,776	1,141,401,975	5.59%	-30.90%
1,111,317,184	1,295,936,888	4.96%	0.19%

#### Real Estate Fund (3)

Private Investment Fund <sup>(3)</sup>

% of Total Rate of

Return

10.97%

8.87%

14.04%

16.06%

9.50%

5.92%

19.89%

17.32%

13.66%

Fund FV

9.12%

9.48%

9.32%

9.90%

9.90%

8.83%

9.24%

Fair

Value

1,819,125,566 1,621,268,022 7.94% -16.36%

Book

Value

\$2,499,963,535 \$2,970,729,926

2,306,644,120 2,769,435,919

2,286,868,807 2,773,374,435

2,449,109,360 2,918,978,182

2,246,698,441 2,564,877,605

1,909,670,699 2,229,679,980

1,859,585,108 2,013,101,198

2,221,945,727 2,569,809,038 10.67%

1,809,775,995 1,789,139,253 6.85%

	Book Value	Fair Value	% of Total Fund FV	Rate of Return
2017 \$	\$2,003,957,301	\$2,242,658,118	6.89%	7.38%
2016	1,941,003,659	2,207,396,472	7.56%	11.51%
2015	1,763,256,288	1,848,291,148	6.21%	12.93%
2014	1,478,885,377	1,509,757,272	5.12%	10.66%
2013	1,611,385,620	1,471,299,222	5.68%	10.26%
2012	1,524,367,937	1,328,560,229	5.52%	7.19%
2011	1,350,551,373	1,097,203,255	4.35%	16.12%
2010	1,174,718,491	792,483,221	3.64%	-20.18%
2009	1,021,805,530	770,955,194	3.77%	-28.66%
2008	954,279,128	1,002,243,816	3.84%	6.04%
2013 2012 2011 2010 2009	1,611,385,620 1,524,367,937 1,350,551,373 1,174,718,491 1,021,805,530	1,471,299,222 1,328,560,229 1,097,203,255 792,483,221 770,955,194	5.68% 5.52% 4.35% 3.64% 3.77%	10.26 7.19 16.12 -20.18 -28.66

### Commercial Mortgage Fund (3) (6)

Book Value	Fair Value	% of Total Fund FV	Rate of Return
\$0	\$0	0.00%	0.00%
83	83	0.00%	0.00%
29,834	29,799	0.00%	0.25%
67,723	67,609	0.00%	10.17%
70,239	70,099	0.00%	0.88%
717,122	765,779	0.00%	-6.48%
2,338,063	2,386,359	0.01%	4.61%
3,769,581	3,818,115	0.02%	6.75%
5,084,919	5,135,144	0.02%	-3.14%
6,255,651	6,906,096	0.03%	12.05%

### Alternative Investment Fund <sup>(5)</sup>

Book Value	Fair Value	% of Total Fund FV	Rate of Return		
\$1,780,457,507	\$2,026,788,085	6.22%	8.51%		
1,705,961,044	1,804,337,067	6.18%	-5.32%		
1,611,126,633	1,804,487,746	6.06%	3.98%		
1,210,080,164	1,349,977,450	4.58%	6.63%		
1,190,675,281	1,247,574,910	4.81%	6.39%		
550,080,365	549,205,302	2.28%	-1.62%		
511,873,555	519,007,742	2.06%	0.00%		
0	0	0.00%	0.00%		
0	0	0.00%	0.00%		
0	0	0.00%	0.00%		

2017

2016

2015

2014

2013

2012

2011

2010

2009

2008

# 

### INVESTMENT SUMMARY AT JUNE 30, 2017 (1) (Continued)

### Total Fund (4)

	Book Value	Fair Value	% of Total Fund FV	Rate of Return
2017	\$27,484,125,381	\$32,568,375,166	100.00%	14.18%
2016	26,183,028,965	29,206,055,001	100.00%	0.35%
2015	26,111,332,380	29,755,256,851	100.00%	2.79%
2014	24,570,121,041	29,482,334,377	100.00%	15.43%
2013	23,483,171,029	25,912,503,786	100.00%	11.64%
2012	22,270,077,625	24,077,340,469	100.00%	-0.90%
2011	22,343,270,597	25,247,594,232	100.00%	20.75%
2010	21,710,645,358	21,784,939,405	100.00%	12.88%
2009	21,945,913,372	20,431,180,148	100.00%	-17.37%
2008	25,388,309,339	26,129,160,510	100.00%	-4.71%

(1) All rates of return are net of management fees and division operating expenses.

(2) The fair value of the Liquidity Fund for the periods presented represents the fair value of the pension and trust balances in the Liquidity Fund only (excluding receivables and payables); the Liquidity Fund balances of the other combined investment funds are shown in the fair value of each fund.

(3) Investment returns published for prior years were net of management fees, but were restated in 2008 net of all expenses.

(4) Represents a composite return of the total pension and trust funds. Individual returns for the three primary pension funds (Teachers, State Employees and Municipal Employees) are separately presented elsewhere due to different asset allocations of each fund.

(5) Inception of the Alternative Investment Fund during Fiscal 2011.

(6) Investments in Commercial Mortgage Fund were redeemed by plan participants.

### CONNECTICUT STATE TREASURER'S COMBINED INVESTMENT FUNDS SCHEDULE OF INVESTMENT RETURNS ANNUAL MONEY-WEIGHTED RATES OF RETURN NET OF INVESTMENT EXPENSES

	6/30/2017*	6/30/2016	6/30/2015	6/30/2014
Teachers' Retirement Fund	14.37	0.17%	2.79%	15.67%
State Employees' Retirement Fund	14.32	0.23%	2.84%	15.62%
Municipal Employees' Retirement Fund	13.05	1.15%	2.57%	13.58%
State Judges' Retirement Fund	13.04	1.11%	2.58%	13.66%
The Probate Court Retirement Fund	13.19	1.17%	2.49%	13.86%
State's Attorneys' Retirement Fund	14.67	-0.21%	1.58%	13.66%
Soldiers' Sailors' & Marines' Fund	7.65	1.63%	2.17%	9.44%
Police & Fireman's Survivors' Benefit Fund	13.52	0.98%	2.85%	14.17%
Connecticut Arts Endowment Fund	7.54	1.58%	2.19%	9.40%
School Fund	7.69	1.66%	2.17%	9.56%
Ida Eaton Cotton Fund	7.64	1.66%	2.17%	9.50%
Hopemead State Park Fund	7.61	1.66%	2.15%	9.41%
Andrew C. Clark Fund	7.64	1.66%	2.18%	9.50%
Agricultural College Fund	1.94	3.47%	1.85%	4.29%
OPEB Fund	11.83	2.44%	3.40%	11.75%

\*This schedule is to be built prospectively until it contains ten years of data.

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As of June 30, 2017





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