


# Common Investment Meeting (NYCERS)

**Schedule** Thursday, September 19, 2019 9:00 AM — 3:00 PM EDT  
**Venue** Office of the New York City Comptroller, 1 Centre Street, 10th Floor (Room 1005) - Northside, New York, NY 10007  
**Organizer** Kim Boston


## Public Agenda

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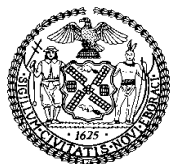
**PUBLIC SESSION**



Welcome and Opening

## Quarterly Fund Performance Overview:

**(RISK) Excluded Companies List:**



## OFFICE OF NEW YORK CITY COMPTROLLER SCOTT M. STRINGER

Alex Doñé, Deputy Comptroller - Asset Management / Chief Investment Officer

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**TO:** Trustees of the Teachers' Retirement System of the City of New York  
 Trustees of the New York City Employees' Retirement System  
 Trustees of the New York City Police Pension Fund  
 Trustees of the New York City Fire Pension Fund  
 Trustees of the Board of Education Retirement System of the City of New York

**FROM:** Miles Draycott

**DATE:** September 19, 2019

**RE:** Excluded Companies List – Annual Update

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### I. PURPOSE AND BACKGROUND:

The purpose of this memorandum is to provide Trustees with recommended updates to the excluded company lists (as of 6/30/2019) and to solicit Board feedback and/or decisions on the proposed changes. The excluded companies list is generated in accordance with various resolutions passed by the System's Trustees and is produced using MSCI's ESG data and screening tool.

BAM understands these resolutions to limit or prohibit investment in equity securities issued by companies engaged in the activities listed below.

Publicly-traded debt securities are issued by both publicly-owned and privately-owned companies. Data/Analytics companies such as MSCI can only obtain data detailing the revenues of publicly-owned companies. Although BAM circulates the excluded companies list to managers of Fixed Income (debt) securities, BAM cannot produce a comprehensive list of companies (publicly-owned and privately-owned) that engage in activities referred to in the resolutions passed by the trustees and which have issued debt securities.

Ex ante tracking error is the expected standard deviation of the difference between the portfolio return and the return of a benchmark. The ex-ante tracking error resulting from each resolution and the cumulative ex-ante tracking error resulting from all of the exclusions is detailed below. Please note that the cumulative tracking error resulting from all of the exclusions is de minimus for every system except NYCERS where a country screen preventing investment in China is still in place. The 64 basis points of tracking error resulting from this exclusion is material.



RISK SUMMARY	BERS	FIRE	NYCERS	POLICE	TRS
<b>Portfolio Risk without Exclusions (%)</b>	<b>12.14</b>	<b>12.20</b>	<b>12.12</b>	<b>12.22</b>	<b>12.14</b>
<b>Active Risk by Policy Directive</b>					
Tobacco	-	-	0.08	-	-
Thermal Coal	0.01	-	0.01	-	0.01
Civilian Firearms Manufacturers	0.00	-	0.00	-	0.00
Civilian Firearms Retailers	0.00	-	0.00	-	0.00
For-Profit Prisons	0.00	0.00	0.00	0.00	0.00
UN Sanctions	0.00	0.00	0.00	0.00	0.00
Country Screens	-	-	0.65	-	0.05
<b>Cumulative Tracking Error</b>	<b>0.01</b>	<b>0.01</b>	<b>0.64</b>	<b>0.01</b>	<b>0.05</b>
<b>Portfolio Risk with Exclusions</b>	<b>12.15</b>	<b>12.21</b>	<b>12.76</b>	<b>12.23</b>	<b>12.19</b>

## II. TOBACCO

In 1998, the Board of the New York City Employees' Retirement System ("NYCERS") passed a resolution prohibiting additional purchases of tobacco stocks in passive domestic equity accounts. As of 6/30/2019 no additional shares in the six companies identified in the resolution had been purchased in the system's passive domestic equity accounts.

BAM Risk screened for U.S. companies that derive more than 50% of their revenues from any one of the four business activities classified as tobacco-related and identified three additional companies. These companies were not included in the list of excluded companies compiled in 1998, but the resolution would seem to prohibit investment in these companies. Equities issued by two of these companies are currently held in NYCERS' passive domestic equity portfolios. The results of BAM's review appear below:

ISSUER	TICKER	% Revenue from Activity as of 6/30/2019	Russell Passive Investments 6/30/19	# Shares in Russell Passive Investments 12/31/18	Suggested Action
UNIVERSAL CORPORATION	UVV	100.0	1,011	1,011	
PHILIP MORRIS INTERNATIONAL INC.	PM	100.0	306,093	306,093	
TURNING POINT BRANDS, INC.	TPB	98.0	-	-	
ALTRIA GROUP, INC.	MO	96.8	672,306	672,306	
CORE-MARK HOLDING COMPANY, INC.	CORE	77.5	2,795	2,795	
SCHWEITZER-MAUDUIT INTERNATIONAL, INC.	SWM	60.0	2,553	2,553	
VECTOR GROUP LTD.	VGR	59.4	-	-	
PYXUS INTERNATIONAL	PYX	100.0	403	-	Add
22ND CENTURY GROUP INC	XXII	100.0	29,509	-	Add
AMCON DISTRIBUTING CO	DIT	83.8	-	-	Add

BAM recommends three additions to the excluded companies list (highlighted in green): Pyxus International, 22nd Century Group, Inc., and Amcon Distributing Co.



The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from Tobacco Exclusion				
BERS	FIRE	NYCERS	POLICE	TRS
-	-	0.08%	-	-

BAM's recommends three additions and no deletions to NYCERS' excluded companies list.

### III. THERMAL COAL

In a resolution passed in 2015, the Boards of NYCERS, TRS and BERS prohibited investment in companies engaged in the extraction of thermal coal. The following list shows companies currently deriving at least 50% of revenues from the extraction of thermal coal -- and companies previously thought to derive at least 50% of their revenues from this business activity.



ISSUER	TICKER	% Revenue from Activity as of 6/30/2019	Suggested Action
PT BUMI RESOURCES TBK	BUMI	99.4	
LUBELSKI WEGIEL BOGDANKA SA	LWB	97.2	
EXXARO RESOURCES LIMITED	EXX	96.1	
PT DELTA DUNIA MAKMUR TBK	DOID	95.0	
INNER MONGOLIA YITAI COAL CO., LTD	900948	94.6	
WASHINGTON H. SOUL PATTINSON AND COMPANY LIMITED	SOL	89.3	
COAL INDIA LTD	COALINDIA	87.8	
AGRITRADE RESOURCES LIMITED	1131	86.5	
CONSOL ENERGY INC.	CEIX	84.3	
PT ADARO ENERGY TBK	ADRO	83.4	
WHITEHAVEN COAL LIMITED	WHC	80.5	
GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED	GMDCLTD	78.4	
BANPU PUBLIC COMPANY LIMITED	BANPU	78.0	
CLOUD PEAK ENERGY INC.	CLDPQ	72.3	
PEABODY ENERGY CORPORATION	BTU	70.7	
YANZHOU COAL MINING COMPANY LIMITED	600188	68.5	
ARCH COAL, INC.	ARCH	57.2	
PT UNITED TRACTORS TBK	UNTR	56.9	
SEMIRARA MINING AND POWER CORP	SCC	55.2	
ALLIANCE RESOURCE PARTNERS, L.P.	ARLP	93.0	Add
FORESIGHT ENERGY LP	FELP	98.9	Add
GEO ENERGY RESOURCES LIMITED	RE4	98.3	Add
NEW HOPE CORPORATION LIMITED	NHC	97.3	Add
BUKIT ASAM TBK PT	PTBA	96.7	Add
YANG QUAN COAL INDUSTRY (GROUP) CO., LTD.	600348	75.3	Add
INDIKA ENERGY TBK PT	PNKGF	**	Delete
INDO TAMBANGRAYA MEGAH	PTIZF	**	Keep
TAMBANG BATUBARA BUKIT	PBATF	**	Keep
HARGREAVES SERVICES PLC	HSP	**	Keep
HALLADOR ENERGY COMPANY	HNRG	**	Keep
PT HARUM ENERGY TBK	HRUM	**	Keep
THE LANNA RESOURCES PUBLIC CO. LTD	LANNA-R	**	Keep
WESTMORELAND COAL COMPANY	WLBAQ	**	Keep

BAM recommends six additions to the excluded companies list (highlighted in green): Alliance Resource Partners, LP, Foresight Energy, LP, Geo Energy Resources Limited, New Hope Corporation Limited, Bukit Asam TBK PT, and Yang Quan Coal Industry (Group) Co., Ltd.

In addition, BAM recommends one deletion from the list (highlighted in red): Indika Energy TBK PT. Analysis of this company using the MSCI data/screening tool suggests that the company now derives less than 50% of its revenues from the extraction of thermal coal. As a result, BAM is now recommending that they be dropped from the list.



Finally, MSCI no longer provides coverage for seven companies previously on the list (highlighted in yellow): Indo Tambangraya Megah, Tambang Batubara Bukit, Hargreaves Services, PLC, Hallador Energy Company, PT Harum Energy Tbk, The Lanna Resources Public Co., Ltd. and Westmoreland Coal Company. Based on information observed on Bloomberg and/or corporate websites, BAM believes it unlikely that these companies have changed their business model. BAM believes that they continue to be engaged in, and derive the majority of their revenues from, the extraction of thermal coal. BAM recommends that those companies remain on the list.

The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from Thermal Coal Divestment				
BERS	FIRE	NYCERS	POLICE	TRS
0.01%	-	0.01%	-	0.01%

#### IV. CIVILIAN FIREARMS MANUFACTURERS

In a 2013 resolution, the Boards of NYCERS, TRS and BERS prohibited investment in companies engaged in the manufacture of civilian firearms. The following list shows companies deriving at least 5% of their revenues from this business activity.

ISSUER	TICKER	% Revenue from Activity as of 6/30/2019	Suggested Action
REMINGTON ARMS COMPANY, LLC	REMIG	90.0	
STURM RUGER & COMPANY INC.	RGR	80.0	
AMERICAN OUTDOOR BRANDS CORPORATION	AOBC	75.0	
MIROKU CORPORATION	7983	62.8	
COLT DEFENSE LLC	COESE	45.0	
SIG SAUER INC.	SIGSR	45.0	
VISTA OUTDOOR INC.	VSTO	45.0	
FORJAS TAURUS SA	FJTA3	44.0	
VERNEY CARRON SA	MLVER	35.0	
HECKLER & KOCH GMBH	HK	20.0	
POONGSAN CORPORATION	103140	12.0	
OLIN CORPORATION	OLN	10.0	
IZHEVSKIY MASHZAVOD OAO	ROSTE	10.0	
HOWA MACHINERY, LTD.	6203	10.0	
CLARUS CORPORATION	CLAR	5.0	
NORTHROP GRUMMAN INNOVATIONS SYSTEMS, INC.	NOC	5.0	Add
S&T MOTIV CO., LTD.	064960	5.0	Add





BAM recommends two additions to the excluded companies list (highlighted in green), Northrup Grumman Innovations Systems, INC., and S&T Motiv Co., Ltd., as revenues derived from the manufacture of civilian firearms exceed the 5% threshold.

The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from Civilian Firearms Manufacturers Divestment				
BERS	FIRE	NYCERS	POLICE	TRS
0.00%	-	0.00%	-	0.00%

## V. CIVILIAN FIREARMS RETAILERS

In a 2016 resolution, the Boards of NYCERS, TRS and BERS prohibited investment in companies engaged in the retail sale of civilian firearms. The following list shows companies deriving at least 5% of their revenues from this business activity.

ISSUER	TICKER	% Revenue from Activity as of 6/30/2019	Suggested Action
DICK'S SPORTING GOODS, INC.	DKS	5.0	
SPORTSMAN'S WAREHOUSE HOLDINGS, INC.	SPWH	15.0	Add
CABELA'S INCORPORATED	BSGRP	5.0	Add
BIG 5 SPORTING GOODS CORPORATION	BGFV	2.0	Delete
VISTA OUTDOOR INC.	VSTO	**	Delete

BAM recommends two additions to the excluded companies list: Cabela's Inc. and Sportsman's Warehouse Holdings, Inc. (highlighted in green), as revenue from the retail sale of civilian firearms exceeds the 5% threshold.

BAM also recommends two deletions from the list (highlighted in red): Big 5 Sporting Goods Corp. and Vista Outdoor Inc., since revenue from the retail sale of civilian firearms has fallen below the 5% threshold.

The ex-ante tracking error resulting from the above resolution is set out below:



Tracking Error Impact from Civilian Firearms Retailers Divestment				
BERS	FIRE	NYCERS	POLICE	TRS
0.00%	-	0.00%	-	0.00%

## VI. FOR-PROFIT PRISONS

In a 2017 resolution, the Boards of NYCERS, POLICE, FIRE, TRS and BERS prohibited investment in companies engaged in the operation of incarceration facilities. The following list shows companies deriving at least 20% of their revenues from this business activity.

ISSUER	TICKER	% Revenue from Activity as of 6/30/2019	Suggested Action
CORECIVIC, INC.	CXW	97.4	
THE GEO GROUP, INC.	GEO	75.0	
G4S PLC	GFS	1.0	Delete

BAM recommends one deletion from the excluded companies list, G4S (highlighted in red), as revenue derived from the operation of private incarceration facilities has dropped below the 20% threshold.

The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from For-Profit Prisons Divestment				
BERS	FIRE	NYCERS	POLICE	TRS
0.00%	0.00%	0.00%	0.00%	0.00%

## VII. UN Sanctions

In a 2008 resolution and subsequent 2009 investment directive, the Boards of NYCERS, POLICE, FIRE, TRS and BERS prohibited investment in two companies found to be non-compliant with UN sanctions on Iran and Sudan and which were also non-responsive to repeated requests for information from the Comptroller and other institutional investors. These companies are listed below:



ISSUER	COUNTRY	TICKER
PETROCHINA COMPANY LIMITED	CN	601857
OIL AND NATURAL GAS CORPORATION LIMITED	IN	ONGC

The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from UN Sanctions Exclusion				
BERS	FIRE	NYCERS	POLICE	TRS
0.00%	0.00%	0.00%	0.00%	0.00%

### VIII. Country Screens

In a 2006 resolution, the Boards of NYCERS and TRS prohibited investment in any company incorporated in China, Russia or Pakistan. In June of this year, TRS's policy was revised to only prohibit investment in companies incorporated in China, Russia or Pakistan with poor rankings relative to the UN Global Compact Principles and controversies. As a result, the TRS trustees recently approved adding the following companies to TRS's excluded companies list:

ISSUER	COUNTRY	TICKER
PETROCHINA COMPANY LIMITED	CN	601857
ZIJIN MINING GROUP COMPANY LIMITED	CN	601899
JIANGXI COPPER COMPANY LIMITED	CN	600362
CHINA PETROLEUM & CHEMICAL CORPORATION	CN	600028
ZTE CORPORATION	CN	000063
AVICHINA INDUSTRY & TECHNOLOGY COMPANY LIMITED	CN	2357
CHINA RAILWAY GROUP LIMITED	CN	601390
CHINA SOUTHERN AIRLINES COMPANY LIMITED	CN	600029
ALUMINUM CORPORATION OF CHINA LIMITED	CN	601600
CHINA EASTERN AIRLINES CORPORATION LIMITED	CN	600115
SEVERSTAL' PAO	RU	CHMF
PJSC MMC NORILSK NICKEL	RU	GMKN
GAZPROM PAO	RU	GAZP
HABIB BANK LIMITED	PK	HBL



At present NYCERS retains the country screen which prohibits investment in every company incorporated in China, Russia and Pakistan.

The ex-ante tracking error resulting from the above resolution is set out below:

Tracking Error Impact from Country Screens Exclusion				
BERS	FIRE	NYCERS	POLICE	TRS
-	-	0.65%	-	0.05%

## DISCLOSURES

The information contained in this memo is confidential, may not be distributed to unauthorized persons, and may contain material non-public information pertaining to certain investment activities and portfolio companies. Federal, state, and/or foreign securities laws prohibit any person who has received such information from purchasing or selling such securities based on material non-public information or from communicating such information to any other person under circumstances in which it is reasonably foreseeable that such person is likely to purchase or sell such securities.



### NYCERS U.S. PASSIVE EQUITY ACCOUNTS

Exclusion Category	Asset Name	Security Ticker
Thermal Coal	PT BUMI RESOURCES TBK	BUMI
Thermal Coal	FORESIGHT ENERGY LP	FELP
Thermal Coal	GEO ENERGY RESOURCES LIMITED	RE4
Thermal Coal	NEW HOPE CORPORATION LIMITED	NHC
Thermal Coal	LUBELSKI WEGIEL BOGDANKA SA	LWB
Thermal Coal	BUKIT ASAM TBK PT	PTBA
Thermal Coal	EXXARO RESOURCES LIMITED	EXX
Thermal Coal	PT DELTA DUNIA MAKMUR TBK	DOID
Thermal Coal	INNER MONGOLIA YITAI COAL CO., LTD	900948
Thermal Coal	ALLIANCE RESOURCE PARTNERS, L.P.	ARLP
Thermal Coal	WASHINGTON H. SOUL PATTINSON AND COMPANY LIMITED	SOL
Thermal Coal	COAL INDIA LTD	COALINDIA
Thermal Coal	AGRITRADE RESOURCES LIMITED	1131
Thermal Coal	CONSOL ENERGY INC.	CEIX
Thermal Coal	PT ADARO ENERGY TBK	ADRO
Thermal Coal	WHITEHAVEN COAL LIMITED	WHC
Thermal Coal	GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED	GMDCLTD
Thermal Coal	BANPU PUBLIC COMPANY LIMITED	BANPU
Thermal Coal	YANG QUAN COAL INDUSTRY (GROUP) CO., LTD.	600348
Thermal Coal	CLOUD PEAK ENERGY INC.	CLDPQ
Thermal Coal	PEABODY ENERGY CORPORATION	BTU
Thermal Coal	YANZHOU COAL MINING COMPANY LIMITED	600188
Thermal Coal	ARCH COAL, INC.	ARCH
Thermal Coal	PT UNITED TRACTORS TBK	UNTR
Thermal Coal	HARGREAVES SERVICES PLC	HSP
Thermal Coal	HALLADOR ENERGY COMPANY	HNRG
Thermal Coal	PT HARUM ENERGY TBK	HRUM
Thermal Coal	THE LANNA RESOURCES PUBLIC CO. LTD	LANNA-R
Thermal Coal	WESTMORELAND COAL COMPANY	WLBAQ
Thermal Coal	SEMIRARA MINING AND POWER CORP	SCC
Thermal Coal	INDO TAMBANGRAYA MEGAH	PTIZF
Thermal Coal	TAMBANG BATUBARA BUKIT	PBATF
Gun Manufacturers	FORJAS TAURUS SA	FJTA13
Gun Manufacturers	Verney Carron SA	MLVER
Gun Manufacturers	Heckler & Koch GmbH	HK
Gun Manufacturers	POONGSAN CORPORATION	103140
Gun Manufacturers	Olin Corporation	OLN
Gun Manufacturers	Howa Machinery, Ltd.	6203
Gun Manufacturers	CLARUS CORPORATION	CLAR
Gun Manufacturers	S&T MOTIV CO., LTD	64960
Gun Manufacturers	REMINGTON ARMS COMPANY, LLC	REMIG
Gun Manufacturers	COLT DEFENSE LLC	COESE
Gun Manufacturers	SIG SAUER INC.	SIGSR
Gun Manufacturers	IZHEVSKIY MASHZAVOD OAO	ROSTE
Gun Manufacturers	NORTHROP GRUMMAN INNOVATIONS SYSTEMS, INC.	NOC
Gun Retailers	SPORTSMAN'S WAREHOUSE HOLDINGS, INC.	SPWH
Gun Retailers	CABELA'S INCORPORATED	BSGRP
Gun Retailers	DICK'S SPORTING GOODS, INC.	DKS



Exclusion Category	Asset Name	Security Ticker
For Profit Prison Companies	CORECIVIC, INC.	CXW
For Profit Prison Companies	THE GEO GROUP, INC.	GEO
Iran / Sudan	PetroChina Company	PETROCHINA
Iran / Sudan	Oil and Natural Gas Limited	ONG

Exclusion Category	Asset Name	Security Ticker
Thermal Coal	AGRITRADE RESOURCES LIMITED	1131
Thermal Coal	ALLIANCE RESOURCE PARTNERS, L.P.	ARLP
Thermal Coal	ARCH COAL, INC.	ARCH
Thermal Coal	BANPU PUBLIC COMPANY LIMITED	BANPU
Thermal Coal	BUKIT ASAM TBK PT	PTBA
Thermal Coal	CLOUD PEAK ENERGY INC.	CLDPQ
Thermal Coal	COAL INDIA LTD	COALINDIA
Thermal Coal	CONSOL ENERGY INC.	CEIX
Thermal Coal	EXXARO RESOURCES LIMITED	EXX
Thermal Coal	FORESIGHT ENERGY LP	FELP
Thermal Coal	GEO ENERGY RESOURCES LIMITED	RE4
Thermal Coal	GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED	GMDCLTD
Thermal Coal	HALLADOR ENERGY COMPANY	HNRG
Thermal Coal	HARGREAVES SERVICES PLC	HSP
Thermal Coal	INDO TAMBANGRAYA MEGAH	PTIZF
Thermal Coal	INNER MONGOLIA YITAI COAL CO., LTD	900948
Thermal Coal	LUBELSKI WEGIEL BOGDANKA SA	LWB
Thermal Coal	NEW HOPE CORPORATION LIMITED	NHC
Thermal Coal	PEABODY ENERGY CORPORATION	BTU
Thermal Coal	PT ADARO ENERGY TBK	ADRO
Thermal Coal	PT BUMI RESOURCES TBK	BUMI
Thermal Coal	PT DELTA DUNIA MAKMUR TBK	DOID
Thermal Coal	PT HARUM ENERGY TBK	HRUM
Thermal Coal	PT UNITED TRACTORS TBK	UNTR
Thermal Coal	SEMIRARA MINING AND POWER CORP	SCC
Thermal Coal	TAMBANG BATUBARA BUKIT	PBATF
Thermal Coal	THE LANNA RESOURCES PUBLIC CO. LTD	LANNA-R
Thermal Coal	WASHINGTON H. SOUL PATTINSON AND COMPANY LIMITED	SOL
Thermal Coal	WESTMORELAND COAL COMPANY	WLBAQ
Thermal Coal	WHITEHAVEN COAL LIMITED	WHC
Thermal Coal	YANG QUAN COAL INDUSTRY (GROUP) CO., LTD.	600348
Thermal Coal	YANZHOU COAL MINING COMPANY LIMITED	600188
Gun Manufacturers	AMERICAN OUTDOOR BRANDS CORPORATION	AOBC
Gun Manufacturers	CLARUS CORPORATION	CLAR
Gun Manufacturers	COLT DEFENSE LLC	COESE
Gun Manufacturers	FORJAS TAURUS SA	FJTA3
Gun Manufacturers	HECKLER & KOCH GMBH	HK
Gun Manufacturers	HOWA MACHINERY, LTD.	6203
Gun Manufacturers	IZHEVSKIY MASHZAVOD OAO	ROSTE



Exclusion Category	Asset Name	Security Ticker
Gun Manufacturers	MIROKU CORPORATION	7983
Gun Manufacturers	NORTHROP GRUMMAN INNOVATIONS SYSTEMS, INC.	NOC
Gun Manufacturers	OLIN CORPORATION	OLN
Gun Manufacturers	POONGSAN CORPORATION	103140
Gun Manufacturers	REMINGTON ARMS COMPANY, LLC	REMIG
Gun Manufacturers	S&T MOTIV CO., LTD.	064960
Gun Manufacturers	SIG SAUER INC.	SIGSR
Gun Manufacturers	STURM RUGER & COMPANY INC.	RGR
Gun Manufacturers	VERNEY CARRON SA	MLVER
Gun Manufacturers	VISTA OUTDOOR INC.	VSTO
Gun Retailers	CABELA'S INCORPORATED	BSGRP
Gun Retailers	DICK'S SPORTING GOODS, INC.	DKS
Gun Retailers	SPORTSMAN'S WAREHOUSE HOLDINGS, INC.	SPWH
For Profit Prison Companies	CORECIVIC, INC.	CXW
For Profit Prison Companies	THE GEO GROUP, INC.	GEO
Iran / Sudan	PETROCHINA COMPANY LIMITED	PETROCHINA
Iran / Sudan	OIL AND NATURAL GAS CORPORATION LIMITED	ONG

Prohibited Purchase of Additional Shares	Asset Name	Security Ticker	Maximum # of Shares
Tobacco Restriction	22ND CENTURY GROUP INC	XXII	29,509
Tobacco Restriction	ALTRIA GROUP, INC.	MO	672,306
Tobacco Restriction	AMCON DISTRIBUTING CO	DIT	-
Tobacco Restriction	CORE-MARK HOLDING COMPANY, INC.	CORE	2,795
Tobacco Restriction	PHILIP MORRIS INTERNATIONAL INC.	PM	306,093
Tobacco Restriction	PYXUS INTERNATIONAL	PYX	403
Tobacco Restriction	SCHWEITZER-MAUDUIT INTERNATIONAL, INC.	SWM	2,553
Tobacco Restriction	TURNING POINT BRANDS, INC.	TPB	-
Tobacco Restriction	UNIVERSAL CORPORATION	UVV	1,011
Tobacco Restriction	VECTOR GROUP LTD.	VGR	-

The above list replaces all prior instruction relating to the divestment of thermal coal manufacturers, civilian gun manufacturers and civilian gun and ammunition retailers, for profit prison companies, investments in Iran and Sudan and tobacco manufacturers. All managers of U.S. passive public equity accounts for the New York City Employees Retirement System are hereby directed: (i) to sell as soon as practicable and in an orderly manner any holdings of the companies listed above, and (ii) to not buy in the future any securities of any kind of the companies listed above.



### NYCERS

Exclusion Category	Asset Name	Security Ticker
Thermal Coal	AGRITRADE RESOURCES LIMITED	1131
Thermal Coal	ALLIANCE RESOURCE PARTNERS, L.P.	ARLP
Thermal Coal	ARCH COAL, INC.	ARCH
Thermal Coal	BANPU PUBLIC COMPANY LIMITED	BANPU
Thermal Coal	BUKIT ASAM TBK PT	PTBA
Thermal Coal	CLOUD PEAK ENERGY INC.	CLDPQ
Thermal Coal	COAL INDIA LTD	COALINDIA
Thermal Coal	CONSOL ENERGY INC.	CEIX
Thermal Coal	EXXARO RESOURCES LIMITED	EXX
Thermal Coal	FORESIGHT ENERGY LP	FELP
Thermal Coal	GEO ENERGY RESOURCES LIMITED	RE4
Thermal Coal	GUJARAT MINERAL DEVELOPMENT CORPORATION LIMITED	GMDCLTD
Thermal Coal	HALLADOR ENERGY COMPANY	HNRG
Thermal Coal	HARGREAVES SERVICES PLC	HSP
Thermal Coal	INDO TAMBANGRAYA MEGAH	PTIZF
Thermal Coal	INNER MONGOLIA YITAI COAL CO., LTD	900948
Thermal Coal	LUBELSKI WEGIEL BOGDANKA SA	LWB
Thermal Coal	NEW HOPE CORPORATION LIMITED	NHC
Thermal Coal	PEABODY ENERGY CORPORATION	BTU
Thermal Coal	PT ADARO ENERGY TBK	ADRO
Thermal Coal	PT BUMI RESOURCES TBK	BUMI
Thermal Coal	PT DELTA DUNIA MAKMUR TBK	DOID
Thermal Coal	PT HARUM ENERGY TBK	HRUM
Thermal Coal	PT UNITED TRACTORS TBK	UNTR
Thermal Coal	SEMIRARA MINING AND POWER CORP	SCC
Thermal Coal	TAMBANG BATUBARA BUKIT	PBATF
Thermal Coal	THE LANNA RESOURCES PUBLIC CO. LTD	LANNA-R
Thermal Coal	WASHINGTON H. SOUL PATTINSON AND COMPANY LIMITED	SOL
Thermal Coal	WESTMORELAND COAL COMPANY	WLBAQ
Thermal Coal	WHITEHAVEN COAL LIMITED	WHC
Thermal Coal	YANG QUAN COAL INDUSTRY (GROUP) CO., LTD.	600348
Thermal Coal	YANZHOU COAL MINING COMPANY LIMITED	600188
Gun Manufacturers	AMERICAN OUTDOOR BRANDS CORPORATION	AOBC
Gun Manufacturers	CLARUS CORPORATION	CLAR
Gun Manufacturers	COLT DEFENSE LLC	COESE
Gun Manufacturers	FORJAS TAURUS SA	FJTA3
Gun Manufacturers	HECKLER & KOCH GMBH	HK
Gun Manufacturers	HOWA MACHINERY, LTD.	6203
Gun Manufacturers	IZHEVSKIY MASHZAVOD OAO	ROSTE





Exclusion Category	Asset Name	Security Ticker
Gun Manufacturers	MIROKU CORPORATION	7983
Gun Manufacturers	NORTHROP GRUMMAN INNOVATIONS SYSTEMS, INC.	NOC
Gun Manufacturers	OLIN CORPORATION	OLN
Gun Manufacturers	POONGSAN CORPORATION	103140
Gun Manufacturers	REMINGTON ARMS COMPANY, LLC	REMIG
Gun Manufacturers	S&T MOTIV CO., LTD.	064960
Gun Manufacturers	SIG SAUER INC.	SIGSR
Gun Manufacturers	STURM RUGER & COMPANY INC.	RGR
Gun Manufacturers	VERNEY CARRON SA	MLVER
Gun Manufacturers	VISTA OUTDOOR INC.	VSTO
Gun Retailers	CABELA'S INCORPORATED	BSGRP
Gun Retailers	DICK'S SPORTING GOODS, INC.	DKS
Gun Retailers	SPORTSMAN'S WAREHOUSE HOLDINGS, INC.	SPWH
For Profit Prison Companies	CORECIVIC, INC.	CXW
For Profit Prison Companies	THE GEO GROUP, INC.	GEO
Iran / Sudan	PETROCHINA COMPANY LIMITED	PETROCHINA
Iran / Sudan	OIL AND NATURAL GAS CORPORATION LIMITED	ONG

The above list replaces all prior instruction relating to the divestment of thermal coal manufacturers, civilian gun manufacturers and civilian gun and ammunition retailers, for profit prison companies and investments in Iran and Sudan. All managers of public equity or fixed-income accounts for the New York City Employees Retirement System are hereby directed: (i) to sell as soon as practicable and in an orderly manner any holdings of the companies listed above, and (ii) to not buy in the future any securities of any kind of the companies listed above.

**SUPPLEMENTAL MATERIAL -  
PERFORMANCE REPORTING (Public):**

Total Fund Overview (Public):



New York City  
Employees' Retirement System  
Performance Overview as of June 30, 2019

# Total Fund Overview



# New York City Employees' Retirement System

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Through June 30, 2019

**City of New York Employees' Retirement System  
Second Quarter 2019 Summary**

**General Economic and Market Conditions:** The U.S. economy continued its now-record expansion in the second quarter with a 2.1% gain in GDP, slower than the robust 3.1% in the first quarter but well ahead of expectations. Consumer spending rose 4.3% in the quarter, supported by solid gains in the job market and disposable income growth of 5% in each of the first two quarters of 2019. Offsetting the gains in consumption were hits to GDP from exports, non-residential business investment, residential investment, and a drawdown in inventories. The economic news for the U.S. during the quarter was largely good, and better than the headlines would lead us to believe. Yet the Fed proceeded with a widely anticipated (and clearly signaled) interest rate cut in July, lowering the Federal Funds rate target by 25 basis points.

How did we get to a situation where the expansion continues but the Fed acts to cut rates? In classic Fed-speak, the announced reasoning is “a mid-cycle adjustment to policy.” To be fair, while the job market and overall GDP data are coming in solid for the U.S., the global economy is clearly showing signs of slowing, and the uncertainty stemming from trade tensions is top of mind. Chairman Jerome Powell noted three reasons for the rate cut: (1) to insure against downside risks from slowing global growth and trade tensions; (2) to mitigate the effects those factors are already having on the U.S. outlook, even if they haven't shown up in the data; and (3) to enable a faster return to the Federal Reserve's symmetric 2% inflation target.

It is important to note that the Fed made clear this July rate cut is not likely to be the first in a series. After initial confusion, the markets simply interpreted this Fed comment as fewer rate cuts this year than were previously priced into bond yields. Key to the Fed's perceived latitude to lower rates is the persistent surprise of low inflation. After breaking through the Fed's 2% target in 2018, inflation has once again subsided. Headline CPI rose 1.6% in June (year-over-year), dragged down by a 3.4% decline in energy costs. In fact, core CPI (less food and energy) rose 2.1% over the past 12 months, pushed up by the rising cost of shelter, apparel, and used vehicles. While annual wage gains have moved above 3% for the first time since the Global Financial Crisis (GFC), wage pressures have yet to show up in headline inflation. The impact of tariffs on consumer prices has not affected the broad CPI data, as the tariffs to date have been narrowly targeted.

Foreshadowing the expected slowdown in the U.S. economy is the Purchasing Managers' Index (PMI), a forward-looking measure of business expectations for manufacturing demand and production. The mid-year 2019 reading of the PMI hit 50.6, very close to the line dividing expansion from contraction (50), and the lowest reading since 2009. Producers cite the twin worries of slowing global growth and trade tensions; the 5% drop in exports and the softening of business spending in the second quarter data certainly support these



Through June 30, 2019

concerns. Other concerns about a material slowdown to GDP growth include the waning impact on domestic spending that has come from rising stock prices and fiscal stimulus since the GFC. Further concerns include the effects of potential new tariffs, and the slowdown in inventory accumulation. The U.S. economy is also approaching capacity constraints as the expansion reaches into record territory. Unemployment has hit a generational low of 3.6%; at some point firms' difficulties in finding new and replacement staff will weigh on overall workforce growth.

The nine interest rate hikes enacted by the Fed through 2018 raised the cost of borrowing for both businesses and consumers, and while the reversal of Fed policy since January halted the trajectory of rates, the impact of the increases since 2016 is still working its way through the economy. Higher mortgage rates slowed housing markets, pulling existing home sales down by more than 10% over the course of 2018. Rates for 30-year mortgages have fallen by more than 110 bps since November 2018, and home sales have bounced back since the start of the year, but the recovery has been uneven, concentrated in the South and the West. Investment in new homes, as measured by permits, began slipping in 2018 and is still down more than 10% (year over year) through June. New residential construction, restricted in many locations by supply and cost factors, has lagged the pace set in typical expansions since the GFC.

*Please note that all return figures mentioned below are gross of fee.*

**Total Fund Performance:** For the quarter ended June 30, 2019, the Fund returned +3.45%, eighty one basis points below the Policy Target return of +4.26%. Over the trailing year, NYCERS has earned a return of +7.36% versus the Policy Target return of +7.73%. Over three years, the total Fund has returned +9.77% annualized. Over the trailing five years, the Fund has gained 6.83% annualized. The trailing 10-year return is +10.03% annualized.

**Total Fund Assets:** The Fund's assets totaled \$68.2 billion as of the end of the second quarter of 2019.

**U.S. Equity:** The total domestic equity portion of the NYCERS Fund returned +3.88% for the quarter, below the +4.10% return of the Russell 3000 Index. For the trailing year, NYCERS underperformed the index, returning +8.42% versus +8.98% for the index. The Fund is below the benchmark over the trailing three, five and ten year periods.

In Large Cap, the Fund underperformed the Russell 1000 Index, returning +4.06% versus the Russell 1000's return of +4.25% during the second quarter. The Fund's one year return of +9.58% underperformed the +10.02% return of the Index.



Through June 30, 2019

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In Small Cap, the Fund returned +2.02%, below the Russell 2000 return of +2.10% for the quarter. The Fund's one year return of -2.95% outperformed the -3.31% return of the Index.

**Developed International:** For the quarter, the Fund's Non-U.S. Developed Equity composite returned +3.86% (excluding NYCERS' non-U.S. Environmental manager), outperforming the Custom MSCI World ex-US Benchmark by 36 basis points. The Fund returned +0.93% for the trailing one year period, above the return of the benchmark (+0.16%). The Fund is above the benchmark over the trailing three, five, and ten year periods.

**Emerging Markets Equity:** The Fund's active emerging markets equity composite returned +2.39% in the quarter, outperforming the +2.19% return of NYCERS custom MSCI benchmark. The passive portfolio underperformed the active one for the quarter. The one year return for the active emerging markets composite is +4.48%, outperforming the +4.05% return for the benchmark. The active emerging markets equity composite is above the benchmark over the trailing three and ten year periods.

**Core Fixed Income:** The composite of the Fund's core program returned +3.58% during the quarter, while the NYCERS Custom Structured Index returned +3.95%. For the past year, the core composite has returned +8.50%, while the benchmark's return is +9.51%.

**TIPS:** The Fund's TIPS composite delivered a +2.85% return in the quarter, below the +2.86% return for the Bloomberg Barclays Capital US TIPS Index. Over the past year, the Fund's TIPS managers have returned +4.84%, even with the benchmark's return of +4.84%. The Fund is ahead of the benchmark over the trailing three, five and ten year periods.

**High Yield:** In high yield, the Fund's managers returned +2.70% for the quarter, while NYCERS High Yield Custom Benchmark posted a lower return of +2.50%. The Fund outperformed the custom benchmark over the past year, returning +7.61% as compared to the benchmark's return of +7.48%. The Fund is behind the custom benchmark over the trailing five year period, but ahead of the benchmark over the trailing three and ten year periods.

**Bank Loans:** The NYCERS bank loan composite returned +1.32% in the second quarter, below the Credit Suisse Leveraged Loan Index's return of +1.58%. The Fund underperformed the benchmark for the year returning +3.87% versus +4.15% for the benchmark. The Fund has underperformed the benchmark over the trailing three year period, but outperformed over the trailing five year period.





Through June 30, 2019

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**Convertibles:** The convertible portfolio returned +2.35% in the quarter, below the +2.93% return of the NYCERS Custom Convertible Bond Index. Over the past year, the convertibles portfolio has returned +7.01%, outperforming the +6.62% return for the benchmark. The Fund underperformed the custom benchmark over the trailing three year period, but outperformed over the trailing five and ten year periods.

**Opportunistic Fixed Income:** The opportunistic fixed income composite returned +1.72% over the second quarter, underperforming the blended benchmark of 50% JP Morgan Global High Yield / 50% Credit Suisse Leveraged Loan Index - Plus 300 bps (+2.96%). The Fund returned +5.22% for the trailing one year period, below the return of the blended benchmark (+9.26%). The Fund is below the blended benchmark over the trailing three and five year periods, but outperformed over the trailing ten year period.

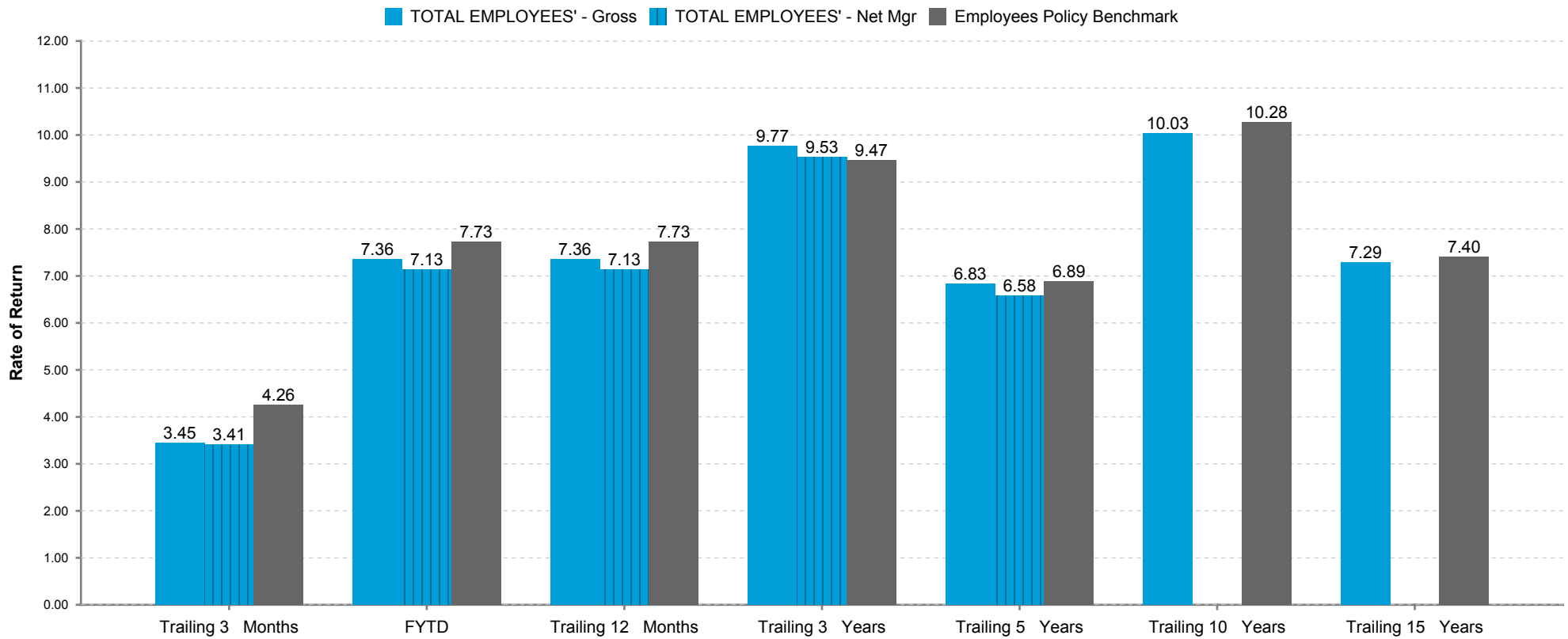
**Alternatives:** For the quarter, the Private Equity portfolio had approximately \$4.7 billion in invested capital, representing roughly 6.9% of the Total Fund. The Private Real Estate portfolio had approximately \$3.6 billion invested, accounting for roughly 5.2% of the Total Fund. The Infrastructure portfolio had approximately \$656 million invested, or 1.0%. Performance is reported separately by NYCERS' Private Equity and Real Estate consultants.



**Market Value (Billions)**

TOTAL EMPLOYEES'

\$68.2

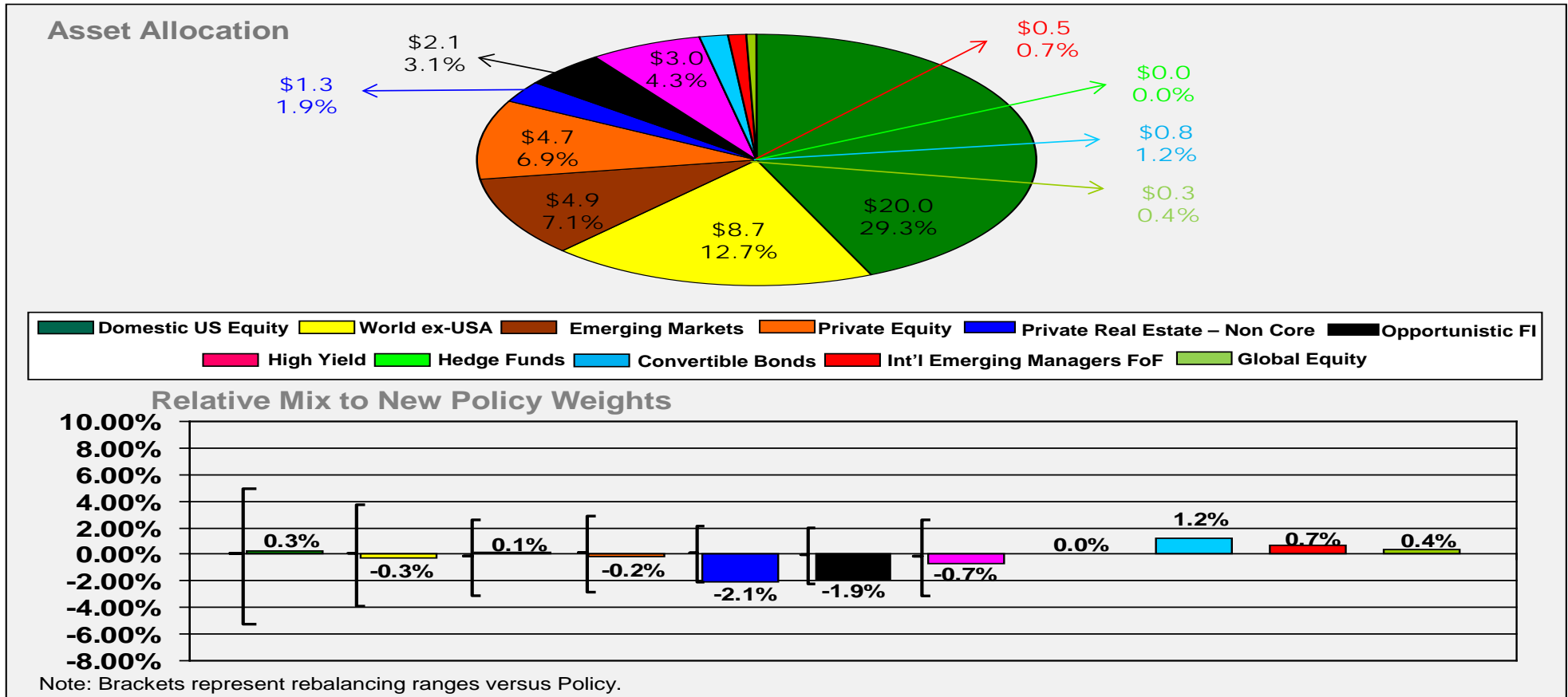


	Plan 3 Years	Benchmark 3 Years	Plan 5 Years	Benchmark 5 Years	Plan 10 Years	Benchmark 10 Years
<b>Standard Deviation</b>						
TOTAL EMPLOYEES'	5.9	6.0	6.8	6.2	7.6	7.9



**Portfolio Asset Allocation: June 30, 2019**

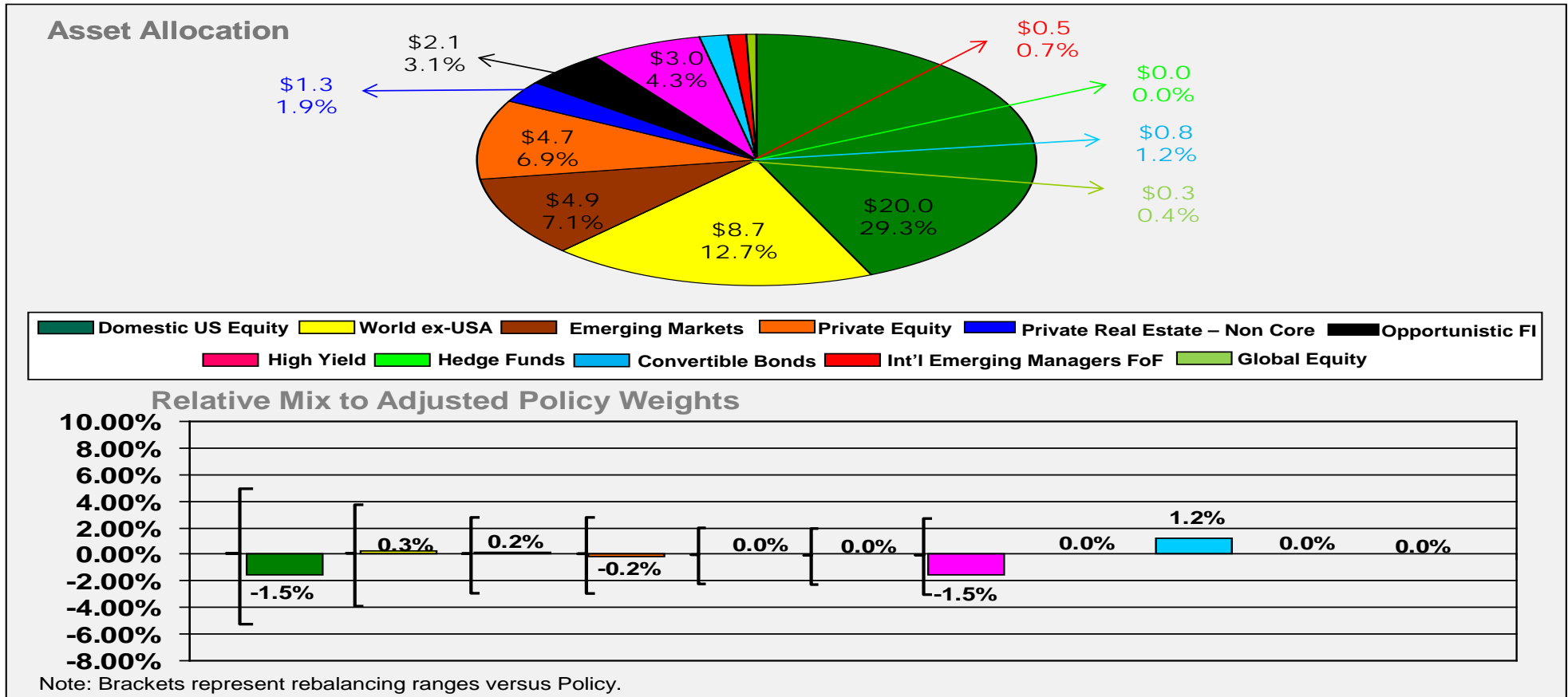
**Portfolio Asset Allocation – Growth**





**Portfolio Asset Allocation: June 30, 2019**

**Portfolio Asset Allocation – Growth**

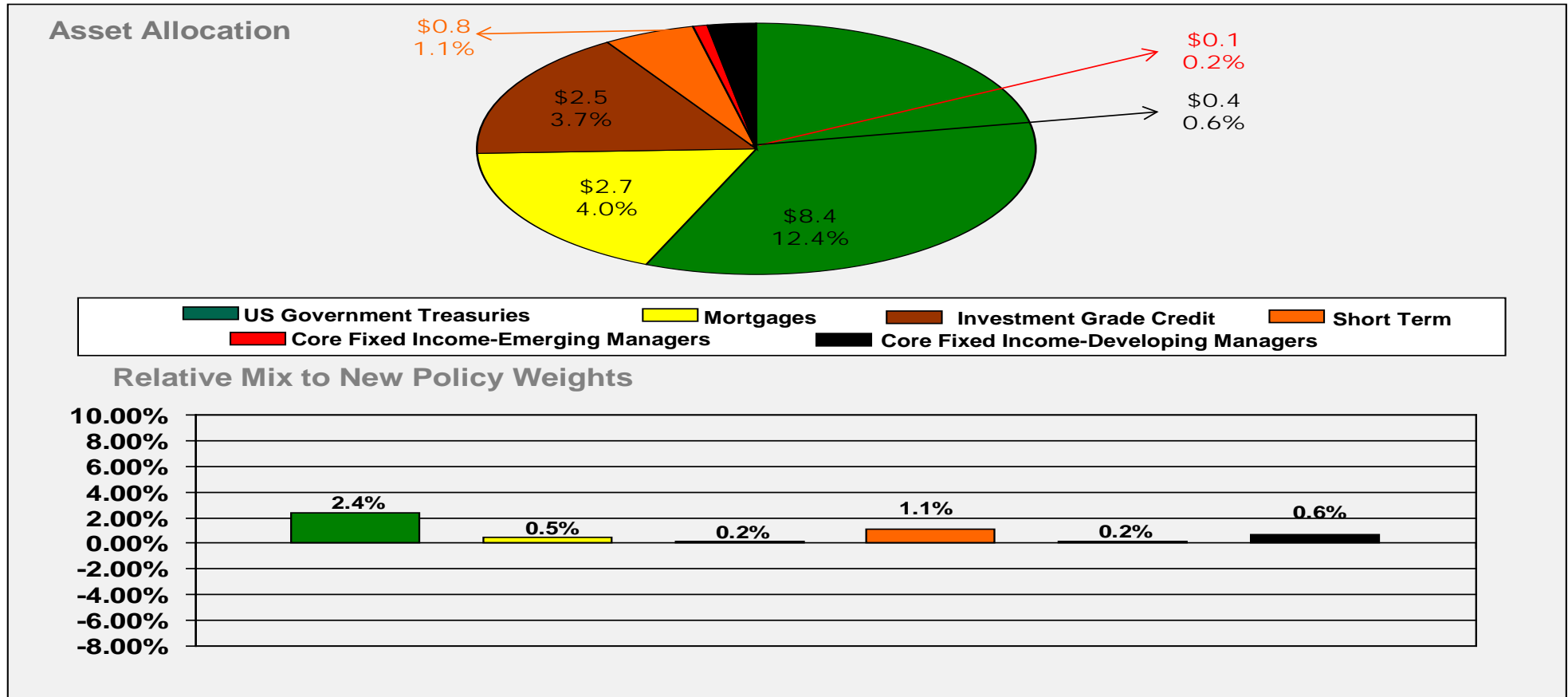


Note: On June 28, 2019 NYCERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.



**Portfolio Asset Allocation: June 30, 2019**

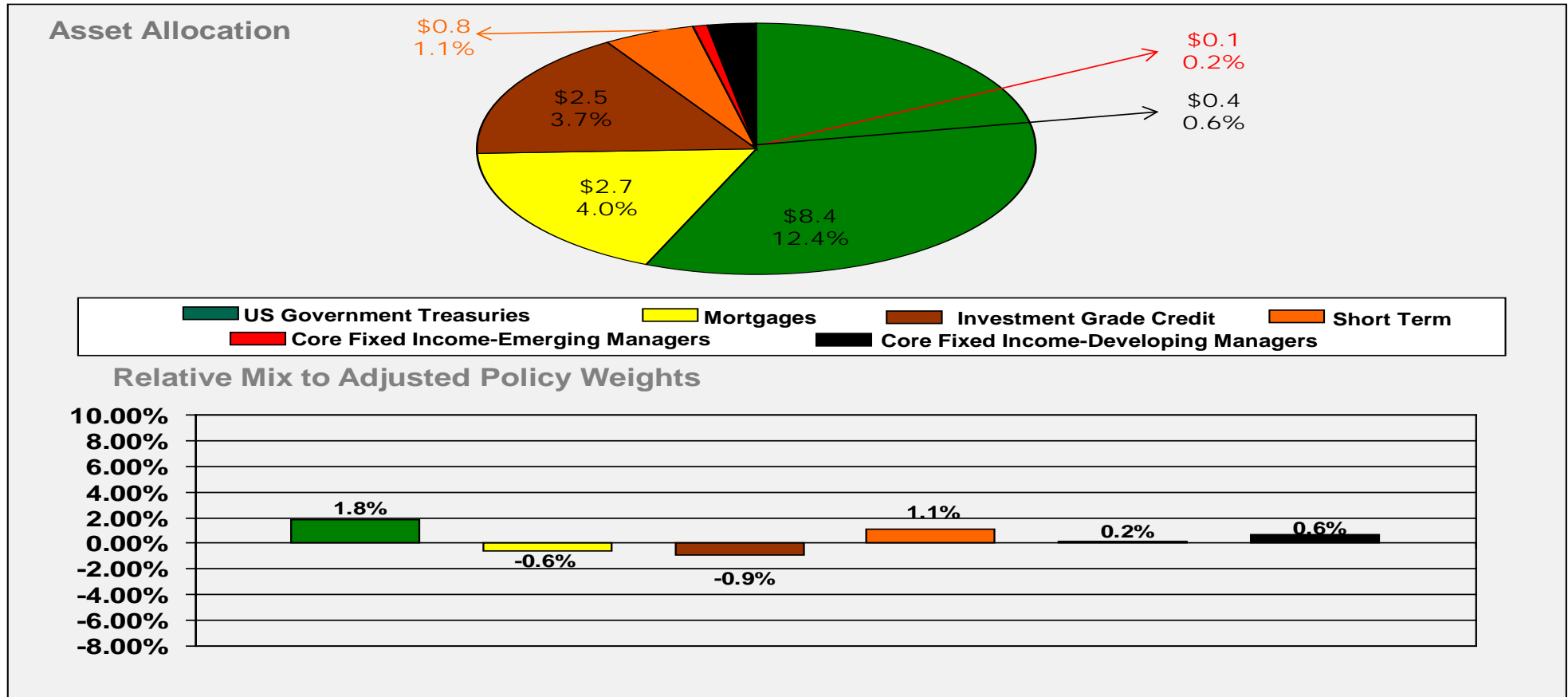
**Portfolio Asset Allocation – Deflation Protection**





**Portfolio Asset Allocation: June 30, 2019**

**Portfolio Asset Allocation – Deflation Protection**

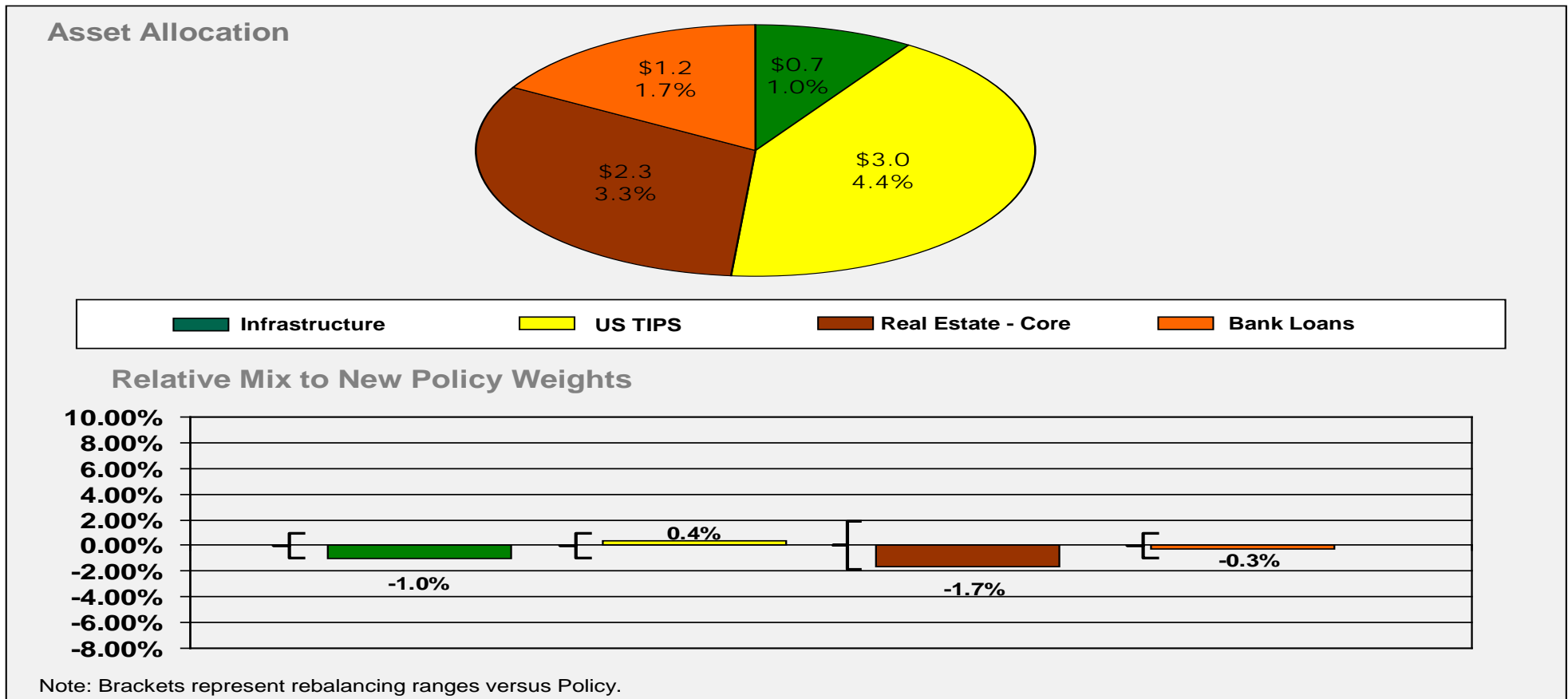


Note: On June 28, 2019 NYCERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.



**Portfolio Asset Allocation: June 30, 2019**

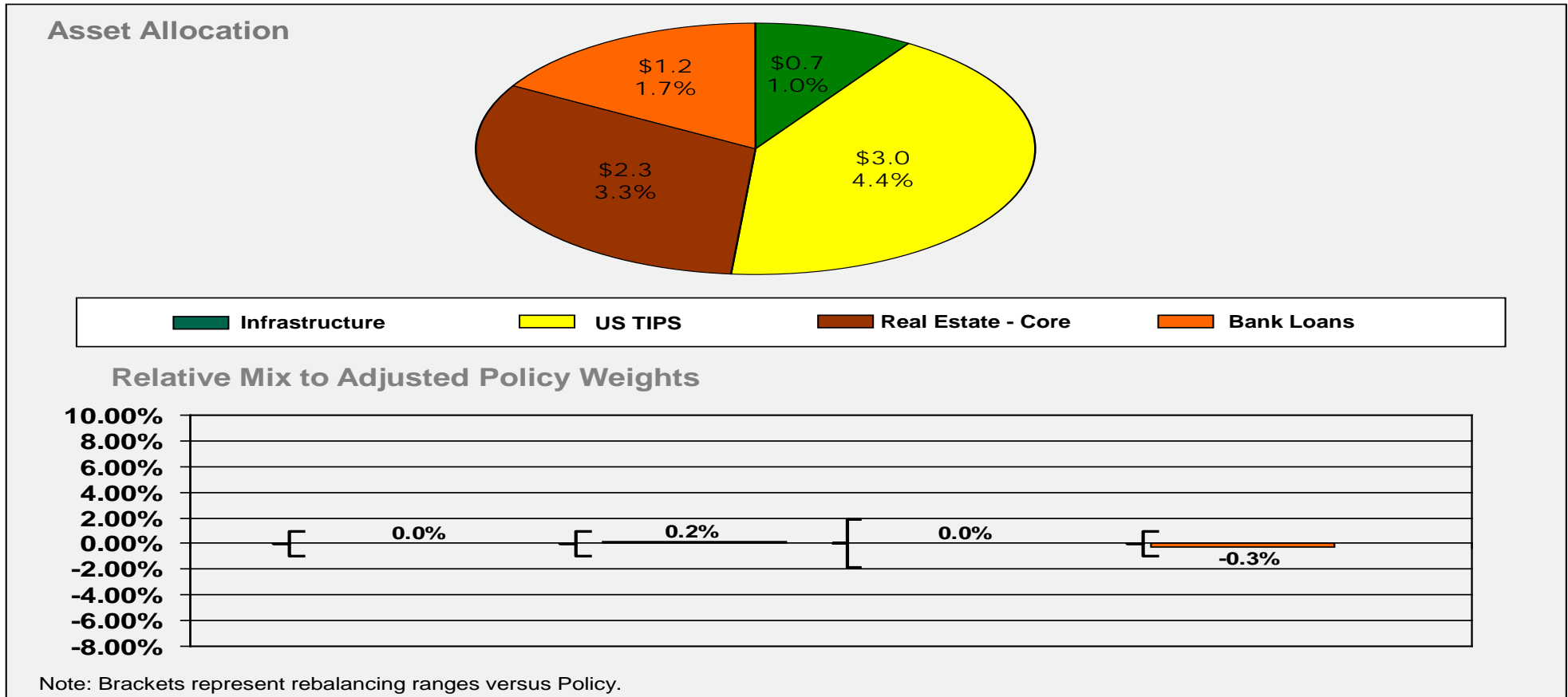
**Portfolio Asset Allocation – Inflation Protection**





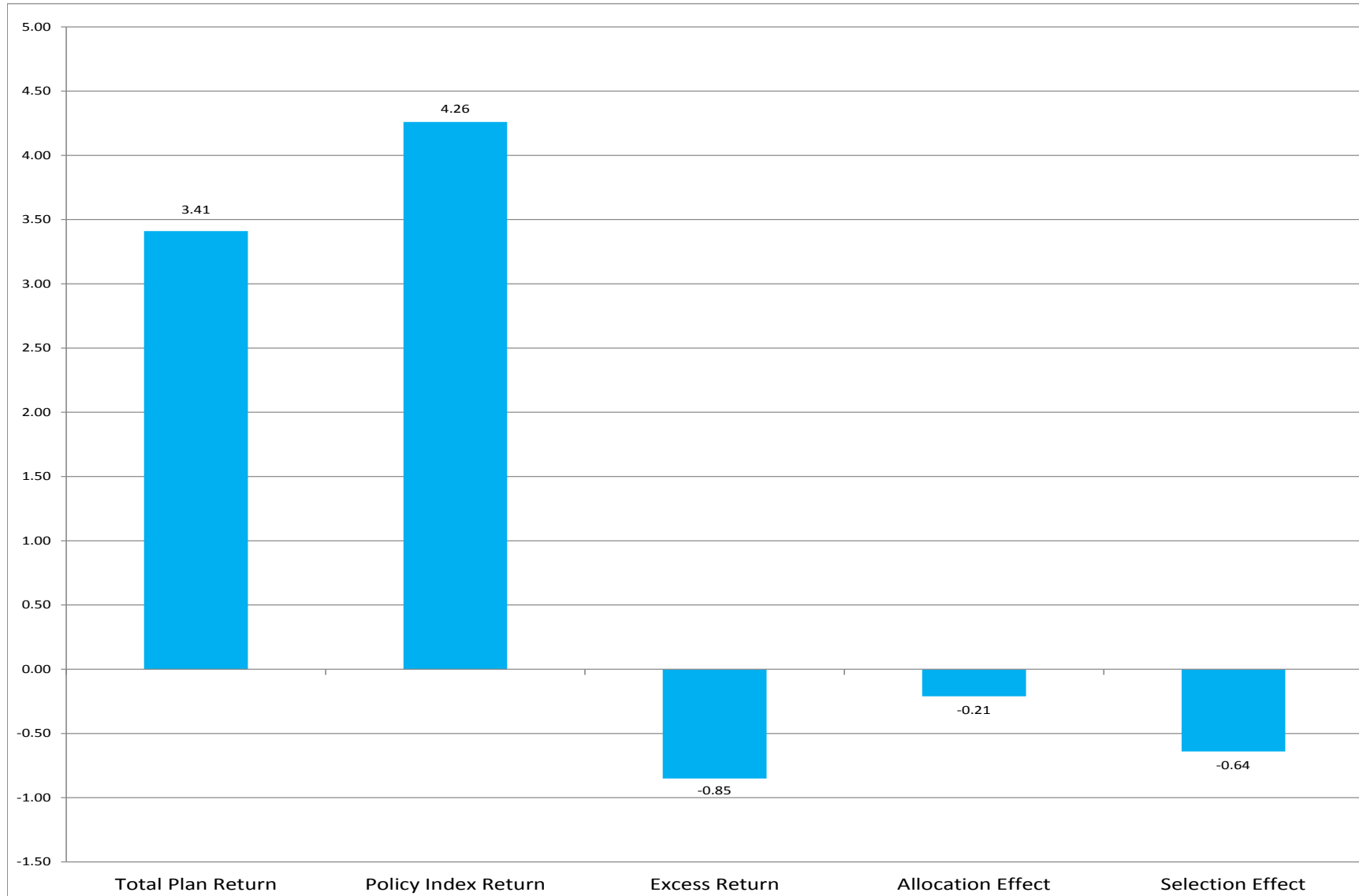
**Portfolio Asset Allocation: June 30, 2019**

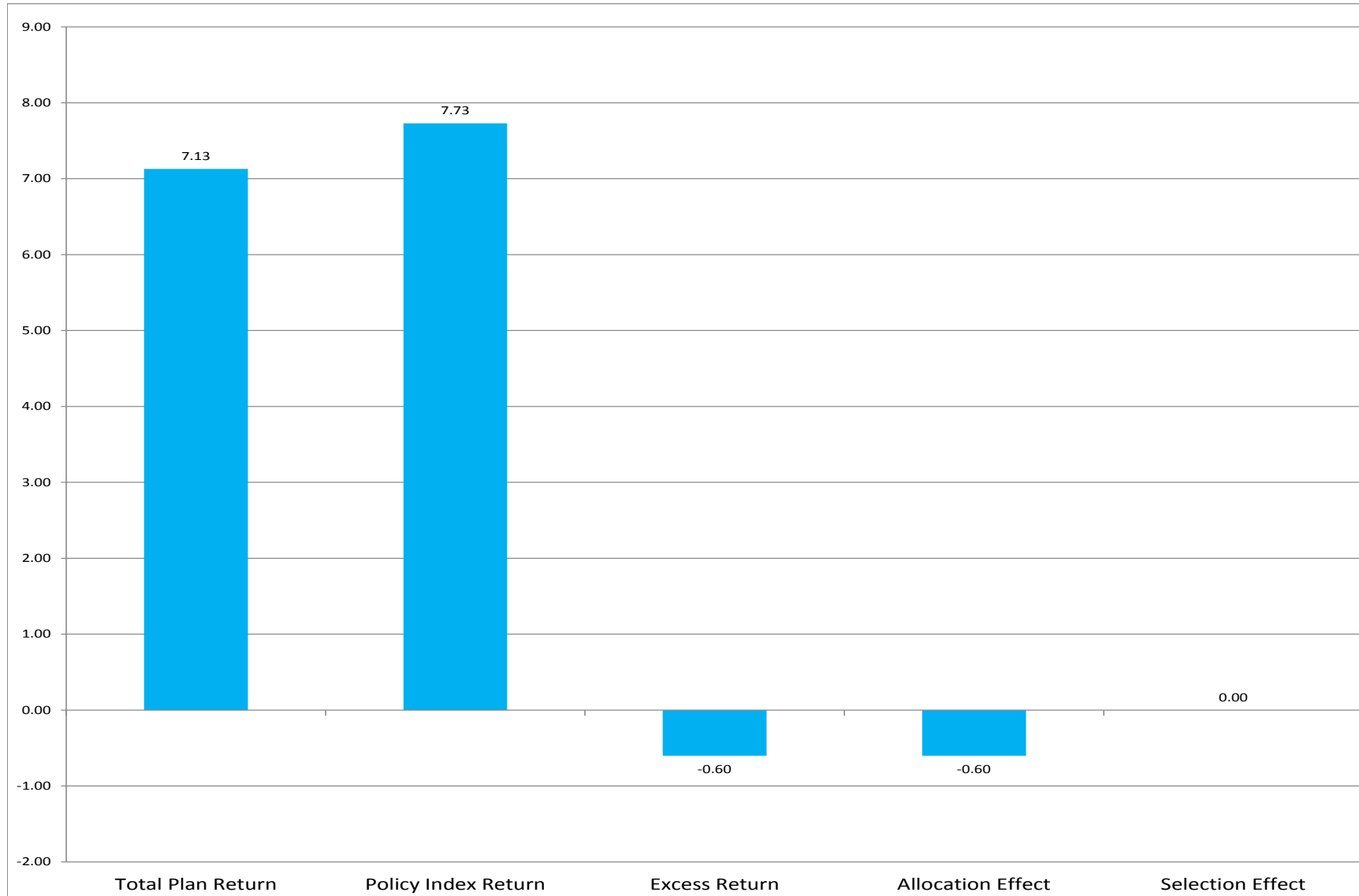
**Portfolio Asset Allocation – Inflation Protection**

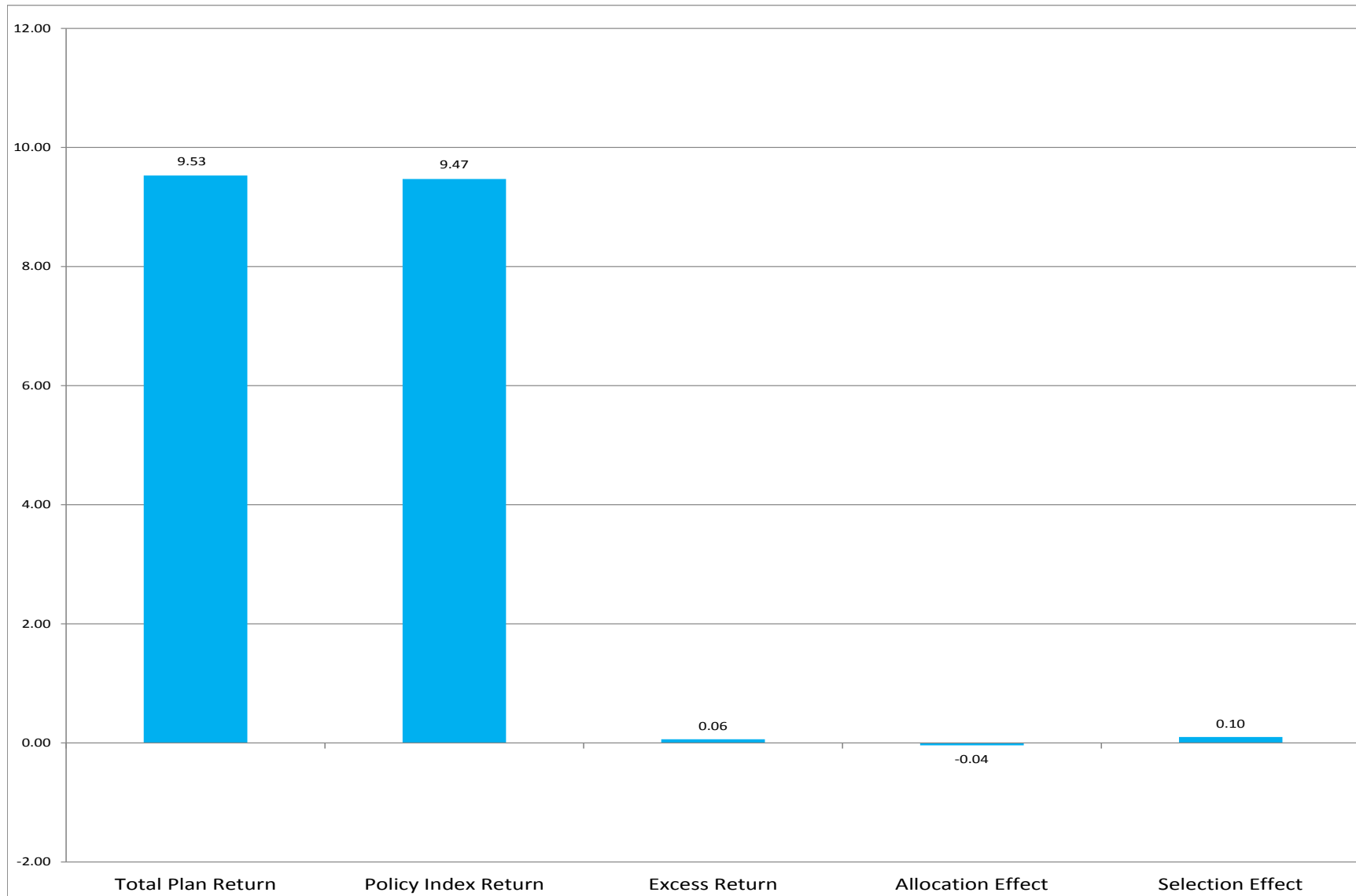


Note: On June 28, 2019 NYCERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.7 years on that date.











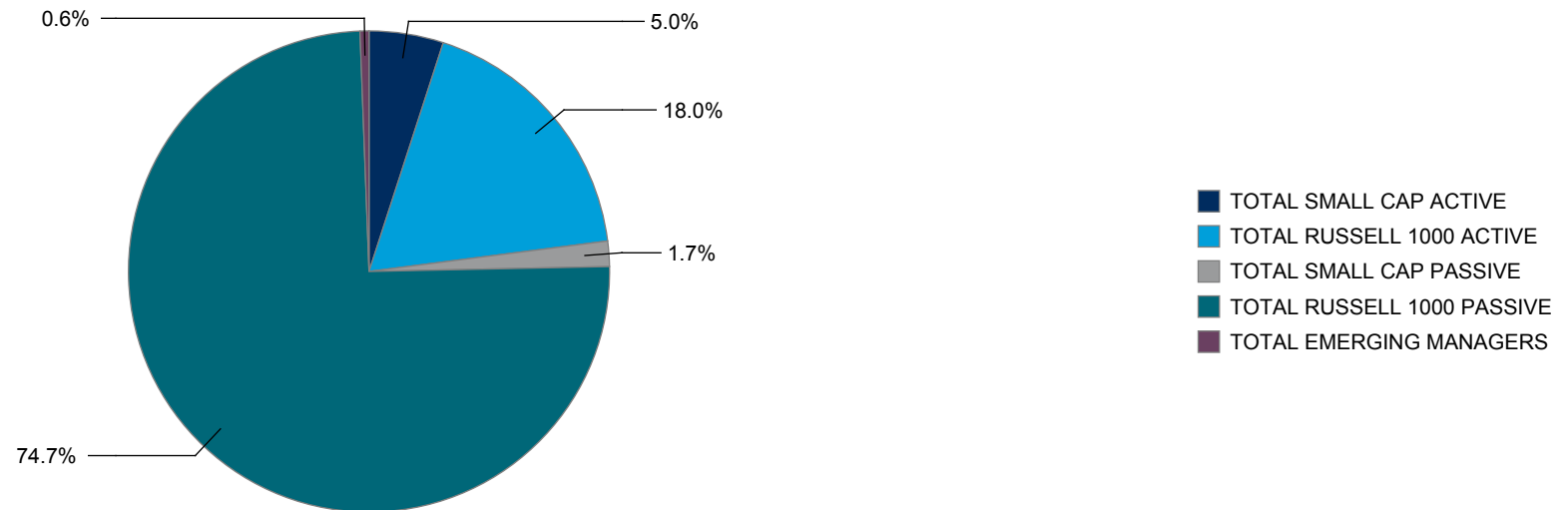
Allocation Effect - Asset Class Breakdown				
	Quarter	FYTD	3 Years	Benchmark
TOTAL EMPLOYEES'	-0.21	-0.60	-0.04	Employees Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.05	-0.15	-0.06	RUSSELL 3000
TOTAL WORLD ex-USA	-0.01	-0.02	-0.04	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	0.00	-0.01	0.00	MSCI World Index
TOTAL EMERGING MARKETS	-0.01	-0.03	-0.03	Employees Custom EM Index
TOTAL INTERNATIONAL FOF	0.00	0.00	0.00	NYC Blended Custom Benchmark for FoF
TOTAL HEDGE FUNDS	0.00	0.00	-0.01	HFRI Fund of Funds Composite Index plus 1%
TOTAL PRIVATE EQUITY	-0.02	-0.09	-0.02	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.01	0.01	0.00	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.00	0.00	0.01	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.00	0.00	0.00	CPI + 4%
TOTAL US TREASURY SHORT TERM	-0.10	-0.07	-0.12	FTSE USBIG Treasury 1-3 Y Index
TOTAL US TREASURY INTERMEDIATE	0.00	0.00	-0.02	FTSE USBIG Treasury/Agency 1-10 y
TOTAL ACTIVE GOVERNMENT	-0.03	-0.12	0.23	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	0.00	-0.04	-0.05	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.01	-0.01	0.03	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL CORE FI- DEVELOPING MGRS	-0.01	0.00	-0.03	BBG BARC Agg
TOTAL CORE FI- EMERGING MGRS	0.00	0.00	-0.01	BBG BARC Agg
TOTAL HIGH YIELD	0.02	-0.01	0.06	High Yield Custom Benchmark
TOTAL BANK LOANS	0.00	0.00	0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	-0.01	-0.02	0.00	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CONVERTIBLE BONDS	0.00	0.01	0.03	Merrill All US Converts
TOTAL OPPORTUNISTIC FIXED	0.00	0.00	0.00	OFI - JPMGHY / CSFB 50/50 Blend Plus 300
TOTAL CASH	-0.02	-0.04	-0.10	

Selection Effect - Asset Class Breakdown				
	Quarter	FYTD	3 Years	Benchmark
TOTAL EMPLOYEES'	-0.64	0.00	0.10	Employees Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.06	-0.18	-0.11	RUSSELL 3000
TOTAL WORLD ex-USA	0.04	0.08	0.23	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	0.01	0.03	0.01	MSCI World Index
TOTAL EMERGING MARKETS	0.00	0.00	0.00	Employees Custom EM Index
TOTAL INTERNATIONAL FOF	0.01	-0.01	0.00	NYC Blended Custom Benchmark for FoF
TOTAL HEDGE FUNDS	0.00	0.00	-0.01	HFRI Fund of Funds Composite Index plus 1%
TOTAL PRIVATE EQUITY	-0.67	0.05	-0.13	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.03	0.08	0.03	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.02	0.01	0.04	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.02	0.05	0.04	CPI + 4%
TOTAL US TREASURY SHORT TERM	0.00	0.00	0.00	FTSE USBIG Treasury 1-3 Y Index
TOTAL US TREASURY INTERMEDIATE	0.00	0.00	0.01	FTSE USBIG Treasury/Agency 1-10 y
TOTAL ACTIVE GOVERNMENT	-0.01	-0.02	0.00	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	0.01	0.01	0.01	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.00	0.00	0.00	FTSE MORTGAGE INDEX
TOTAL ETI	0.02	0.03	0.01	ETI Custom Benchmark
TOTAL CORE FI- DEVELOPING MGRS	0.00	0.00	0.00	BBG BARC Agg
TOTAL CORE FI- EMERGING MGRS	0.00	0.00	0.00	BBG BARC Agg
TOTAL HIGH YIELD	0.01	-0.01	-0.01	High Yield Custom Benchmark
TOTAL BANK LOANS	-0.01	-0.01	-0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	0.00	0.00	0.00	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CONVERTIBLE BONDS	-0.02	-0.02	-0.06	Merrill All US Converts
TOTAL OPPORTUNISTIC FIXED	-0.04	-0.13	-0.03	OFI - JPMGHY / CSFB 50/50 Blend Plus 300
TOTAL CASH	0.00	0.01	0.00	

# Total Domestic Equity Asset Allocations: Quarter Ending June 30, 2019



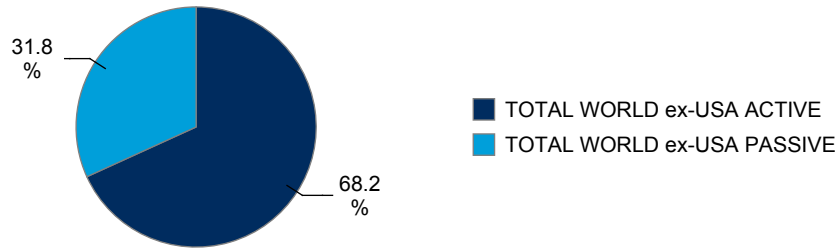
	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL DOMESTIC EQUITY	\$20.0	29.3



	<u>ALLOCATION</u>			<u>PERFORMANCE</u>		
	<u>Policy Weight</u>	<u>Actual Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL SMALL CAP ACTIVE	4.9	5.0	0.1	1.8	2.1	(0.3)
TOTAL RUSSELL 1000 ACTIVE	18.0	18.0	(0.0)	1.6	4.2	(2.7)
TOTAL SMALL CAP PASSIVE	2.2	1.7	(0.5)	2.5	2.1	0.5
TOTAL RUSSELL 1000 PASSIVE	74.3	74.8	0.5	4.4	4.2	0.1
TOTAL EMERGING MANAGERS	0.6	0.6	(0.0)	2.0	2.1	(0.1)



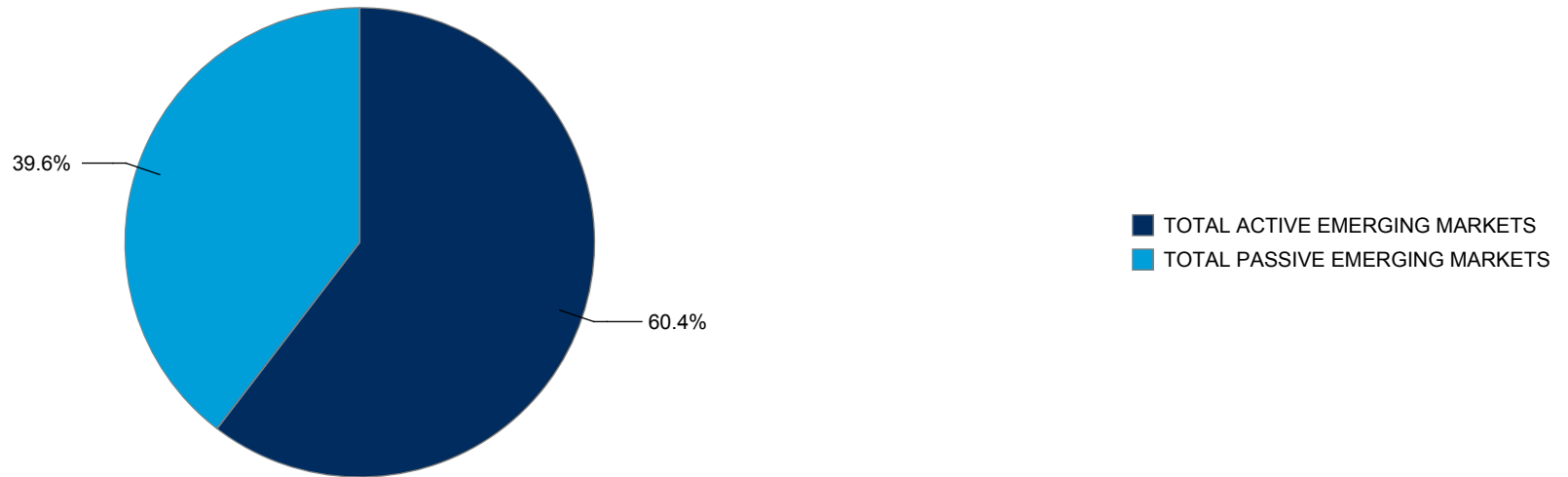
	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL WORLD ex-USA	\$8.7	12.7



	<u>ALLOCATION</u>		<u>PERFORMANCE</u>		
	<u>Asset Class Weight</u>	<u>Quarterly Returns</u>			
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>	
TOTAL WORLD ex-USA LARGE & MID ACTIVE	60.66	4.07	3.79	0.28	
TOTAL WORLD ex-USA SMALL CAP ACTIVE	7.55	2.79	2.37	0.42	
TOTAL WORLD ex-USA LARGE & MID CAP PASSIVE	25.53	3.97	3.79	0.18	
TOTAL WORLD ex-USA SMALL CAP PASSIVE	6.26	1.94	1.76	0.18	
TOTAL WORLD ex-USA	100.00	3.81	3.50	0.31	



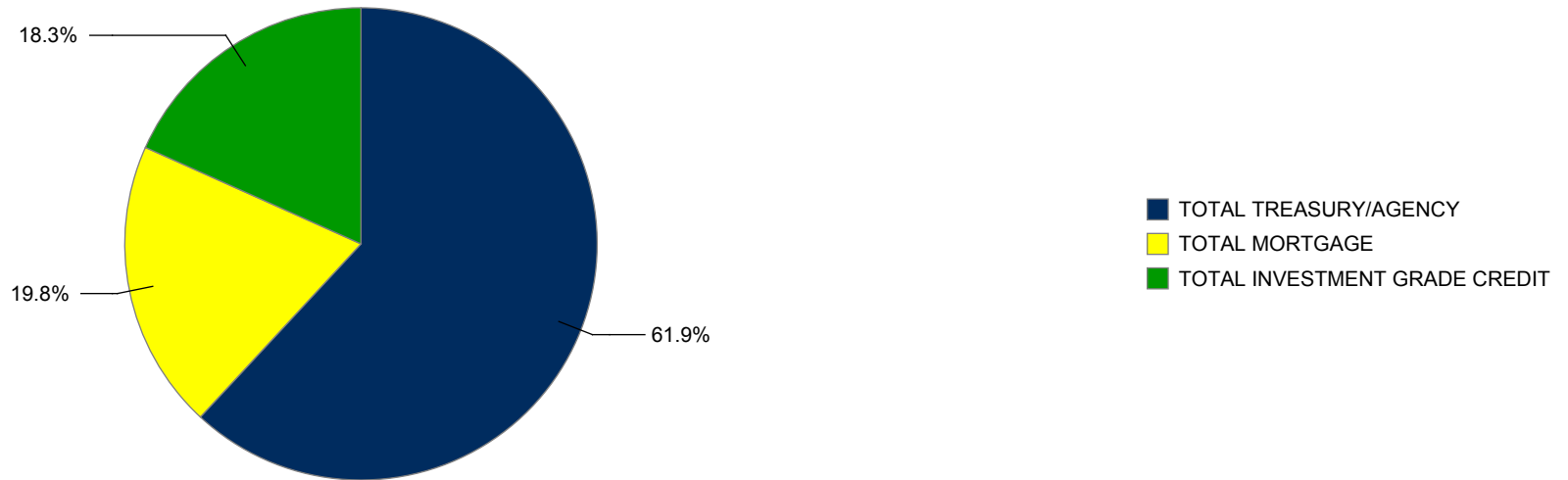
	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL EMERGING MARKETS	\$4.9	7.1



	<u>ALLOCATION</u>	<u>PERFORMANCE</u>		
	<u>Asset Class Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL ACTIVE EMERGING MARKETS	60.39	2.29	2.19	0.09
TOTAL PASSIVE EMERGING MARKETS	39.61	2.18	2.19	(0.02)
TOTAL EMERGING MARKETS	100.00	2.24	2.19	0.05



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL STRUCTURED + ETI	\$13.6	20.0



	<u>Policy Weight</u>	<u>Actual Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL TREASURY/AGENCY	58.82	61.88	3.06	3.65	4.56	(0.91)
TOTAL MORTGAGE	20.59	19.78	(0.81)	2.66	2.09	0.57
TOTAL INVESTMENT GRADE CREDIT	20.59	18.35	(2.24)	4.35	4.07	0.28



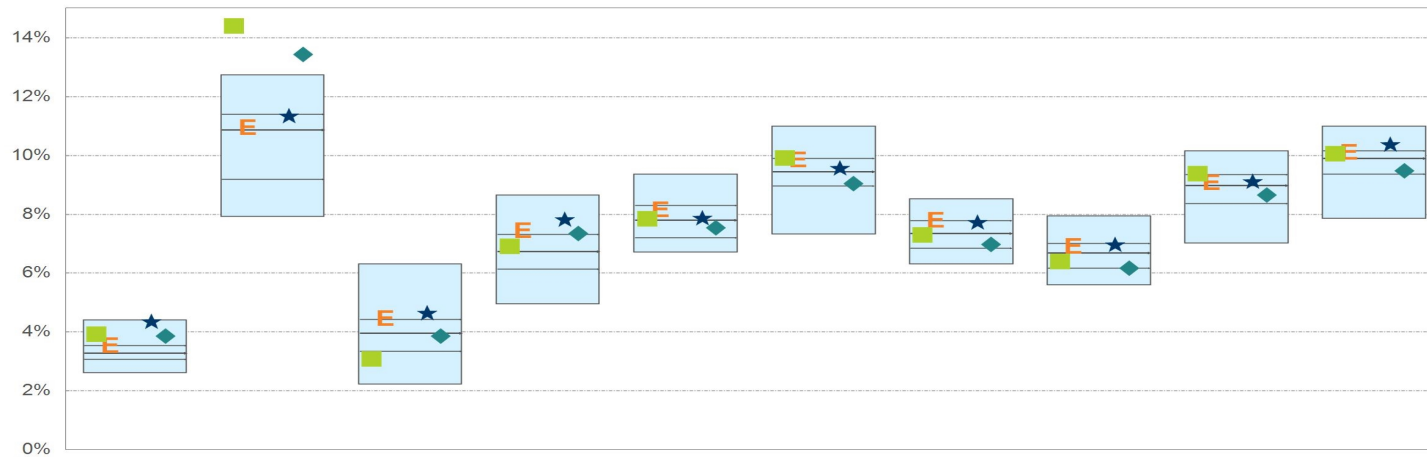


Through June 30, 2019



### City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$10 Billion  
Cumulative Periods Ending : June 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	4.40	12.74	6.32	8.66	9.36	11.00	8.52	7.94	10.16	10.99
25th	3.54	11.40	4.42	7.31	8.30	9.90	7.78	7.01	9.35	10.16
50th	3.27	10.86	3.96	6.73	7.80	9.44	7.34	6.69	8.98	9.90
75th	3.06	9.18	3.35	6.13	7.20	8.96	6.85	6.17	8.37	9.36
95th	2.62	7.93	2.23	4.96	6.72	7.33	6.31	5.60	7.03	7.87
No. Of Obs	50	50	50	50	50	50	50	50	50	46
<b>E</b> Total System - Employee	3.45 (31)	10.87 (47)	4.37 (27)	7.36 (23)	8.07 (31)	9.77 (35)	7.71 (31)	6.83 (45)	9.00 (47)	10.03 (40)
<b>★</b> Employees Policy Bench	4.26 (5)	11.26 (31)	4.56 (19)	7.73 (15)	7.79 (50)	9.47 (47)	7.63 (37)	6.88 (37)	9.02 (43)	10.28 (21)
<b>■</b> Public Mkt Equiv 25	3.83 (11)	14.31 (1)	2.98 (89)	6.81 (43)	7.75 (52)	9.82 (31)	7.20 (52)	6.29 (64)	9.28 (27)	9.96 (40)
<b>◆</b> Public Mkt Equiv 35	3.77 (13)	13.34 (1)	3.77 (56)	7.25 (25)	7.44 (62)	8.95 (75)	6.88 (72)	6.07 (77)	8.56 (62)	9.38 (70)

Wilshire Trust Universe Comparison Service® (TUCS®)



Through June 30, 2019



### City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$10 Billion  
Consecutive Time Periods: June 30, 2019



Percentile Rankings	Jun 19	Mar 19	Dec 18	Sep 18	Jun 18	Jun 19	Jun 18	Jun 17	Jun 16	Jun 15
5th	4.40	8.46	-2.91	3.69	2.06	8.66	10.80	15.77	3.09	6.10
25th	3.54	7.63	-4.58	2.92	1.59	7.31	9.52	13.73	1.86	4.53
50th	3.27	7.03	-5.87	2.61	1.09	6.73	9.05	13.00	1.44	3.93
75th	3.06	6.19	-6.60	2.27	0.70	6.13	8.33	12.31	0.68	3.04
95th	2.62	4.77	-7.88	1.81	0.33	4.96	6.89	8.87	-1.28	2.02
No. Of Obs	50	50	50	50	50	50	50	50	50	50
<b>E</b> Total System - Emolve	3.45 (31)	7.17 (43)	-5.87 (50)	2.87 (31)	0.70 (75)	7.36 (23)	8.78 (56)	13.24 (37)	1.76 (33)	3.40 (64)
<b>★</b> Employees Policy Bench	4.26 (5)	6.71 (60)	-6.02 (60)	3.03 (21)	0.62 (77)	7.73 (15)	7.84 (83)	12.93 (52)	2.28 (13)	3.95 (47)
<b>■</b> Public Mkt Equiv 25	3.83 (11)	10.10 (1)	-9.91 (100)	3.72 (3)	1.45 (31)	6.81 (43)	8.70 (58)	14.09 (17)	-0.30 (87)	2.74 (81)
<b>◆</b> Public Mkt Equiv 35	3.77 (13)	9.22 (1)	-8.45 (95)	3.35 (15)	1.35 (33)	7.25 (25)	7.64 (85)	12.03 (79)	0.89 (64)	2.91 (79)

Wilshire Trust Universe Comparison Service® (TUCS®)



**NEW YORK CITY EMPLOYEE RETIREMENT SYSTEM  
ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018**

INVESTMENT STYLE (EQUITIES)	Actual 2018								Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09- 30-18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
<b>Total US Equities</b>	<b>30,033.47</b>	<b>8,309.25</b>	-	<b>2.77</b>	-	-	<b>8,309.25</b>	<b>2.77</b>	<b>18,795.31</b>	<b>7,900.17</b>	<b>4.20</b>
Small Cap Active	1,273.56	4,687.14	-	36.80	-	-	4,687.14	36.80	1,288.14	4,708.39	36.55
Small Cap Growth	-	-	-	-	-	-	-	-	-	-	-
Small Cap Value	280.85	1,459.33	-	51.96	-	-	1,459.33	51.96	243.05	1,265.24	52.06
Small Cap Core	216.00	1,555.04	-	71.99	-	-	1,555.04	71.99	237.70	1,727.38	72.67
Small Cap Fundamental Index	776.70	1,672.77	-	21.54	-	-	1,672.77	21.54	807.39	1,715.77	21.25
Russell 1000 Fundamental	2,123.94	2,506.74	-	11.80	-	-	2,506.74	11.80	1,963.48	2,259.10	11.51
Active Emerging Managers (U.S. Equities)	117.16	545.79	-	46.59	-	-	545.79	46.59	123.79	617.75	49.90
<b>Total US Active Equities</b>	<b>3,514.65</b>	<b>7,739.67</b>	-	<b>22.02</b>	-	-	<b>7,739.67</b>	<b>22.02</b>	<b>3,375.41</b>	<b>7,585.24</b>	<b>22.47</b>
Small Cap Passive											
Small Cap Passive	352.91	15.04	-	0.43	-	-	15.04	0.43	350.57	14.81	0.42
Mid Cap Passive											
Mid Cap Passive	644.90	40.01	-	0.62	-	-	40.01	0.62	-	-	-
Russell / S&P Passive											
Russell 1000 Growth Passive	2,499.23	112.60	-	0.45	-	-	112.60	0.45	3.73	-	-
Russell 1000 Value Passive	2,378.71	106.86	-	0.45	-	-	106.86	0.45	3.88	-	-
Russell 1000 Core Passive	14,827.59	72.62	-	0.05	-	-	72.62	0.05	15,061.72	300.12	0.20
Passive Russell 3000	1,485.03	97.57	-	0.66	-	-	97.57	0.66	-	-	-
Passive S&P 500	4,330.43	124.88	-	0.29	-	-	124.88	0.29	-	-	-
Passive Russell Top 200	-	-	-	-	-	-	-	-	-	-	-
<b>Total US Passive Equities</b>	<b>26,518.81</b>	<b>569.57</b>	-	<b>0.21</b>	-	-	<b>569.57</b>	<b>0.21</b>	<b>15,419.90</b>	<b>314.93</b>	<b>0.20</b>



**NEW YORK CITY EMPLOYEE RETIREMENT SYSTEM  
ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018**

	Actual 2018							Estimates 2019			
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09- 30-18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
<b>Total International Equities</b>	<b>14,046.83</b>	<b>35,549.61</b>	-	<b>25.31</b>	<b>5,341.81</b>	<b>3.80</b>	<b>40,891.42</b>	<b>29.11</b>	<b>13,456.49</b>	<b>32,646.22</b>	<b>24.26</b>
Global Equity	-	-	-	-	-	-	-	-	253.56	915.53	36.11
<b>Total Global Equities</b>	-	-	-	-	-	-	-	-	<b>253.56</b>	<b>915.53</b>	<b>36.11</b>
<b>Active Total World Ex Usa</b>	<b>5,966.90</b>	<b>18,186.74</b>	-	<b>30.48</b>	-	-	<b>18,186.74</b>	<b>30.48</b>	<b>5,950.71</b>	<b>17,857.13</b>	<b>30.01</b>
World Ex-USA Large & Mid Active	5,139.41	14,319.43	-	27.86	-	-	14,319.43	27.86	5,240.18	14,610.34	27.88
World Ex-USA Small Cap Active	826.95	3,867.31	-	46.77	-	-	3,867.31	46.77	710.11	3,246.79	45.72
Total World Ex USA	0.47	-	-	-	-	-	-	-	0.42	-	-
Total Progress Intl.	0.07	-	-	-	-	-	-	-	0.00	-	-
NON-U.S. Environmental Managers	110.13	1,418.00	-	128.75	5,341.81	485.04	6,759.81	613.79	2.74	-	-
Active Emerging Markets	3,067.42	12,872.07	-	41.96	-	-	12,872.07	41.96	2,902.02	11,625.28	40.06
Total Active Int'l Fund of Funds	377.58	1,799.24	-	47.65	-	-	1,799.24	47.65	424.37	2,188.15	51.56
<b>Total Active International Equities</b>	<b>9,522.04</b>	<b>34,276.05</b>	-	<b>36.00</b>	<b>5,341.81</b>	<b>485.04</b>	<b>39,617.86</b>	<b>41.61</b>	<b>9,279.84</b>	<b>31,670.57</b>	<b>34.13</b>
Int'l Passive Equities											
World Ex-USA Small Cap Passive	487.75	242.39	-	4.97	-	-	242.39	4.97	491.73	246.22	5.01
World Ex-USA Large & Mid Cap Passive	2,009.07	233.79	-	1.16	-	-	233.79	1.16	1,777.63	208.10	1.17
Passive Global	0.01	-	-	-	-	-	-	-	-	-	-
Passive Emerging Markets	2,027.97	797.37	-	3.93	-	-	797.37	3.93	1,907.29	521.34	2.73
Total Int'l Passive Equities	4,524.79	1,273.56	-	2.81	-	-	1,273.56	2.81	4,176.65	975.65	2.34
<b>REITS Active Equities</b>	-	-	-	-	-	-	-	-	-	-	-



NEW YORK CITY EMPLOYEE RETIREMENT SYSTEM  
 ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018						Total Fees & Expenses in BPS		Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09- 30-18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
<b>INVESTMENT STYLE (FIXED INCOME)</b>											
<b>Total Fixed Income</b>	<b>20,412.26</b>	<b>24,253.41</b>	-	<b>11.88</b>	<b>126.76</b>	<b>0.06</b>	<b>24,380.17</b>	<b>11.94</b>	<b>23,122.35</b>	<b>23,559.00</b>	<b>10.19</b>
Structured Program	11,622.74	6,125.43	-	5.27	126.76	0.11	6,252.19	5.38	14,061.62	5,926.76	4.21
Government Treas/Agency Sector	6,715.74	2,058.27	-	3.06	-	-	2,058.27	3.06	9,888.22	2,463.83	2.49
Long Duration Treasury	-	-	-	-	-	-	-	-	-	-	-
Mortgage Sector	1,711.97	1,022.75	-	5.97	126.76	0.74	1,149.51	6.71	1,709.07	1,005.48	5.88
Investment Grade Credit Sector	3,195.02	3,044.42	-	9.53	-	-	3,044.42	9.53	2,464.34	2,457.45	9.97
Developing Managers	402.45	713.19	-	17.72	-	-	713.19	17.72	400.79	716.69	17.88
Emerging Managers	118.55	406.02	-	34.25	-	-	406.02	34.25	118.29	409.06	34.58
TIPS	2,586.90	447.01	-	1.73	-	-	447.01	1.73	2,848.06	499.71	1.75
Active TIPS Managers	634.96	350.42	-	5.52	-	-	350.42	5.52	700.35	391.27	5.59
Passive TIPS Managers	1,951.94	96.60	-	0.49	-	-	96.60	0.49	2,147.71	108.43	0.50
High Yield	2,599.59	8,580.36	-	33.01	-	-	8,580.36	33.01	2,641.92	7,734.46	29.28
Bank Loans	1,120.32	3,619.93	-	32.31	-	-	3,619.93	32.31	1,154.29	3,720.37	32.23
Convertible Bonds	718.82	2,849.12	-	39.64	-	-	2,849.12	39.64	757.61	3,024.85	39.93
ETI - Access - RBC	149.14	276.85	-	18.56	-	-	276.85	18.56	158.12	291.61	18.44
ETI - AFL-CIO HIT	305.91	1,235.49	-	40.39	-	-	1,235.49	40.39	303.59	1,235.49	40.70
<b>Total Public Markets (Externally managed)</b>	<b>63,704.69</b>	<b>68,112.27</b>	-	<b>10.69</b>	<b>5,468.57</b>	<b>0.86</b>	<b>73,580.83</b>	<b>11.55</b>	<b>54,949.65</b>	<b>65,020.91</b>	<b>11.83</b>
Other ETI Programs	360.42	-	-	-	-	-	-	-	352.52	-	-
In-House Short Term	427.45	-	-	-	-	-	-	-	325.53	-	-
<b>Total Public Markets</b>	<b>64,492.56</b>	<b>68,112.27</b>	-	<b>10.56</b>	<b>5,468.57</b>	<b>0.85</b>	<b>73,580.83</b>	<b>11.41</b>	<b>55,627.70</b>	<b>65,020.91</b>	<b>11.69</b>



**NEW YORK CITY EMPLOYEE RETIREMENT SYSTEM  
ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018**

	Actual 2018								Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09- 30-18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
<b>INVESTMENT STYLE (PRIVATE MARKETS)</b>											
Hedge Funds	75.56	550.03	-	72.80	-	-	550.03	72.80	-	-	-
Private Equity	4,432.07	51,023.76	17,512.47	154.64	88,032.63	198.63	156,568.87	353.26	4,566.97	89,210.17	195.34
Private Real Estate	3,349.27	33,103.03	8,497.60	124.21	31,661.63	94.53	73,262.26	218.74	3,439.18	39,177.48	113.92
Infrastructure	328.07	8,432.70	3,097.96	128.69	863.09	26.31	12,393.75	138.32	450.97	11,514.04	116.59
Opportunistic Fixed Income	1,762.93	15,577.66	10,614.53	148.57	3,481.59	19.75	29,673.78	168.32	1,852.23	15,722.56	84.88
<b>Total Private Markets</b>	<b>9,947.90</b>	<b>108,687.18</b>	<b>39,722.55</b>	<b>149.19</b>	<b>124,038.95</b>	<b>124.69</b>	<b>272,448.69</b>	<b>273.88</b>	<b>10,309.34</b>	<b>155,624.26</b>	<b>150.95</b>
<b>Total Overall</b>	<b>62,699.73</b>	<b>176,799.45</b>	<b>39,722.55</b>	<b>34.53</b>	<b>129,507.52</b>	<b>20.66</b>	<b>346,029.52</b>	<b>55.19</b>	<b>65,937.03</b>	<b>220,645.17</b>	<b>33.46</b>

The overall carried interest and incentive fees paid by NYCERS in Fiscal Year 2018: 20.66 BPS

**General Footnotes:**

- 1) Private Markets data reflect: carried interest realized and/or Incentive fees as stated by its corresponding partnership. Management fees reported are inclusive of partnership expenses associated with the partnership for the stated fiscal year.
- 2) Infrastructure's expense data is based off the total committed amounts rather than current market value due to its early fund life juncture.
- 3) Estimated Fees for the Public Markets data does not take into account major rebalancing shifts and is calculated at a fixed NAV. Estimates fees for the Private Markets data is based solely off gross management fee data and is not inclusive of any offsets. Both estimates are considered to be equitably conservative and should be construed as such. Estimates for FY 2018 for Private Equity is provided by the Consultant.



Through June 30, 2019

**NYC EMPLOYEES' RETIREMENT SYSTEM  
SECURITIES LENDING INCOME  
June 30, 2019**

	U. S. FIXED INCOME	U. S. EQUITY	INTERNATIONAL EQUITY	TOTAL
1989	-	-	-	-
1990	256,000	-	-	256,000
1991	754,000	48,000	-	802,000
1992	1,467,000	654,000	367,000	2,488,000
1993	3,445,000	1,308,000	732,000	5,485,000
1994	4,261,000	2,744,000	1,082,000	8,087,000
1995	3,727,000	3,191,000	745,000	7,663,000
1996	3,608,000	3,592,000	1,258,000	8,458,000
1997	3,924,000	5,921,000	1,533,000	11,378,000
1998	6,374,000	7,337,000	1,952,000	15,663,000
1999	6,643,000	6,718,000	2,175,000	15,536,000
2000	6,552,000	7,669,000	3,049,000	17,270,000
2001	10,335,000	10,394,000	4,435,000	25,164,000
2002	5,906,000	7,780,000	3,510,000	17,196,000
2003	2,442,000	4,766,000	3,603,000	10,811,000
2004	3,502,000	5,844,000	3,825,000	13,171,000
2005	5,229,000	8,264,000	4,471,000	17,964,000
2006	4,626,000	10,012,000	4,163,000	18,801,000
2007	9,445,000	15,100,000	4,510,000	29,055,000
2008	25,936,000	26,696,000	6,878,000	59,510,000
2009	8,149,000	16,388,000	4,305,000	28,842,000
2010	3,714,000	10,256,000	3,125,000	17,095,000
2011	4,834,000	12,861,000	5,163,000	22,858,000
2012	6,691,000	16,287,000	4,116,000	27,094,000
2013	5,051,000	17,973,000	3,014,000	26,038,000
2014	5,194,000	14,847,000	5,272,000	25,313,000
2015	5,010,000	16,300,000	6,124,000	27,434,000
2016	6,545,000	19,856,000	5,097,000	31,498,000
2017	9,452,000	16,246,000	4,295,000	29,993,000
2018	14,213,961	13,284,175	6,691,938	34,190,073
2019 (6 months)	4,633,932	7,975,346	2,702,986	15,312,264
Since Inception	<u>181,919,893</u>	<u>290,311,521</u>	<u>98,193,923</u>	<u>570,425,337</u>



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**New York City  
Employees' Retirement System**

# **Appendix A**

## **Consolidated Performance Report**



# Consolidated Performance Report



Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
<b>SYSTEM RETURN SUMMARY</b>																
5	NYCERS-TOTAL PORTFOLIO - GROSS	68,187	100.00	3.45	7.36	10.87	(2.51)	16.51	9.57	(0.17)	7.34	9.77	6.83	10.03	8.72	07/01/1987
	ESTIMATED INVESTMENT FEES			(0.05)	(0.23)	(0.12)	(0.19)	(0.26)	(0.24)	(0.27)	(0.27)	(0.23)	(0.25)			
	EST MANAGEMENT FEES - PUBLIC MARKET (ACCRUAL)			(0.02)	(0.10)	(0.05)	(0.10)	(0.11)	(0.12)	(0.12)	(0.13)	(0.11)	(0.11)			
	EST MANAGEMENT FEES - ALTERNATIVE MARKETS (CASH)			(0.03)	(0.13)	(0.07)	(0.09)	(0.15)	(0.12)	(0.15)	(0.14)	(0.12)	(0.14)			
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	NYCERS-TOTAL PORTFOLIO - NET MGR			3.41	7.13	10.75	(2.70)	16.25	9.33	(0.44)	7.07	9.53	6.58			
	NYCERS POLICY BENCHMARK			4.26	7.73	11.26	(2.75)	15.98	9.43	0.17	8.15	9.47	6.89	10.28		
	EXCESS RETURN			(0.85)	(0.60)	(0.50)	0.04	0.27	(0.09)	(0.62)	(1.09)	0.06	(0.30)	(0.25)		
<b>EQUITY RETURN DETAIL</b>																
18	NYCERS-TOTAL EQUITY (INCL PE & RA) - GROSS	43,171	63.31	3.67	7.18	13.54	(4.50)	22.77	11.39	(0.17)	7.85	12.67	8.40	12.08	7.93	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.06)	(0.29)	(0.16)	(0.23)	(0.34)	(0.29)	(0.35)	(0.33)	(0.30)	(0.31)			
	EST MANAGEMENT FEES			(0.06)	(0.29)	(0.16)	(0.23)	(0.34)	(0.29)	(0.35)	(0.33)	(0.30)	(0.31)			
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	NYCERS-TOTAL EQUITY (INCL PE & RA) - NET MGR			3.62	6.89	13.39	(4.74)	22.43	11.10	(0.52)	7.52	12.37	8.09			
26	NYCERS-TOTAL DOMESTIC EQUITY - GROSS	19,970	29.29	3.88	8.42	18.07	(5.37)	20.07	14.34	(0.67)	11.35	13.71	9.76	14.43	11.28	08/01/1979
	ESTIMATED INVESTMENT FEES			(0.01)	(0.04)	(0.02)	(0.04)	(0.06)	(0.10)	(0.09)	(0.11)	(0.06)	(0.07)			
	NYCERS-TOTAL DOMESTIC EQUITY - NET MGR			3.87	8.37	18.05	(5.41)	20.01	14.24	(0.76)	11.24	13.65	9.68			
	RUSSELL 3000 (DAILY)			4.10	8.98	18.71	(5.24)	21.13	12.74	0.48	12.56	14.02	10.19	14.67	11.62	
	EXCESS RETURN			(0.22)	(0.61)	(0.66)	(0.17)	(1.12)	1.51	(1.24)	(1.31)	(0.37)	(0.51)	(0.24)	(0.34)	
36	NYCERS-TOTAL SMALL CAP - GROSS	1,321	1.94	2.02	(2.95)	15.86	(10.67)	12.91	25.30	(5.96)	4.40	11.43	6.98	14.39	8.35	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.07)	(0.28)	(0.17)	(0.26)	(0.33)	(0.32)	(0.27)	(0.31)	(0.31)	(0.31)			
	NYCERS-TOTAL SMALL CAP - NET MGR			1.94	(3.23)	15.69	(10.93)	12.58	24.97	(6.24)	4.09	11.12	6.67			
	RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)	14.65	21.31	(4.41)	4.89	12.30	7.06	13.45	8.05	
	EXCESS RETURN			(0.15)	0.08	(1.29)	0.09	(2.07)	3.67	(1.82)	(0.80)	(1.19)	(0.39)	0.94	0.30	
46	NYCERS-TOTAL RUSSELL 1000 - GROSS	18,531	27.18	4.06	9.58	18.27								10.79	04/01/2018	
	ESTIMATED INVESTMENT FEES			(0.00)	(0.02)	(0.01)								(0.02)		
	NYCERS-TOTAL RUSSELL 1000 - NET MGR			4.05	9.57	18.26								10.77		
	RUSSELL 1000 (DAILY)			4.25	10.02	18.84								11.01		
	EXCESS RETURN			(0.19)	(0.45)	(0.58)								(0.24)		
56	NYCERS-TOTAL FUND OF FUNDS - GROSS	118	0.17	2.16	0.49	16.93	(7.77)							7.34	05/01/2017	
	ESTIMATED INVESTMENT FEES			(0.13)	(0.50)	(0.29)	(0.46)							(0.50)		
	NYCERS-TOTAL FUND OF FUNDS - NET MGR			2.03	(0.01)	16.64	(8.23)							6.83		
	RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)							6.75		
	EXCESS RETURN			(0.06)	3.30	(0.34)	2.78							0.08		

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<b>EQUITY RETURN DETAIL</b>																
68	NYCERS-TOTAL WORLD ex-USA - GROSS	8,667	12.71	3.86	0.79	16.00	(13.92)	29.77	4.50	(0.82)	(4.09)	11.21	4.38	8.21	6.13	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.05)	(0.22)	(0.12)	(0.19)	(0.32)	(0.28)	(0.28)	(0.27)	(0.26)	(0.26)			
	NYCERS-TOTAL WORLD ex-USA - NET MGR			3.81	0.57	15.88	(14.11)	29.45	4.22	(1.09)	(4.36)	10.96	4.12			
	WORLD EX-USA CUSTOM BM			3.50	0.16	14.39	(14.68)	26.40	1.15	0.49	(4.90)	9.23	2.60	7.28	5.56	
	EXCESS RETURN			0.31	0.41	1.50	0.57	3.05	3.06	(1.59)	0.54	1.72	1.52	0.93	0.57	
78	NYCERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - GROSS	5,258	7.71	4.14	2.27	17.23	(12.94)	31.04	5.17	(3.97)	(4.44)	12.51	4.52		5.04	11/01/2013
	ESTIMATED INVESTMENT FEES			(0.07)	(0.28)	(0.16)	(0.24)	(0.36)	(0.30)	(0.27)	(0.27)	(0.31)	(0.29)		(0.29)	
	NYCERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - NET MGR			4.07	1.98	17.07	(13.18)	30.68	4.88	(4.24)	(4.71)	12.19	4.23		4.75	
	NYC CUSTOM WORLD EX-USA LG & MID ACT INDEX			3.79	1.29	14.64	(14.09)	25.18	1.00	(0.81)	(4.90)	9.22	2.31		3.29	
	EXCESS RETURN			0.28	0.70	2.44	0.91	5.49	3.88	(3.43)	0.20	2.98	1.92		1.46	
88	NYCERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE- GROSS	654	0.96	2.89	(6.33)	13.05	(18.45)	34.86	2.67	10.72	(3.78)	9.31	4.94		7.63	05/01/2013
	ESTIMATED INVESTMENT FEES			(0.10)	(0.40)	(0.23)	(0.37)	(0.62)	(0.50)	(0.55)	(0.48)	(0.49)	(0.49)			
	NYCERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE - NET MGR			2.79	(6.72)	12.82	(18.82)	34.24	2.17	10.18	(4.26)	8.81	4.45			
	S&P EPAC SMALL CAP USD NET			2.37	(6.38)	12.53	(18.58)	33.47	1.34	8.58	(3.43)	8.61	4.13		6.71	
	EXCESS RETURN			0.42	(0.35)	0.29	(0.24)	0.78	0.83	1.59	(0.83)	0.21	0.32		0.92	
98	NYCERS-TOTAL WORLD ex-USA LARGE CAP PASSIVE - GROSS	2,213	3.25	3.97	1.50	14.70	(13.64)	24.54	1.30	(0.41)	(4.98)	9.23	2.40		4.73	02/01/2011
	ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)			
	NYCERS-TOTAL WORLD ex-USA LARGE CAP PASSIVE - NET MGR			3.97	1.49	14.69	(13.65)	24.53	1.28	(0.42)	(5.00)	9.22	2.38			
	NYC CUSTOM WORLD EX US INDEX			3.79	1.29	14.64	(14.09)	24.12	1.00	(0.81)	(4.90)	8.91	2.13		4.43	
	EXCESS RETURN			0.18	0.20	0.05	0.44	0.41	0.28	0.39	(0.10)	0.31	0.25		0.30	
108	NYCERS-TOTAL WORLD ex-USA SMALL CAP PASSIVE - GROSS	542	0.80	1.95	(5.95)	12.88	(17.68)	33.74	2.53	9.99		9.46	4.86		5.87	02/01/2014
	ESTIMATED INVESTMENT FEES			(0.01)	(0.05)	(0.03)	(0.04)	(0.08)	(0.02)	(0.02)		(0.05)	(0.04)		(0.04)	
	NYCERS-TOTAL WORLD ex-USA SMALL CAP PASSIVE - NET MGR			1.94	(6.00)	12.85	(17.72)	33.66	2.52	9.97		9.41	4.83		5.83	
	WORLD EX USA SC PASSIVE CUSTOM BM			1.76	(6.17)	12.88	(18.07)	33.31	2.18	9.59		9.17	4.46		5.45	
	EXCESS RETURN			0.18	0.17	(0.03)	0.35	0.35	0.33	0.39		0.24	0.37		0.38	

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	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
<b>EQUITY RETURN DETAIL</b>																
120	NYCERS-TOTAL ACTIVE EMERGING MARKETS - GROSS	2,939	4.31	2.39	4.48	10.06	(14.78)	36.08	12.59	(17.85)	1.02	10.01	1.61	7.32	7.45	11/01/2005
	ESTIMATED INVESTMENT FEES			(0.10)	(0.42)	(0.22)	(0.34)	(0.60)	(0.52)	(0.41)	(0.50)	(0.46)	(0.46)			
	NYCERS-TOTAL ACTIVE EMERGING MARKETS - NET MGR			2.29	4.06	9.84	(15.12)	35.48	12.07	(18.25)	0.52	9.54	1.15			
	NYCERS CUSTOM EM INDEX			2.19	4.05	8.45	(13.38)	34.18	13.66	(16.80)	(0.07)	9.16	1.66	6.28	6.80	
	EXCESS RETURN			0.09	0.01	1.39	(1.74)	1.30	(1.59)	(1.45)	0.60	0.38	(0.51)	1.05	0.65	
130	NYCERS-TOTAL PASSIVE EMERGING MARKETS - GROSS	1,928	2.83	2.18	4.08	8.61	(12.83)	32.97	12.55	(17.87)	(1.29)	8.84	0.96	0.39	0.40	04/01/2011
	ESTIMATED INVESTMENT FEES			(0.01)	(0.03)	(0.01)	(0.03)	(0.07)	(0.06)	(0.05)	(0.06)	(0.05)	(0.05)			
	NYCERS-TOTAL PASSIVE EMERGING MARKETS - NET MGR			2.18	4.05	8.59	(12.86)	32.90	12.49	(17.92)	(1.35)	8.79	0.91			
	MSCI CUSTOM NYCERS EMERGING MARKETS (NET)			2.19	4.05	8.45	(12.97)	33.03	12.68	(17.71)		8.83				
	EXCESS RETURN			(0.02)	0.00	0.14	0.11	(0.13)	(0.19)	(0.21)		(0.04)				
140	NYCERS-TOTAL INTERNATIONAL FUND OF FUNDS - GROSS	471	0.69	4.64	(0.30)	15.78	(15.83)							5.28	5.28	05/01/2017
	ESTIMATED INVESTMENT FEES			(0.13)	(0.51)	(0.29)	(0.44)							(0.54)	(0.54)	
	NYCERS-TOTAL INTERNATIONAL FUND OF FUNDS - NET MGR			4.50	(0.81)	15.49	(16.27)							4.74	4.74	
	NYC BLENDED CUSTOM BENCHMARK FOR FOF (ERS)			3.30	0.77	13.49	(14.39)							5.14	5.14	
	EXCESS RETURN			1.20	(1.58)	2.01	(1.88)							(0.40)	(0.40)	
150	NYCERS-TOTAL GLOBAL EQUITY - GROSS	281	0.41	6.28		23.04								13.73	13.73	08/01/2018
	ESTIMATED INVESTMENT FEES			(0.15)		(0.42)								(0.61)	(0.61)	
	NYCERS-TOTAL GLOBAL EQUITY - NET MGR			6.12		22.62								13.12	13.12	
	MSCI WORLD INDEX			4.00		16.98								3.11	3.11	
	EXCESS RETURN			2.12		5.64								10.01	10.01	

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<b>EQUITY RETURN DETAIL</b>															
168	NYCERS-TOTAL HEDGE FUND* - NET MGR	7	0.01	(0.10)	11.92	11.68	4.80	3.97	2.24	(1.88)	5.56	7.54	4.49	4.42	07/01/2011
	HFRI FUND OF FUNDS COMPOSITE INDEX + 1%			1.73	2.15	6.67	(3.06)	8.84	1.52	0.73	4.40	5.28	3.21	3.63	
	EXCESS RETURN			(1.83)	9.77	5.01	7.85	(4.87)	0.72	(2.61)	1.16	2.26	1.29	0.79	
178	NYCERS-TOTAL DIRECT HEDGE FUNDS* - NET MGR	7	0.01	(0.10)	11.92	11.68	4.80	4.30	2.79	(1.56)	6.02	7.88	4.80	5.50	01/01/2012
	HFRI FUND OF FUNDS COMPOSITE INDEX + 1%			1.73	2.15	6.67	(3.06)	8.84	1.52	0.73	4.40	5.28	3.21	4.58	
	EXCESS RETURN			(1.83)	9.77	5.01	7.85	(4.54)	1.27	(2.29)	1.62	2.60	1.59	0.92	

\* INFORMATION PROVIDED BY ALPHA FRONTIER

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	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
<b>EQUITY RETURN DETAIL</b>																
187	NYCERS-TOTAL PRIVATE EQUITY (TIME WEIGHTED)	4,672	6.85	4.90	14.66	4.71	16.96	19.65	10.84	10.61	13.99	16.31	13.44	13.23	12.53	04/01/2004
	NYC R3000 +3% LAGGED			14.85	12.01	(0.80)	21.06	22.22	18.37	2.49	21.24	16.86	13.64	19.77	13.03	
	EXCESS RETURN			(9.96)	2.65	5.51	(4.10)	(2.57)	(7.53)	8.11	(7.26)	(0.55)	(0.20)	(6.54)	(0.50)	
197	NYCERS-TOTAL PRIVATE REAL ESTATE (TIME WEIGHTED)	3,579	5.25	2.08	8.47	3.50	10.84	11.58	10.84	16.06	15.44	10.29	11.95	10.43	9.43	04/01/2004
	NCREIF NFI-ODCE NET + 100 BP			1.02	6.51	2.48	8.43	7.72	8.86	15.08	12.56	7.67	9.84			
	EXCESS RETURN			1.06	1.96	1.02	2.41	3.85	1.98	0.98	2.88	2.62	2.11			
207	NYCERS-TOTAL INFRASTRUCTURE (TIME WEIGHTED)	656	0.96	3.48	13.15	5.41	15.81	19.07	9.87	15.14	20.16	15.18	14.22		15.26	12/01/2013
	CPI + 4%			1.45	5.86	3.02	6.03	6.20	6.17	4.69	4.69	6.16	5.55		5.63	
	EXCESS RETURN			2.03	7.30	2.38	9.78	12.88	3.70	10.45	15.47	9.02	8.68		9.63	

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	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
<b>FIXED INCOME RETURN DETAIL</b>																
219	NYCERS-TOTAL FIXED INCOME (DOM & GLOBAL) - GROSS	25,016	36.69	3.02	7.33	6.58	0.09	4.93	6.00	(0.37)	6.18	3.98	3.56	5.78	8.17	02/01/1980
	ESTIMATED INVESTMENT FEES			(0.03)	(0.12)	(0.06)	(0.11)	(0.13)	(0.14)	(0.13)	(0.15)	(0.12)	(0.13)			
	EST MANAGEMENT FEES			(0.03)	(0.12)	(0.06)	(0.11)	(0.13)	(0.14)	(0.13)	(0.15)	(0.12)	(0.13)			
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	NYCERS-TOTAL FIXED INCOME (DOM & GLOBAL) - NET MGR			3.00	7.21	6.52	(0.02)	4.80	5.86	(0.50)	6.03	3.85	3.43			
227	NYCERS-TOTAL STRUCTURED FIXED INCOME - GROSS	12,765	18.72	3.58	8.50	6.74	(0.33)	4.39	3.87	0.28	7.69	2.80	3.38	5.14	7.62	01/01/1985
	ESTIMATED INVESTMENT FEES			(0.01)	(0.05)	(0.02)	(0.05)	(0.06)	(0.07)	(0.09)	(0.06)	(0.06)	(0.06)			
	NYCERS-TOTAL STRUCTURED FIXED INCOME - NET MGR			3.57	8.45	6.72	(0.37)	4.33	3.79	0.21	7.60	2.74	3.32			
	NYC CUSTOM STRUCTURED INDEX-ERS			3.95	9.51	7.48	(0.19)	4.47								
	EXCESS RETURN			(0.38)	(1.06)	(0.76)	(0.19)	(0.14)								
237	NYCERS-TOTAL CORE FI- DEVELOPING MGRS - GROSS	430	0.63	3.21	8.12	7.05	(0.87)	4.16	3.80	1.04	5.84	2.88	3.32	4.65	4.85	05/01/2009
	ESTIMATED INVESTMENT FEES			(0.05)	(0.19)	(0.09)	(0.18)	(0.18)	(0.19)	(0.18)	(0.17)	(0.18)	(0.18)			
	NYCERS-TOTAL CORE FI- DEVELOPING MGRS - NET MGR			3.16	7.93	6.96	(1.05)	3.98	3.61	0.86	5.67	2.70	3.14			
	BBG BARC AGG (DLY)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97	2.31	2.95	3.90	3.96	
	EXCESS RETURN			0.08	0.06	0.84	(1.06)	0.44	0.96	0.31	(0.30)	0.38	0.19	0.76	0.89	
247	NYCERS-TOTAL CORE FI- EMERGING MGRS - GROSS	127	0.19	3.28	8.29	6.56	0.32	4.66	2.87	0.90	6.18	3.17	3.38	4.58	5.81	01/01/1992
	ESTIMATED INVESTMENT FEES			(0.09)	(0.37)	(0.18)	(0.34)	(0.41)	(0.30)	(0.35)	(0.36)	(0.35)	(0.35)			
	NYCERS-TOTAL CORE FI- EMERGING MGRS - NET MGR			3.19	7.92	6.38	(0.03)	4.25	2.58	0.56	5.82	2.82	3.02			
	BBG BARC AGG (DLY)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97	2.31	2.95	3.90	5.47	
	EXCESS RETURN			0.11	0.05	0.26	(0.04)	0.71	(0.07)	0.01	(0.15)	0.51	0.08	0.68	0.34	
257	NYCERS-TOTAL TIPS - GROSS	2,996	4.39	2.85	4.84	6.19	(1.26)	3.06	4.74	(1.18)	3.50	2.10	1.81	3.73	3.85	06/01/2005
	ESTIMATED INVESTMENT FEES			(0.00)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)	(0.07)	(0.02)	(0.03)			
	NYCERS-TOTAL TIPS - NET MGR			2.85	4.82	6.18	(1.27)	3.04	4.72	(1.21)	3.42	2.08	1.78			
	BBG BARC GBL INF-LK: US TIPS (DLY)			2.86	4.84	6.15	(1.26)	3.01	4.68	(1.44)	3.64	2.08	1.76	3.64	3.71	
	EXCESS RETURN			(0.02)	(0.02)	0.03	(0.01)	0.03	0.04	0.23	(0.21)	0.00	0.03	0.10	0.14	
267	NYCERS-TOTAL HIGH YIELD - GROSS	2,951	4.33	2.70	7.61	9.99	(2.38)	7.00	15.32	(3.82)	2.94	7.12	4.32	8.63	7.70	10/01/1994
	ESTIMATED INVESTMENT FEES			(0.08)	(0.33)	(0.17)	(0.31)	(0.35)	(0.39)	(0.33)	(0.36)	(0.35)	(0.35)			
	NYCERS-TOTAL HIGH YIELD - NET MGR			2.62	7.29	9.81	(2.69)	6.65	14.93	(4.15)	2.58	6.77	3.97			
	HIGH YIELD CUSTOM BENCHMARK			2.50	7.48	9.94	(2.34)	7.03	15.48	(4.21)	2.78	7.06	4.41	8.24	6.91	
	EXCESS RETURN			0.12	(0.19)	(0.12)	(0.35)	(0.38)	(0.55)	0.06	(0.20)	(0.28)	(0.44)	0.39	0.79	
277	NYCERS- TOTAL BANK LOANS - GROSS	1,178	1.73	1.32	3.87	5.11	0.99	4.52	9.17	1.18	2.58	5.23	4.17	4.59	12/01/2012	
	ESTIMATED INVESTMENT FEES			(0.08)	(0.33)	(0.17)	(0.33)	(0.34)	(0.36)	(0.33)	(0.34)	(0.34)	(0.34)			
	NYCERS-TOTAL BANK LOANS - NET MGR			1.24	3.53	4.94	0.66	4.18	8.81	0.85	2.24	4.89	3.83			
	CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06	5.43	3.85	4.40		
	EXCESS RETURN			(0.35)	(0.61)	(0.48)	(0.48)	(0.07)	(1.06)	1.23	0.18	(0.54)	(0.02)		0.18	

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<b>FIXED INCOME RETURN DETAIL</b>																
289	NYCERS- TOTAL CONVERTIBLE BONDS - GROSS	789	1.16	2.35	7.01	9.42	(0.29)	13.11	7.47	(0.85)	8.42	8.87	5.84	9.23	6.62	06/01/2008
	ESTIMATED INVESTMENT FEES			(0.10)	(0.43)	(0.22)	(0.40)	(0.46)	(0.46)	(0.43)	(0.47)	(0.44)	(0.44)			
	NYCERS-TOTAL CONVERTIBLE BONDS - NET MGR			2.25	6.59	9.20	(0.69)	12.65	7.01	(1.28)	7.95	8.43	5.40			
	BOFAML ALL CONVERTIBLE EX M AI (DAILY)			3.92	8.00	14.39	0.65	15.70	11.71	(2.75)	9.33	13.65	7.60	12.04	8.57	
	EXCESS RETURN			(1.67)	(1.42)	(5.19)	(1.34)	(3.05)	(4.70)	1.47	(1.38)	(5.22)	(2.20)	(2.81)	(1.95)	
299	NYCERS-TOTAL OPPORTUNISTIC FIXED INCOME	2,138	3.13	1.72	5.22	2.79	6.46	7.69	8.75	(2.18)	8.15	8.15	4.81	12.35	7.56	10/01/2007
	OPPORTUNISTIC FIXED INCOME JPMGHY / CSFB 50/50 BLEND PLUS 300			2.96	9.26	9.32	2.36	9.42	17.40	0.63	4.93	9.86	7.48	11.14	9.17	
	EXCESS RETURN			(1.23)	(4.04)	(6.53)	4.10	(1.73)	(8.66)	(2.81)	3.22	(1.71)	(2.67)	1.20	(1.60)	
309	NYCERS-TOTAL TARGETED INVESTMENTS (NO CASH) - GROSS	883	1.29	3.77	9.91	6.79	1.17	4.08	2.97	4.33	8.26	2.81	4.27	5.33	7.89	12/01/1984
	ESTIMATED INVESTMENT FEES			(0.04)	(0.20)	(0.09)	(0.20)	(0.20)	(0.21)	(0.21)	(0.22)	(0.19)	(0.20)	(0.22)	(0.10)	
	NYCERS-TOTAL TARGETED INVESTMENTS (NO CASH) - NET MGR			3.73	9.71	6.70	0.98	3.88	2.76	4.12	8.03	2.62	4.07	5.11	7.79	
	EMPLOYEES CUSTOM BENCHMARK (NO CASH)			2.53	7.20	5.08	1.01	3.10	2.38	1.42	6.03	2.49	3.00	3.79		
	EXCESS RETURN			1.20	2.51	1.62	(0.03)	0.78	0.38	2.70	2.00	0.13	1.07	1.32		
<b>CASH SUMMARY</b>																
321	Short Term NYCERS - GROSS	760	1.11	0.64	2.36	1.27	1.95	1.09	0.76	0.31	0.36	1.52	1.12	0.82		04/01/1982
	ESTIMATED INVESTMENT FEES			0.00	0.00	0.00	0.00	0.00	0.00	(0.00)	0.00	0.00	0.00	0.00		
	Short Term NYCERS - NET MGR			0.64	2.36	1.27	1.95	1.09	0.76	0.31	0.36	1.52	1.12	0.82		
325	Cash Account	0.00	0.00													
327	Securities Lending	0.00	0.00													
329	KKR Cash Account	0.00	0.00													



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**New York City  
Employees' Retirement System**

# **Appendix B**

## **Public Markets Manager Performance Detail**



# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
<b>EQUITY SUMMARY</b>										
<b>US EQUITY</b>										
BlackRock US SCG R2000	288	0.42	2.74	(0.40)	20.35	(9.18)	22.32	11.29	(1.54)	5.70
RUSSELL 2000 GROWTH DAILY			2.75	(0.49)	20.36	(9.31)	22.17	11.32	(1.38)	5.60
Excess			(0.01)	0.09	(0.02)	0.12	0.15	(0.03)	(0.16)	0.10
BlackRock US SCV R2000	43	0.06	1.30	(6.08)	13.49	(12.77)	7.95	31.61	(7.49)	4.90
RUSSELL 2000 VALUE DAILY			1.38	(6.24)	13.47	(12.86)	7.84	31.74	(7.47)	4.22
Excess			(0.08)	0.15	0.02	0.09	0.11	(0.13)	(0.02)	0.68
RAFI US SCE	597	0.87	0.52	(6.39)	12.37	(11.31)	9.63	27.57	(7.09)	4.56
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)	14.65	21.31	(4.41)	4.89
Excess			(1.57)	(3.08)	(4.62)	(0.29)	(5.01)	6.26	(2.68)	(0.34)
Ceredex US SCV	122	0.18	2.60	(3.49)	14.20	(11.97)	10.59	29.34	(4.74)	2.58
RUSSELL 2000 VALUE DAILY			1.38	(6.24)	13.47	(12.86)	7.84	31.74	(7.47)	4.22
Excess			1.22	2.74	0.73	0.89	2.75	(2.40)	2.73	(1.64)
Wellington US SCC	271	0.40	4.48	4.29	22.39	(10.09)	19.90	19.25	(2.79)	9.89
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)	14.65	21.31	(4.41)	4.89
Excess			2.39	7.60	5.40	0.93	5.25	(2.05)	1.63	4.99
BlackRock US LC R1000 Value	0	0.00					13.53	17.36	(3.94)	13.51
RUSSELL 1000 VALUE (DAILY)							13.66	17.34	(3.83)	13.45
Excess							(0.13)	0.02	(0.11)	0.06
BlackRock US LMC R1000 Core	14,944	21.92	4.37	10.24	18.88					
RUSSELL 1000 (DAILY)			4.25	10.02	18.84					
Excess			0.12	0.22	0.04					

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
PIMCO RAFI US LMCE	1,948	2.86	2.21	5.02	14.10	(6.90)	16.94	15.71	(3.17)	12.15
RUSSELL 1000 (DAILY)			4.25	10.02	18.84	(4.78)	21.69	12.05	0.92	13.24
Excess			(2.04)	(5.00)	(4.75)	(2.11)	(4.74)	3.66	(4.09)	(1.09)
Legal General US LMCE	1,640	2.40								
RUSSELL 1000 (DAILY)										
Excess										
<b>FUND OF FUNDS</b>										
NYCERS-TOTAL FUND OF FUNDS	118	0.17	2.03	(0.01)	16.64	(8.23)				
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)				
Excess			(0.06)	3.30	(0.34)	2.78				
NYCERS-TOTAL LEGATO	118	0.17	2.03	(0.01)	16.64	(8.17)				
RUSSELL 2000 (DAILY)			2.10	(3.31)	16.98	(11.01)				
Excess			(0.06)	3.30	(0.34)	2.84				
<b>NON - US EQUITY</b>										
Causeway WorldxUS LMCC	1,218	1.79	1.58	(2.72)	12.56	(18.52)	27.94	0.69	(2.41)	(4.94)
NYC Developed Value Benchmark			3.79	1.29	14.64	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			(2.21)	(4.01)	(2.07)	(4.43)	5.18	(4.33)	3.28	0.45
Sprucegrove WorldxUS LMCC	1,293	1.90	3.59	1.45	13.41	(13.93)	27.61	11.10	(9.77)	(3.69)
NYC Developed Value Benchmark			3.79	1.29	14.64	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			(0.20)	0.16	(1.23)	0.16	4.85	6.08	(4.08)	1.70
Baillie Gifford WorldxUS LMCC	1,365	2.00	5.19	(0.32)	24.36	(12.79)	39.40	2.12	(4.67)	(6.81)
NYC Developed Growth Benchmark			3.79	1.29	14.64	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			1.40	(1.61)	9.73	1.30	11.63	5.16	(8.76)	(2.38)
Walter Scott WorldxUS LMCC	1,382	2.03	5.69	9.71	17.98	(7.16)	27.94	5.26	0.04	(3.43)
NYC Developed Growth Benchmark			3.79	1.29	14.64	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			1.90	8.42	3.34	6.93	0.17	8.31	(4.05)	1.00

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Acadian WorldxUS SCC	421	0.62	2.74	(5.92)	13.35	(19.03)	37.50	5.15	8.71	(3.02)
S&P EPAC Small Cap USD NET			2.37	(6.38)	12.53	(18.58)	33.47	1.34	8.58	(3.43)
Excess			0.37	0.46	0.82	(0.45)	4.03	3.82	0.13	0.41
Fidelity WorldxUS SCC	116	0.17	3.43	(7.15)	12.96	(18.48)	31.22	(0.81)	11.68	(5.51)
S&P EPAC Small Cap USD NET			2.37	(6.38)	12.53	(18.58)	33.47	1.34	8.58	(3.43)
Excess			1.06	(0.77)	0.43	0.10	(2.25)	(2.15)	3.09	(2.08)
Alger EAFE SCC	117	0.17	2.34							
MSCI EAFE SMALL CAP NET (DAILY)			1.71							
Excess			0.63							
SSGA WorldxUS LMC NYC Custom IDX	2,213	3.25	3.97	1.49	14.69	(13.65)	24.53	1.28	(0.42)	(5.00)
NYC Custom World ex US Index			3.79	1.29	14.64	(14.09)	24.12	1.00	(0.81)	(4.90)
Excess			0.18	0.20	0.05	0.44	0.41	0.28	0.39	(0.10)
SSGA WorldxUS SC Custom IDX <sup>1</sup>	542	0.80	1.94	(6.00)	12.85	(17.72)	33.66	2.52	9.97	
World ex USA SC PASSIVE CUSTOM BM			1.76	(6.17)	12.88	(18.07)	33.31	2.18	9.59	
Excess			0.18	0.17	(0.03)	0.35	0.35	0.33	0.39	
Generation WorldxUS	0	0.00						9.93	7.04	11.39
MSCI World Index								7.51	(0.87)	4.94
Excess								2.42	7.91	6.45
<b>EMERGING MARKETS</b>										
Baillie Gifford EM	828	1.21	3.30	9.14	14.96	(14.40)	41.25	4.20	(13.67)	4.53
NYCERS Custom EM Index			2.19	4.05	8.45	(13.38)	34.18	13.66	(16.80)	(0.07)
Excess			1.11	5.09	6.50	(1.02)	7.07	(9.46)	3.14	4.60
Acadian EM	725	1.06	2.27	1.12	8.32	(17.60)	36.05	12.66	(18.25)	3.09
NYCERS Custom EM Index			2.19	4.05	8.45	(13.38)	34.18	13.66	(16.80)	(0.07)
Excess			0.08	(2.93)	(0.13)	(4.22)	1.86	(1.00)	(1.45)	3.16

<sup>1</sup> Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
<sup>2</sup> Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Parametric EM	617	0.90	2.09	2.18	7.97	(14.77)	30.24	11.58	(19.39)	(1.55)
NYCERS Custom EM Index			2.19	4.05	8.45	(13.38)	34.18	13.66	(16.80)	(0.07)
Excess			(0.11)	(1.87)	(0.48)	(1.38)	(3.95)	(2.09)	(2.59)	(1.48)
DFA EM	770	1.13	1.38	3.24	7.61	(13.70)	34.27	20.31	(22.06)	(4.16)
NYCERS Custom EM Index			2.19	4.05	8.45	(13.38)	34.18	13.66	(16.80)	(0.07)
Excess			(0.81)	(0.81)	(0.84)	(0.31)	0.09	6.65	(5.26)	(4.09)
BlackRock MSCI EM Core	1,928	2.83	2.18	4.05	8.59	(12.86)	32.90	12.49	(17.92)	(1.52)
MSCI CUSTOM NYCERS EMERGING MARKETS (NET)			2.19	4.05	8.45	(12.97)	33.03	12.68	(17.71)	
Excess			(0.02)	0.00	0.14	0.11	(0.13)	(0.19)	(0.21)	
INTERNATIONAL FOF										
NYCERS-TOTAL INTERNATIONAL FOF	471	0.69	4.50	(0.81)	15.49	(16.27)				
NYC Blended Custom Benchmark for FoF (ERS)			3.30	0.77	13.49	(14.39)				
Excess			1.20	(1.58)	2.01	(1.88)				
NYCERS-TOTAL INTERNATIONAL BIVIUM	153	0.22	3.61	(2.63)	14.73	(18.08)				
NYC Blended Custom Benchmark for FoF (ERS)			3.30	0.77	13.49	(14.39)				
Excess			0.30	(3.40)	1.24	(3.69)				
NYCERS-TOTAL INTERNATIONAL FIS	157	0.23	4.36	0.03	14.25	(14.84)				
NYC Blended Custom Benchmark for FoF (ERS)			3.30	0.77	13.49	(14.39)				
Excess			1.06	(0.74)	0.76	(0.45)				
NYCERS-TOTAL INTERNATIONAL LEADING EDGE	161	0.24	5.51	0.19	17.48	(15.78)				
NYC Blended Custom Benchmark for FoF (ERS)			3.30	0.77	13.49	(14.39)				
Excess			2.21	(0.58)	4.00	(1.39)				
GLOBAL EQUITY										
Fiera-Global	281	0.41	6.12		22.62					
MSCI World Index			4.00		16.98					
Excess			2.12		5.64					

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19



Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
<b>FIXED INCOME SUMMARY</b>										
<b>STRUCTURED FIXED INCOME</b>										
Neuberger Berman Mortgages	544	0.80	2.00	6.16	4.19	0.82	2.43	1.50	1.42	6.99
FTSE MORTGAGE INDEX			2.09	6.39	4.30	1.01	2.47	1.59	1.56	6.12
Excess			(0.09)	(0.23)	(0.11)	(0.19)	(0.04)	(0.09)	(0.14)	0.86
BlackRock Mortgages	1,272	1.87	2.21	6.66	4.67	0.96	2.69	2.17	1.67	6.75
FTSE MORTGAGE INDEX			2.09	6.39	4.30	1.01	2.47	1.59	1.56	6.12
Excess			0.12	0.27	0.37	(0.05)	0.22	0.58	0.11	0.62
Prudential Credit	784	1.15	4.16	10.10	9.07	(1.91)	6.17	5.89	(0.32)	7.54
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.09	(0.03)	0.08	(0.01)	0.13	0.33	0.33	0.50
T Rowe Price Credit	780	1.14	4.37	10.50	9.50	(2.41)	6.85	6.00	0.13	7.91
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.30	0.37	0.51	(0.51)	0.81	0.44	0.78	0.87
BlackRock Credit	338	0.50	4.25	10.29	9.48	(2.00)	6.38	5.50	(0.83)	7.48
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.18	0.16	0.49	(0.10)	0.35	(0.06)	(0.18)	0.44
Taplin Credit	209	0.31	4.61	10.07	10.65	(3.47)	6.91	9.51	(4.37)	7.83
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.54	(0.06)	1.66	(1.56)	0.87	3.95	(3.73)	0.79
Barrow Hanley Credit	394	0.58	4.63	10.93	9.98	(2.37)	6.06	5.88	(0.09)	7.47
NYC - Investment Grade Credit			4.07	10.13	8.99	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.55	0.80	0.99	(0.46)	0.02	0.32	0.56	0.42

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
BlackRock LI Treasury	3,041	4.46	4.48	10.20	8.03	(0.19)	4.76	1.24	0.69	11.98
NYC - Treasury Agency Plus Five			4.56	10.38	8.09	(0.05)	4.66	1.21	0.72	12.38
Excess			(0.08)	(0.19)	(0.06)	(0.14)	0.10	0.02	(0.03)	(0.40)
SSGA LI Treasury	3,167	4.64	4.47	10.17	8.00	(0.18)	4.93	1.57	0.46	12.10
NYC - Treasury Agency Plus Five			4.56	10.38	8.09	(0.05)	4.66	1.21	0.72	12.38
Excess			(0.09)	(0.22)	(0.09)	(0.13)	0.28	0.36	(0.26)	(0.28)
SSGA ST Treasury 1-3Y	2,231	3.27	1.44	3.94	2.42	1.52	0.40			
FTSE USBIG Treasury 1-3 Y Index			1.44	3.95	2.44	1.56	0.42			
Excess			(0.00)	(0.01)	(0.02)	(0.04)	(0.02)			
SSGA IT Treasury 1-10Y <sup>2</sup>	6	0.01	2.33	5.02	3.84	2.05				
FTSE USBIG Treasury/Agency 1-10 y			2.33	6.11	3.95	1.42				
Excess			0.00	(1.09)	(0.10)	0.63				
91 DAY TREASURY BILL (DAILY)			0.64	2.31	1.24	1.87				
Excess			1.69	2.71	2.60	0.17				
<b>HIGH YIELD</b>										
Oaktree High Yield	405	0.59	2.35	6.68	9.59	(3.46)	5.78	14.91	(4.77)	1.52
BBG BARC US HY - 2% Issr Cap			2.50	7.48	9.94	(2.08)	7.50	17.13	(4.43)	2.46
Excess			(0.15)	(0.80)	(0.35)	(1.38)	(1.72)	(2.22)	(0.33)	(0.93)
Neuberger Berman High Yield	436	0.64	2.35	7.31	9.43	(2.00)	5.78	14.70	(4.00)	2.14
BBG BARC US HY - 2% Issr Cap			2.50	7.48	9.94	(2.08)	7.50	17.13	(4.43)	2.46
Excess			(0.15)	(0.17)	(0.51)	0.08	(1.73)	(2.43)	0.43	(0.32)
Stone Harbor High Yield	254	0.37	2.90	8.31	10.74	(2.62)	5.85	12.98	(4.54)	0.97
BBG BARC US HY - 2% Issr Cap			2.50	7.48	9.94	(2.08)	7.50	17.13	(4.43)	2.46
Excess			0.40	0.83	0.80	(0.53)	(1.65)	(4.15)	(0.10)	(1.49)
T Rowe Price High Yield	653	0.96	3.14	8.81	10.45	(2.36)	7.03	12.32	(1.28)	2.96
BBG BARC US HY - 2% Issr Cap			2.50	7.48	9.94	(2.08)	7.50	17.13	(4.43)	2.46
Excess			0.64	1.33	0.51	(0.28)	(0.47)	(4.81)	3.16	0.50

<sup>1</sup> Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
<sup>2</sup> Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Shenkman High Yield	374	0.55	2.61	6.23	9.63	(3.21)	6.79	11.86	(2.24)	2.93
BBG BARC US HY - 2% Issr Cap			2.50	7.48	9.94	(2.08)	7.50	17.13	(4.43)	2.46
Excess			0.11	(1.25)	(0.31)	(1.12)	(0.71)	(5.27)	2.20	0.47
Eaton Vance High Yield	297	0.44	2.68		9.88					
BBG BARC US HY - 2% Issr Cap			2.50		9.94					
Excess			0.18		(0.06)					
Mackay Shields High Yield	225	0.33	2.56		9.61					
BBG BARC US HY - 2% Issr Cap			2.50		9.94					
Excess			0.06		(0.33)					
Nomura High Yield	308	0.45	2.09		9.40					
BBG BARC US HY - 2% Issr Cap			2.50		9.94					
Excess			(0.41)		(0.53)					
<b>BANK LOANS</b>										
Barings Bank Loans	320	0.47	0.95	2.98	4.75	0.38	4.47	8.46	0.12	1.99
CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06
Excess			(0.63)	(1.17)	(0.66)	(0.76)	0.22	(1.42)	0.50	(0.07)
Credit Suisse Bank Loans	332	0.49	1.27	3.93	4.97	1.04	4.66	8.95	2.57	2.67
CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06
Excess			(0.31)	(0.22)	(0.44)	(0.10)	0.41	(0.92)	2.96	0.61
Guggenheim Bank Loans	1	0.00				1.24	3.82	7.84	2.07	2.88
CSFB LEVERAGED LOAN INDEX						1.14	4.25	9.88	(0.38)	2.06
Excess						0.10	(0.43)	(2.03)	2.45	0.83
Invesco Bank Loans	320	0.47	1.63	3.95	5.79	0.17	3.64	9.68	(0.91)	1.65
CSFB LEVERAGED LOAN INDEX			1.58	4.15	5.42	1.14	4.25	9.88	(0.38)	2.06
Excess			0.05	(0.19)	0.38	(0.97)	(0.61)	(0.20)	(0.53)	(0.41)

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Bain Bank Loans	205	0.30								
CSFB LEVERAGED LOAN INDEX										
Excess										
TIPS										
SSGA TIPS	2,259	3.31	2.85	4.82	6.18	(1.30)	3.06	4.73	(1.35)	3.57
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			2.86	4.84	6.15	(1.26)	3.01	4.68	(1.44)	3.64
Excess			(0.01)	(0.01)	0.03	(0.04)	0.05	0.04	0.09	(0.07)
BlackRock TIPS	737	1.08	2.82	4.79	6.16	(1.18)	2.98	4.71	(1.24)	3.74
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			2.86	4.84	6.15	(1.26)	3.01	4.68	(1.44)	3.64
Excess			(0.04)	(0.04)	0.01	0.08	(0.02)	0.02	0.20	0.10
CONVERTIBLE BONDS										
Advent Convertible Bonds	456	0.67	2.01	5.38	8.31	(1.64)	7.75	7.35	(1.92)	4.68
BofA ML U.S. Convertible Yield Alternative			2.25	4.57	8.69	(0.42)	9.45	9.96	(8.77)	2.75
Excess			(0.25)	0.80	(0.38)	(1.22)	(1.69)	(2.61)	6.85	1.93
Victory Convertible Bonds	333	0.49	2.58	8.29	10.45	0.66	20.54	6.47	(0.24)	13.76
BofA Merrill Lynch US Investment Grade Convertible Bond Index			4.20	10.51	11.40	3.35	20.99	14.23	1.68	15.69
Excess			(1.62)	(2.22)	(0.95)	(2.69)	(0.45)	(7.77)	(1.92)	(1.93)
CORE FI - EMERGING MANAGERS										
New Century-Core Plus	29	0.04	3.19	7.84	6.24	0.17	4.24	1.98	(0.04)	6.09
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97
Excess			0.11	(0.03)	0.13	0.16	0.70	(0.67)	(0.59)	0.12
Optimum Quantvest-Core	11	0.02	3.21	8.09	5.94	0.22	2.56			
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54			
Excess			0.13	0.22	(0.17)	0.21	(0.98)			

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19





Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
<b>Integrity-Core</b>										
Integrity-Core	13	0.02	3.18	7.68	6.04	0.01	3.92			
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54			
Excess			0.10	(0.19)	(0.07)	(0.00)	0.38			
<b>Pugh-Core Plus</b>										
Pugh-Core Plus	33	0.05	3.14	7.70	6.22	(0.39)	4.25	3.13	0.69	6.05
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97
Excess			0.06	(0.17)	0.11	(0.40)	0.71	0.49	0.14	0.08
<b>Ramirez-Core</b>										
Ramirez-Core	42	0.06	3.23	8.18	6.80	0.04	4.80	3.47	0.94	
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	
Excess			0.15	0.31	0.69	0.03	1.25	0.82	0.39	
<b>CORE FI - DEVELOPING MANAGERS</b>										
<b>LM Capital-Core Plus</b>										
LM Capital-Core Plus	316	0.46	3.18	8.02	7.00	(1.14)	3.85	3.47	0.83	5.67
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97
Excess			0.10	0.15	0.88	(1.15)	0.31	0.82	0.28	(0.30)
<b>GIA-Core Plus</b>										
GIA-Core Plus	114	0.17	3.12	7.67	6.84	(0.81)	4.35	4.00		
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65		
Excess			0.04	(0.20)	0.73	(0.82)	0.80	1.35		
<b>ECONOMICALLY TARGETED INVESTMENTS</b>										
<b>AFL-CIO Housing Investment Trust</b>										
AFL-CIO Housing Investment Trust	328	0.48	3.28	7.90	6.02	0.16	3.17	1.94	1.13	6.10
BBG BARC Agg (Dly)			3.08	7.87	6.11	0.01	3.54	2.65	0.55	5.97
Excess			0.20	0.03	(0.09)	0.15	(0.38)	(0.71)	0.58	0.14
<b>RBC Access MBS</b>										
RBC Access MBS	157	0.23	2.30	6.83	4.85	0.49	2.64	1.61	1.83	6.66
Access RBC Benchmark			2.16	6.27	4.21	1.17	1.96	1.52	1.40	5.08
Excess			0.14	0.55	0.64	(0.69)	0.69	0.09	0.43	1.58

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19

# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
CPC Construction Facility	8	0.01	0.79	4.21	2.11	4.14	6.07	(3.95)	12.90	
CPC CONST BENCHMARK			1.06	4.23	2.13	3.99	3.34	3.03	2.90	
Excess			(0.27)	(0.02)	(0.01)	0.15	2.73	(6.99)	10.00	
BOA PPAR FNMA	24	0.03	5.66	13.51	9.25	2.33	5.21	4.07	42.03	13.31
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.31	6.25	4.52	0.47	1.60	1.69	39.53	6.19
BOA PPAR GNMA	16	0.02	4.39	11.37	7.27	2.42	4.08	3.13	8.04	15.61
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			2.26	4.46	2.77	0.79	1.56	0.85	6.03	8.96
Citibank PPAR FNMA	17	0.03	6.30	15.16	9.75	2.63	5.26	3.71	6.69	25.71
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.96	7.90	5.02	0.77	1.65	1.33	4.20	18.58
Citibank PPAR GNMA	6	0.01	2.53	10.12	5.32	1.90	3.10	2.78	5.08	15.37
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.40	3.21	0.82	0.27	0.57	0.50	3.06	8.72
CFSB PPAR GNMA	3	0.00	2.85	9.78	5.57	0.99	3.83	3.21	5.90	15.34
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.73	2.87	1.07	(0.65)	1.30	0.93	3.88	8.69
CPC PPAR FNMA	103	0.15	5.94	14.84	9.95	2.31	5.06	6.15	8.96	13.91
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.59	7.58	5.22	0.45	1.45	3.77	6.46	6.78
CPC PPAR GNMA	79	0.12	2.23	8.96	4.83	0.86	2.58	2.86	5.08	8.41
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.11	2.06	0.33	(0.77)	0.05	0.58	3.07	1.76

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
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# Public Markets Manager Performance Detail



## Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
JPMC PPAR FNMA	83	0.12	6.79	14.75	10.26	1.68	9.96	7.94	6.18	12.06
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			4.44	7.50	5.52	(0.18)	6.35	5.56	3.68	4.93
JPMC PPAR GNMA	32	0.05	2.49	9.37	4.97	1.99	2.63	2.99	6.04	13.75
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.37	2.47	0.47	0.36	0.11	0.72	4.03	7.10
LIIF PPAR FNMA	11	0.02	5.72	14.40	9.26	2.27	9.55	5.03	6.29	38.12
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			3.38	7.15	4.53	0.41	5.94	2.65	3.79	30.99
LIIF PPAR GNMA	3	0.00	2.40	8.01	4.37	2.53	2.52	3.88	3.92	9.74
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			0.27	1.11	(0.13)	0.89	(0.01)	1.61	1.91	3.09
LISC PPAR FNMA	1	0.00	5.85		9.79					
FNMA Plus 85bps			2.35		4.73					
Excess			3.50		5.05					
NCBCI PPAR FNMA	0	0.00	0.57	8.27	3.10	2.00	1.75	3.46	4.97	14.93
FNMA Plus 85bps			2.35	7.26	4.73	1.86	3.61	2.38	2.50	7.13
Excess			(1.78)	1.02	(1.63)	0.15	(1.86)	1.07	2.47	7.81
NCBCI PPAR GNMA	2	0.00	1.40	8.09	3.91	1.23	3.01	3.51	5.53	16.66
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			(0.73)	1.19	(0.59)	(0.41)	0.48	1.23	3.52	10.01
NHS PPAR GNMA	1	0.00	1.25	7.31	3.76	0.54	(2.93)	3.58	4.90	13.73
GNMA Plus 65bps			2.13	6.90	4.50	1.63	2.53	2.28	2.02	6.65
Excess			(0.88)	0.41	(0.74)	(1.09)	(5.46)	1.30	2.89	7.08

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Net Returns Through June 30, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Wells Fargo PPAR FNMA	10	0.01	5.80	23.19	16.37					
FNMA Plus 85bps			2.35	7.26	4.73					
Excess			3.45	15.93	11.64					
<b>CASH</b>										
Short Term NYCERS	760	1.11	0.64	2.36	1.27	1.95	1.09	0.76	0.31	0.36
91 DAY TREASURY BILL (DAILY)			0.64	2.31	1.24	1.87	0.86	0.33	0.05	0.03
Excess			(0.00)	0.05	0.02	0.07	0.23	0.44	0.26	0.33
Cash Account	0	0.00								
Securities Lending	0	0.00								
KKR Cash Account	0	0.00								

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017  
2 Assets were in transition from 9/29/17 to 2/11/19



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**New York City  
Employees' Retirement System**

# **Appendix C**

## **Alternative Assets Manager Performance Detail**

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
<b>TOTAL PRIVATE EQUITY</b>		11,310,296,929	9,329,493,848	8,722,105,971	4,731,498,321	1.44	9.8%
<b>TOTAL LIQUIDATED</b>		903,565,249	1,026,938,810	1,245,358,147	-	1.21	5.4%
<b>TOTAL ACTIVE</b>		10,406,731,679	8,302,555,038	7,476,747,824	4,731,498,321	1.47	10.5%
<b>TOTAL ACTIVE</b>							
Cypress Merchant Banking Partners II, L.P.	1999	45,172,972	53,944,269	50,584,154	26,160	0.94	-1.2%
Lincolnshire Equity Fund II, L.P.	1999	18,397,347	19,261,466	37,375,300	745,985	1.98	24.6%
Solera Partners, L.P.	2000	19,999,779	26,600,886	41,635,156	347,736	1.58	7.5%
SCP Private Equity Partners II, L.P.	2000	27,442,463	30,827,225	10,819,873	1,656,554	0.40	-11.6%
Apollo Investment Fund V, L.P.	2001	40,000,000	62,528,643	123,295,865	373,641	1.98	38.6%
RRE Ventures III, L.P.	2001	19,999,999	26,323,260	34,078,940	1,072,601	1.34	5.4%
Thomas, McNerney & Partners, L.P.	2002	20,000,000	20,000,000	10,058,105	4,658,206	0.74	-4.3%
Landmark Equity Partners XI, L.P.	2002	55,000,000	52,284,778	80,358,502	135,129	1.54	23.3%
FS Equity Partners V, L.P.	2003	25,000,000	21,419,958	41,861,469	1,935,782	2.04	15.4%
Blackstone Capital Partners IV, L.P.	2003	34,418,762	38,818,072	100,180,571	32,066	2.58	39.7%
Ares Corporate Opportunities Fund, L.P.	2003	45,000,000	53,984,770	80,476,920	1,953,115	1.53	13.3%
Markstone Capital Partners, LP	2004	40,000,000	46,899,103	19,822,611	272,215	0.43	-43.5%
FdG Capital Partners II LP	2004	35,000,000	37,714,408	43,600,092	2,311,821	1.22	3.8%
Paladin Homeland Security Fund (NY City), L.P.	2004	15,000,000	16,513,285	6,286,009	22,200	0.38	-14.2%
Lincolnshire Equity Fund III, L.P.	2004	55,000,000	55,006,941	77,732,618	21,305,589	1.80	28.4%
Yucaipa American Alliance Fund I, LP	2004	90,000,000	114,094,892	109,693,086	36,132,078	1.28	4.9%
New York/Fairview Emerging Managers Fund, L.P.-Tranche 1	2004	32,000,000	32,862,069	31,044,617	6,465,706	1.14	2.2%
Aurora Equity Partners III L.P.	2004	50,000,000	54,126,788	87,435,881	374,809	1.62	13.5%
Palladium Equity Partners III, L.P.	2005	35,000,000	36,441,392	68,123,287	3,560,016	1.97	16.3%
New Mountain Partners II, L.P.	2005	46,451,615	42,071,397	81,045,604	668,796	1.94	13.6%
Prism Venture Partners V-A, L.P.	2005	30,000,000	30,762,722	19,062,102	472,359	0.64	-8.8%
Snow Phipps Group, L.P.	2005	20,000,000	23,827,483	20,914,615	10,377,596	1.31	6.0%
Blackstone Mezzanine Partners II, L.P.	2005	21,346,698	23,488,553	31,752,958	280,769	1.36	8.0%
Psilos Group Partners III, L.P.	2005	35,000,000	37,205,819	17,948,760	24,582,974	1.14	2.0%
USPF II Institutional Fund, L.P.	2005	65,000,000	85,734,194	98,737,695	11,803,899	1.29	4.3%
JP Morgan Fleming (Tranche A)	2005	43,000,000	42,889,227	41,554,133	13,267,150	1.28	4.7%

Information provided by the New York City Employees' Retirement System Consultants

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Aisling Capital II, LP	2006	6,680,102	7,854,064	7,775,060	384,801	1.04	0.7%
InterMedia Partners VII, L.P.	2006	25,000,000	29,198,197	29,591,747	243,132	1.02	0.3%
Terra Firma Capital Partners III, L.P.	2006	52,771,479	53,487,997	20,191,973	3,747,060	0.45	-9.8%
BDCM Opportunity Fund II, L.P.	2006	25,000,000	37,160,726	61,921,197	31,359,531	2.51	18.0%
Blackstone Capital Partners V, L.P.	2006	121,624,827	129,361,839	204,710,082	5,791,727	1.63	8.0%
Avista Capital Partners, L.P.	2006	45,000,000	59,165,902	72,036,625	1,076,257	1.24	4.5%
GSC Recovery III, L.P.	2006	25,000,000	28,228,414	33,208,011	248,689	1.19	4.2%
Apollo Investment Fund VI, L.P.	2006	90,000,000	115,838,240	163,387,090	11,330,971	1.51	8.7%
Landmark Equity Partners XIII, L.P.	2006	50,000,000	47,997,218	51,094,749	11,381,524	1.30	5.2%
Ares Corporate Opportunities Fund II, L.P.	2006	50,000,000	54,760,870	88,352,171	3,418,826	1.68	13.1%
Fairview Ventures Fund III, L.P.	2006	25,000,000	26,623,278	35,000,121	20,369,052	2.08	14.1%
Ampersand 2006	2006	25,000,000	25,000,000	51,467,841	18,799,002	2.81	16.6%
CCMP Capital Investors II, L.P.	2006	30,000,000	32,921,953	56,637,777	25,402	1.72	13.5%
Thomas, McNerney & Partners II, L.P.	2006	25,000,000	25,349,167	51,010,685	6,089,741	2.25	16.7%
Catterton Partners VI, L.P.	2006	45,000,000	51,243,868	74,926,969	20,546,117	1.86	11.7%
First Reserve Fund XI, L.P.	2006	45,000,000	47,820,682	29,965,435	2,398,494	0.68	-8.4%
Arsenal Capital Partners II, LP	2006	22,500,000	27,416,444	43,593,587	7,334,745	1.86	11.7%
RRE Ventures IV, L.P.	2006	35,000,000	44,276,091	24,558,167	39,341,258	1.44	5.4%
MidOcean Partners III, L.P.	2006	58,234,777	69,499,186	127,209,414	16,327,114	2.07	13.0%
GF Capital Private Equity Fund, L.P.	2006	20,000,000	20,716,299	26,087,171	10,619,743	1.77	12.5%
The Fourth Cinven Fund	2006	69,391,355	72,910,838	105,267,237	51,979	1.44	7.4%
Pegasus Partners IV, L.P.	2007	30,000,000	36,742,533	27,580,372	6,833,946	0.94	-1.3%
FTVentures III, LP	2007	24,201,990	26,802,873	49,633,924	7,878,884	2.15	15.9%
Co-Investment Partners Europe, L.P.	2007	39,925,196	42,601,283	51,788,773	2,387,861	1.27	4.7%
Montreux Equity Partners IV, L.P.	2007	20,000,000	20,000,000	11,044,696	16,122,533	1.36	4.8%
Quaker BioVentures II, L.P.	2007	20,000,000	19,058,740	16,436,907	3,750,842	1.06	1.3%
SCP Vitalife Partners II Fund	2007	20,000,000	20,099,698	1,579	8,747,389	0.44	-10.1%
Craton Equity Investors I, L.P.	2007	20,000,000	20,089,805	2,153,907	39,962	0.11	-33.1%
Nautic Partners VI, L.P.	2007	30,000,000	33,794,398	72,914,122	6,667,132	2.35	18.8%
Constellation Venture Capital III, L.P.	2007	25,000,000	28,575,035	13,995,719	8,136,127	0.77	-4.2%
United States Power Fund III, L.P.	2007	65,000,000	76,903,642	78,227,722	18,635,705	1.26	4.2%

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# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Halyard Capital Fund II, L.P.	2007	25,000,000	21,563,143	26,187,697	4,749,401	1.43	6.6%
Carlyle Partners V, L.P.	2007	70,000,000	72,144,879	116,231,821	11,905,543	1.78	13.7%
PCG Clean Energy & Technology Fund (East), LLC	2007	90,000,000	81,429,594	17,795,757	17,410,469	0.43	-11.6%
GSO Capital Opportunities Fund LP	2007	45,000,000	67,377,298	95,627,284	747,533	1.43	17.4%
StarVest Partners II, L.P.	2007	25,000,000	25,159,680	6,804,079	14,153,485	0.83	-2.8%
New Mountain Partners III, L.P.	2007	100,000,000	101,866,058	135,606,735	67,181,365	1.99	13.2%
Vista Equity Partners Fund III, L.P.	2007	30,000,000	32,183,690	76,619,901	3,597,509	2.49	27.1%
Trilantic Capital Partners IV L.P.	2007	69,028,637	72,038,053	106,260,854	8,794,765	1.60	13.9%
RLJ Equity Partners Fund I, L.P.	2007	20,000,000	21,952,327	22,531,306	10,418,160	1.50	9.1%
Pine Brook Capital Partners, L.P.	2007	30,000,000	34,045,068	38,882,924	5,766,166	1.31	7.4%
Paladin III (NY City), L.P.	2008	30,000,000	40,209,181	28,310,127	35,906,746	1.60	9.5%
Apollo Investment Fund VII, L.P.	2008	100,000,000	121,261,165	190,718,768	17,784,283	1.72	22.9%
NGN BioMed Opportunity II, L.P.	2008	20,000,000	19,151,821	13,346,209	10,941,515	1.27	3.6%
Riverstone/Carlyle Global Energy & Power Fund IV, L.P.	2008	45,000,000	52,385,374	42,371,009	17,600,229	1.14	3.7%
Yucaipa American Alliance Fund II, LP	2008	120,000,000	163,744,290	127,289,780	142,617,629	1.65	9.5%
Levine Leichtman Capital Partners IV, L.P.	2008	35,000,000	37,477,097	59,216,356	3,968,658	1.69	18.4%
New York/Fairview Emerging Managers Fund, L.P.-Tranche 2	2008	45,000,000	44,996,824	46,845,259	35,416,271	1.83	14.3%
Yucaipa Corporate Initiatives Fund II, LP	2008	42,092,788	41,298,333	15,059,176	21,821,462	0.89	-1.8%
Leeds Equity Partners V, L.P.	2008	60,000,000	57,812,601	69,987,009	62,499,195	2.29	19.1%
GI Partners Fund III L.P.	2008	45,000,000	48,618,007	75,587,958	767,714	1.57	13.0%
Ares Corporate Opportunities Fund III, L.P.	2008	75,000,000	90,524,334	139,591,218	55,348,360	2.15	20.9%
GCM Grosvenor NYCERS Emerging Manager Fund, L.P.	2008	116,737,374	141,646,962	122,120,383	76,279,297	1.40	10.0%
First Reserve Fund XII, L.P.	2008	45,000,000	49,986,866	24,602,219	8,788,704	0.67	-9.2%
Landmark Equity Partners XIV, L.P.	2008	109,120,000	106,061,756	119,219,423	19,130,484	1.30	9.6%
Crestview Partners II, L.P.	2008	50,000,000	57,957,601	74,238,021	23,627,442	1.69	13.4%
Avista Capital Partners II, L.P.	2008	75,000,000	97,206,003	150,159,298	16,198,005	1.71	15.3%
Blue Wolf Capital Fund II, L.P.	2008	25,000,000	27,167,904	31,424,990	6,401,750	1.39	7.8%
Bridgepoint Europe IV	2008	26,654,587	27,047,550	31,067,022	10,104,198	1.52	10.1%
Aisling Capital III, LP	2008	14,000,000	15,802,617	34,929,859	2,288,773	2.36	26.2%
Onex Partners III LP	2008	75,000,000	81,909,329	108,383,240	28,430,045	1.67	12.7%
Welsh, Carson, Anderson & Stowe XI, L.P.	2009	40,000,000	40,000,000	51,763,285	14,145,698	1.65	12.5%

Information provided by the New York City Employees' Retirement System Consultants



# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
FS Equity Partners VI, L.P.	2009	32,500,000	32,605,808	71,744,199	24,757,909	2.96	24.1%
Lincolnshire Equity Fund IV, L.P.	2009	27,500,000	29,299,527	33,506,337	11,998,566	1.55	10.9%
Lexington Capital Partners VII, L.P.	2009	50,000,000	44,615,537	55,304,565	14,265,894	1.56	14.1%
Snow Phipps II, L.P.	2010	30,000,000	33,779,232	25,315,478	19,156,974	1.32	8.6%
JP Morgan Fleming (Tranche B)	2010	35,000,000	35,690,482	27,543,543	25,789,195	1.49	9.3%
Trident V, L.P.	2010	110,000,000	126,363,624	131,452,887	72,789,674	1.62	11.3%
Blackstone Capital Partners VI, L.P.	2011	120,000,000	123,301,843	93,797,710	104,954,510	1.61	13.5%
Ampersand 2011	2011	25,000,000	25,000,000	40,459,089	29,116,180	2.78	21.6%
BDCM Opportunity Fund III, L.P.	2011	45,000,000	64,508,843	29,258,559	58,042,699	1.35	8.5%
AXA Secondary Fund V B L.P.	2011	120,000,000	98,871,409	136,167,348	22,599,197	1.61	15.7%
Wellspring Capital Partners V, L.P.	2011	40,000,000	40,547,421	44,838,205	19,246,283	1.58	16.0%
EQT VI, L.P.	2011	106,336,545	110,454,799	136,494,935	50,613,814	1.69	14.1%
Pegasus Partners V, L.P.	2011	20,789,916	24,840,481	22,509,205	20,218,000	1.72	14.2%
BC European Capital IX	2011	131,887,060	142,706,209	98,663,454	103,471,687	1.42	10.5%
American Securities Partners VI, L.P.	2011	80,000,000	85,921,998	128,938,416	36,260,970	1.92	21.8%
Vista Equity Partners Fund IV, L.P.	2011	100,000,000	104,087,016	128,192,934	80,425,471	2.00	18.7%
Warburg Pincus Private Equity XI, L.P.	2012	110,000,000	117,033,488	81,191,854	105,825,725	1.60	14.3%
Trilantic Capital Partners V L.P.	2012	70,000,000	74,682,352	63,756,097	47,951,337	1.50	18.0%
Palladium Equity Partners IV, L.P.	2012	55,000,000	46,311,075	25,524,369	45,019,454	1.52	14.5%
Ares Corporate Opportunities Fund IV, L.P.	2012	125,000,000	129,125,287	67,443,598	118,720,807	1.44	12.3%
Green Equity Investors VI, L.P.	2012	120,000,000	129,110,851	80,112,938	129,653,349	1.62	15.7%
Platinum Equity Capital Partners III, L.P.	2012	100,000,000	81,908,272	115,783,299	36,513,533	1.86	36.1%
<u>NYCERS - 2012 Emerging Manager Program</u>	2012	<u>139,600,000</u>	<u>134,561,132</u>	<u>51,116,989</u>	<u>149,281,282</u>	<u>1.49</u>	<u>15.4%</u>
Carlyle Partners VI, L.P.	2013	75,000,000	77,880,087	31,664,681	70,166,052	1.31	11.4%
Carlyle Partners VI, L.P. (Side Car)	2014	8,250,000	5,996,229	345,832	5,792,255	1.02	0.8%
Landmark Equity Partners XV, L.P.	2013	75,000,000	51,733,419	37,835,527	26,986,426	1.25	12.0%
Apollo Investment Fund VIII, L.P.	2013	140,000,000	126,215,699	40,000,861	120,126,287	1.27	10.6%
Landmark - NYC Fund I, L.P.	2013	25,000,000	20,352,880	13,350,228	15,080,000	1.40	15.0%
CVC Capital Partners VI, L.P.	2014	123,414,038	120,360,141	31,966,787	124,984,470	1.30	13.1%
Crestview Partners III, L.P.	2013	66,000,000	43,187,204	7,888,194	50,075,931	1.34	16.0%
Crestview Partners III (Co-Investment B), L.P.	2013	22,000,000	20,146,182	1,085,940	23,778,122	1.23	10.5%

Information provided by the New York City Employees' Retirement System Consultants

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Olympus Growth Fund VI, L.P.	2014	75,000,000	61,803,725	25,426,675	57,725,009	1.35	15.0%
ASF VI B L.P.	2014	83,000,000	58,826,711	32,761,625	51,550,015	1.43	13.5%
ASF VI B NYC Co-Invest L.P.	2014	27,000,000	20,859,194	16,251,429	12,645,486	1.39	12.6%
Vista Equity Partners Fund V, L.P.	2014	125,000,000	144,254,441	112,808,849	144,041,716	1.78	22.6%
Lexington Capital Partners VIII, L.P.	2014	110,000,000	93,195,847	34,720,677	85,105,307	1.29	20.4%
Siris Partners III, L.P.	2015	31,000,000	26,031,066	14,162,811	16,651,848	1.18	10.0%
Centerbridge Capital Partners III, L.P.	2015	23,700,000	13,255,419	4,359,744	13,308,369	1.33	13.7%
Welsh, Carson, Anderson & Stowe XII, L.P.	2015	78,500,000	55,428,421	10,929,590	77,144,347	1.59	26.4%
Warburg Pincus Private Equity XII, L.P.	2015	205,500,000	148,849,843	9,005,627	167,765,286	1.19	11.6%
ASF VII B L.P.	2015	94,500,000	31,271,414	3,959,681	36,422,288	1.29	16.8%
ASF VII B NYC Co-Invest L.P.	2015	46,000,000	23,381,531	2,451,699	34,265,055	1.57	41.1%
EQT VII, L.P.	2015	162,577,473	138,963,998	18,086,777	155,764,371	1.25	14.1%
American Securities Partners VII, L.P.	2015	80,000,000	63,207,656	9,406,486	48,496,849	0.92	-6.4%
Bridgepoint Europe V L.P.	2015	61,994,259	56,670,066	8,076,223	60,113,363	1.20	12.3%
Bridgepoint Europe V Co-Invest	2015	18,328,581	17,018,173	1,702,176	25,898,594	1.62	35.0%
<i>NYCERS - 2015 Emerging Manager Program</i>	2015	<u>190,400,000</u>	<u>57,202,103</u>	<u>2,433,935</u>	<u>66,325,833</u>	<u>1.20</u>	<u>19.8%</u>
Vista Equity Partners Fund VI, L.P.	2016	158,000,000	168,958,181	39,435,462	183,097,587	1.32	19.5%
Platinum Equity Capital Partners IV, L.P.	2016	111,000,000	73,297,786	20,327,485	80,970,385	1.38	36.0%
Platinum Equity Capital Partners IV Co-Investment, L.P.	2018	16,000,000	11,200,000	-	10,452,676	0.93	NM
Apax IX USD, L.P.	2016	127,000,000	57,503,233	1,204,490	78,293,022	1.38	NM
Green Equity Investors VII, L.P.	2017	95,000,000	48,339,475	376,189	53,431,706	1.11	NM
Ares Corporate Opportunities Fund V, L.P.	2017	95,000,000	53,385,750	1,635,473	53,926,601	1.04	NM
KKR Americas Fund XII, L.P.	2017	158,000,000	62,078,909	1,041,587	64,732,929	1.06	NM
BC European Capital X	2017	88,894,352	44,279,911	-	43,716,266	0.99	NM
BCEC X Co-Investment	2017	35,924,538	23,489,050	-	24,242,099	1.03	3.4%
Warburg Pincus Financial Sector, L.P.	2017	104,000,000	27,217,156	5,304,000	19,072,154	0.90	NM
Platinum Equity Small Cap Fund, L.P.	2018	41,000,000	3,119,044	-	2,452,184	0.79	NM
EQT VIII, L.P.	2018	109,672,014	15,851,062	1,344,326	14,211,162	0.98	NM
EQT VIII Co-Investment	2018	39,879,477	6,040,864	-	6,758,649	1.12	NM
CVC Capital Partners VII, L.P.	2018	154,175,413	24,563,857	231,608	30,083,968	1.23	NM
Grain Communications Opportunity Fund II, L.P.	2018	21,000,000	3,525,644	17,138	2,831,515	0.81	NM

Information provided by the New York City Employees' Retirement System Consultants

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Palladium Equity Partners V, L.P.	2017	33,333,333	5,486,557	-	4,185,039	0.76	NM
Vista Equity Partners Fund VII, L.P.	2018	177,500,000	14,605,521	638	14,355,724	0.98	NM
Welsh, Carson, Anderson & Stowe XIII, L.P.	2019	89,000,000	652,842	-	176,016	0.27	NM
Siris Partners IV, L.P.	2018	89,000,000	13,489,968	-	12,547,400	0.93	NM
Apollo Investment Fund IX, L.P.	2018	256,000,000	23,383,997	2,651	20,116,153	0.86	NM
ASF VIII B L.P.	2019	174,000,000	17,400	-	605,367	34.79	NM
ASF VIII B NYC Co-Invest L.P.	2019	87,000,000	8,700	-	2,179	0.25	NM
Warburg Pincus Global Growth, L.P.	2019	125,500,000	1,485,714	-	1,102,031	0.74	NM
Bridgepoint Europe VI	2018	119,583,513	-	-	(1,470,267)	-	N/A
Bridgepoint Europe VI Co-Invest	2018	29,881,752	-	-	-	-	N/A
Crestview Partners IV, L.P.	2018	71,000,000	-	-	-	-	N/A
Crestview Partners IV (Co-Investment), L.P.	2018	23,666,667	-	-	-	-	N/A
KKR European Fund V (USD)	2019	83,250,000	-	-	-	-	N/A
Lexington Capital Partners IX	2019	106,500,000	-	-	5,008,636	-	NM

Information provided by the New York City Employees' Retirement System Consultants

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year	Style Sector	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
<b>TOTAL PRIVATE REAL ESTATE</b>			5,442,889,545	4,660,894,677	3,229,416,299	3,507,511,140	1.45	8.0%
<b>TOTAL PRIVATE REAL ESTATE</b>								
Colony Realty Partners II	2006	Core Portfolio	20,000,000	24,666,122	8,957,737	-	0.36	-13.3%
JP Morgan Strategic Property Fund	2006	Core Portfolio	136,000,000	169,623,990	18,869,856	306,374,184	1.92	7.0%
Prologis Targeted US Logistics Fund	2006	Core Portfolio	25,000,000	34,306,959	11,278,143	46,624,379	1.69	5.5%
Prudential PRISA	2006	Core Portfolio	86,000,000	92,673,389	35,006,797	122,426,038	1.70	4.9%
RREEF America REIT II	2006	Core Portfolio	86,000,000	113,537,802	58,616,562	124,873,148	1.62	5.3%
UBS Trumbull Property Fund	2006	Core Portfolio	156,000,000	249,387,451	214,927,821	173,768,267	1.56	6.3%
Heitman America Real Estate Trust, L.P.	2007	Core Portfolio	115,000,000	185,275,259	70,275,259	256,865,453	1.77	7.9%
JP Morgan Special Situation Property Fund	2007	Core Portfolio	90,000,000	109,398,290	42,168,519	131,224,240	1.58	4.8%
Prudential PRISA II	2007	Core Portfolio	141,518,761	150,922,667	47,761,655	214,354,125	1.74	5.9%
RREEF America REIT III	2007	Core Portfolio	90,000,000	90,000,000	51,156,568	-	0.57	-7.5%
LaSalle Property Fund	2010	Core Portfolio	132,000,000	49,779,374	18,739,275	72,621,873	1.84	10.6%
NYC Asset Investor #2	2013	Core Portfolio	75,000,000	73,151,879	21,915,703	97,607,113	1.63	14.3%
MetLife Core Property Fund	2014	Core Portfolio	50,000,000	50,000,000	9,545,683	63,037,352	1.45	9.7%
Almanac Realty Securities VII	2015	Core Portfolio	65,000,000	49,248,759	12,489,298	50,643,104	1.28	14.2%
Almanac Realty Securities VII (Sidecar IV)	2015	Core Portfolio	20,000,000	11,059,245	1,363,297	13,635,352	1.36	17.7%
USAA Eagle Real Estate Fund	2015	Core Portfolio	90,000,000	79,992,181	5,731,428	89,715,551	1.19	8.6%
Artemis Co-Investment1	2016	Core Portfolio	53,000,000	51,691,503	18,992,266	43,496,864	1.21	19.0%
Brookfield Premier Real Estate Partners	2016	Core Portfolio	91,000,000	98,387,011	7,387,011	115,350,700	1.25	11.6%
Exeter Core Industrial Club Fund II	2016	Core Portfolio	28,000,000	19,698,000	2,361,172	21,489,765	1.21	13.3%
Jamestown Premier Property Fund	2016	Core Portfolio	48,721,196	46,244,082	20,123,104	35,365,746	1.20	9.0%
Carlyle Property Investors	2017	Core Portfolio	91,000,000	96,130,890	5,130,890	100,732,146	1.10	7.1%
Lion Industrial Trust	2017	Core Portfolio	90,000,000	95,811,563	5,811,563	114,091,646	1.25	15.9%
Almanac Realty Securities VIII	2018	Core Portfolio	51,000,000	716,349	-	400,332	0.56	NM
Almanac Realty Securities VIII (Sidecar II)	2018	Core Portfolio	34,000,000	555,489	-	570,666	1.03	NM
Artemis Income and Growth Fund	2018	Core Portfolio	61,000,000	-	-	-	-	NM
Heitman Core Real Estate Debt Income Trust	2018	Core Portfolio	45,000,000	45,295,267	295,267	45,889,711	1.02	NM
Canyon-Johnson Urban	2002	Non-Core Portfolio	15,000,000	13,742,215	16,418,450	-	1.19	11.1%
Blackstone Real Estate Partners IV L.P.	2004	Non-Core Portfolio	30,000,000	38,393,533	50,030,468	3,396,038	1.39	9.9%
The City Investment Fund I	2004	Non-Core Portfolio	225,000,000	221,883,300	224,384,800	388,315	1.01	0.3%
Tishman Speyer Citigroup Alt Inv V&VI NYC	2004	Non-Core Portfolio	100,000,000	71,066,452	261,908,690	-	3.69	63.2%
Canyon-Johnson Urban II	2005	Non-Core Portfolio	40,000,000	35,954,815	15,898,610	136,423	0.45	-10.5%
Apollo Real Estate Investment Fund V	2006	Non-Core Portfolio	25,000,000	25,000,000	18,953,167	9,532,314	1.14	1.7%
American Value Partners Fund I	2007	Non-Core Portfolio	55,000,000	39,320,163	41,373,738	4,329,108	1.16	3.1%
Blackstone Real Estate Partners VI L.P.	2007	Non-Core Portfolio	110,000,000	123,465,884	235,679,383	9,803,458	1.99	13.3%
Carlyle Realty Partners V, L.P.	2007	Non-Core Portfolio	20,000,000	25,757,491	30,485,065	5,860,722	1.41	8.3%
Metropolitan Workforce Housing Fund	2007	Non-Core Portfolio	14,000,000	14,013,027	16,744,531	257,293	1.21	3.9%
Thor Urban Property Fund II	2007	Non-Core Portfolio	40,000,000	54,796,108	54,781,253	14,318,373	1.26	6.8%
UrbanAmerica II	2007	Non-Core Portfolio	25,000,000	23,222,798	2,626,813	-	0.11	-25.0%

Information provided by the New York City Retirement Systems Consultants. Interim returns are subject to change and may differ due to differences in accounting and performance methodologies.



Through March 31, 2019

	Vintage Year	Style Sector	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
Westbrook Real Estate Fund VII, L.P.	2007	Non-Core Portfolio	40,000,000	43,854,799	42,237,578	10,630,496	1.21	3.2%
Ares European Real Estate Fund III	2008	Non-Core Portfolio	30,000,000	30,487,501	33,237,500	557,433	1.11	2.6%
Blackstone Real Estate Partners Europe III - USD	2008	Non-Core Portfolio	50,000,000	52,002,063	68,185,471	9,158,386	1.49	11.1%
Capri Urban Investors	2008	Non-Core Portfolio	60,000,000	60,000,000	27,538,270	16,628,932	0.74	-4.3%
JPM Urban REN PTY FD	2008	Non-Core Portfolio	16,360,625	4,206,523	4,206,523	-	1.00	0.0%
Prudential PRISA III	2008	Non-Core Portfolio	50,000,000	77,488,276	17,089,777	160,855,548	2.30	11.9%
Silverpeak Legacy Partners III	2008	Non-Core Portfolio	50,000,000	23,490,515	4,048,619	4,253,169	0.35	-11.6%
Stockbridge Real Estate III	2008	Non-Core Portfolio	27,000,000	26,998,145	16,829,753	14,688,201	1.17	2.3%
BlackRock Carbon Capital III Co-Investments	2009	Non-Core Portfolio	40,000,000	43,757,162	53,189,633	-	1.22	8.9%
Walton Street Real Estate Fund VI	2009	Non-Core Portfolio	50,000,000	44,323,933	47,860,268	20,505,175	1.54	8.8%
Westbrook Real Estate Fund VIII, L.P.	2009	Non-Core Portfolio	50,000,000	59,596,997	68,952,803	9,965,927	1.32	11.5%
Canyon Johnson Urban Fund III	2010	Non-Core Portfolio	30,000,000	29,971,216	40,371,580	35,297	1.35	11.9%
Carlyle Realty Partners VI, L.P.	2011	Non-Core Portfolio	70,000,000	75,469,523	106,045,703	9,257,392	1.53	21.1%
H/2 Special Opportunities Fund II	2011	Non-Core Portfolio	40,000,000	40,045,335	57,031,777	4,695,259	1.54	14.5%
Blackstone Real Estate Partners VIII L.P.	2012	Non-Core Portfolio	170,000,000	209,641,010	232,135,807	113,183,713	1.65	17.3%
Brookfield Strategic Real Estate Partners	2012	Non-Core Portfolio	100,000,000	118,731,844	154,805,181	75,740,052	1.94	21.3%
Taconic New York City Investment Fund	2012	Non-Core Portfolio	70,000,000	29,272,728	46,981,257	4,647,698	1.76	15.9%
Blackstone Real Estate Partners Europe IV L.P. - USD	2013	Non-Core Portfolio	169,000,000	166,918,745	162,060,576	89,300,872	1.51	15.7%
KTR Industrial Fund III	2013	Non-Core Portfolio	40,000,000	18,186,884	28,372,400	-	1.56	40.5%
Lone Star Real Estate Fund III	2013	Non-Core Portfolio	100,000,000	95,639,471	115,529,066	13,300,883	1.35	14.9%
NYC Asset Investor #1	2013	Non-Core Portfolio	50,000,000	56,143,713	23,363,259	47,477,813	1.26	6.7%
NYC Asset Investor #3	2013	Non-Core Portfolio	50,000,000	31,540,272	5,512,467	34,463,972	1.27	8.6%
Carlyle Realty Partners VII, L.P.	2014	Non-Core Portfolio	80,000,000	66,898,984	41,120,521	50,312,108	1.37	14.8%
DivcoWest Fund IV	2014	Non-Core Portfolio	23,000,000	22,770,380	33,029,490	4,974,628	1.67	26.3%
H/2 Special Opportunities Fund III	2014	Non-Core Portfolio	65,000,000	65,000,000	48,650,671	35,691,156	1.30	11.9%
Avanath Affordable Housing Fund II	2015	Non-Core Portfolio	8,000,000	8,086,752	698,328	11,623,190	1.52	13.0%
Blackstone Real Estate Partners VIII L.P.	2015	Non-Core Portfolio	151,000,000	131,065,028	43,892,530	124,028,500	1.28	15.8%
Tristan European Property Investors Special Opp IV	2015	Non-Core Portfolio	49,696,355	34,883,232	2,163,571	37,827,638	1.15	9.5%
DivcoWest Fund V	2016	Non-Core Portfolio	60,000,000	29,020,769	43,068	30,672,012	1.06	4.4%
Exeter Industrial Value Fund IV, L.P.	2016	Non-Core Portfolio	30,000,000	16,500,000	-	18,249,609	1.11	11.9%
H/2 Special Opportunities Fund IV	2016	Non-Core Portfolio	91,000,000	17,726,451	740,287	18,070,548	1.06	4.6%
Pramerica Real Estate Capital VI	2016	Non-Core Portfolio	60,961,337	30,069,651	13,392,985	22,254,385	1.19	17.7%
PW Real Estate Fund III	2016	Non-Core Portfolio	49,858,195	28,823,471	3,696,925	35,424,297	1.36	22.4%
Westbrook Real Estate Fund X Co-Investment	2016	Non-Core Portfolio	36,000,000	21,233,359	4,119,230	19,786,331	1.13	11.4%
Basis Investment Group Real Estate Fund I	2017	Non-Core Portfolio	17,000,000	10,205,243	2,026,019	8,987,921	1.08	14.3%
DRA Growth and Income Fund IX	2017	Non-Core Portfolio	49,000,000	29,423,937	7,922,391	26,903,998	1.18	18.5%
NYCRS-KKR CMBS Retention Partners	2017	Non-Core Portfolio	122,000,000	95,960,858	7,718,992	96,206,147	1.08	8.6%
Aermont Capital Real Estate Fund IV	2018	Non-Core Portfolio	74,073,076	-	-	-	-	NM
Brookfield Strategic Real Estate Partners III, L.P.	2018	Non-Core Portfolio	170,000,000	-	-	-	-	NM
KKR Real Estate Partners Americas II	2018	Non-Core Portfolio	118,700,000	41,290,602	6,426,181	37,972,656	1.08	NM
Blackstone Real Estate Partners IX L.P.	2019	Non-Core Portfolio	166,000,000	-	-	-	-	NM

Information provided by the New York City Retirement Systems Consultants. Interim returns are subject to change and may differ due to differences in accounting and performance methodologies.

# Alternative Assets Manager Performance Detail



Through March 31, 2019

	Vintage Year	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
<b>TOTAL INFRASTRUCTURE</b>		1,284,484,636	606,363,471	106,038,742	633,715,847	1.22	12.8%
<b>TOTAL INFRASTRUCTURE INVESTMENTS</b>							
Brookfield Infrastructure Fund II, L.P.	2013	75,000,000	61,554,101	16,966,063	74,418,995	1.48	12.4%
IFM Global Infrastructure Fund	2014	75,000,000	100,136,579	37,106,368	105,392,569	1.42	12.4%
Global Energy & Power Infrastructure Fund II	2014	45,000,000	38,036,298	23,153,513	30,731,347	1.42	34.8%
KKR Global Infrastructure Investors II L.P.	2014	77,000,000	74,009,380	8,708,101	80,725,528	1.21	10.9%
Global Infrastructure Partners III-A/B, L.P.	2016	106,000,000	80,259,082	5,246,450	83,646,386	1.11	8.2%
Brookfield Infrastructure Fund III, L.P.	2016	91,000,000	43,452,473	2,957,257	45,689,825	1.12	9.3%
Actis Energy 4	2016	64,300,000	33,577,419	4,952,281	34,987,407	1.19	18.6%
EQT Infrastructure III (No.2) SCSp	2017	56,133,762	51,453,569	2,337,792	55,867,250	1.13	19.2%
ASF VII Infrastructure L.P.	2017	66,000,000	26,076,825	2,273,032	25,365,450	1.06	27.7%
Axium Infrastructure North America	2017	67,104,915	67,584,787	1,899,872	67,559,443	1.03	7.0%
NYCRS EIG Energy Partners, L.P.	2017	65,880,000	13,583,138	438,014	13,951,139	1.06	10.6%
NYCRS EIG Energy Partners Co-Investment, L.P.	2018	16,470,000	-	-	-	NM	NM
KKR Global Infrastructure Investors III L.P.	2018	87,500,000	6,062,730	-	5,023,425	NM	NM
Global Energy & Power Infrastructure Fund III, L.P.	2018	87,500,000	-	-	-	NM	NM
Cardinal NR Sidecar Holdings L.P.	2018	10,500,000	10,500,000	-	10,872,289	NM	NM
EQT Infrastructure IV (No.2) USD SCSp	2019	101,500,000	-	-	(585,938)	NM	NM
Ardian Infrastructure Fund V B	2019	75,195,959	77,090	-	70,732	NM	NM
Global Infrastructure Partners IV-A/B, L.P.	2019	117,400,000	-	-	-	NM	NM

Information provided by the New York City Employees' Retirement System Consultants

# Alternative Assets Manager Performance Detail



Through June 30, 2019

	Vintage Year	Commitment - Closing (Base)	Contributions Cumulative (Local)	Distributions Cumulative	Final Market Value	3 Month Base%	Inception IRR%
<b>TOTAL OPPORTUNISTIC FIXED INCOME</b>		<b>2,716,796,539</b>	<b>2,790,228,128</b>	<b>1,363,200,894.22</b>	<b>2,154,143,431</b>	<b>1.72%</b>	<b>7.44%</b>
Avenue Special Situations Fund V, L.P.	2007	75,784,973	76,951,175	100,600,875.00	-		NM
Avenue Europe Special Sit. Fund, L.P.	2008	31,314,073	27,839,090	53,703,162.08	-		NM
PIMCO DiSCO Fund, L.P.	2008	150,000,000	150,427,750	204,457,598.81	-		11.23%
Alliance Bernstein PPIP Fund, L.P.	2009	41,697,493	41,697,493	57,295,571.07	-		15.51%
AG GECC PPIP Fund, L.P.	2010	27,000,000	27,052,129	41,724,862.00	-		20.19%
Avenue Special Situations Fund VI (A), L.P.	2011	70,000,000	71,766,544	71,272,284.00	4,899,123.00	0.00%	1.39%
GoldenTree Managed Account	2011	140,000,000	131,253,192	-	209,891,156.63	2.21%	7.04%
Marathon Centre Street Partnership, L.P. - Asset Class	2011	218,750,000	320,250,000	110,250,000.00	323,419,815.60	1.54%	7.15%
AG Centre Street Partnership, L.P. - CC Asset Class	2012	180,000,000	163,800,000	47,626,130.00	159,971,489.00	0.07%	5.03%
Apollo Centre Street Partnership, L.P.	2012	268,750,000	388,899,876	201,671,748.00	245,859,855.84	2.97%	4.97%
FCO MA Centre Street L.P.	2012	140,000,000	264,262,524	155,042,754.04	167,520,157.00	0.00%	8.47%
OHA Centre Street Partnership, L.P.	2012	175,000,000	244,955,346	69,955,346.41	259,082,445.73	2.45%	8.02%
Contrarian Centre Street Partnership, L.P. - Asset Class	2013	90,000,000	90,000,000	-	94,749,487.68	-0.08%	1.20%
Lone Star Fund VIII (U.S.), L.P.	2013	100,000,000	98,438,980	92,624,618.07	29,942,387.94	0.00%	12.72%
Oaktree Opportunities Fund IX, L.P.	2013	100,000,000	100,000,000	42,895,430.47	76,749,760.00	4.49%	4.00%
Ares Centre Street Partnership, L.P.	2014	140,000,000	128,117,072	-	183,293,091.42	1.59%	9.81%
Brightwood Capital Fund III, L.P.	2015	35,000,000	28,403,806	11,424,728.60	22,669,413.00	-2.13%	5.66%
Torchlight Debt Opportunity Fund V, LP	2015	67,000,000	53,600,000	6,909,717.00	59,277,282.00	0.76%	11.78%
Brightwood Capital Fund IV, LP	2016	87,500,000	61,250,000	4,691,135.00	61,991,521.00	0.00%	9.65%
ICG Centre Street Partnership, L.P.	2017	120,000,000	110,653,297	63,566,157.95	54,512,442.62	0.00%	7.95%
KKR OFI SMA	2017	272,000,000	139,136,957	25,893,856.00	128,403,771.37	5.20%	16.06%
Maranon Centre Street Partnership, L.P.	2018	103,000,000	50,465,187	1,594,919.72	50,902,521.66	2.09%	7.19%
Torchlight Debt Opportunity Fund VI, LP	2019	84,000,000	21,007,710	-	21,007,710.00		0.00%

Information provided by Alpha Frontier  
Above data is not final and subject to change

# Alternative Assets Manager Performance Detail



Through June 30, 2019

	Market Value	MTD Return%	3 Month Return%	FYTD Return%	YTD Return%	1 Year Return%	3 Year Return%	ITD Return%	ITD Cumulative Return%
<b>TOTAL HEDGE FUNDS</b>	7,395,629	-0.42%	-0.10%	11.92%	11.68%	11.92%	7.54%	4.42%	41.33%
<b>TOTAL DIRECT HEDGE FUNDS</b>	7,395,629	-0.42%	-0.10%	11.92%	11.68%	11.92%	7.88%	5.50%	49.41%
<b>FUND OF FUNDS HEDGE FUNDS</b>	-	0.00%		0.00%	0.00%		0.79%	1.83%	12.03%
<b>TOTAL DIRECT HEDGE FUNDS</b>									
Luxor Capital Partners Liquidating SPV, LLC.	1,777,864	-20.13%	-19.26%	-15.33%	-16.97%	-15.33%	3.15%	3.15%	9.77%
Perry Partners L.P.	5,617,765	8.01%	8.01%	7.68%	24.97%	7.68%	2.82%	-1.11%	-6.55%
Event Driven	7,395,629	-0.42%	-0.10%	0.87%	11.68%	0.87%	4.12%	0.58%	3.77%
<b>FUND OF FUNDS HEDGE FUNDS</b>									
Fund of Funds Hedge Funds	-	0.00%		0.00%	0.00%		0.79%	1.83%	12.03%

Information provided by Alpha Frontier





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**New York City  
Employees' Retirement System**

# Appendix D

## Footnotes



Through June 30, 2019

- The Barclays Capital Aggregate (then known as the Lehman Brothers Aggregate) was used prior to 1/1/89. Effective 1/1/89, in the Government Sector, maturities of less than 5 years were dropped from the Salomon and Lehman indices. From that date until 7/1/99 the benchmark was the NYC Core + 5, from Lehman.
- Effective 7/1/94, the NYC Core + 5 Index includes BBB rated securities.
- Effective 7/1/99, the basis of the NYC Index was changed from Lehman Brothers to Salomon. Also effective 7/1/99, only Salomon indices have been used to compare all fixed income managers.
- Effective 4/1/03, the name of the benchmark provider was changed from Salomon to Citigroup.
- Effective 7/1/03 the “NYC-Loomis” benchmark index for the Loomis Sayles Enhanced Yield portfolio reflects a change from the Citigroup BB&B Index to the more appropriate Merrill Lynch High Yield Master II Index.
- Effective 7/1/09, the Core+5 program was restructured.
  - The U.S. Gov’t sector benchmark Index was changed from the Citigroup Core+5 Treasury/Gov’t Sponsored Index to the Citigroup Core+5 Treasury/Agency Index.
  - The Corporate and Yankee sectors were combined to form the new Investment Grade Credit sector. The benchmark for the new combined sector is the customized Citigroup Credit Index. For historical performance purposes, the old Corporate sector Index is linked to the new Credit sector Index.
  - There were no changes to the Mortgage sector Index.
  - The total Core+5 results and benchmark returns combine the three sectors. Historical total Core+5 returns continue to include the old Corporate and Yankee sector returns.
- Effective 11/1/10 The NCREIF NPI policy index was replaced with the NCREIF NFI ODEC net Index retroactively.
- Effective 6/1/11 The Opportunistic Fixed NYC-CORE PLUS 5 + 200BPS policy index was replaced with the NYC-10% ANNUAL RETURN primary and JP MORGAN GLOBAL HIGH YIELD PLUS 3% secondary indices retroactively.
- Effective 8/1/11 The Hedge Funds Primary benchmark is the 1 YEAR TREASURY BILL YIELD + 4% and the secondary benchmark is the HFRI FUND OF FUNDS COMPOSITE INDEX + 1%.



Through June 30, 2019

## General Notes

- Estimated management fees for public market investments are calculated on an accrual basis without adjustment for management fee caps. Alternative investment fees are recorded on a cash basis. Since not all alternative managers currently provide detailed fee disclosure, the alternative investment fees noted here are not comprehensive.
- Public Market returns are Net of Manager Fees for periods after January 2014 and Gross of investment advisory fees for other periods unless otherwise indicated.
- Public market excess returns for periods prior to 2014 are based on Gross performance.

## Page Specific

### Pages 8 - 13 - Portfolio Asset Allocation

- Rebalancing Ranges: the minimum and maximum weights that actual Asset Allocation may reach before rebalancing between Asset Classes is necessary.

### Pages 14 -16 - Performance Attribution: Total Plan

- Plan Return at Policy Weights: the return of the Total Plan assuming actual Asset Class results were maintained at target (Adjusted Policy) weights. *Figure = (Return of Asset Class 1\* Target Weight) plus (Return Of Asset Class 2\* Target Weight) plus (.....)*
- **Allocation Effect** = Total Plan Return minus Plan Return at Adjusted Policy Weights. Allocation is the Contribution to Performance resulting from an overweight or underweight to an asset class. E.g. an underweight to an Asset Class that under-performs results in a positive Allocation Effect and vice versa.
- **Selection Effect** = Equal to the Custom Benchmark (Adjusted Policy Index) Return minus Plan Return at Adjusted Policy Weights. This illustrates how the Managers have added or removed value based on their Security Selection decisions, e.g., *If the manager's Actual Returns are higher than the Implied Return there will be a positive Selection Effect.*
- **Policy Index = Custom Benchmark**  
*The "policy index" is a custom benchmark representing the weighted average return of the weighted benchmark indexes for each major investment program. Weights may reflect an adjustment of actual policy for outstanding commitments for new or revised programs, such as for private market programs, which are invested gradually, or for any new or updated program requiring the completion of RFPs and contracts. The policy index/custom benchmark is calculated monthly based on adjusted policy weights at the beginning of each month.*



Through June 30, 2019

*The indexes and most recent policy weights are as follows:*

*U.S. Equity: Russell 3000 \* 30.65%*

*International Developed (EAFE) Markets: MSCI World ex USA IMI\* 12.45%*

*Int'l Active- Global: MSCI World Net Dividends Index\* 0.39%*

*Emerging Markets: MSCI Custom ERS Emerging Markets (Net)\* 6.95%*

*International Emerging Managers FOF: NYC Blended Custom Benchmark for FoF\* 0.68%*

*REITs: Dow Jones Real Estate Securities \* 0.00%*

*Private Equity: Russell 3000 + 300 b.p. per annum \* 7.00%*

*Private Real Estate – Core: NFI - ODCE Net \* 3.69%*

*Private Real Estate – Non Core: NFI - ODCE Net + 200bps \* 2.15%*

*Infrastructure: CPI + 4% \* 1.05%*

*Hedge Funds: HFRI Fund of Funds Composite Index plus 1% \* 0.00%*

*US Treasury Short Term: FTSE USBIG Treasury 1-3Y \* 0.00%*

*US Treasury Intermediate: FTSE USBIG Treasury/Agency 1-10Y \* 0.00%*

*Active Government: NYC Treasury Agency + 5 \* 10.51%*

*Core FI-Developing Managers: BBG Barc Agg \* 0.00%*

*Core FI-Emerging Managers: BBG Barc Agg \* 0.00%*

*Mortgage: FTSE Mortgage Index \* 3.18%*

*ETI: ETI Custom Benchmark \* 1.34%*

*Investment Grade Credit: NYC – Investment Grade Credit \* 4.52%*



Through June 30, 2019

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*High Yield: Bloomberg Barclays US High Yield 2% Issuer Capped \* 5.80%*

*Bank Loans: Credit Suisse Leveraged Loan \* 2.00%*

*TIPS: BBG BARC Gbl Inf-Lk: US TIPS \* 4.24%*

*Convertible Bonds: BofAML All Convertibles Ex Mandatory \* 0.00%*

*Opportunistic Fixed: OFI - JPMGHY / CSFB 50/50 Blend Plus 300 b.p. per annum \* 3.40%*

**Page 17 – Allocation and Selection Effects - Asset Class Breakdown**

- This chart aims to break down the Allocation and Selection Effects shown on the Performance Attribution pages. The aim of the Page is to show the asset classes where Managers are either out performing or under performing their benchmark and to show the basis point effect that this is having on Plan performance.

ETI Quarterly Report (Public):

# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

## Public/Private Apartment Rehabilitation Program (PPAR)

Lenders*	BOA		CCD		CFSB		CPC		JPM		LIIF		NCBCI		NHS		WF		LISC		BE		HDC			
Contractual Commitment <sup>1</sup>	\$80.00		\$40.00		\$10.00		\$290.00		\$145.00		\$25.00		\$17.00		\$3.00		\$70.00		\$12.00		\$12.00		\$20.00			
Current Market Value <sup>1</sup>	\$39.23		\$23.67		\$2.56		\$182.41		\$114.86		\$13.69		\$1.95		\$0.65		\$9.53		\$1.44		\$0.00		\$0.00			
	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units	Dollars	Units		
<b>Commitments Q2</b> <b>(included in total)</b>																										
Bronx	\$0.00	0	\$0.00	0	\$0.00	0	\$1.99	90	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
Brooklyn	0.00	0	0.00	0	0.00	0	1.70	333	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Manhattan	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Queens	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Staten Island	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Outside of NYC	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
<b>Total</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$3.69</b>	<b>423</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>
<b>Delivered Q2</b> <b>(included in total)</b>																										
Bronx	\$0.00	0	\$0.00	0	\$0.00	0	\$6.02	393	\$3.02	30	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0
Brooklyn	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Manhattan	0.00	0	0.00	0	0.00	0	0.00	0	1.19	54	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Queens	0.00	0	0.00	0	0.00	0	0.00	0	5.26	68	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Staten Island	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Outside of NYC	0.00	0	2.11	41	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
<b>Total</b>	<b>\$0.00</b>	<b>0</b>	<b>\$2.11</b>	<b>41</b>	<b>\$0.00</b>	<b>0</b>	<b>\$6.02</b>	<b>393</b>	<b>\$9.48</b>	<b>152</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>
<b>Total Commitments</b>																										
Bronx	\$0.00	0	\$3.25	157	\$0.00	0	\$45.72	1,386	\$19.95	339	\$1.55	61	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$0.00	0	\$1.28	101	\$0.00	0
Brooklyn	4.61	212	6.02	179	0.00	0	18.13	1,152	4.14	156	1.09	95	0.00	0	0.00	0	8.70	130	2.80	156	2.48	359	0.00	0	0.00	0
Manhattan	0.00	0	0.00	0	0.51	39	16.27	435	0.00	0	2.72	174	0.00	0	0.00	0	13.58	103	5.06	155	2.39	83	0.00	0	0.00	0
Queens	0.00	0	0.00	0	0.00	0	7.77	389	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Staten Island	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Outside of NYC	0.00	0	0.00	0	0.00	0	5.38	254	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
<b>Total</b>	<b>\$4.61</b>	<b>212</b>	<b>\$9.27</b>	<b>336</b>	<b>\$0.51</b>	<b>39</b>	<b>\$93.27</b>	<b>3,616</b>	<b>\$24.09</b>	<b>495</b>	<b>\$5.36</b>	<b>330</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$22.28</b>	<b>233</b>	<b>\$7.86</b>	<b>311</b>	<b>\$6.15</b>	<b>543</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>
<b>Historical Investments</b>																										
Bronx	\$18.31	1,276	\$11.01	645	\$0.00	0	\$129.70	8,061	\$81.04	2,616	\$1.51	117	\$0.00	0	\$0.00	0	\$3.94	90	\$1.27	48	\$0.00	0	\$0.00	0	\$0.00	0
Brooklyn	6.92	142	4.83	302	0.00	0	128.01	5,072	26.07	747	5.78	401	0.00	0	0.66	7	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Manhattan	7.24	148	3.70	283	3.22	197	95.64	5,047	53.31	1,695	7.11	407	1.98	123	0.50	15	3.31	100	0.00	0	0.00	0	0.00	0	0.00	0
Queens	15.17	293	0.80	54	0.00	0	21.09	815	21.35	755	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
Staten Island	0.00	0	0.00	0	0.00	0	0.26	8	1.28	35	0.00	0	0.00	0	0.00	0	1.26	67	0.00	0	0.00	0	0.00	0	0.00	0
Outside of NYC	1.61	39	2.11	41	0.00	0	16.50	461	5.55	123	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
<b>Total</b>	<b>\$49.25</b>	<b>1,898</b>	<b>\$22.45</b>	<b>1,325</b>	<b>\$3.22</b>	<b>197</b>	<b>\$391.21</b>	<b>19,464</b>	<b>\$188.61</b>	<b>5,971</b>	<b>\$14.40</b>	<b>925</b>	<b>\$1.98</b>	<b>123</b>	<b>\$1.17</b>	<b>22</b>	<b>\$8.51</b>	<b>257</b>	<b>\$1.27</b>	<b>48</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>	<b>\$0.00</b>	<b>0</b>

\*Lenders : Bank of America, Citi Community Development, Carver Federal Savings Bank, The Community Preservation Corp, JP Morgan Chase, Low Income Investment Fund, NCB Capital Impact, Neighborhood Housing Service, Wells Fargo, Local Initiatives Support Corp, Bellwether Enterprise, NYC HDC

<sup>1</sup> Dollar amount listed in millions

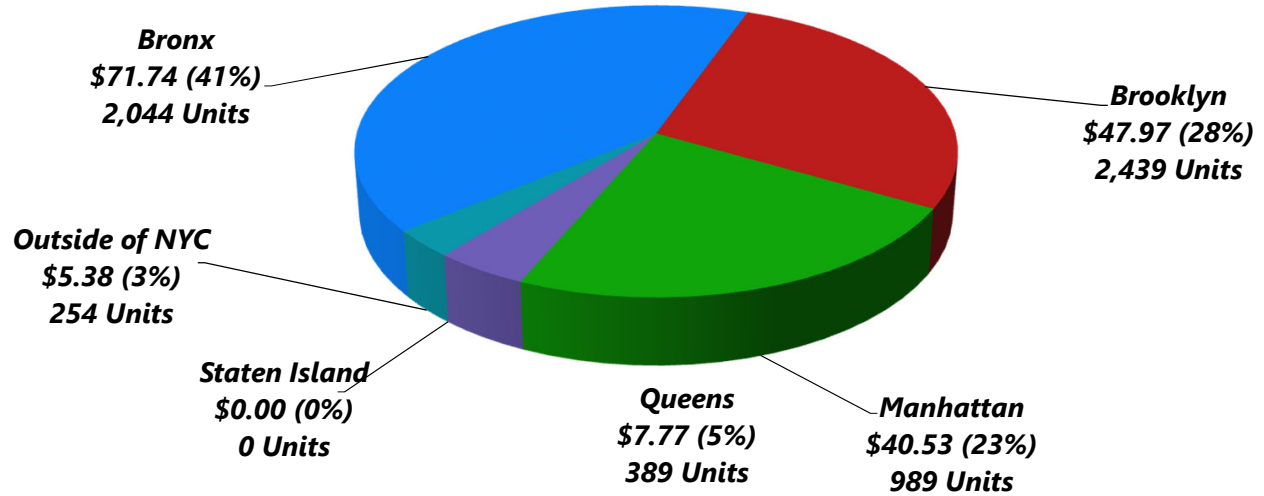
# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

## Public/Private Apartment Rehabilitation Program (PPAR)

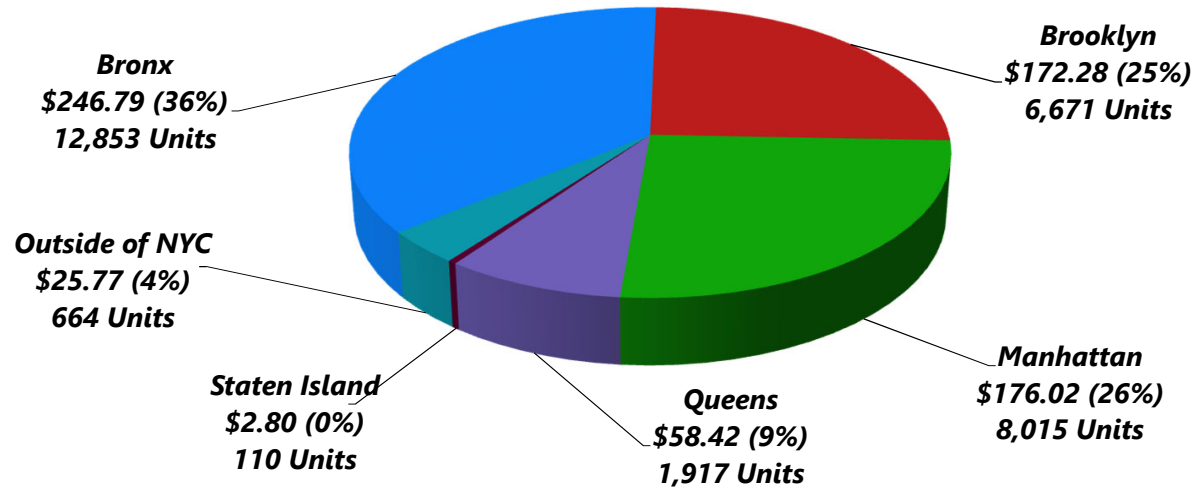
Lenders*	All Lender Totals	
Contractual Commitment <sup>1</sup>	\$724.00	
Current Market Value <sup>1</sup>	\$389.99	
	Dollars	Units
<b>Commitments Q2</b> (included in total)		
Bronx	\$1.99	90
Brooklyn	1.70	333
Manhattan	0.00	0
Queens	0.00	0
Staten Island	0.00	0
Outside of NYC	0.00	0
<b>Total</b>	<b>\$3.69</b>	<b>423</b>
<b>Delivered Q2</b> (included in total)		
Bronx	\$9.05	423
Brooklyn	0.00	0
Manhattan	1.19	54
Queens	5.26	68
Staten Island	0.00	0
Outside of NYC	2.11	41
<b>Total</b>	<b>\$17.61</b>	<b>586</b>
<b>Total Commitments</b>		
Bronx	\$71.74	2,044
Brooklyn	47.97	2,439
Manhattan	40.53	989
Queens	7.77	389
Staten Island	0.00	0
Outside of NYC	5.38	254
<b>Total</b>	<b>\$173.40</b>	<b>6,115</b>
<b>Historical Investments</b>		
Bronx	\$246.79	12,853
Brooklyn	172.28	6,671
Manhattan	176.02	8,015
Queens	58.42	1,917
Staten Island	2.80	110
Outside of NYC	25.77	664
<b>Total</b>	<b>\$682.08</b>	<b>30,230</b>

<sup>1</sup> Dollar amount listed in millions

### Current Commitments All PPAR Lenders



### Historical Investments Since Inception All PPAR Lenders



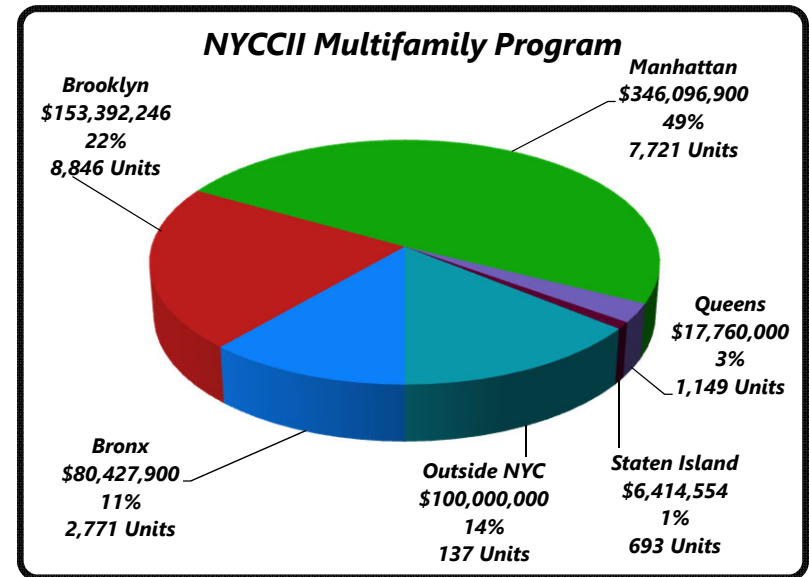


# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

**AFL-CIO Housing Investment Trust (HIT)**  
Market Value \$327.68 million<sup>1</sup>

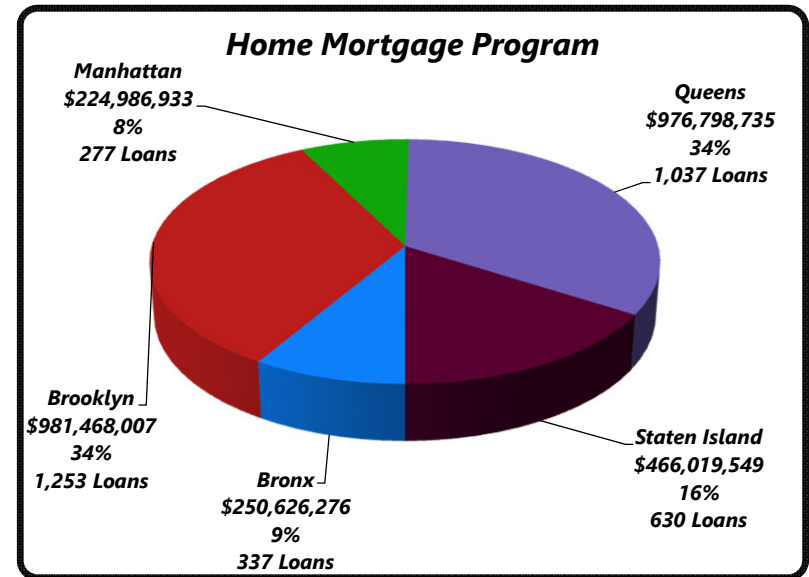
## NYC Community Investment Initiative (NYCCII)

Borough	NYCCII Phase I: 2002 - 2005		NYCCII Phase II: 2006 - 2013		Grand Total	
	Investments	Units <sup>2</sup>	Investments	Units <sup>2</sup>	Investments	Units <sup>2</sup>
Bronx	\$27,600,000	2,010	\$52,827,900	761	\$80,427,900	2,771
Brooklyn	49,501,800	3,230	103,890,446	5,616	153,392,246	8,846
Manhattan	172,021,700	6,908	174,075,200	813	346,096,900	7,721
Queens	0	0	17,760,000	1,149	17,760,000	1,149
Staten Island	0	0	6,414,554	693	6,414,554	693
Outside NYC	0	0	100,000,000	137	100,000,000	137
<b>Total</b>	<b>\$249,123,500</b>	<b>12,148</b>	<b>\$454,968,100</b>	<b>9,169</b>	<b>\$704,091,600</b>	<b>21,317</b>



## HIT Home Mortgage Program

Borough	NYCCII Phase I: 2002 - 2005		NYCCII Phase II: 2006 - 2013		Grand Total	
	\$ Amount	Loans	\$ Amount	Loans	\$ Amount	Loans
Bronx	\$32,544,168	41	\$218,082,108	296	\$250,626,276	337
Brooklyn	116,575,736	138	864,892,271	1,115	981,468,007	1,253
Manhattan	10,742,253	12	214,244,680	265	224,986,933	277
Queens	82,399,317	64	894,399,418	973	976,798,735	1,037
Staten Island	106,039,089	191	359,980,460	439	466,019,549	630
<b>Total</b>	<b>\$348,300,563</b>	<b>446</b>	<b>\$2,551,598,937</b>	<b>3,088</b>	<b>\$2,899,899,500</b>	<b>3,534</b>

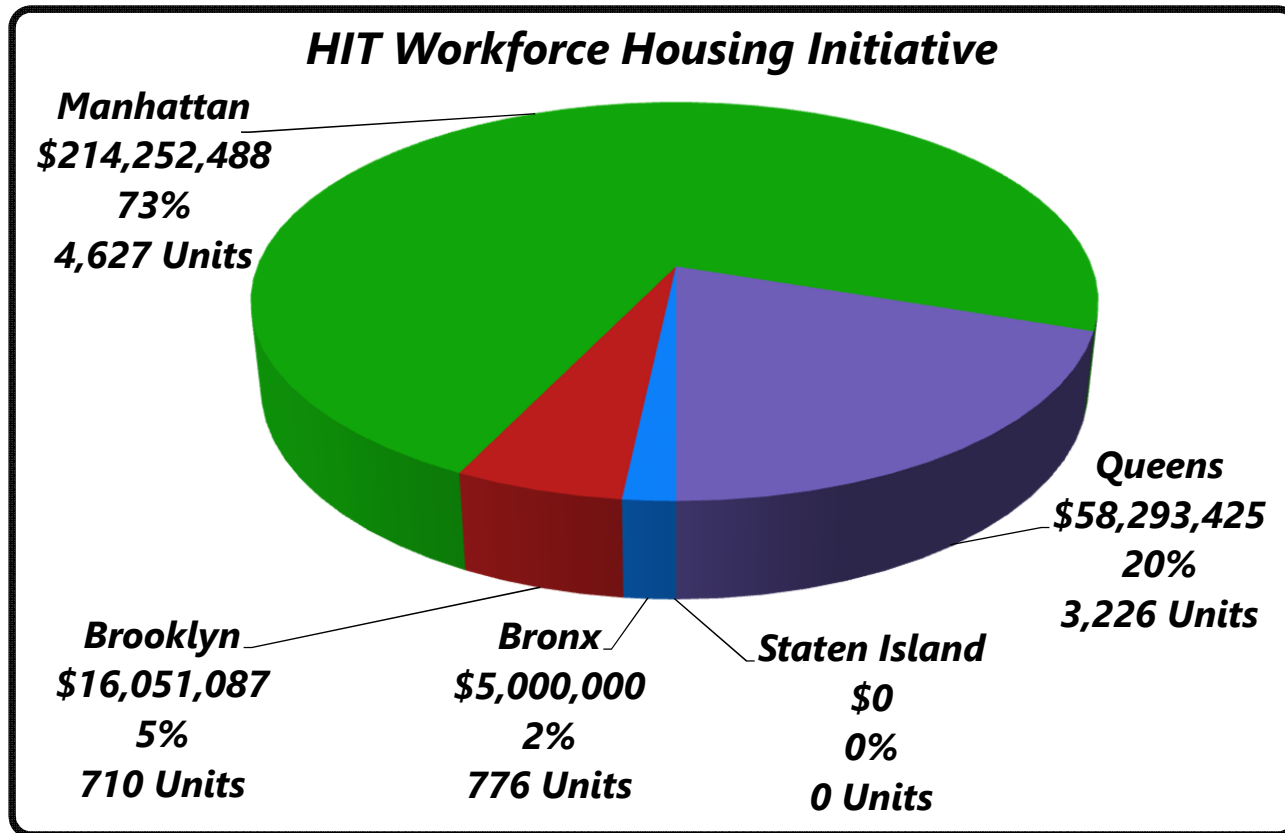


NYCERS Loans	Phase I: 134	Phase II: 780	Total: 914
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<sup>1</sup>Interest is reinvested  
<sup>2</sup>Low/Moderate Income Units

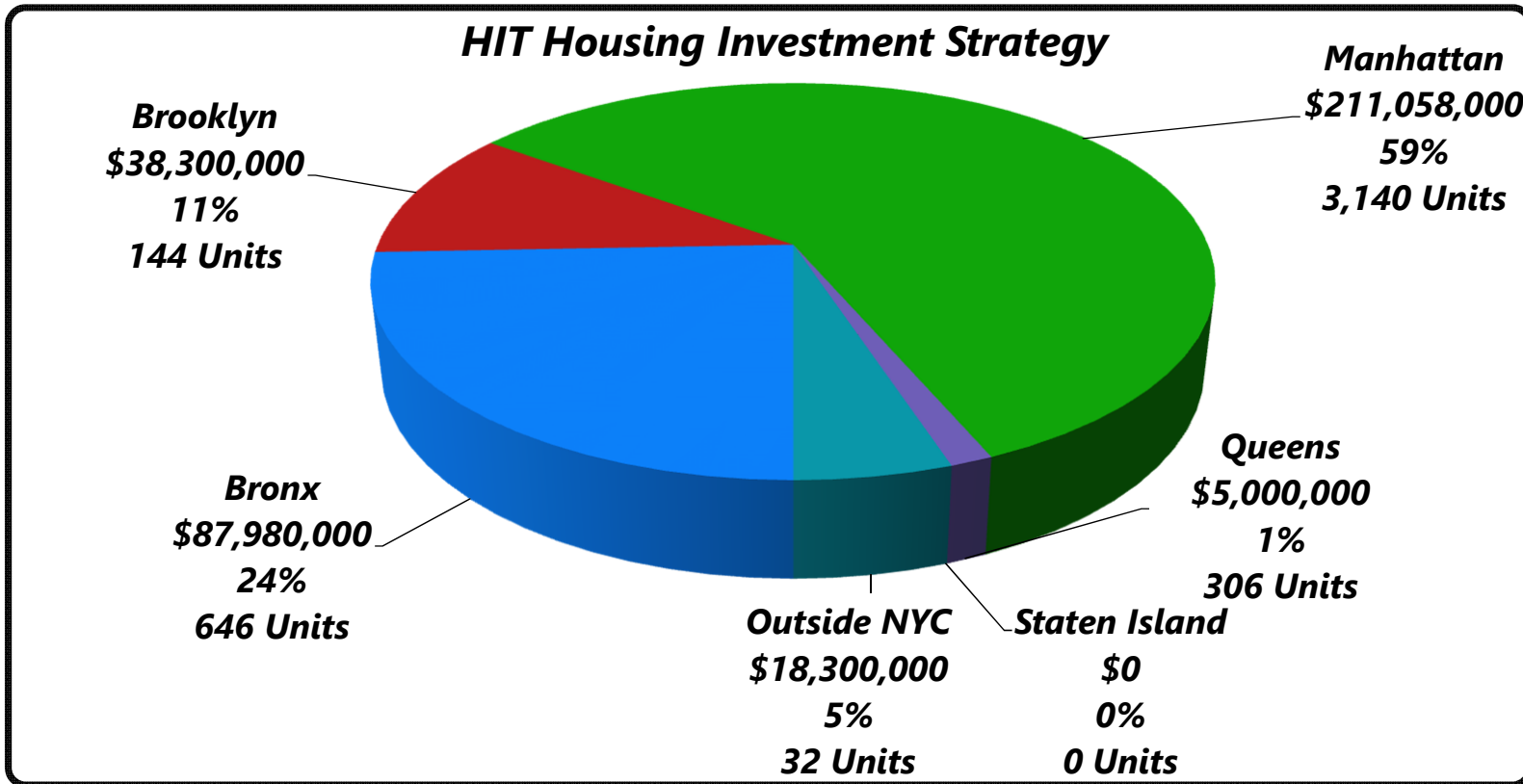
# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

AFL-CIO Housing Investment Trust (HIT) NYC Workforce Housing Initiative: 2009 - 2015		
<u>Borough</u>	<u>Investments</u>	<u>LMI Units</u>
	<u>Since Inception</u>	<u>Since Inception</u>
Bronx	\$5,000,000	776
Brooklyn	16,051,087	710
Manhattan	214,252,488	4,627
Queens	58,293,425	3,226
Staten Island	0	0
<b>Total</b>	<b>\$293,597,000</b>	<b>9,339</b>



# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

AFL-CIO Housing Investment Trust (HIT)					
HIT Housing Investment Strategy: 2015 - Q2 2019					
<u>Borough</u>	<u>Q2 Investments</u>	<u>Investments</u>		<u>LMI Units</u>	
		<u>Since Inception</u>	<u>Q2 LMI Units</u>	<u>Since Inception</u>	
Bronx	\$52,000,000	\$87,980,000	152	646	
Brooklyn	0	38,300,000	0	144	
Manhattan	0	211,058,000	0	3,140	
Queens	0	5,000,000	0	306	
Staten Island	0	0	0	0	
Outside NYC	0	18,300,000	0	32	
<b>Total</b>	<b>\$52,000,000</b>	<b>\$360,638,000</b>	<b>152</b>	<b>4,268</b>	



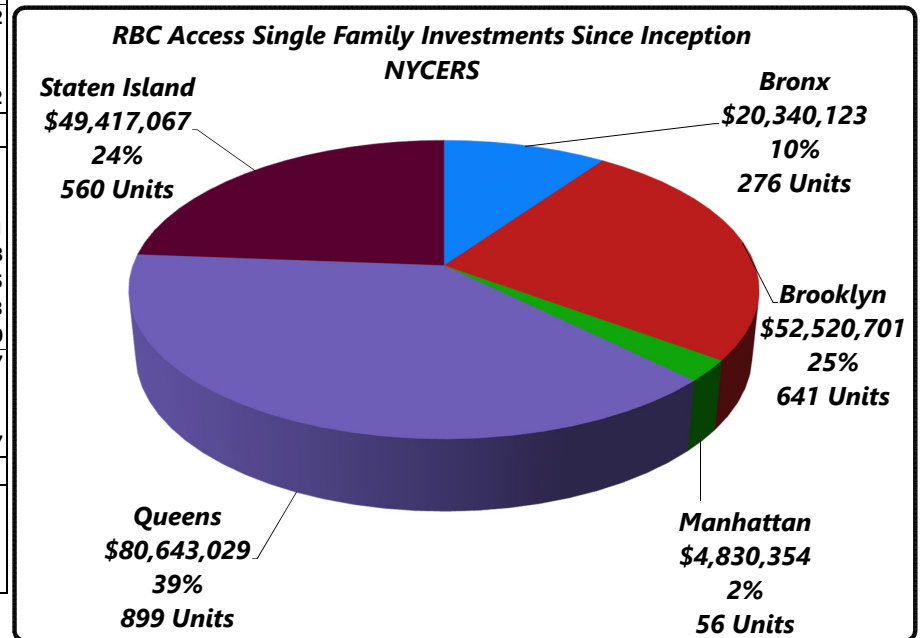
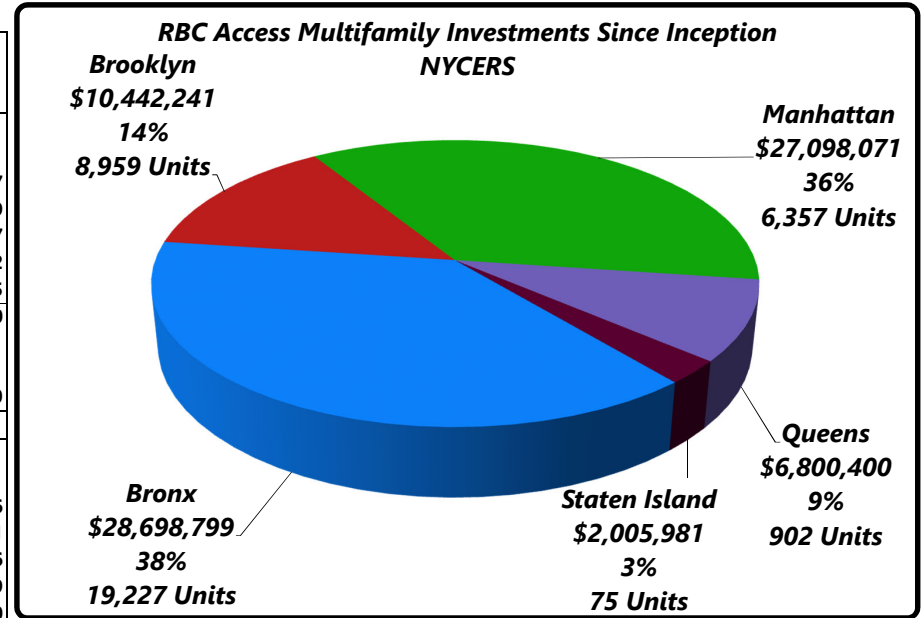
# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

RBC ACCESS CAPITAL STRATEGIES (Since Inception 2/1/07)

<b>\$162 million Allocated (36% of total account)</b>					
<b>Market Value \$156.95 million</b>					
<b>Multifamily Investments Detail</b>					
	<b>\$ Invested<sup>1</sup></b>		<b>Units<sup>2</sup></b>		
	<b>Q2</b>	<b>Total</b>	<b>Q2</b>	<b>Total</b>	
Bronx	\$0	\$28,698,799	0	19,227	
Brooklyn	0	10,442,241	0	8,959	
Manhattan	0	27,098,071	0	6,357	
Queens	0	6,800,400	0	902	
Staten Island	0	2,005,981	0	75	
<b>Total NYCERS Multifamily Investments</b>	<b>\$0</b>	<b>\$75,045,493</b>	<b>0</b>	<b>35,520</b>	
<b>Multifamily Total All Systems</b>					
	<b>\$0</b>	<b>\$208,459,702</b>	<b>0</b>	<b>35,520</b>	
<b>Single Family Investments Detail</b>					
	<b>\$ Invested</b>		<b>Units</b>		
	<b>Q2</b>	<b>Total</b>	<b>Q2</b>	<b>Total</b>	
Bronx	\$147,985	\$20,340,123	1	276	
Brooklyn	204,924	52,520,701	2	641	
Manhattan	0	4,830,354	0	56	
Queens	0	80,643,029	0	899	
Staten Island	95,980	49,417,067	1	560	
<b>Total NYCERS Single Family Investments</b>	<b>\$448,889</b>	<b>\$207,751,275</b>	<b>4</b>	<b>2,432</b>	
<b>Single Family Total All Systems</b>					
	<b>\$1,246,914</b>	<b>\$577,086,874</b>	<b>4</b>	<b>2,432</b>	
<b>Other Investments Detail</b>					
	<b>\$ Invested</b>		<b>Loans</b>		
	<b>Q2</b>	<b>Total</b>	<b>Q2</b>	<b>Total</b>	
Bronx	\$0	\$243,000	0	1	
Brooklyn	0	1,940,545	0	8	
Manhattan	0	875,846	0	5	
Queens	0	195,636	0	3	
Staten Island	0	0	0	0	
<b>Total NYCERS Other Investments</b>	<b>\$0</b>	<b>\$3,255,026</b>	<b>0</b>	<b>17</b>	
<b>Other Investments Total All Systems</b>					
	<b>\$0</b>	<b>\$9,041,740</b>	<b>0</b>	<b>17</b>	
<b>Grand Total NYCERS</b>					
	<b>\$448,889</b>	<b>\$286,051,794</b>			
<b>Grand Total All Systems</b>					
	<b>\$1,246,914</b>	<b>\$794,588,316</b>			

<sup>1</sup> Certain bond investment amounts are allocated pro rata across boroughs based upon unit count.

<sup>2</sup> If not indicated otherwise, superintendent units are allocated based on building size.



# NYCERS Pension Fund - Economically Targeted Investments Quarterly Report

## Equity Investments

Total Market Value \$166.13 million

### Hudson Market Value \$34.52 million

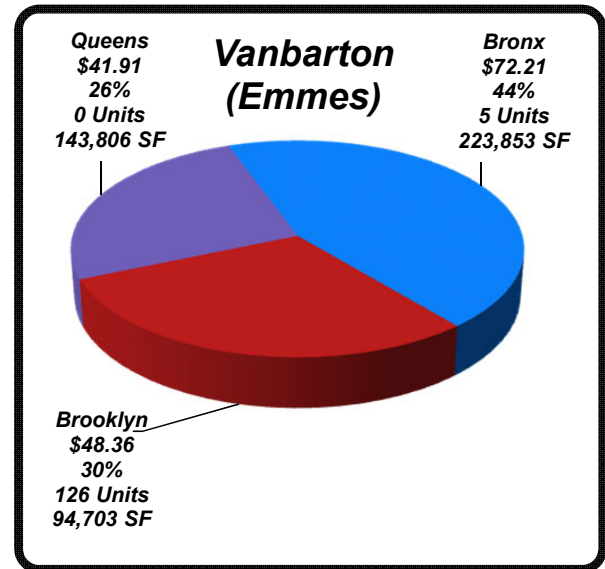
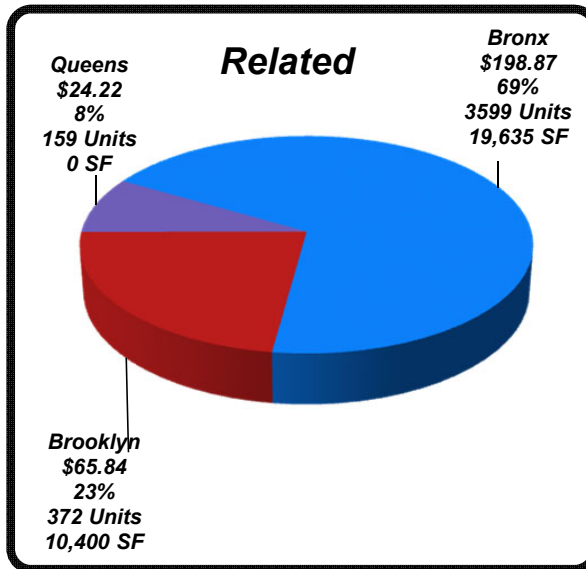
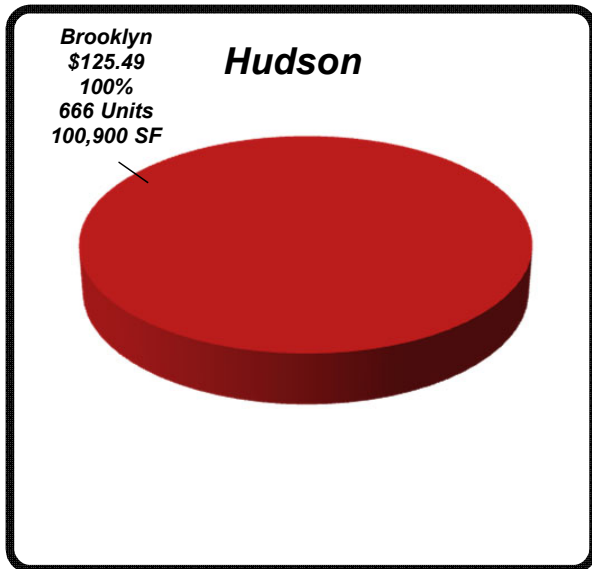
Borough	Gross			
	Capital Invested	Total Units	Workforce Units	Comm. SF
Bronx	\$0.00	0	0	0
Brooklyn	125.49	666	666	100,900
Manhattan	0.00	0	0	0
Queens	0.00	0	0	0
Staten Island	0.00	0	0	0
Outside NYC	0.00	0	0	0
<b>Totals</b>	<b>\$125.49</b>	<b>666</b>	<b>666</b>	<b>100,900</b>

### Related Market Value \$87.52 million

Borough	Gross			
	Capital Invested	Total Units	Workforce Units	Comm. SF
Bronx	\$198.87	3,599	3,356	19,635
Brooklyn	65.84	372	212	10,400
Manhattan	0.00	0	0	0
Queens	24.22	159	151	0
Staten Island	0.00	0	0	0
Outside NYC	0.00	0	0	0
<b>Totals</b>	<b>\$288.93</b>	<b>4,130</b>	<b>3,719</b>	<b>30,035</b>

### Vanbarton (Emmes) Market Value \$44.08 million

Borough	Gross			
	Capital Invested	Total Units	Workforce Units	Comm. SF
Bronx	\$72.21	5	2	223,853
Brooklyn	48.36	126	61	94,703
Manhattan	0.00	0	0	0
Queens	41.91	0	0	143,806
Staten Island	0.00	0	0	0
Outside NYC	0.00	0	0	0
<b>Totals</b>	<b>\$162.48</b>	<b>131</b>	<b>63</b>	<b>462,362</b>



\*All information is derived from quarterly reports submitted by individual managers. Performance has not been reviewed by consultants or custodial bank.

\*\*Dollar amount listed in millions

Private Equity Quarterly Report (Public):



## Private Equity Monitoring Report

For the period ended March 31, 2019

Report Prepared For:

New York City Employees' Retirement System



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All data is as of March 31, 2019 unless otherwise noted.

**PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. ACTUAL PERFORMANCE MAY VARY.**

## I. Executive Summary

The New York City Employees' Retirement System ("NYCERS") established the Alternative Investment Program (the "Program") on January 1, 1997 on behalf of its beneficiaries to participate in attractive long-term investment opportunities and to provide diversification to its overall pension investment portfolio.

StepStone Group LP ("StepStone") was engaged by NYCERS on September 1, 2011 to provide private equity advisory services for prospective investment opportunities and monitoring and reporting services for existing and new investments.

Since inception through March 31, 2019, the Program has committed US\$11.3 billion to 214 partnership investments (the "Portfolio"). This quarterly monitoring report covers the performance of the Portfolio as of March 31, 2019 as well as significant activity that occurred during the first quarter of 2019.

### Performance Summary

US\$ in millions	March 31, 2019	December 31, 2018	March 31, 2018	Quarterly Change	Yearly Change
Number of Managers	112	112	111	-	1
Number of Investments	214	211	199	3	15
Committed Capital <sup>1</sup>	\$11,278.6	\$10,900.9	\$10,216.2	\$377.7	\$1,062.4
Contributed Capital	\$9,329.5	\$9,136.1	\$8,615.5	\$193.4	\$714.0
Distributed Capital	\$8,722.1	\$8,497.8	\$7,682.2	\$224.3	\$1,039.9
Market Value	\$4,731.5	\$4,579.1	\$4,606.9	\$152.4	\$124.6
Total Value	\$13,453.6	\$13,076.9	\$12,289.1	\$376.7	\$1,164.5
Total Gain/(Loss)	\$4,124.1	\$3,940.7	\$3,673.6	\$183.4	\$450.6
Unfunded Commitment <sup>2</sup>	\$3,227.0	\$3,011.9	\$2,736.3	\$215.1	\$490.7
Total Exposure <sup>3</sup>	\$7,958.5	\$7,591.0	\$7,343.2	\$367.5	\$615.3
DPI <sup>4</sup>	0.93x	0.93x	0.89x	0.00x	0.04x
TVM <sup>5</sup>	1.44x	1.43x	1.43x	0.01x	0.02x
IRR <sup>6</sup>	9.8%	9.7%	9.8%	+ 11 bps	+ 3 bps
TVM Net of StepStone Fees <sup>7</sup>	1.44x	1.43x	1.43x	0.01x	0.01x
IRR Net of StepStone Fees <sup>7</sup>	9.8%	9.7%	9.8%	+ 11 bps	+ 3 bps

<sup>1</sup> Committed Capital is presented net of any commitment releases or expirations and reflects foreign currency exchange rate fluctuations.

<sup>2</sup> Unfunded Commitment represents the aggregate remaining commitments to partnership investments.

<sup>3</sup> Total Exposure represents the sum of Market Value and Unfunded Commitment.

<sup>4</sup> DPI, or Distributed to Paid-In Multiple, is a performance metric that measures distributions received relative to capital invested. DPI is calculated as Distributed Capital divided by Contributed Capital.

<sup>5</sup> TVM, or Total Value Multiple, is a performance metric that measures total value created by the Portfolio relative to capital invested, without consideration for time. TVM is calculated as Total Value, which is comprised of Market Value plus Distributed Capital, divided by Contributed Capital.

<sup>6</sup> IRR, or Internal Rate of Return, is a performance metric that is calculated based on the Portfolio's daily cash flows and market value as of quarter-end. IRR is net of fund manager's fees, expenses and carried interest.

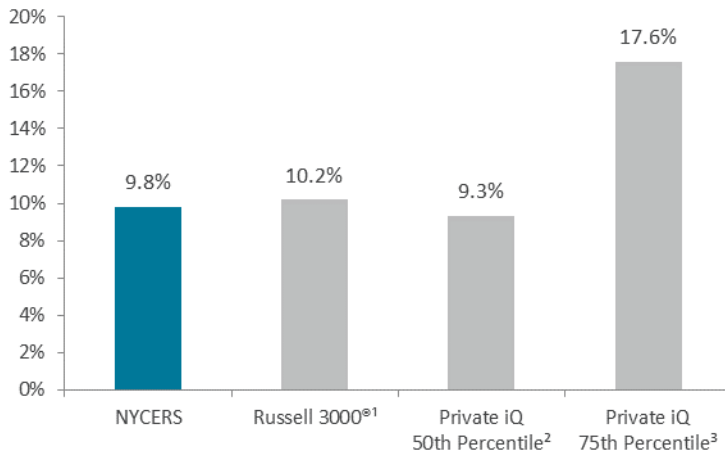
<sup>7</sup> TVM and IRR Net of StepStone fees represent TVM and IRR net of fees paid by NYCERS to StepStone.

**Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.**

## Portfolio Performance vs. Benchmarks

The Portfolio's performance is measured against a dollar-weighted public benchmark, which produced the return that would have been earned if NYCERS's private equity cash flows were invested in the Russell 3000® Index<sup>1</sup>.

The following graph illustrates Portfolio IRR performance versus benchmarks as of March 31, 2019.



<sup>1</sup>Return is a dollar-weighted PME+ calculation of daily changes in the Russell 3000® Index. Russell Investment Group is the source and owner of the trademark, service marks and copyrights related to the Russell Indexes. Russell® is a trademark of Russell Investment Group.

<sup>2</sup>Private iQ benchmark reflects Equity (all sub-sectors), Mezzanine, Distressed, Oil & Gas Assets asset classes, 50th percentile, or median, IRR at March 31, 2019 for funds with vintage years from 1998 through 2019. Note: Data may be subject to change.

<sup>3</sup>Private iQ benchmark reflects Equity (all sub-sectors), Mezzanine, Distressed, Oil & Gas Assets asset classes, 50th percentile, or median, IRR at March 31, 2019 for funds with vintage years from 1998 through 2019. Note: Data may be subject to change.

The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

## Portfolio Diversification

### By Strategy

As of March 31, 2019 (US\$ in millions)	Market Value		Unfunded Commitment		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
Buyout	\$2,994.8	63.3%	\$1,972.1	61.1%	\$4,966.8	62.4%
Growth Equity	450.8	9.5%	319.8	9.9%	770.6	9.7%
Special Situations	475.3	10.0%	215.2	6.7%	690.5	8.7%
Energy	76.6	1.6%	10.7	0.3%	87.3	1.1%
Secondaries	273.2	5.8%	461.3	14.3%	734.5	9.2%
Co-Investment	161.3	3.4%	233.0	7.2%	394.3	5.0%
Other	299.5	6.3%	15.0	0.5%	314.4	4.0%
<b>Total</b>	<b>\$4,731.5</b>	<b>100.0%</b>	<b>\$3,227.0</b>	<b>100.0%</b>	<b>\$7,958.5</b>	<b>100.0%</b>

### By Fund Geographic Focus

As of March 31, 2019 (US\$ in millions)	Market Value		Unfunded Commitment		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
North America	\$3,273.2	69.2%	\$1,685.2	52.2%	\$4,958.4	62.3%
Global	794.6	16.8%	912.7	28.3%	1,707.3	21.5%
Western Europe	654.7	13.8%	629.1	19.5%	1,283.8	16.1%
Rest of World	9.0	0.2%	-	0.0%	9.0	0.1%
<b>Total</b>	<b>\$4,731.5</b>	<b>100.0%</b>	<b>\$3,227.0</b>	<b>100.0%</b>	<b>\$7,958.5</b>	<b>100.0%</b>

Fund Geographic Focus is based on a number of factors, including the GP-stated geographic focus, the number of investments within each region, invested capital by region, the location of the firm's offices and investment professionals, and the underlying fund currency.

## II. Market Overview

### Executive Summary

Global equity markets rebounded during the first quarter of 2019 as U.S.-China trade negotiations showed signs of progress and major central banks grew more accommodative to slowing global economic growth. The MSCI Emerging Markets index increased 9.6%, as the U.S. decided to suspend tariff hikes on \$200 billion worth of Chinese goods. The MSCI Europe index rallied 10%, despite ongoing Brexit-related uncertainty, as the European Central Bank restarted the bank's stimulus plan and vowed to maintain negative interest rates through the end of the year. The S&P 500 Total Return index rose during the quarter, returning 13.6%, led by a 19.9% gain in the Information Technology sector following strong earnings. The U.S. Federal Reserve placed interest-rate hikes on hold for the remainder of the year, acknowledging the deterioration of economic momentum. The Federal Reserve's adjusted outlook on slowing growth expectations caused the Treasury yield curve to invert.

In private markets, U.S. leveraged buyout ("LBO") debt volume increased by 39.2% quarter-over-quarter, from US\$26.6 billion to US\$37.0 billion, 30.3% higher than the first quarter of 2018 and 98.8% higher than the 10-year quarterly average of US\$17.7 billion. According to data from S&P, purchase price multiples for U.S. LBOs increased to 10.3x EBITDA in the first quarter, up 0.3% from 10.3x EBITDA in the prior quarter, and above the 10-year average of 9.6x EBITDA. Average debt multiples of large corporate U.S. LBO loans remained at 5.7x for the quarter, above the 10-year average of 5.2x. Equity contributions for U.S. LBOs decreased to 42.2%, a 1.6% decrease quarter-over-quarter and above the 10-year average of 41.4%.<sup>1</sup>

Fundraising for global private equity totaled US\$139.4 billion in the first quarter of 2019, a 1.8% increase compared to the prior quarter and a 13.6% increase from the first quarter of 2018. Geographically, the U.S. represented 60.3% of total funds raised in the quarter, higher than the 10-year average of 59.6%. Funds raised in Europe, Asia, and the Rest of World made up 27.9%, 9.3% and 2.5% of global fundraising for the quarter, respectively. Invested capital for private equity funds decreased 3.4% quarter-over-quarter and increased 39.8% year-over-year, with US\$95.9 billion invested in 3,635 deals. A significant portion of the capital deployed was in the Information Technology sector, accounting for 40.7% compared to the 10-year average of 35.6%.<sup>2</sup>

Private equity-backed IPO transaction volume decreased in the first quarter with US\$3.8 billion raised in 12 IPOs. The amount raised through IPOs decreased 25.4% compared to the prior quarter and 52.1% compared to the first quarter of 2018. The largest IPOs of the quarter were completed by Lyft, Inc. (NASDAQ: LYFT), a provider of peer-to-peer on-demand ridesharing services in North America, which raised US\$2.6 billion, and Gossamer Bio, Inc. (NASDAQ: GOSS), a clinical-stage biopharmaceutical company focused on developing therapeutics in the disease areas of immunology, inflammation, and oncology, which raised US\$317.4 million. Together these deals represent 73.1% of the total value for all IPOs in the quarter. M&A activity decreased in the first quarter with a total value of US\$169.7 billion, a 23.1% decrease compared to the prior quarter and a 34.8% decrease compared to the first quarter of 2018. The largest M&A deals of the quarter were the US\$80.9 billion purchase of Shire plc by Takeda Pharmaceutical Company Limited (TSE: 4502) and the US\$11.4 billion purchase of EnLink Midstream Partners, LP by EnLink Midstream, LLC (NYSE: ENLC). Together these deals represent 54.3% of the total value for all deals in the quarter.<sup>3</sup>

<sup>1</sup> S&P U.S. LBO Review, Q1 2019

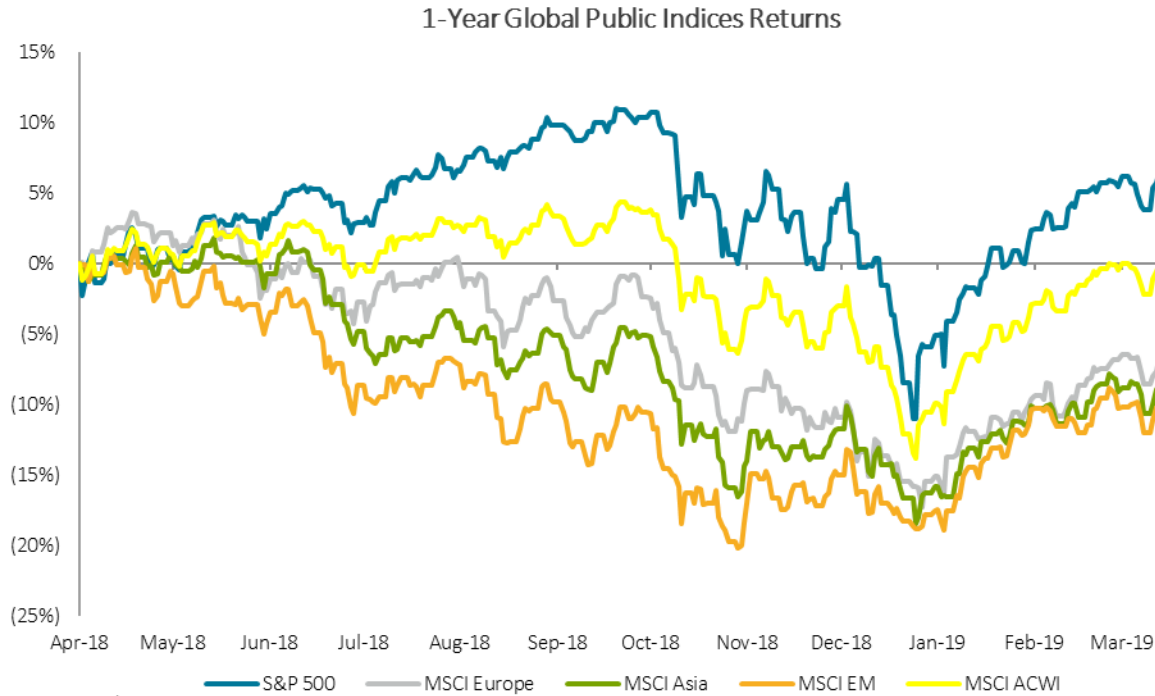
<sup>2</sup> Thomson ONE data as of June 6, 2019. Please note, all data in this report from Thomson ONE is subject to revision as further data is made available.

<sup>3</sup> Capital IQ Transaction Screening Report as of June 6, 2019

## Capital Markets Overview

### Public Equity Markets

Global public markets rallied during the quarter as China-U.S. trades concerns eased and major banks grew more accommodative to slowing global economic growth. U.S. markets fueled global growth due to the Federal Reserve’s dovish tilt in planned interest rate hikes and progress in U.S.-China trade talks. Information Technology, Energy, and Consumer Discretionary sectors for U.S. equities increased 19.9%, 16.4%, and 15.7% for the quarter, respectively. Although global markets grew over the quarter, economic growth has become a cause of concern amongst investors.



The following table shows the returns of four major MSCI indices, as well as the S&P 500 and the S&P 500 Total Return Index, over various time horizons through March 31, 2019. Returns for time periods greater than one year are annualized. During the quarter, U.S. markets increased 13.6% followed by MSCI ACWI at 11.6%, MSCI Europe at 10.0%, and MSCI Emerging Markets at 9.6%.

### Regional Indices

	3 Mo	1 Yr	3 Yr	5 Yr	10 Yr
MSCI Asia	8.8%	(8.4%)	7.9%	4.0%	7.2%
MSCI Europe	10.0%	(6.6%)	3.5%	(1.7%)	5.8%
MSCI EM	9.6%	(9.6%)	8.1%	1.2%	6.4%
MSCI ACWI	11.6%	0.5%	8.5%	4.4%	9.7%
S&P 500	13.1%	7.3%	11.2%	8.6%	13.5%
S&P 500 Total Return*	13.6%	9.5%	13.5%	10.9%	15.9%

For the period ended March 31, 2019

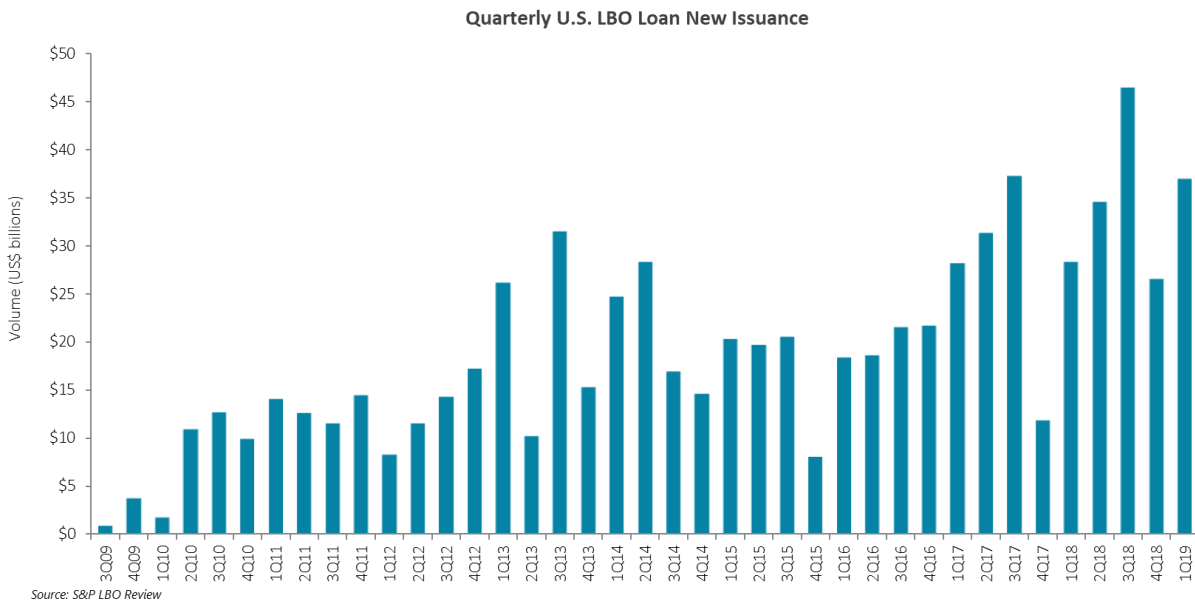
\*Includes reinvestment of dividends.

Source: Capital IQ

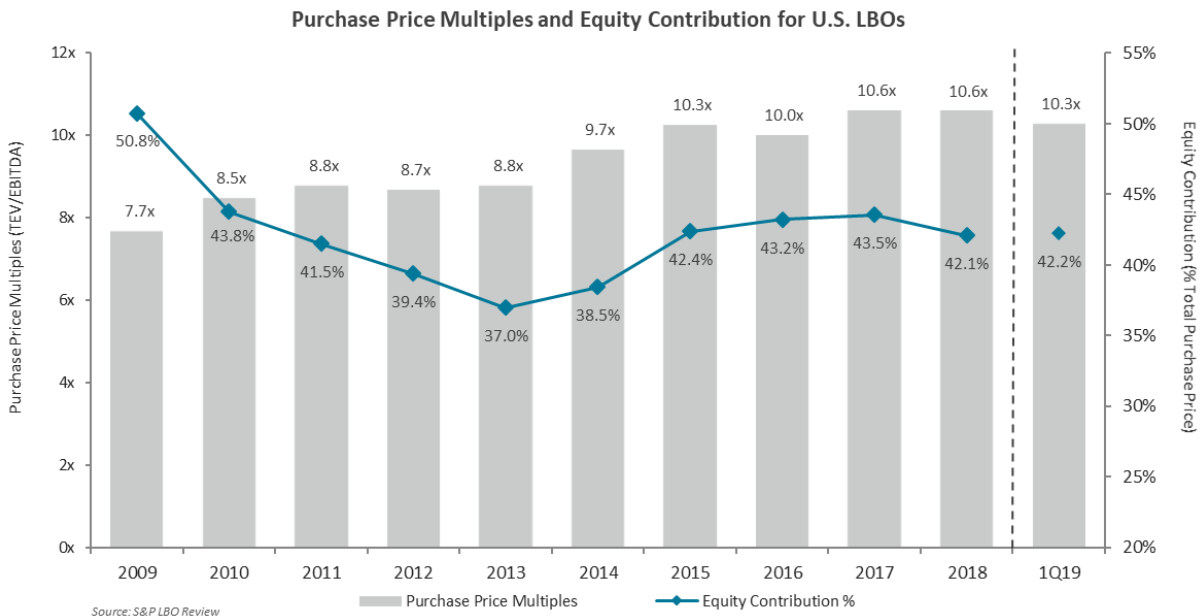
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## Debt Markets

During the first quarter of 2019, U.S. LBO new loan issuance totaled US\$37.0 billion, representing an increase of 39.2% from the prior quarter and an increase of 30.3% from the first quarter of 2018. The following chart shows the quarterly volume of U.S. LBO new loan issuance for the past ten years.



The weighted average purchase price multiple for U.S. LBO deals was 10.3x total enterprise value (“TEV”) to EBITDA in the first quarter, remaining constant with the prior quarter and above the 10-year average of 9.6x. Average debt multiples of large corporate U.S. LBO loans remained at 5.7x EBITDA, as equity contributions for U.S. LBOs decreased from 42.9% to 42.2%. The following chart compares purchase price multiples and equity contribution percentages for U.S. LBO deals.



## Private Equity Market Overview

### All Private Equity

The table below shows the pooled Internal Rate of Return (“IRR”) performance of global private equity investments by sector over various investment horizons through March 31, 2019. The All Private Equity benchmark had an IRR of 3.8% for the quarter. All five sectors were positive for the quarter, led by Venture Capital with 5.3%, followed by Large Buyouts with 4.5%, Energy with 2.5%, Small/Middle Buyouts with 2.4%, and Mezzanine with 1.8%.

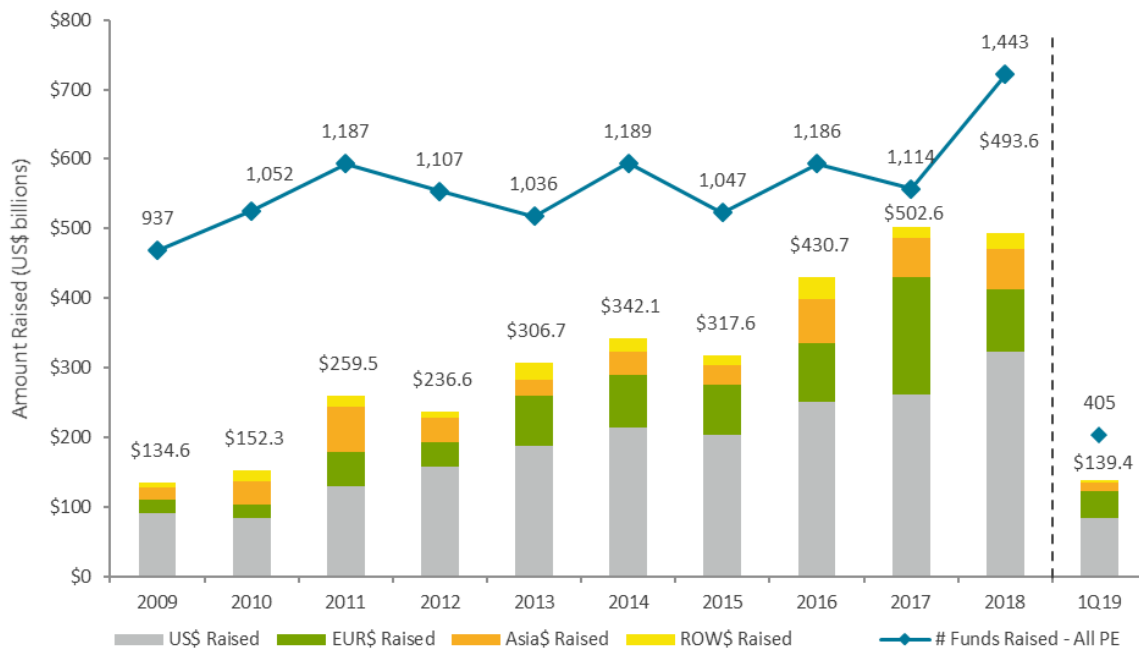
Sector	3 Mo	1 Yr	3 Yr	5 Yr	10 Yr
Small/Middle Buyouts (<\$3bn)	2.4%	9.4%	15.0%	11.7%	14.1%
Large Buyouts (>\$3bn)	4.5%	10.7%	15.5%	12.5%	15.7%
Mezzanine	1.8%	5.0%	9.2%	8.3%	9.9%
Energy	2.5%	(6.3%)	7.8%	(0.5%)	5.4%
Venture Capital	5.3%	21.2%	15.0%	15.4%	14.9%
<b>All Private Equity</b>	<b>3.8%</b>	<b>11.3%</b>	<b>14.2%</b>	<b>11.7%</b>	<b>14.3%</b>

Source: Burgiss PrivateIQ

### Fundraising

Global private equity fundraising totaled US\$139.4 billion in the first quarter, representing an increase of 1.8% quarter-over-quarter and an increase of 13.6% compared to the first quarter of 2018. Buyout fundraising totaled US\$91.5 billion, decreasing 11.4% quarter-over-quarter and increasing 13.3% compared to the prior year period. Venture Capital raised US\$21.5 billion in the first quarter, a decrease of 5.0% quarter-over-quarter and an increase of 50.6% compared to the first quarter of 2018. Geographically, the U.S. represented 60.3% of total funds raised in the quarter, higher than the 10-year average of 59.6%. Funds raised in Europe, Asia, and the Rest of World made up 27.9%, 9.3% and 2.5%, respectively, of global fundraising for the quarter. The chart below shows annual private equity fundraising activity across all sectors.

Regional Fundraising by Year – All Private Equity

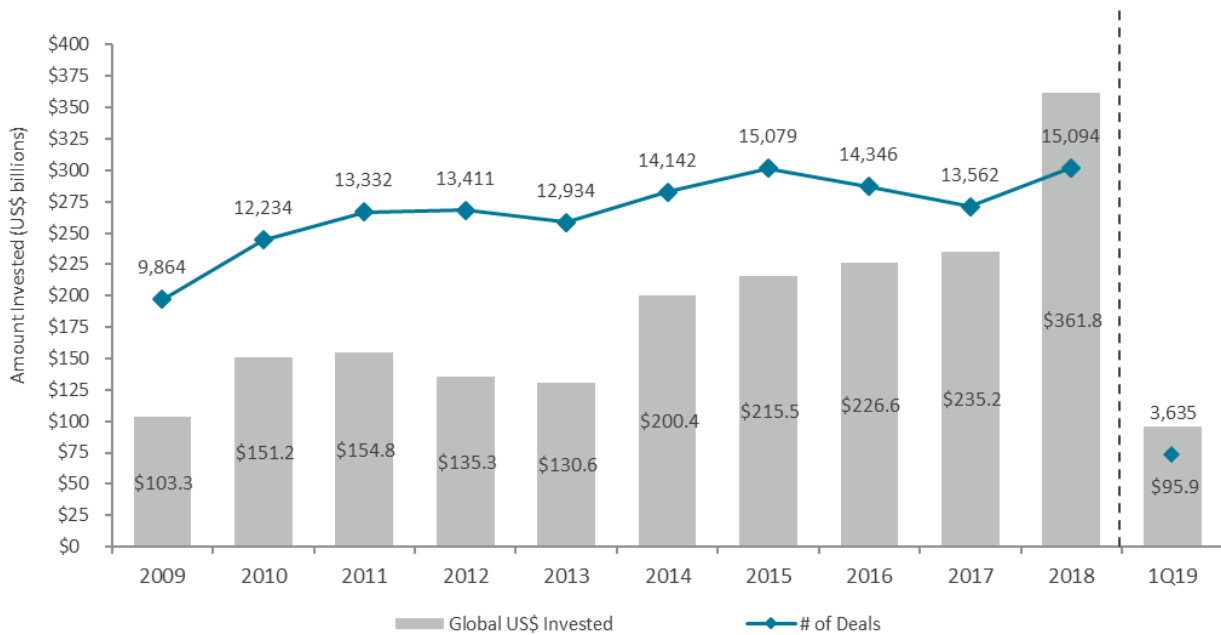


Source: Thomson ONE

### Investment Activity

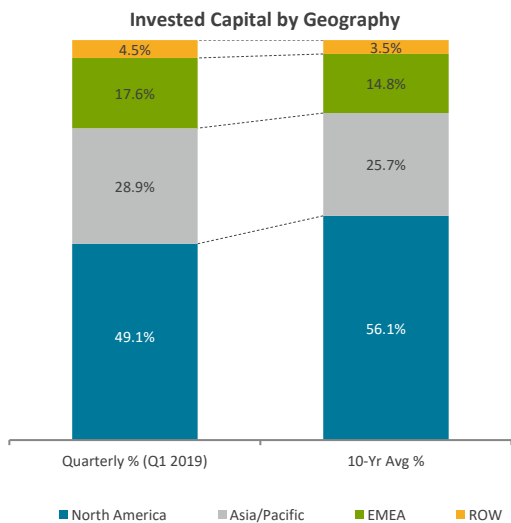
Private equity funds invested US\$95.9 billion globally during the first quarter, representing a quarter-over-quarter decrease of 7.3% and an increase of 37.3% from the first quarter of 2018. The average investment size during the quarter was US\$26.4 million, a decrease of 3.4% compared to the average investment size of US\$27.3 million in the fourth quarter.

**Investment Activity - All Private Equity**

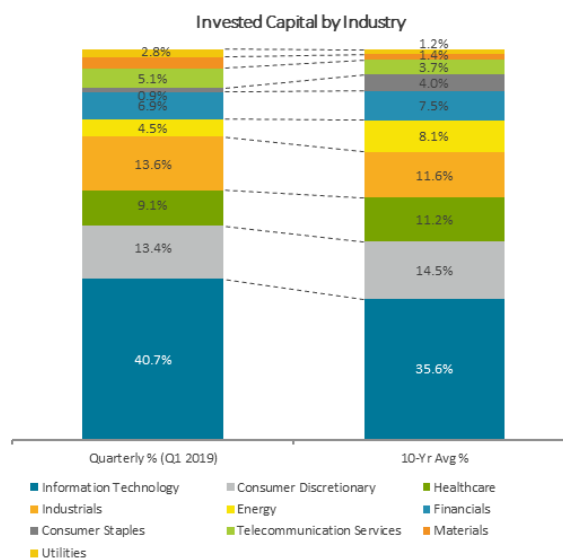


Source: Thomson ONE

The graphs below depict the percentage of invested capital by industry and geography for the first quarter of 2019 and over the last ten years. The Information Technology sector had the largest departure from its 10-year average, accounting for US\$39.0 billion of transactions, or 40.7% of total capital invested by private equity firms, compared to its 10-year average of 35.6%. Considering geography, investment activity was below average in North America, comprising 49.1% of total capital invested compared to its 10-year historical average of 56.1%.



Source: Thomson ONE

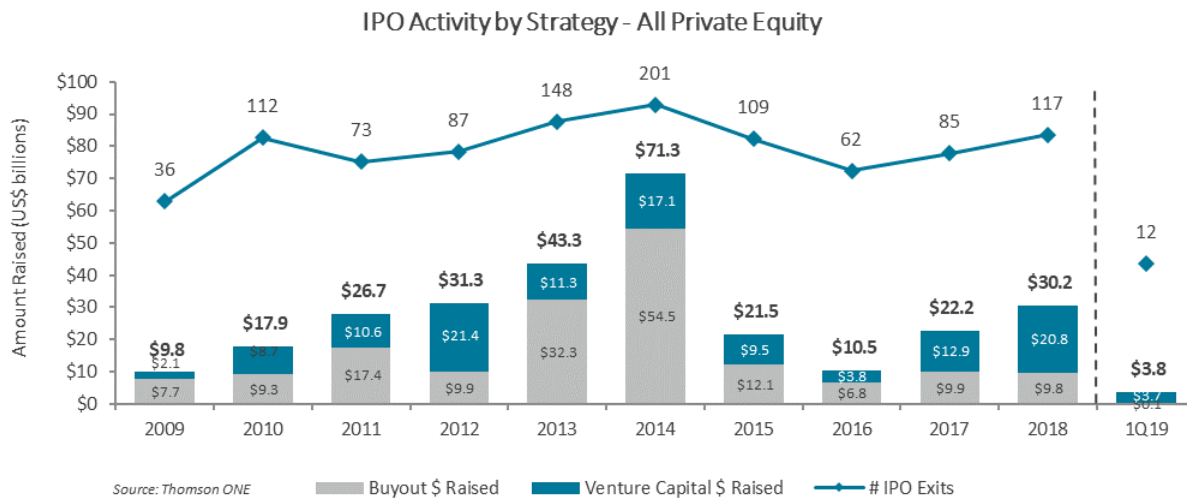


Source: Thomson ONE

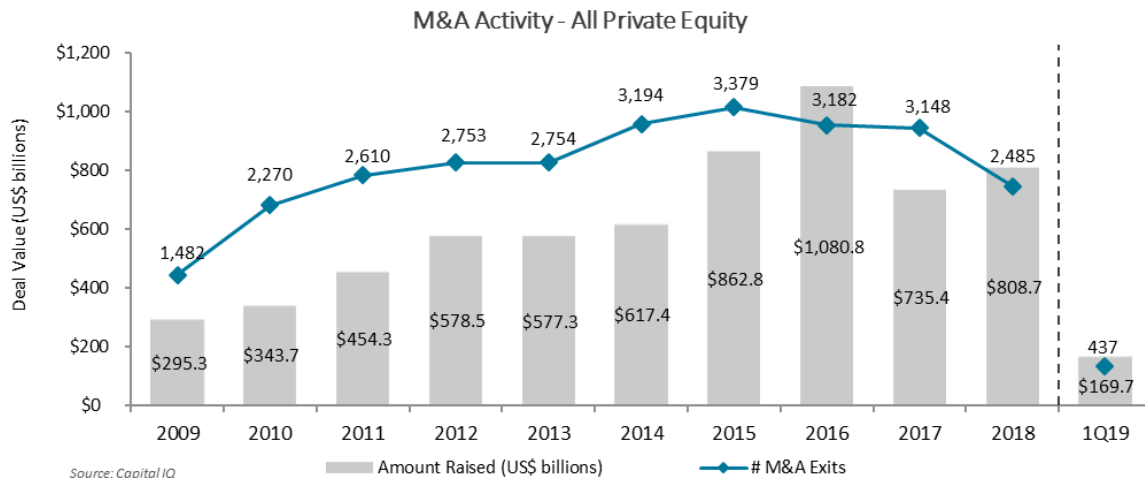


## Deal Environment

In the first quarter, the number of private equity-backed IPOs decreased 52.0%, from 25 to 12, and the amount raised decreased 25.4%, from US\$5.1 billion to US\$3.8 billion, compared to the prior quarter. The IPOs were comprised of 11 venture capital-backed IPOs that raised a total of US\$3.7 billion and one IPO from buyouts that raised US\$0.1 billion. The largest IPOs of the quarter were completed by Lyft, Inc. (NASDAQ: LYFT), a provider of peer-to-peer on-demand ridesharing services in North America, which raised US\$2.6 billion, and Gossamer Bio, Inc. (NASDAQ: GOSS), a clinical-stage biopharmaceutical company focused on developing therapeutics in the disease areas of immunology, inflammation, and oncology, which raised US\$317.4 million. Together these deals represented 73.1% of the total value for all IPOs in the quarter. The graph below shows the amount raised and the number of IPOs on the NYSE and NASDAQ.



The number of private equity-backed Mergers and Acquisitions (“M&A”) declined 23.1%, and the total value of M&A deals decreased 34.8% compared to the prior quarter. In the first quarter, there were 437 private-equity backed M&A deals totaling US\$169.7 billion. The largest M&A deals of the quarter were the US\$80.9 billion purchase of Shire plc by Takeda Pharmaceutical Company Limited (TSE: 4502) and the US\$11.4 billion purchase of EnLink Midstream Partners, LP by EnLink Midstream, LLC (NYSE: ENLC). Together these deals represent 54.3% of the total value for all deals in the quarter. The graph below shows the deal value and the number of M&A deals.



### III. Portfolio Review

#### Quarterly Highlights

- Cash Flow Activity** – During the first quarter of 2019, the Portfolio made US\$193.4 million of contributions and received US\$224.3 million of distributions, for a net cash inflow of US\$31.0 million, compared to a net cash inflow of US\$92.7 million during the prior quarter and a net cash inflow of US\$16.0 million during the first quarter of 2018. Contributions decreased 16.2% from the prior quarter and increased 21.4% from the first quarter of 2018. The most recent four quarter average of the Program’s contributions is US\$178.5 million. Distributions decreased 30.6% from the prior quarter and increased 28.0% from the first quarter of 2018. The most recent four quarter average of the Program’s distributions is US\$260.0 million.
- Recent Portfolio Activity** – During the first quarter of 2019, net of cash flow activity, the valuation of the Portfolio increased by US\$183.4 million, or 4.0%, from the prior quarter. The increase in Portfolio value is primarily attributable to the strong performance of Mega Buyout funds during the quarter, which generated a US\$51.0 million increase in valuation from the prior quarter-end. During the last twelve months, net of cash flow activity, the valuation of the Portfolio increased by US\$450.6 million, or 10.5%, from the quarter ended March 31, 2018.
- New Investment Commitments** – The Program closed on three new investment commitments during the first quarter of 2019, totaling US\$386.5 million.

<i>As of March 31, 2019 (US\$ in millions)</i>	Month Closed	Sub-Strategy	Geographic Focus	Committed Capital
Warburg Pincus Global Growth, L.P.	January 2019	Growth Equity	Global	\$ 125.5
ASF VIII L.P.	March 2019	Secondaries	Europe	174.0
ASF VIII B NYC Co-Invest L.P.	March 2019	Co-Investment	Europe	87.0
<b>Total</b>				<b>\$ 386.5</b>

- Subsequent Investment Commitments** – Subsequent to quarter-end through August 22, 2019, the Program has closed on six new investment commitments, totaling US\$544.0 million.

<i>As of August 22, 2019 (US\$ in millions)</i>	Month Closed	Sub-Strategy	Geographic Focus	Committed Capital
Lindsay Goldberg V, L.P.	April 2019	Buyout	North America	\$ 87.0
Lexington Co-Invest Partners B, L.P.	May 2019	Co-Investment	Global	35.5
Platinum Equity Capital Partners V, L.P.	July 2019	Special Situations	North America	157.0
Apax X USD L.P.	July 2019	Buyout	Global	104.5
Trilantic Capital Partners VI (North America) L.P.	July 2019	Buyout	North America	51.0
Blackstone Capital Partners VIII L.P.	August 2019	Buyout	Global	109.0
<b>Total</b>				<b>\$ 544.0</b>

## Investment Performance

### Since Inception Performance

<i>US\$ in millions</i>	March 31, 2019	December 31, 2018	March 31, 2018	Quarterly Change	Yearly Change
<b>Active Investments</b>					
Number of Managers	92	92	96	-	(4)
Number of Investments	183	181	177	2	6
Committed Capital <sup>1</sup>	\$10,375.1	\$10,032.2	\$9,574.9	\$342.9	\$800.2
Contributed Capital	\$8,302.6	\$8,144.0	\$7,872.0	\$158.5	\$430.5
Distributed Capital	\$7,476.7	\$7,295.9	\$6,784.2	\$180.9	\$692.5
Market Value	\$4,731.5	\$4,579.1	\$4,606.9	\$152.4	\$124.6
Total Value	\$12,208.2	\$11,874.9	\$11,391.1	\$333.3	\$817.1
Total Gain/(Loss)	\$3,905.7	\$3,730.9	\$3,519.1	\$174.8	\$386.6
Unfunded Commitment <sup>2</sup>	\$3,227.0	\$3,011.9	\$2,736.3	\$215.1	\$490.7
Total Exposure <sup>3</sup>	\$7,958.5	\$7,591.0	\$7,343.2	\$367.5	\$615.3
DPI <sup>4</sup>	0.90x	0.90x	0.86x	0.00x	0.04x
TVM <sup>5</sup>	1.47x	1.46x	1.45x	0.01x	0.02x
IRR <sup>6</sup>	10.5%	10.3%	10.3%	+ 17 bps	+ 27 bps
<b>Exited Investments</b>					
Number of Managers	27	26	19	1	8
Number of Investments	31	30	22	1	9
Committed Capital <sup>1</sup>	\$903.6	\$868.7	\$641.3	\$34.8	\$262.3
Contributed Capital	\$1,026.9	\$992.1	\$743.5	\$34.8	\$283.4
Distributed Capital	\$1,245.4	\$1,201.9	\$898.0	\$43.4	\$347.4
Total Value	\$1,245.4	\$1,201.9	\$898.0	\$43.4	\$347.4
Total Gain/(Loss)	\$218.4	\$209.8	\$154.4	\$8.6	\$64.0
Unfunded Commitment <sup>2</sup>	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
DPI <sup>4</sup>	1.21x	1.21x	1.21x	0.00x	0.00x
TVM <sup>5</sup>	1.21x	1.21x	1.21x	0.00x	0.00x
IRR <sup>6</sup>	5.4%	5.5%	5.7%	- 11 bps	- 34 bps
<b>Total Portfolio</b>					
Number of Managers	112	112	111	-	1
Number of Investments	214	211	199	3	15
Committed Capital <sup>1</sup>	\$11,278.6	\$10,900.9	\$10,216.2	\$377.7	\$1,062.4
Contributed Capital	\$9,329.5	\$9,136.1	\$8,615.5	\$193.4	\$714.0
Distributed Capital	\$8,722.1	\$8,497.8	\$7,682.2	\$224.3	\$1,039.9
Market Value	\$4,731.5	\$4,579.1	\$4,606.9	\$152.4	\$124.6
Total Value	\$13,453.6	\$13,076.9	\$12,289.1	\$376.7	\$1,164.5
Total Gain/(Loss)	\$4,124.1	\$3,940.7	\$3,673.6	\$183.4	\$450.6
Unfunded Commitment <sup>2</sup>	\$3,227.0	\$3,011.9	\$2,736.3	\$215.1	\$490.7
Total Exposure <sup>3</sup>	\$7,958.5	\$7,591.0	\$7,343.2	\$367.5	\$615.3
DPI <sup>4</sup>	0.93x	0.93x	0.89x	0.00x	0.04x
<b>TVM<sup>5</sup></b>	<b>1.44x</b>	<b>1.43x</b>	<b>1.43x</b>	<b>0.01x</b>	<b>0.02x</b>
<b>IRR<sup>6</sup></b>	<b>9.8%</b>	<b>9.7%</b>	<b>9.8%</b>	<b>+ 11 bps</b>	<b>+ 3 bps</b>
TVM Net of StepStone Fees <sup>7</sup>	1.44x	1.43x	1.43x	0.01x	0.01x
IRR Net of StepStone Fees <sup>7</sup>	9.8%	9.7%	9.8%	+ 11 bps	+ 3 bps

<sup>1</sup> Committed Capital is presented net of any commitment releases or expirations and reflects foreign currency exchange rate fluctuations. Total committed includes underlying fund commitments to the EM 2012 and 2015 Programs.

<sup>2</sup> Unfunded Commitment represents the aggregate remaining commitments to partnership investments.

<sup>3</sup> Total Exposure represents the sum of Market Value and Unfunded Commitment.

<sup>4</sup> DPI, or Distributed to Paid-In Multiple, is a performance metric that measures distributions received relative to capital invested. DPI is calculated as Distributed Capital divided by Contributed Capital.

<sup>5</sup> TVM, or Total Value Multiple, is a performance metric that measures total value created by the Portfolio relative to capital invested, without consideration for time. TVM is calculated as Total Value, which is comprised of Market Value plus Distributed Capital, divided by Contributed Capital.

<sup>6</sup> IRR, or Internal Rate of Return, is a performance metric that is calculated based on the Portfolio's daily cash flows and market value as of quarter-end. IRR is net of fund manager's fees, expenses and carried interest.

Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

### Performance by Vintage Year

The following table and chart illustrate the Portfolio's since inception investment performance by vintage year as of March 31, 2019 relative to the median quartile U.S. All Private Equity TVM and IRR benchmarks as provided by Burgiss Private iQ. Performance of funds that are less than two years old are not meaningful. Note that Burgiss Private iQ data is continuously updated and is therefore subject to change.

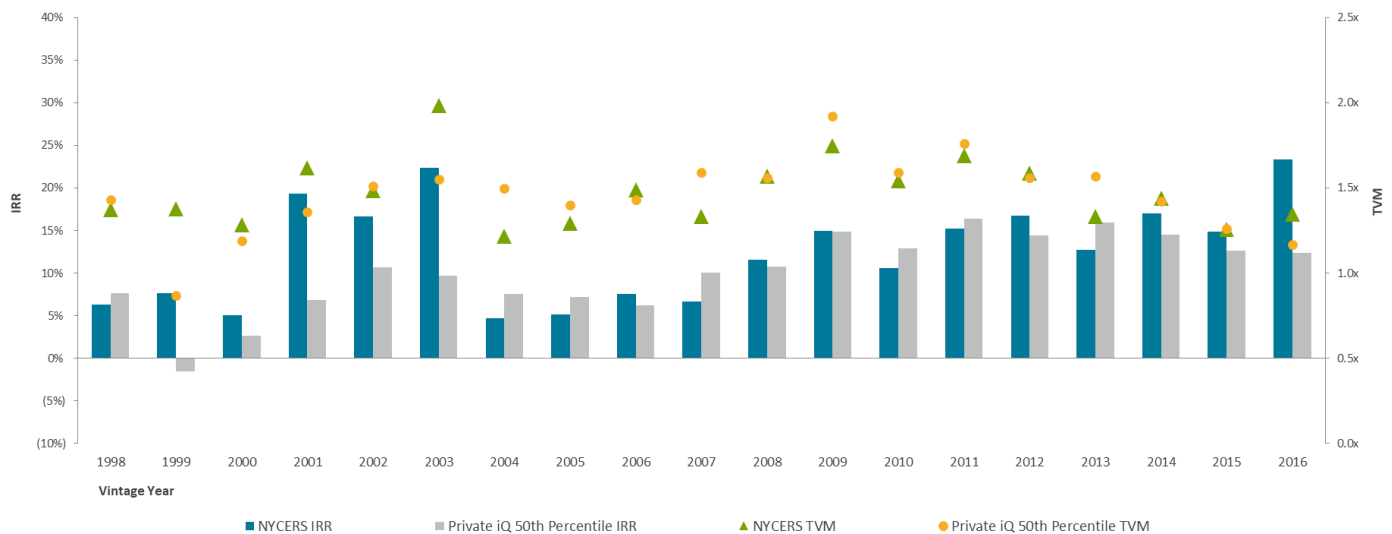
As of March 31, 2019 (US\$ in millions)

Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Unfunded Commitment	Total Exposure	TVM	IRR	PME Return <sup>1</sup>	PME Spread <sup>2</sup>	Private iQ U.S. All PE 50th Percentile TVM	Private iQ U.S. All PE 50th Percentile IRR
1998	\$50.0	\$50.2	\$69.1	\$0.0	\$0.0	\$0.0	1.37x	6.3%	3.4%	2.9%	1.43x	7.7%
1999	88.6	102.1	139.9	0.8	-	0.8	1.38x	7.6%	6.2%	1.4%	0.87x	(1.5%)
2000	116.9	137.1	173.9	2.0	7.4	9.5	1.28x	5.1%	5.3%	-0.2%	1.19x	2.7%
2001	98.1	128.5	206.6	1.4	2.8	4.2	1.62x	19.4%	7.7%	11.7%	1.36x	6.9%
2002	100.0	124.8	180.6	4.8	2.8	7.6	1.49x	16.7%	7.2%	9.5%	1.51x	10.7%
2003	104.4	114.2	222.5	3.9	11.9	15.8	1.98x	22.3%	6.9%	15.5%	1.55x	9.7%
2004	433.6	475.7	511.9	66.9	9.4	76.3	1.22x	4.7%	7.9%	-3.2%	1.50x	7.6%
2005	520.7	576.5	681.4	65.0	16.5	81.5	1.29x	5.1%	7.0%	-1.8%	1.40x	7.2%
2006	992.9	1,121.6	1,460.0	210.9	28.6	239.5	1.49x	7.6%	8.6%	-1.0%	1.43x	6.2%
2007	940.2	1,011.3	1,122.6	223.9	63.2	287.1	1.33x	6.6%	11.5%	-4.9%	1.59x	10.0%
2008	1,235.1	1,418.8	1,630.9	595.9	87.1	683.0	1.57x	11.6%	13.6%	-2.0%	1.56x	10.8%
2009	179.2	181.7	252.6	65.2	10.4	75.5	1.75x	14.9%	14.5%	0.4%	1.92x	14.9%
2010	175.0	195.8	184.3	117.7	9.6	127.3	1.54x	10.6%	12.7%	-2.2%	1.59x	12.9%
2011	789.0	820.2	859.3	524.9	95.9	620.9	1.69x	15.2%	13.0%	2.2%	1.76x	16.4%
2012	610.5	607.9	452.7	513.0	78.0	591.0	1.59x	16.8%	11.9%	4.9%	1.56x	14.5%
2013	463.1	397.8	155.4	375.5	111.2	486.7	1.33x	12.7%	11.2%	1.5%	1.57x	16.0%
2014	600.7	551.9	262.9	532.5	146.2	678.7	1.44x	17.0%	11.2%	5.8%	1.42x	14.5%
2015	827.6	588.8	84.3	654.9	261.4	916.2	1.26x	14.9%	11.5%	3.4%	1.26x	12.6%
2016	396.0	299.8	61.0	342.4	144.1	486.4	1.35x	23.4%	11.2%	12.2%	1.17x	12.4%
2017	683.2	301.1	8.4	305.5	389.4	695.0	NM	NM	NM	NM	NM	NM
2018	1,208.6	121.4	1.8	117.4	1,088.2	1,205.6	NM	NM	NM	NM	NM	NM
2019	665.3	2.2	-	6.9	663.1	670.0	NM	NM	NM	NM	NM	NM
<b>Total</b>	<b>\$11,278.6</b>	<b>\$9,329.5</b>	<b>\$8,722.1</b>	<b>\$4,731.5</b>	<b>\$3,227.0</b>	<b>\$7,958.5</b>	<b>1.44x</b>	<b>9.8%</b>	<b>10.2%</b>	<b>-0.4%</b>	<b>1.34x</b>	<b>9.3%</b>

<sup>1</sup> Russell 3000 PME+

<sup>2</sup> PME Spread is calculated as IRR minus PME Return.

As of March 31, 2019



## Portfolio Periodic Returns vs. Russell 3000® Index

As of March 31, 2019	3 Month	1 Year	3 Year	5 Year	10 Year	Since Inception
NYCERS IRR	4.2%	10.4%	13.4%	10.7%	11.8%	9.8%
Russell 3000® <sup>1</sup>	14.2%	3.7%	13.8%	10.3%	16.6%	10.2%
Russell 3000® + 300 bps <sup>2</sup>	17.2%	6.7%	16.8%	13.3%	19.6%	13.2%
<b>NYCERS Outperformance/(Underperformance)</b>						
vs. Russell 3000® + 300 bps <sup>2</sup>	(13.1%)	3.7%	(3.3%)	(2.6%)	(7.8%)	(3.4%)

<sup>1</sup>Return is a dollar-weighted PME+ calculation of daily changes in the Russell 3000® Index. Russell Investment Group is the source and owner of the trademark, service marks and copyrights related to the Russell Indexes. Russell® is a trademark of Russell Investment Group.

<sup>2</sup>Return is a dollar-weighted PME+ calculation of daily changes in the Russell 3000® Index plus a 300 basis point illiquidity premium (the Opportunity Cost Benchmark).

Note: The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

## Performance by Strategy / Sub-Strategy

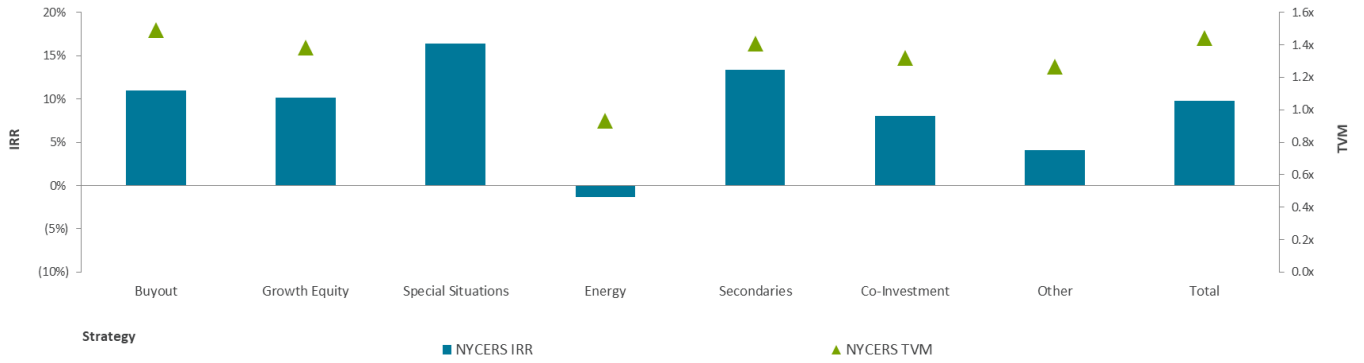
The following table and charts illustrate the Portfolio's since inception investment performance by strategy and sub-strategy as of March 31, 2019.

As of March 31, 2019 (US\$ in millions)

Strategy / Sub-Strategy	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Unfunded Commitment	Total Exposure	TVM	IRR
<b>Buyout</b>	<b>\$7,082.4</b>	<b>\$6,034.8</b>	<b>\$6,000.3</b>	<b>\$2,994.8</b>	<b>\$1,972.1</b>	<b>\$4,966.8</b>	<b>1.49x</b>	<b>11.0%</b>
Mega Buyout	2,236.5	1,430.7	1,015.3	969.1	1,016.2	1,985.2	1.39x	11.4%
Large Buyout	1,989.6	1,859.3	1,872.9	1,081.4	407.0	1,488.4	1.59x	14.8%
Middle-Market Buyout	1,656.7	1,489.4	1,745.4	493.7	408.3	902.0	1.50x	9.6%
Small Buyout	1,199.6	1,255.4	1,366.7	450.5	140.6	591.2	1.45x	9.0%
<b>Growth Equity</b>	<b>812.5</b>	<b>533.4</b>	<b>285.4</b>	<b>450.8</b>	<b>319.8</b>	<b>770.6</b>	<b>1.38x</b>	<b>10.2%</b>
<b>Special Situations</b>	<b>812.2</b>	<b>751.5</b>	<b>734.7</b>	<b>475.3</b>	<b>215.2</b>	<b>690.5</b>	<b>1.61x</b>	<b>16.4%</b>
<b>Energy</b>	<b>355.0</b>	<b>394.3</b>	<b>291.7</b>	<b>76.6</b>	<b>10.7</b>	<b>87.3</b>	<b>0.93x</b>	<b>-1.3%</b>
<b>Secondaries</b>	<b>1,027.1</b>	<b>584.9</b>	<b>551.4</b>	<b>273.2</b>	<b>461.3</b>	<b>734.5</b>	<b>1.41x</b>	<b>13.4%</b>
<b>Co-Investment</b>	<b>466.6</b>	<b>240.6</b>	<b>156.7</b>	<b>161.3</b>	<b>233.0</b>	<b>394.3</b>	<b>1.32x</b>	<b>8.1%</b>
<b>Other</b>	<b>722.9</b>	<b>790.1</b>	<b>701.8</b>	<b>299.5</b>	<b>15.0</b>	<b>314.4</b>	<b>1.27x</b>	<b>4.1%</b>
Venture Capital	656.5	699.2	574.5	298.4	11.0	309.5	1.25x	3.5%
Mezzanine	66.3	90.9	127.4	1.0	3.9	5.0	1.41x	13.3%
<b>Total</b>	<b>\$11,278.6</b>	<b>\$9,329.5</b>	<b>\$8,722.1</b>	<b>\$4,731.5</b>	<b>\$3,227.0</b>	<b>\$7,958.5</b>	<b>1.44x</b>	<b>9.8%</b>

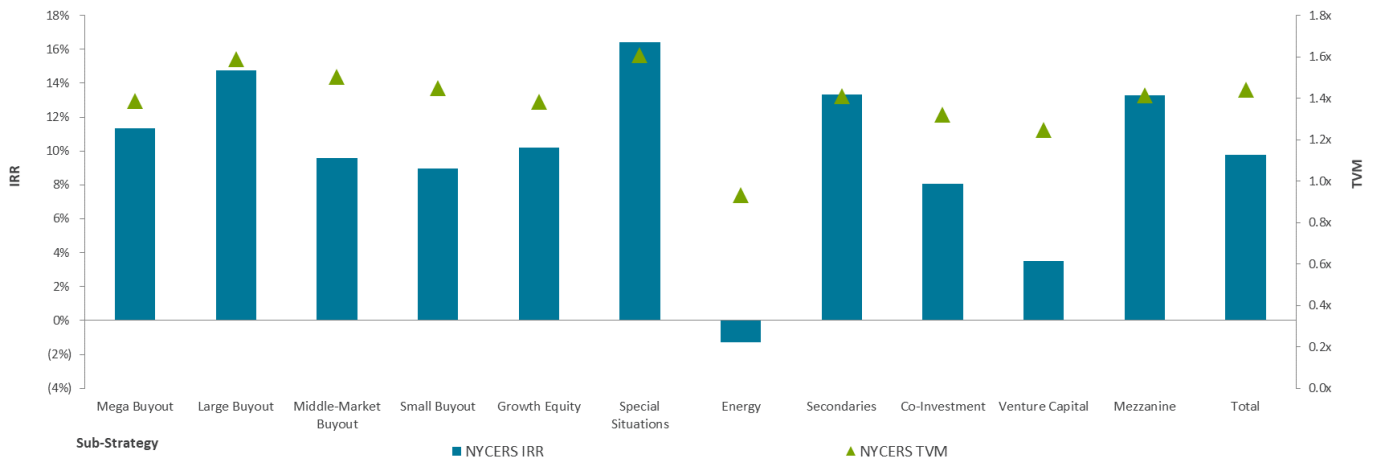
### Performance by Strategy

As of March 31, 2019



### Performance by Sub-Strategy

As of March 31, 2019



## Portfolio Diversification

The following tables illustrate the Portfolio's diversification by strategy and fund geographic focus as of March 31, 2019.

### By Strategy/Sub-Strategy

As of March 31, 2019 (US\$ in millions)	Market Value		Unfunded Commitment		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
<b>Buyout</b>	<b>\$2,994.8</b>	<b>63.3%</b>	<b>\$1,972.1</b>	<b>61.1%</b>	<b>\$4,966.8</b>	<b>62.4%</b>
Mega Buyout	969.1	20.5%	1,016.2	31.5%	1,985.2	24.9%
Large Buyout	1,081.4	22.9%	407.0	12.6%	1,488.4	18.7%
Middle-Market Buyout	493.7	10.4%	408.3	12.7%	902.0	11.3%
Small Buyout	450.5	9.5%	140.6	4.4%	591.2	7.4%
<b>Growth Equity</b>	<b>450.8</b>	<b>9.5%</b>	<b>319.8</b>	<b>9.9%</b>	<b>770.6</b>	<b>9.7%</b>
<b>Special Situations</b>	<b>475.3</b>	<b>10.0%</b>	<b>215.2</b>	<b>6.7%</b>	<b>690.5</b>	<b>8.7%</b>
Energy	76.6	1.6%	10.7	0.3%	87.3	1.1%
Secondaries	273.2	5.8%	461.3	14.3%	734.5	9.2%
Co-Investment	161.3	3.4%	233.0	7.2%	394.3	5.0%
Other	299.5	6.3%	15.0	0.5%	314.4	4.0%
Venture Capital	298.4	6.3%	11.0	0.3%	309.5	3.9%
Mezzanine	1.0	0.0%	3.9	0.1%	5.0	0.1%
<b>Total</b>	<b>\$4,731.5</b>	<b>100.0%</b>	<b>\$3,227.0</b>	<b>100.0%</b>	<b>\$7,958.5</b>	<b>100.0%</b>

### By Fund Geographic Focus

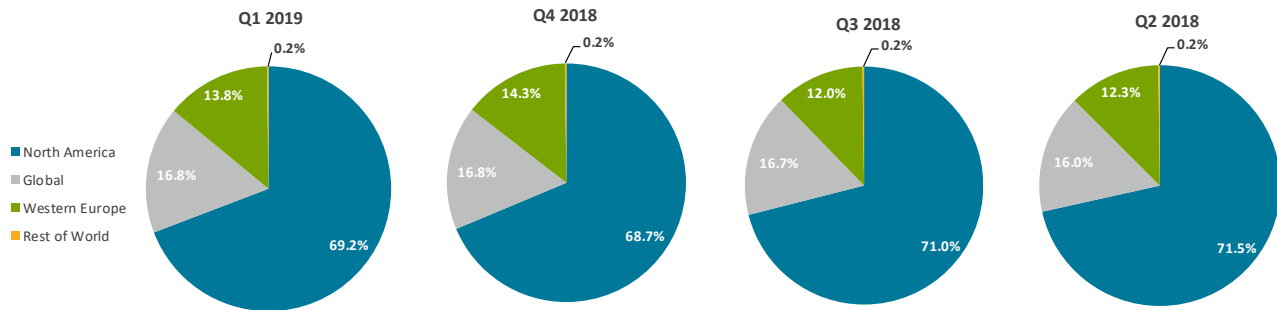
As of March 31, 2019 (US\$ in millions)	Market Value		Unfunded Commitment		Total Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
North America	\$3,273.2	69.2%	\$1,685.2	52.2%	\$4,958.4	62.3%
Global	794.6	16.8%	912.7	28.3%	1,707.3	21.5%
Western Europe	654.7	13.8%	629.1	19.5%	1,283.8	16.1%
Rest of World	9.0	0.2%	-	0.0%	9.0	0.1%
<b>Total</b>	<b>\$4,731.5</b>	<b>100.0%</b>	<b>\$3,227.0</b>	<b>100.0%</b>	<b>\$7,958.5</b>	<b>100.0%</b>

Fund Geographic Focus is based on a number of factors, including the GP-stated geographic focus, the number of investments within each region, invested capital by region, the location of the firm's offices and investment professionals, and the underlying fund currency.

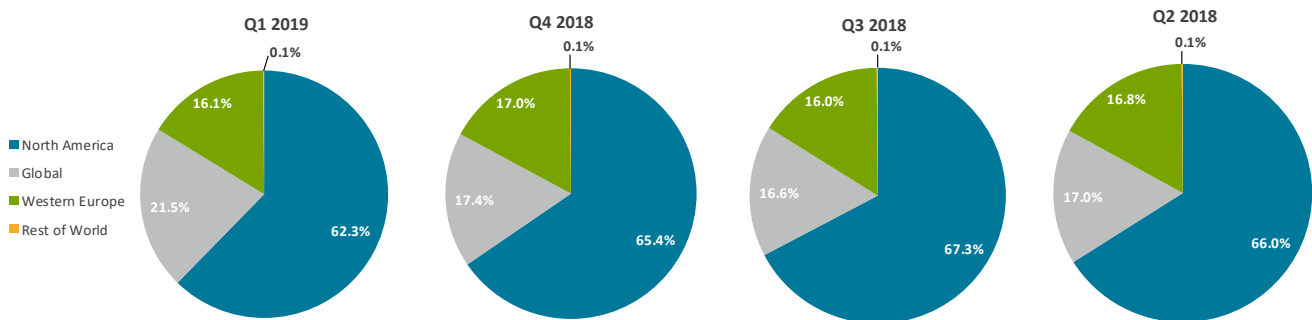
### By Fund Geographic Focus

The following charts illustrate the Portfolio's diversification by fund geographic focus for the most recent four quarters as of March 31, 2019.

**Geographic Exposure by Market Value**



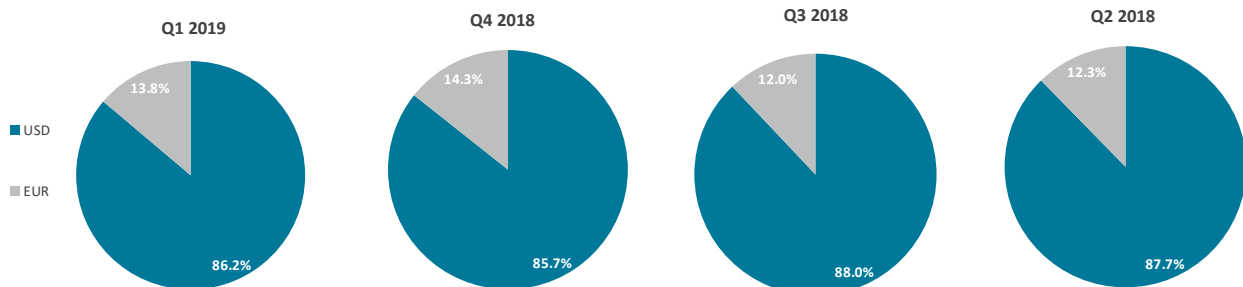
**Geographic Exposure by Market Value + Unfunded**



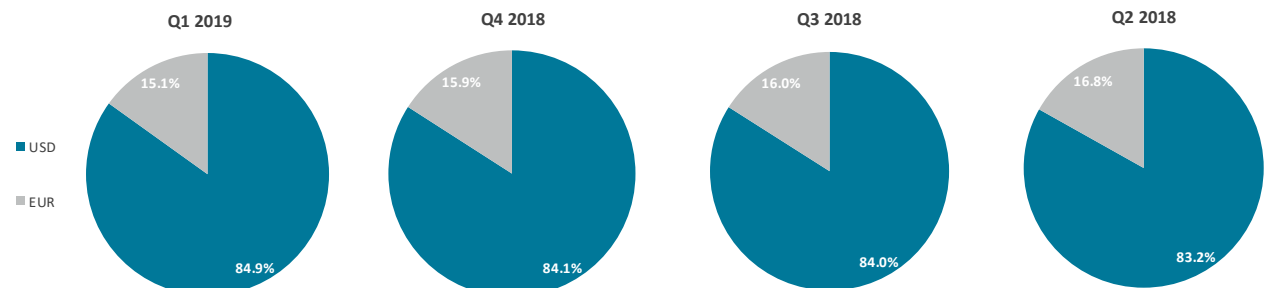
### By Fund Currency

The following charts illustrate the Portfolio's diversification by fund currency for the most recent four quarters as of March 31, 2019.

**Fund Currency Exposure by Market Value**



**Fund Currency Exposure by Market Value + Unfunded**

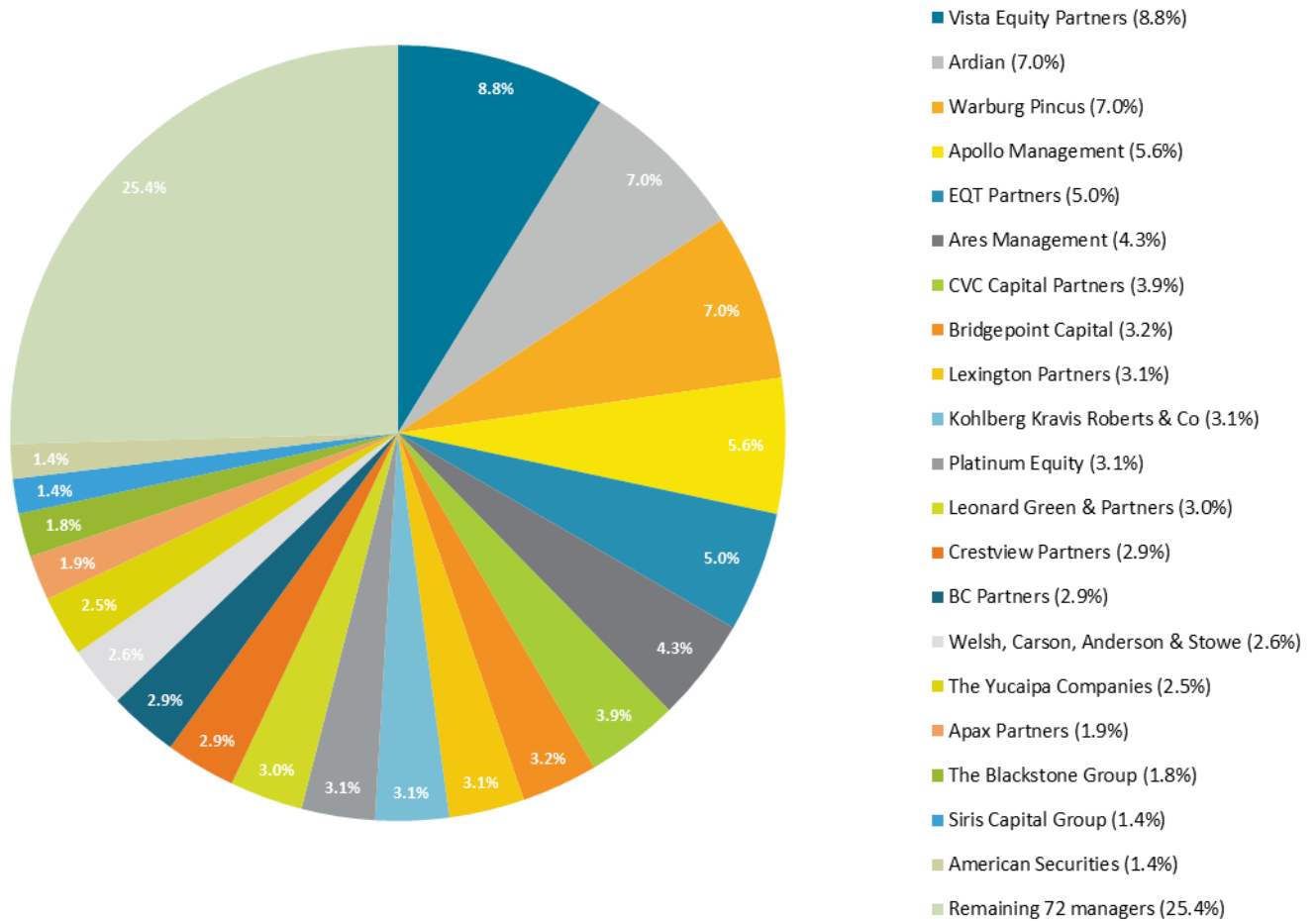




**By Investment Manager**

As of March 31, 2019, the Portfolio was highly diversified by investment manager, with 20 managers comprising US\$5.5 billion, or 74.6% of total exposure. The remaining 72 managers comprised 25.4% of total exposure as of quarter-end.

**Portfolio Total Exposure by Investment Manager**  
 As of March 31, 2019

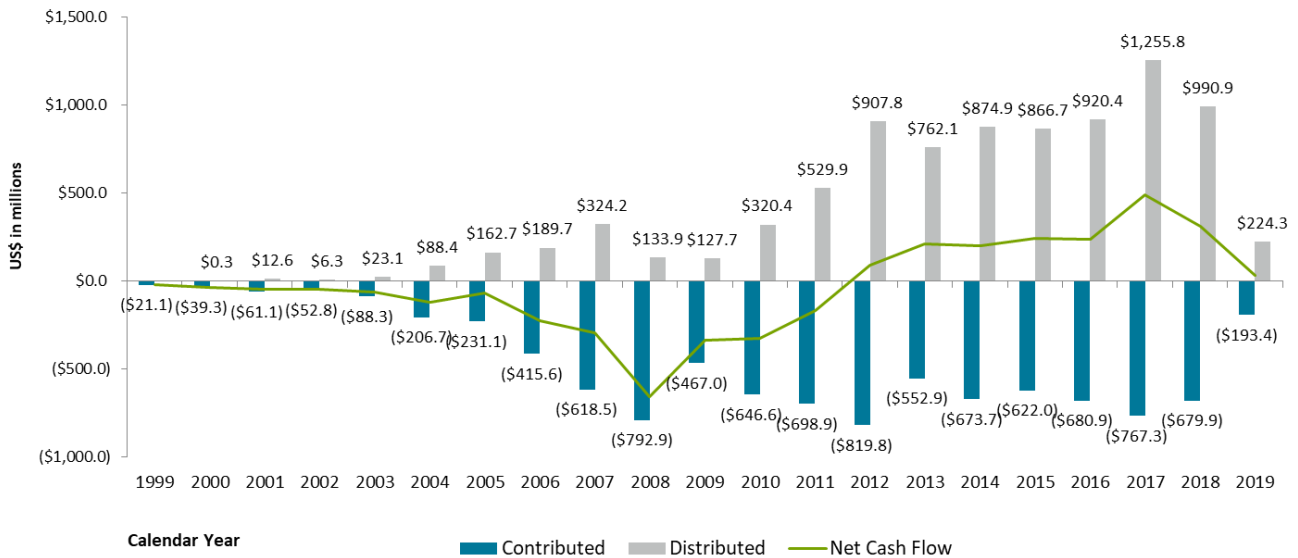


## Portfolio Cash Flow Analysis

The following yearly and quarterly cash flow analysis is based on actual Portfolio cash flows during those time periods.

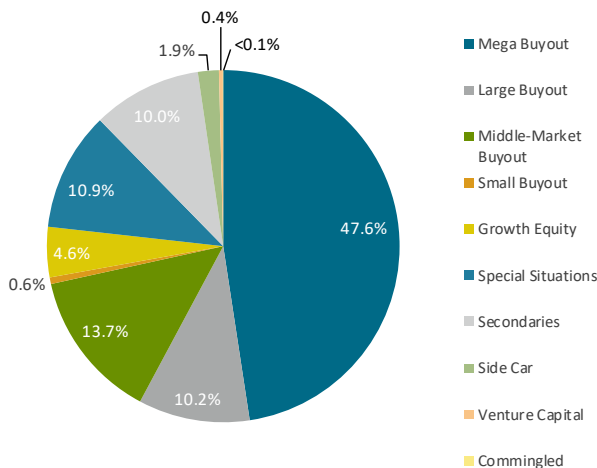
### Year to Date Cash Flow Activity

During the three months ended March 31, 2019, the Portfolio made US\$193.4 million of contributions and received US\$224.3 million of distributions, for a net cash inflow of US\$31.0 million, compared to a net cash inflow of US\$16.0 million during the same period in the prior year. The graph below illustrates cash flow activity since inception by calendar year.

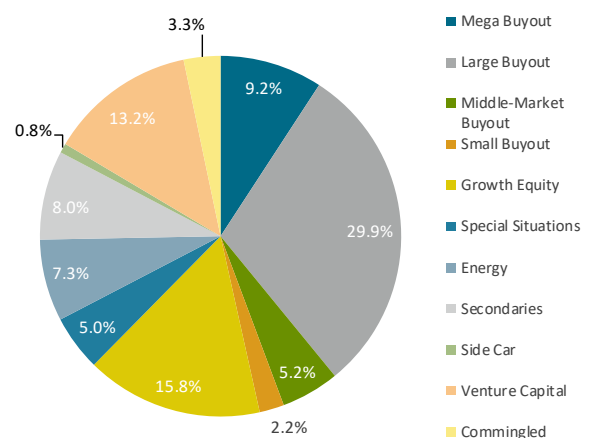


Buyout funds were the most active in terms of cash flow activity during 2019. Buyout funds drew down US\$139.5 million, or 72.2% of total contributions during 2019, and distributed US\$104.3 million, or 46.5% of total distributions during 2019.

2019 Total Contributed by Sub-Strategy

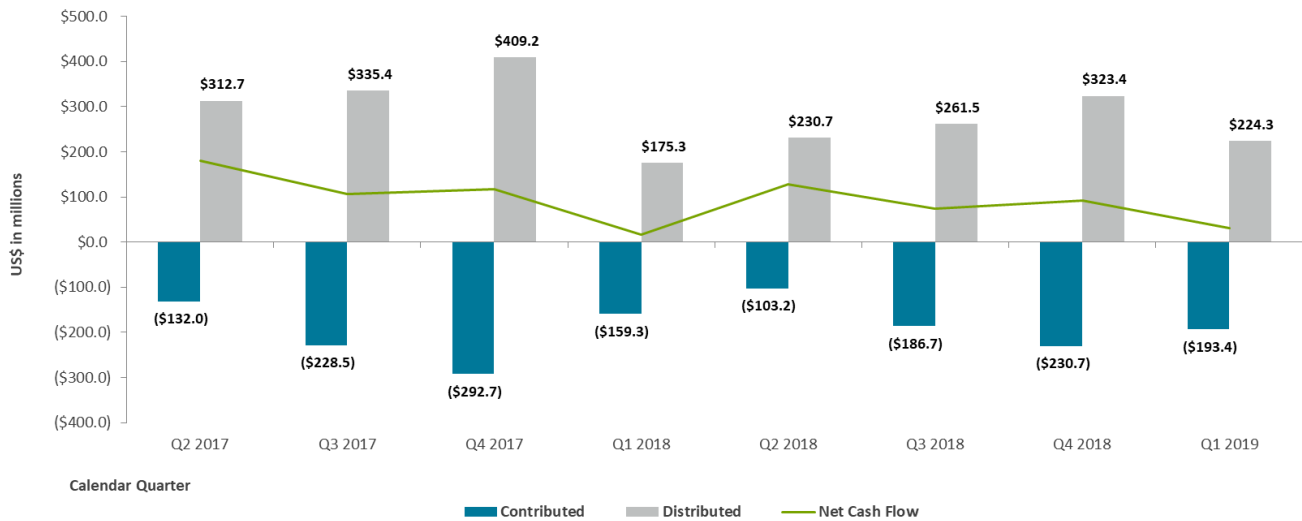


2019 Total Distributed by Sub-Strategy



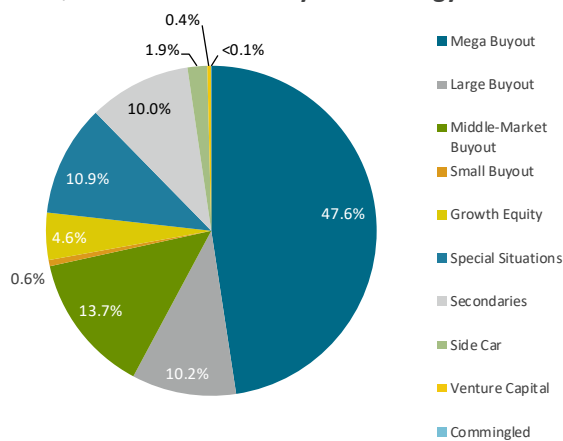
### Quarterly Cash Flow Activity

During the first quarter of 2019, the Portfolio made US\$193.4 million of contributions and received US\$224.3 million of distributions, for a net cash inflow of US\$31.0 million. The graph below illustrates recent cash flow activity by quarter.

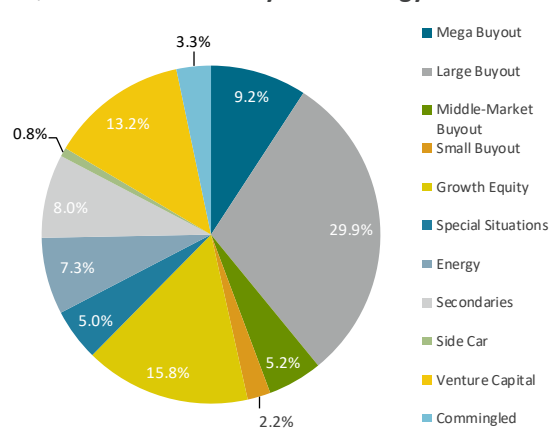


Buyout funds were the most active in terms of cash flow activity during first quarter of 2019. Buyout funds drew down US\$139.5 million or 72.2% of total contributions during the quarter, and distributed US\$104.3 million, or 46.5% of total distributions during the quarter.

Q1 2019 Contributed by Sub-Strategy



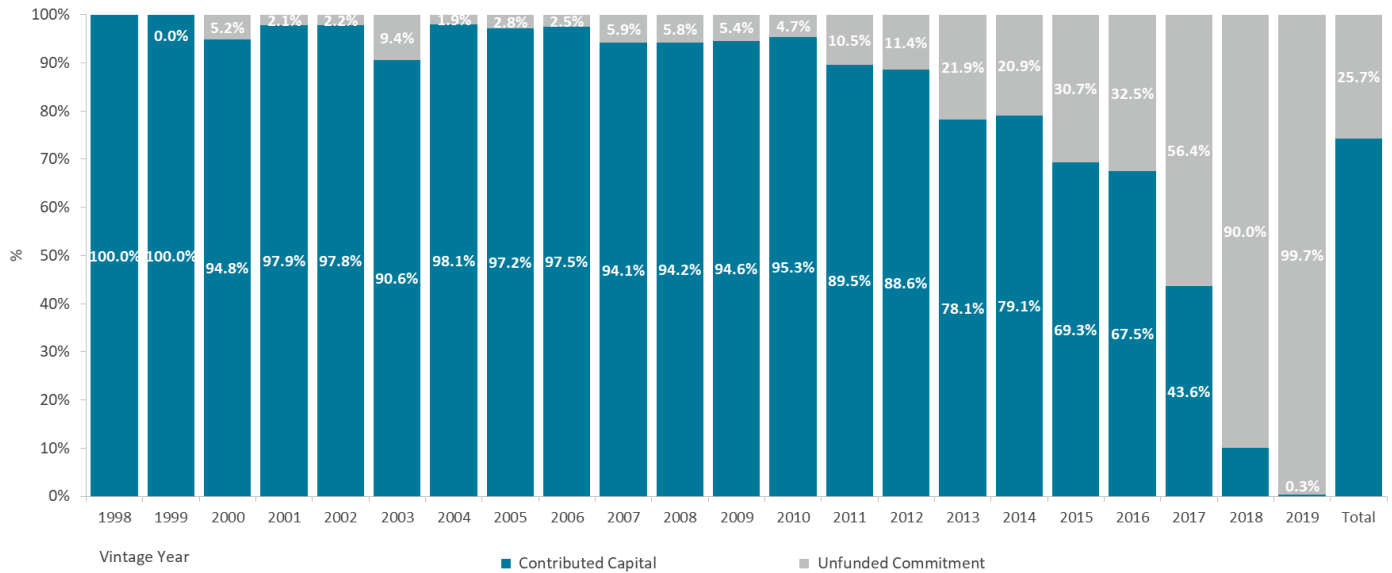
Q1 2019 Distributed by Sub-Strategy



### Invested Capital by Vintage Year

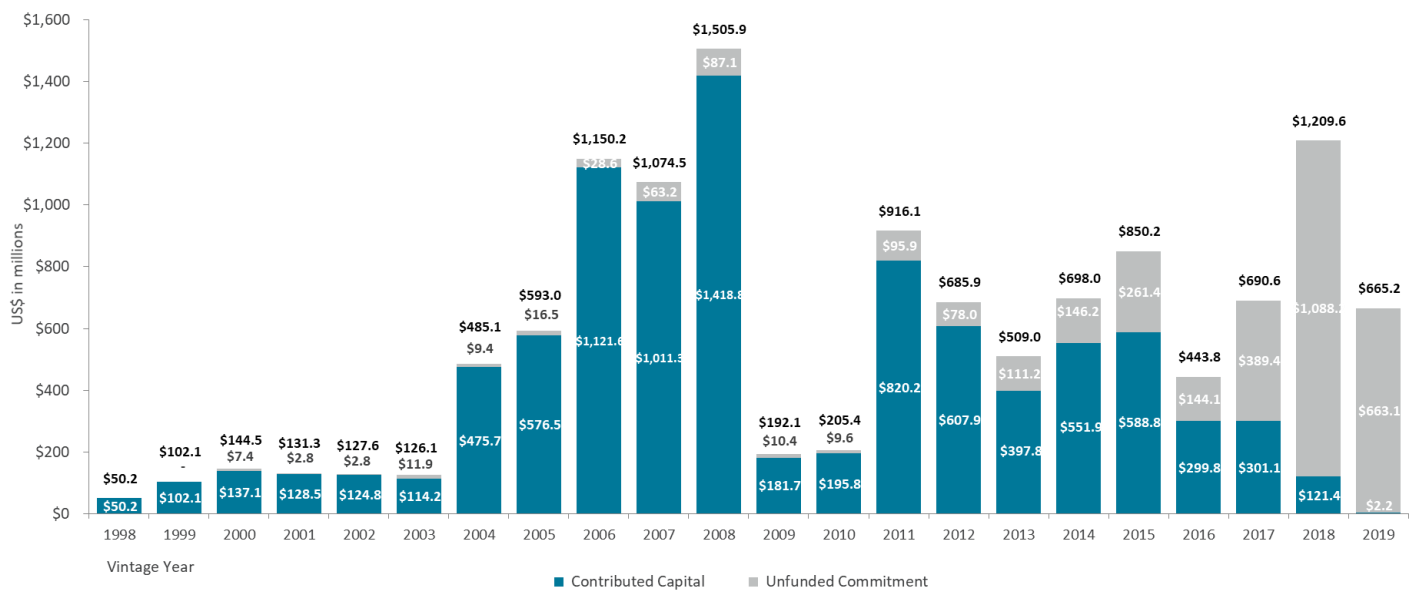
The following chart illustrates cumulative capital contributions as a percentage of total capital commitments, by fund vintage year, as of March 31, 2019.

**Capital Contributions to Unfunded by Vintage Year (%)**



The following chart illustrates cumulative capital contributions relative to unfunded commitment, by fund vintage year, as of March 31, 2019.

**Capital Contributions to Unfunded by Vintage Year (US\$)**



## Portfolio Company-Level Analysis

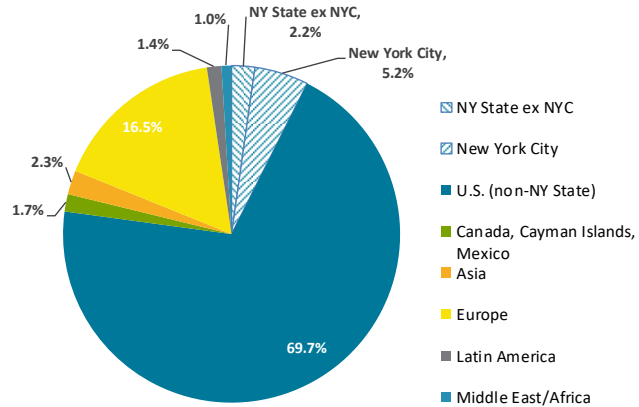
### Geographic Exposure

The following charts illustrate the Portfolio’s total investment cost and current market value exposure by geography at the portfolio company level as of March 31, 2019. Please note that the geography is based upon the corporate headquarters of each portfolio company.

#### Geographic Exposure by Total Cost

As of March 31, 2019 (US\$ in millions)

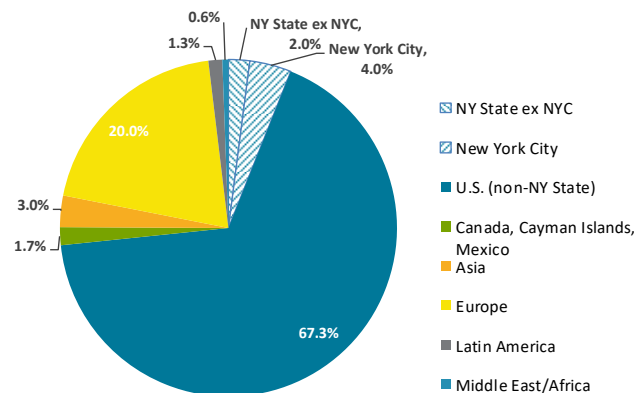
	Sum of Total Cost	% of Total
<b>North America</b>	<b>\$6,486.9</b>	<b>78.8%</b>
<b>New York</b>	<b>610.2</b>	<b>7.4%</b>
<i>NY State ex NYC</i>	183.0	2.2%
<i>New York City</i>	427.2	5.2%
<b>U.S. (non-NY State)</b>	<b>5,739.1</b>	<b>69.7%</b>
Canada, Cayman Islands, Mexico	137.6	1.7%
Asia	189.4	2.3%
Europe	1,360.5	16.5%
Latin America	114.3	1.4%
Middle East/Africa	79.1	1.0%
<b>Total</b>	<b>\$8,230.2</b>	<b>100.0%</b>



#### Geographic Exposure by Current Market Value

As of March 31, 2019 (US\$ in millions)

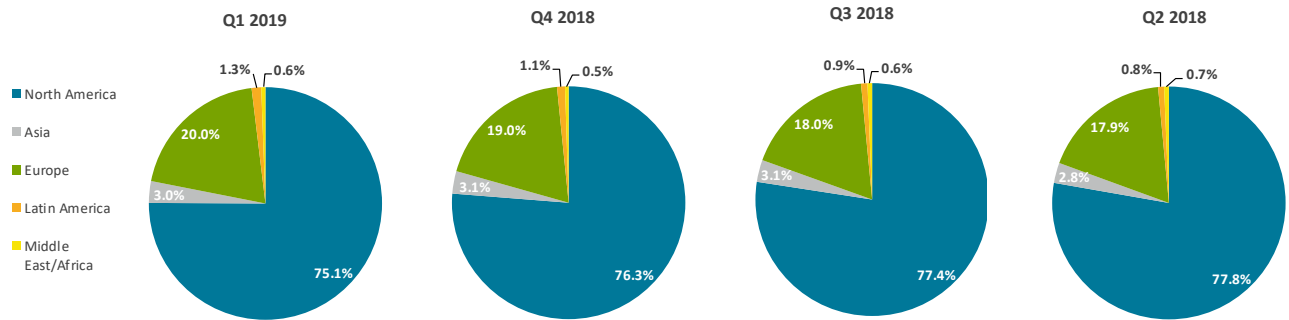
	Sum of Current Market Value	% of Total
<b>North America</b>	<b>\$4,059.4</b>	<b>75.1%</b>
<b>New York</b>	<b>326.3</b>	<b>6.0%</b>
<i>NY State ex NYC</i>	110.0	2.0%
<i>New York City</i>	216.3	4.0%
<b>U.S. (non-NY State)</b>	<b>3,640.4</b>	<b>67.3%</b>
Canada, Cayman Islands, Mexico	92.7	1.7%
Asia	163.2	3.0%
Europe	1,081.1	20.0%
Latin America	71.7	1.3%
Middle East/Africa	31.4	0.6%
<b>Total*</b>	<b>\$5,406.8</b>	<b>100.0%</b>



\* Total portfolio company market value will not equal the Portfolio’s market value due to a fund’s cash holding and rounding estimates.

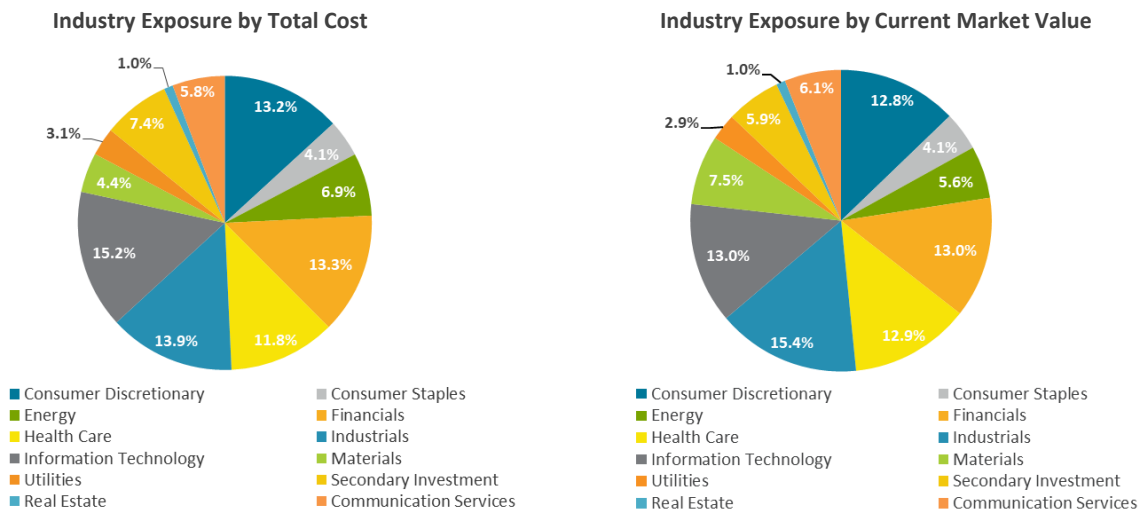
### Geographic Exposure

The following charts illustrate the Portfolio's current exposure by geography at the portfolio company level for the most recent four quarters. Please note that the geography is based upon the corporate headquarters of each portfolio company.



### Industry Exposure

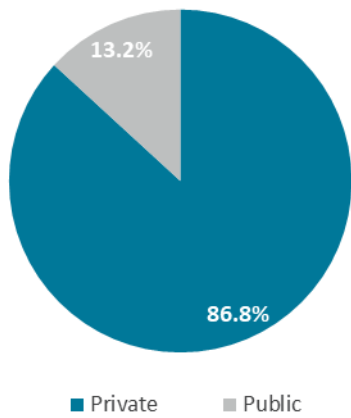
The following charts illustrate the Portfolio's total investment cost and current market value exposure by industry at the portfolio company level as of March 31, 2019. Please note that the Financials category includes investments in various debt securities.



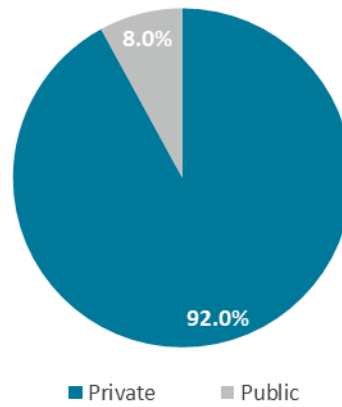
**Public Market Exposure**

As of quarter-end, publicly traded investments comprised 13.2% of the Portfolio’s total investment cost and 8.0% of the Portfolio’s exposed market value. The following charts illustrate the total investment and current market value exposure at the portfolio company level.

**Public Market Exposure by Total Cost**



**Public Market Exposure Current Market Value**



## IV. Appendix



**New York City Employees' Retirement System  
Private Equity Portfolio  
As of March 31, 2019 (in USD)**

Vintage Year	Investment	First Drawdown	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Multiple	IRR <sup>1</sup>	PME Return <sup>2</sup>	PME Spread <sup>3</sup>
<b>Active Investments</b>										
1999	Cypress Merchant Banking Partners II, L.P.	3/29/1999	\$ 45,172,972	\$ 53,944,269	\$ 50,584,154	\$ 26,160	0.94x	(1.2%)	5.5%	(6.7%)
1999	Lincolnshire Equity Fund II, L.P.	10/20/1999	18,397,347	19,261,466	37,375,300	745,985	1.98x	24.6%	7.0%	17.6%
2000	Solera Partners, L.P.	5/26/2000	19,999,779	26,600,886	41,635,156	347,736	1.58x	7.5%	6.1%	1.4%
2000	SCP Private Equity Partners II, L.P.	6/15/2000	27,442,463	30,827,225	10,819,873	1,656,554	0.40x	(11.6%)	5.2%	(16.8%)
2001	Apollo Investment Fund V, L.P.	4/13/2001	40,000,000	62,528,643	123,295,865	373,641	1.98x	38.6%	8.3%	30.3%
2001	RRE Ventures III, L.P.	7/6/2001	19,999,999	26,323,260	34,078,940	1,072,601	1.34x	5.4%	6.5%	(1.2%)
2002	Thomas, Mc Nerney & Partners, L.P.	10/9/2002	20,000,000	20,000,000	10,058,105	4,658,206	0.74x	(4.3%)	10.2%	(14.6%)
2002	Landmark Equity Partners XI, L.P.	10/23/2002	55,000,000	52,284,778	80,358,502	135,129	1.54x	23.3%	7.5%	15.8%
2003	FS Equity Partners V, L.P.	1/20/2003	25,000,000	21,419,958	41,861,469	1,935,782	2.04x	15.4%	5.0%	10.4%
2003	Blackstone Capital Partners IV, L.P.	2/26/2003	34,418,762	38,818,072	100,180,571	32,066	2.58x	39.7%	7.6%	32.2%
2003	Ares Corporate Opportunities Fund, L.P.	4/1/2003	45,000,000	53,984,770	80,476,920	1,953,115	1.53x	13.3%	7.5%	5.9%
2004	Markstone Capital Partners, LP	1/30/2004	40,000,000	46,899,103	19,822,611	272,215	0.43x	(43.5%)	10.3%	(53.8%)
2004	FdG Capital Partners II LP	8/30/2004	35,000,000	37,714,408	43,600,092	2,311,821	1.22x	3.8%	6.7%	(3.0%)
2004	Paladin Homeland Security Fund (NY City), L.P.	9/27/2004	15,000,000	16,513,285	6,286,009	22,200	0.38x	(14.2%)	6.2%	(20.4%)
2004	Lincolnshire Equity Fund III, L.P.	10/1/2004	55,000,000	55,006,941	77,732,618	21,305,589	1.80x	28.4%	11.2%	17.2%
2004	Yucaipa American Alliance Fund I, LP	10/1/2004	90,000,000	114,099,892	109,693,086	36,132,078	1.28x	4.9%	10.4%	(5.5%)
2004	New York/Fairview Emerging Managers Fund, L.P.-Tranche 1	10/21/2004	32,000,000	32,862,069	31,044,617	6,465,706	1.14x	2.2%	8.7%	(6.4%)
2004	Aurora Equity Partners III L.P.	11/16/2004	50,000,000	54,126,788	87,435,881	374,809	1.62x	13.5%	9.9%	3.6%
2005	Palladium Equity Partners III, L.P.	11/12/2004	35,000,000	36,441,392	68,123,287	3,560,016	1.97x	16.3%	11.9%	4.5%
2005	New Mountain Partners II, L.P.	1/12/2005	46,451,615	42,071,397	81,045,604	668,796	1.94x	13.6%	4.5%	9.2%
2005	Prism Venture Partners V-A, L.P.	7/14/2005	30,000,000	30,762,722	19,062,102	472,359	0.64x	(8.8%)	8.3%	(17.0%)
2005	Snow Phipps Group, L.P.	9/7/2005	20,000,000	23,827,483	20,914,615	10,377,596	1.31x	6.0%	10.9%	(4.9%)
2005	Blackstone Mezzanine Partners II, L.P.	10/10/2005	21,346,698	23,488,553	31,752,958	280,769	1.36x	8.0%	3.8%	4.2%
2005	Psilos Group Partners III, L.P.	10/24/2005	35,000,000	37,205,819	17,948,760	24,582,974	1.14x	2.0%	7.4%	(5.3%)
2005	USPF II Institutional Fund, L.P.	11/23/2005	65,000,000	85,734,194	98,737,695	11,803,899	1.29x	4.3%	7.7%	(3.4%)
2005	JP Morgan Fleming (Tranche A)	12/21/2005	43,000,000	42,889,227	41,554,133	13,267,150	1.28x	4.7%	10.6%	(6.0%)
2006	Aisling Capital II, LP	1/12/2006	6,680,102	7,854,064	7,775,060	384,801	1.04x	0.7%	8.0%	(7.3%)
2006	InterMedia Partners VII, L.P.	1/20/2006	25,000,000	29,198,197	29,591,747	243,132	1.02x	0.3%	9.7%	(9.4%)
2006	Terra Firma Capital Partners III, L.P.	3/8/2006	52,771,479	53,487,997	20,191,973	3,747,060	0.45x	(9.8%)	9.8%	(19.6%)
2006	BDCM Opportunity Fund II, L.P.	3/29/2006	25,000,000	37,160,726	61,921,197	31,359,531	2.51x	18.0%	11.2%	6.7%
2006	Blackstone Capital Partners V, L.P.	4/13/2006	121,624,827	129,361,839	204,710,082	5,791,727	1.63x	8.0%	8.3%	(0.4%)
2006	Avista Capital Partners, L.P.	4/27/2006	45,000,000	59,165,902	72,036,625	1,076,257	1.24x	4.5%	6.3%	(1.8%)
2006	GSC Recovery III, L.P.	5/4/2006	25,000,000	28,228,414	33,208,011	248,689	1.19x	4.2%	6.8%	(2.5%)
2006	Apollo Investment Fund VI, L.P.	5/10/2006	90,000,000	115,838,240	163,387,090	11,330,971	1.51x	8.7%	7.6%	1.1%
2006	Landmark Equity Partners XIII, L.P.	5/11/2006	50,000,000	47,997,218	51,094,749	11,381,524	1.30x	5.2%	6.5%	(1.3%)
2006	Ares Corporate Opportunities Fund II, L.P.	5/23/2006	50,000,000	54,760,870	88,352,171	3,267,168	1.68x	13.1%	3.9%	9.2%
2006	Fairview Ventures Fund III, L.P.	6/29/2006	25,000,000	26,623,278	35,000,121	20,369,052	2.08x	14.1%	12.3%	1.8%
2006	Ampersand 2006	8/14/2006	25,000,000	25,000,000	51,467,841	18,799,002	2.81x	16.6%	8.8%	7.8%
2006	CCMP Capital Investors II, L.P.	8/17/2006	30,000,000	32,921,953	56,637,777	25,402	1.72x	13.5%	10.6%	2.9%
2006	Thomas, Mc Nerney & Partners II, L.P.	11/30/2006	25,000,000	25,349,167	51,010,685	6,089,741	2.25x	16.7%	11.5%	5.2%
2006	Catterton Partners VI, L.P.	12/14/2006	45,000,000	51,243,868	74,926,969	20,546,117	1.86x	11.7%	8.8%	2.9%
2006	First Reserve Fund XI, L.P.	12/14/2006	45,000,000	47,820,682	29,965,435	2,398,494	0.68x	(8.4%)	7.1%	(15.4%)
2006	Arsenal Capital Partners II, LP	12/19/2006	22,500,000	27,416,444	43,593,587	7,334,745	1.86x	11.7%	11.9%	(0.2%)
2006	RRE Ventures IV, L.P.	12/19/2006	35,000,000	44,276,091	24,558,167	39,341,258	1.44x	5.4%	10.8%	(5.4%)
2006	MidOcean Partners III, L.P.	12/21/2006	58,234,777	69,499,186	127,209,414	16,327,114	2.07x	13.0%	9.7%	3.3%
2006	GF Capital Private Equity Fund, L.P.	12/22/2006	20,000,000	20,716,299	26,087,171	10,619,743	1.77x	12.5%	12.3%	0.1%
2006	The Fourth Civen Fund	1/22/2007	69,391,355	72,910,838	105,267,237	51,979	1.44x	7.4%	7.5%	(0.2%)
2007	Pegasus Partners IV, L.P.	1/29/2007	30,000,000	36,742,533	27,580,372	6,833,946	0.94x	(1.3%)	11.1%	(12.4%)
2007	FTVentures III, LP	3/1/2007	24,201,990	26,802,873	49,633,924	7,878,884	2.15x	15.9%	10.0%	5.9%
2007	Co-Investment Partners Europe, L.P.	3/19/2007	39,925,196	42,601,283	51,788,773	2,387,861	1.27x	4.7%	15.3%	(10.6%)
2007	Montreux Equity Partners IV, L.P.	3/27/2007	20,000,000	20,000,000	11,044,696	16,122,533	1.36x	4.8%	10.2%	(5.5%)
2007	Quaker BioVentures II, L.P.	3/30/2007	20,000,000	19,058,740	16,436,907	3,750,842	1.06x	1.3%	12.6%	(11.3%)
2007	SCP Vitalife Partners II Fund	4/13/2007	20,000,000	20,099,698	1,579	8,747,389	0.44x	(10.1%)	7.8%	(17.9%)
2007	Craton Equity Investors I, L.P.	4/30/2007	20,000,000	20,089,805	2,153,907	39,962	0.11x	(33.1%)	13.8%	(46.9%)
2007	Nautic Partners VI, L.P.	5/14/2007	30,000,000	33,794,398	72,914,122	6,667,132	2.35x	18.8%	12.0%	6.9%
2007	Constellation Venture Capital III, L.P.	5/22/2007	25,000,000	28,575,035	13,995,719	8,136,127	0.77x	(4.2%)	16.3%	(20.5%)
2007	United States Power Fund III, L.P.	6/28/2007	65,000,000	76,903,642	78,227,722	18,635,705	1.26x	4.2%	9.4%	(5.3%)
2007	Halyard Capital Fund II, L.P.	7/2/2007	25,000,000	21,563,143	26,187,697	4,749,401	1.43x	6.6%	9.8%	(3.3%)
2007	Carlyle Partners V, L.P.	7/6/2007	70,000,000	72,144,879	116,231,821	11,905,543	1.78x	13.7%	11.0%	2.8%
2007	PCG Clean Energy & Technology Fund (East), LLC	7/6/2007	90,000,000	81,429,594	17,795,757	17,410,469	0.43x	(11.6%)	13.0%	(24.7%)
2007	GSO Capital Opportunities Fund LP	7/16/2007	45,000,000	67,377,298	95,627,284	747,533	1.43x	17.4%	10.1%	7.2%
2007	StarVest Partners II, L.P.	8/1/2007	25,000,000	25,159,680	6,804,079	14,153,485	0.83x	(2.8%)	13.8%	(16.5%)
2007	New Mountain Partners III, L.P.	8/9/2007	100,000,000	101,866,058	135,606,735	67,181,365	1.99x	13.2%	12.5%	0.7%
2007	Vista Equity Partners Fund III, L.P.	10/3/2007	30,000,000	32,183,690	76,619,901	3,597,509	2.49x	27.1%	9.9%	17.2%
2007	Trilantic Capital Partners IV L.P.	10/22/2007	69,028,637	72,038,053	106,260,854	8,794,765	1.60x	13.9%	11.0%	2.8%

**New York City Employees' Retirement System**  
**Private Equity Portfolio**  
**As of March 31, 2019 (in USD)**

Vintage Year	Investment	First Drawdown	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Multiple	IRR <sup>1</sup>	PME Return <sup>2</sup>	PME Spread <sup>3</sup>
2007	RLJ Equity Partners Fund I, L.P.	11/30/2007	20,000,000	21,952,327	22,531,306	10,418,160	1.50x	9.1%	13.8%	(4.7%)
2007	Pine Brook Capital Partners, L.P.	1/11/2008	30,000,000	34,045,068	38,882,924	5,766,166	1.31x	7.4%	12.0%	(4.6%)
2008	Paladin III (NY City), L.P.	1/8/2008	30,000,000	40,209,181	28,310,127	35,906,746	1.60x	9.5%	12.0%	(2.5%)
2008	Apollo Investment Fund VII, L.P.	1/28/2008	100,000,000	121,261,165	190,718,768	17,784,283	1.72x	22.9%	13.6%	9.3%
2008	NGN BioMed Opportunity II, L.P.	2/11/2008	20,000,000	19,151,821	13,346,209	10,941,515	1.27x	3.6%	14.8%	(11.1%)
2008	Riverstone/Carlyle Global Energy & Power Fund IV, L.P.	3/3/2008	45,000,000	52,385,374	42,371,009	17,600,229	1.14x	3.7%	13.7%	(10.1%)
2008	Yucaipa American Alliance Fund II, LP	3/28/2008	120,000,000	163,744,290	127,289,780	142,617,629	1.65x	9.5%	12.2%	(2.7%)
2008	Levine Leichtman Capital Partners IV, L.P.	4/8/2008	35,000,000	37,477,097	59,216,356	3,968,658	1.69x	18.4%	14.2%	4.2%
2008	New York/Fairview Emerging Managers Fund, L.P.-Tranche 2	5/28/2008	45,000,000	44,996,824	46,845,259	35,416,271	1.83x	14.3%	13.0%	1.3%
2008	Yucaipa Corporate Initiatives Fund II, LP	6/23/2008	42,092,788	41,298,333	15,059,176	8,788,704	0.67x	(1.8%)	11.9%	(13.7%)
2008	Leeds Equity Partners V, L.P.	7/28/2008	60,000,000	57,812,601	69,987,009	62,499,195	2.29x	19.1%	13.3%	5.8%
2008	GI Partners Fund III L.P.	7/29/2008	45,000,000	48,618,007	75,587,958	767,714	1.57x	13.0%	15.3%	(2.3%)
2008	Ares Corporate Opportunities Fund III, L.P.	7/30/2008	75,000,000	90,524,334	139,591,218	55,348,360	2.15x	20.9%	12.1%	8.8%
2008	GCM Grosvenor NYCERS Emerging Manager Fund, L.P.	8/22/2008	116,737,374	141,646,962	122,120,383	76,279,297	1.40x	10.0%	13.3%	(3.2%)
2008	First Reserve Fund XII, L.P.	8/25/2008	45,000,000	49,986,866	24,602,219	8,788,704	0.67x	(9.2%)	16.8%	(26.0%)
2008	Landmark Equity Partners XIV, L.P.	9/19/2008	109,120,000	106,061,756	119,219,423	19,130,484	1.30x	9.6%	14.4%	(4.8%)
2008	Crestview Partners II, L.P.	10/1/2008	50,000,000	57,957,601	74,238,021	23,627,442	1.69x	13.4%	14.5%	(1.1%)
2008	Avista Capital Partners II, L.P.	11/5/2008	75,000,000	97,206,003	150,159,298	16,198,005	1.71x	15.3%	14.7%	0.7%
2008	Blue Wolf Capital Fund II, L.P.	11/14/2008	25,000,000	27,167,904	31,424,990	6,401,750	1.39x	7.8%	15.7%	(7.9%)
2008	Bridgepoint Europe IV	11/14/2008	26,654,587	27,047,550	31,067,022	10,104,198	1.52x	10.1%	14.8%	(4.7%)
2008	Aisling Capital III, LP	11/20/2008	14,000,000	15,802,617	34,929,859	2,288,773	2.36x	26.2%	14.2%	12.0%
2008	Onex Partners III LP	12/10/2008	75,000,000	81,909,329	108,383,240	28,430,045	1.67x	12.7%	14.8%	(2.2%)
2009	Welsh, Carson, Anderson & Stowe XI, L.P.	2/10/2009	40,000,000	40,000,000	51,763,285	14,145,698	1.65x	12.5%	14.7%	(2.2%)
2009	FS Equity Partners VI, L.P.	7/27/2009	32,500,000	32,605,808	71,744,199	24,757,909	2.96x	24.1%	14.7%	9.4%
2009	Lincolnshire Equity Fund IV, L.P.	8/5/2009	27,500,000	29,299,527	33,506,337	11,998,566	1.55x	10.9%	13.4%	(2.5%)
2009	Lexington Capital Partners VII, L.P.	12/3/2009	50,000,000	44,615,537	55,304,565	14,265,894	1.56x	14.1%	14.3%	(0.2%)
2010	Snow Phipps II, L.P.	1/8/2010	30,000,000	33,779,232	25,315,478	19,156,974	1.32x	8.6%	13.7%	(5.1%)
2010	JP Morgan Fleming (Tranche B)	2/26/2010	35,000,000	35,690,482	27,543,543	25,789,195	1.49x	9.3%	13.2%	(3.9%)
2010	Trident V, L.P.	4/29/2010	110,000,000	126,363,624	131,452,887	72,789,674	1.62x	11.3%	12.4%	(1.1%)
2011	Blackstone Capital Partners VI, L.P.	1/24/2011	120,000,000	123,301,843	93,797,710	104,954,510	1.61x	13.5%	12.3%	1.2%
2011	Ampersand 2011	3/11/2011	25,000,000	25,000,000	40,459,089	29,116,180	2.78x	21.6%	12.6%	9.0%
2011	BDCM Opportunity Fund III, L.P.	4/8/2011	45,000,000	64,508,843	29,258,559	58,042,699	1.35x	8.5%	12.3%	(3.8%)
2011	AXA Secondary Fund V B L.P.	6/16/2011	120,000,000	98,871,409	136,167,348	22,599,197	1.61x	15.7%	14.7%	1.0%
2011	Wellspring Capital Partners V, L.P.	7/1/2011	40,000,000	40,547,421	44,838,205	19,246,283	1.58x	16.0%	12.1%	3.9%
2011	EQT VI, L.P.	8/1/2011	106,336,545	110,454,799	136,494,935	50,613,814	1.69x	14.1%	12.2%	1.9%
2011	Pegasus Partners V, L.P.	8/16/2011	20,789,916	24,840,481	22,509,205	20,218,000	1.72x	14.2%	14.0%	0.2%
2011	BC European Capital IX	9/19/2011	131,887,060	142,706,209	98,663,454	103,471,687	1.42x	10.5%	13.3%	(2.8%)
2011	American Securities Partners VI, L.P.	11/18/2011	80,000,000	85,921,998	128,938,416	36,260,970	1.92x	21.8%	13.1%	8.7%
2011	Vista Equity Partners Fund IV, L.P.	11/30/2011	100,000,000	104,087,016	128,192,934	80,425,471	2.00x	18.7%	13.3%	5.4%
2012	Warburg Pincus Private Equity XI, L.P.	5/24/2012	110,000,000	117,033,488	81,191,854	105,825,725	1.60x	14.3%	12.2%	2.1%
2012	Trilantic Capital Partners V L.P.	9/20/2012	70,000,000	74,682,352	63,756,097	47,951,337	1.50x	18.0%	12.1%	5.9%
2012	Palladium Equity Partners IV, L.P.	10/10/2012	55,000,000	46,311,075	25,524,369	45,019,454	1.52x	14.5%	12.9%	1.7%
2012	Ares Corporate Opportunities Fund IV, L.P.	11/5/2012	125,000,000	129,125,287	67,443,598	118,720,807	1.44x	12.3%	10.9%	1.4%
2012	Green Equity Investors VI, L.P.	11/30/2012	120,000,000	129,110,851	80,112,938	129,653,349	1.62x	15.7%	11.9%	3.8%
2012	Platinum Equity Capital Partners III, L.P.	1/14/2013	100,000,000	81,908,272	115,783,299	36,513,533	1.86x	36.1%	13.1%	23.1%
2012	NYCERS - 2012 Emerging Manager Program <sup>4</sup>	6/21/2013	139,600,000	134,561,132	51,116,989	149,281,282	1.49x	15.4%	1.0%	14.3%
2013	Carlyle Partners VI, L.P.	7/3/2013	75,000,000	77,880,087	31,664,681	70,166,052	1.31x	11.4%	10.9%	0.5%
2014	Carlyle Partners VI, L.P. (Side Car)	9/23/2014	8,250,000	5,996,229	345,832	5,792,255	1.02x	0.8%	11.2%	(10.5%)
2013	Landmark Equity Partners XV, L.P.	10/30/2013	75,000,000	51,733,419	37,835,527	26,986,426	1.25x	12.0%	11.2%	0.9%
2013	Apollo Investment Fund VIII, L.P.	12/11/2013	140,000,000	126,215,699	40,000,861	120,126,287	1.27x	10.6%	11.6%	(1.0%)
2013	Landmark - NYC Fund I, L.P.	12/24/2013	25,000,000	20,352,880	13,350,228	15,080,000	1.40x	15.0%	9.6%	5.4%
2014	CVC Capital Partners VI, L.P.	2/18/2014	123,414,038	120,360,141	31,966,787	124,984,470	1.30x	13.1%	11.2%	1.8%
2013	Crestview Partners III, L.P.	3/3/2015	66,000,000	43,187,204	7,888,194	50,075,931	1.34x	16.0%	10.9%	5.1%
2013	Crestview Partners III (Co-Investment B), L.P.	12/17/2015	22,000,000	20,146,182	1,085,940	23,778,122	1.23x	10.5%	12.9%	(2.4%)
2014	Olympus Growth Fund VI, L.P.	1/21/2014	75,000,000	61,803,725	25,426,675	57,725,009	1.35x	15.0%	12.7%	2.4%
2014	ASF VI B L.P.	5/9/2014	83,000,000	58,826,711	32,761,625	51,550,015	1.43x	13.5%	11.1%	2.4%
2014	ASF VI B NYC Co-Invest L.P.	5/9/2014	27,000,000	20,859,194	16,251,429	12,645,486	1.39x	12.6%	8.8%	3.8%
2014	Vista Equity Partners Fund V, L.P.	9/8/2014	125,000,000	144,254,441	112,808,849	144,041,716	1.78x	22.6%	11.1%	11.5%
2014	Lexington Capital Partners VIII, L.P.	1/8/2015	110,000,000	93,195,847	34,720,677	85,105,307	1.29x	20.4%	11.9%	8.5%
2015	Siris Partners III, L.P.	5/4/2015	31,000,000	26,031,066	14,162,811	16,651,848	1.18x	10.0%	11.1%	(1.1%)
2015	Centerbridge Capital Partners III, L.P.	5/21/2015	23,700,000	13,255,419	4,359,744	13,308,369	1.33x	13.7%	11.1%	2.6%
2015	Welsh, Carson, Anderson & Stowe XII, L.P.	8/26/2015	78,500,000	55,428,421	10,929,590	77,144,347	1.59x	26.4%	12.1%	14.3%
2015	Warburg Pincus Private Equity XII, L.P.	12/21/2015	205,500,000	148,849,843	9,005,627	167,765,286	1.19x	11.6%	11.1%	0.5%
2015	ASF VII B L.P.	12/29/2015	94,500,000	31,271,414	3,959,681	36,422,288	1.29x	16.8%	10.9%	5.9%

**New York City Employees' Retirement System  
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Vintage Year	Investment	First Drawdown	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Multiple	IRR <sup>1</sup>	PME Return <sup>2</sup>	PME Spread <sup>3</sup>
2007	RLJ Equity Partners Fund I, L.P.	11/30/2007	20,000,000	21,952,327	22,531,306	10,418,160	1.50x	9.1%	13.8%	(4.7%)
2007	Pine Brook Capital Partners, L.P.	1/11/2008	30,000,000	34,045,068	38,882,924	5,766,166	1.31x	7.4%	12.0%	(4.6%)
2008	Paladin III (NY City), L.P.	1/8/2008	30,000,000	40,209,181	28,310,127	35,906,746	1.60x	9.5%	12.0%	(2.5%)
2008	Apollo Investment Fund VII, L.P.	1/28/2008	100,000,000	121,261,165	190,718,768	17,784,283	1.72x	22.9%	13.6%	9.3%
2008	NGN BioMed Opportunity II, L.P.	2/11/2008	20,000,000	19,151,821	13,346,209	10,941,515	1.27x	3.6%	14.8%	(11.1%)
2008	Riverstone/Carlyle Global Energy & Power Fund IV, L.P.	3/3/2008	45,000,000	52,385,374	42,371,009	17,600,229	1.14x	3.7%	13.7%	(10.1%)
2008	Yucaipa American Alliance Fund II, LP	3/28/2008	120,000,000	163,744,290	127,289,780	142,617,629	1.65x	9.5%	12.2%	(2.7%)
2008	Levine Leichtman Capital Partners IV, L.P.	4/8/2008	35,000,000	37,477,097	59,216,356	3,968,658	1.69x	18.4%	14.2%	4.2%
2008	New York/Fairview Emerging Managers Fund, L.P.-Tranche 2	5/28/2008	45,000,000	44,996,824	46,845,259	35,416,271	1.83x	14.3%	13.0%	1.3%
2008	Yucaipa Corporate Initiatives Fund II, LP	6/23/2008	42,092,788	41,298,333	15,059,176	21,821,462	0.89x	(1.8%)	11.9%	(13.7%)
2008	Leeds Equity Partners V, L.P.	7/28/2008	60,000,000	57,812,601	69,987,009	62,499,195	2.29x	19.1%	13.3%	5.8%
2008	GI Partners Fund III L.P.	7/29/2008	45,000,000	48,618,007	75,587,958	767,714	1.57x	13.0%	15.3%	(2.3%)
2008	Ares Corporate Opportunities Fund III, L.P.	7/30/2008	75,000,000	90,524,334	139,591,218	55,348,360	2.15x	20.9%	12.1%	8.8%
2008	GCM Grosvenor NYCERS Emerging Manager Fund, L.P.	8/22/2008	116,737,374	141,646,962	122,120,383	76,279,297	1.40x	10.0%	13.3%	(3.2%)
2008	First Reserve Fund XII, L.P.	8/25/2008	45,000,000	49,986,866	24,602,219	8,788,704	0.67x	(9.2%)	16.8%	(26.0%)
2008	Landmark Equity Partners XIV, L.P.	9/19/2008	109,120,000	106,061,756	119,219,423	19,130,484	1.30x	9.6%	14.4%	(4.8%)
2008	Crestview Partners II, L.P.	10/1/2008	50,000,000	57,957,601	74,238,021	23,627,442	1.69x	13.4%	14.5%	(1.1%)
2008	Avista Capital Partners II, L.P.	11/5/2008	75,000,000	97,206,003	150,159,298	16,198,005	1.71x	15.3%	14.7%	0.7%
2008	Blue Wolf Capital Fund II, L.P.	11/14/2008	25,000,000	27,167,904	31,424,990	6,401,750	1.39x	7.8%	15.7%	(7.9%)
2008	Bridgepoint Europe IV	11/14/2008	26,654,587	27,047,550	31,067,022	10,104,198	1.52x	10.1%	14.8%	(4.7%)
2008	Aisling Capital III, LP	11/20/2008	14,000,000	15,802,617	34,929,859	2,288,773	2.36x	26.2%	14.2%	12.0%
2008	Onex Partners III LP	12/10/2008	75,000,000	81,909,329	108,383,240	28,430,045	1.67x	12.7%	14.8%	(2.2%)
2009	Welsh, Carson, Anderson & Stowe XI, L.P.	2/10/2009	40,000,000	40,000,000	51,763,285	14,145,698	1.65x	12.5%	14.7%	(2.2%)
2009	FS Equity Partners VI, L.P.	7/27/2009	32,500,000	32,605,808	71,744,199	24,757,909	2.96x	24.1%	14.7%	9.4%
2009	Lincolnshire Equity Fund IV, L.P.	8/5/2009	27,500,000	29,299,527	33,506,337	11,998,566	1.55x	10.9%	13.4%	(2.5%)
2009	Lexington Capital Partners VII, L.P.	12/3/2009	50,000,000	44,615,537	55,304,565	14,265,894	1.56x	14.1%	14.3%	(0.2%)
2010	Snow Phipps II, L.P.	1/8/2010	30,000,000	33,729,232	25,315,478	19,156,974	1.32x	8.6%	13.7%	(5.1%)
2010	JP Morgan Fleming (Tranche B)	2/26/2010	35,000,000	35,690,482	27,543,543	25,789,195	1.49x	9.3%	13.2%	(3.9%)
2010	Trident V, L.P.	4/29/2010	110,000,000	126,363,624	131,452,887	72,789,674	1.62x	11.3%	12.4%	(1.1%)
2011	Blackstone Capital Partners VI, L.P.	1/24/2011	120,000,000	123,301,843	93,797,710	104,954,510	1.61x	13.5%	12.3%	1.2%
2011	Ampersand 2011	3/11/2011	25,000,000	25,000,000	40,459,089	29,116,180	2.78x	21.6%	12.6%	9.0%
2011	BDCM Opportunity Fund III, L.P.	4/8/2011	45,000,000	64,508,843	29,258,559	58,042,699	1.35x	8.5%	12.3%	(3.8%)
2011	AXA Secondary Fund V B L.P.	6/16/2011	120,000,000	98,871,409	136,167,348	22,599,197	1.61x	15.7%	14.7%	1.0%
2011	Wellspring Capital Partners V, L.P.	7/1/2011	40,000,000	40,547,421	44,838,205	19,246,283	1.58x	16.0%	12.1%	3.9%
2011	EQT VI, L.P.	8/1/2011	106,336,545	110,454,799	136,494,935	50,613,814	1.69x	14.1%	12.2%	1.9%
2011	Pegasus Partners V, L.P.	8/16/2011	20,789,916	24,840,481	22,509,205	20,218,000	1.72x	14.2%	14.0%	0.2%
2011	BC European Capital IX	9/19/2011	131,887,060	142,706,209	98,663,454	103,471,687	1.42x	10.5%	13.3%	(2.8%)
2011	American Securities Partners VI, L.P.	11/18/2011	80,000,000	85,921,998	128,938,416	36,260,970	1.92x	21.8%	13.1%	8.7%
2011	Vista Equity Partners Fund IV, L.P.	11/30/2011	100,000,000	104,087,016	128,192,934	80,425,471	2.00x	18.7%	13.3%	5.4%
2012	Warburg Pincus Private Equity XI, L.P.	5/24/2012	110,000,000	117,033,488	81,191,854	105,825,725	1.60x	14.3%	12.2%	2.1%
2012	Trilantic Capital Partners V L.P.	9/20/2012	70,000,000	74,682,352	63,756,097	47,951,337	1.50x	18.0%	12.1%	5.9%
2012	Palladium Equity Partners IV, L.P.	10/10/2012	55,000,000	46,311,075	25,524,369	45,019,454	1.52x	14.5%	12.9%	1.7%
2012	Ares Corporate Opportunities Fund IV, L.P.	11/5/2012	125,000,000	129,125,287	67,443,598	118,720,807	1.44x	12.3%	10.9%	1.4%
2012	Green Equity Investors VI, L.P.	11/30/2012	120,000,000	129,110,851	80,112,938	129,653,349	1.62x	15.7%	11.9%	3.8%
2012	Platinum Equity Capital Partners III, L.P.	1/14/2013	100,000,000	81,908,272	115,783,299	36,513,533	1.86x	36.1%	13.1%	23.1%
2012	NYCERS - 2012 Emerging Manager Program <sup>4</sup>	6/21/2013	139,600,000	134,561,132	51,116,989	149,281,282	1.49x	15.4%	1.0%	14.3%
2013	Carlyle Partners VI, L.P.	7/3/2013	75,000,000	77,880,087	31,664,681	70,166,052	1.31x	11.4%	10.9%	0.5%
2014	Carlyle Partners VI, L.P. (Side Car)	9/23/2014	8,250,000	5,996,229	345,832	5,792,255	1.02x	0.8%	11.2%	(10.5%)
2013	Landmark Equity Partners XV, L.P.	10/30/2013	75,000,000	51,733,419	37,835,527	26,986,426	1.25x	12.0%	11.2%	0.9%
2013	Apollo Investment Fund VIII, L.P.	12/11/2013	140,000,000	126,215,699	40,000,861	120,126,287	1.27x	10.6%	11.6%	(1.0%)
2013	Landmark - NYC Fund I, L.P.	12/24/2013	20,352,880	20,352,880	13,350,228	15,080,000	1.40x	15.0%	9.6%	5.4%
2014	CVC Capital Partners VI, L.P.	2/18/2014	123,414,038	120,360,141	31,966,787	124,984,470	1.30x	13.1%	11.2%	1.8%
2013	Crestview Partners III, L.P.	3/3/2015	66,000,000	43,187,204	7,888,194	50,075,931	1.34x	16.0%	10.9%	5.1%
2013	Crestview Partners III (Co-Investment B), L.P.	12/17/2015	22,000,000	20,146,182	1,085,940	23,778,122	1.23x	10.5%	12.9%	(2.4%)
2014	Olympus Growth Fund VI, L.P.	1/21/2014	75,000,000	61,803,725	25,426,675	57,725,009	1.35x	15.0%	12.7%	2.4%
2014	ASF VI B L.P.	5/9/2014	83,000,000	58,826,711	32,761,625	51,550,015	1.43x	13.5%	11.1%	2.4%
2014	ASF VI B NYC Co-Invest L.P.	5/9/2014	27,000,000	20,859,194	16,251,429	12,645,486	1.39x	12.6%	8.8%	3.8%
2014	Vista Equity Partners Fund V, L.P.	9/8/2014	125,000,000	144,254,441	112,808,849	144,041,716	1.78x	22.6%	11.1%	11.5%
2014	Lexington Capital Partners VIII, L.P.	1/8/2015	110,000,000	93,195,847	34,720,677	85,105,307	1.29x	20.4%	11.9%	8.5%
2015	Siris Partners III, L.P.	5/4/2015	31,000,000	26,031,066	14,162,811	16,651,848	1.18x	10.0%	11.1%	(1.1%)
2015	Centerbridge Capital Partners III, L.P.	5/21/2015	23,700,000	13,255,419	4,359,744	13,308,369	1.33x	13.7%	11.1%	2.6%
2015	Welsh, Carson, Anderson & Stowe XII, L.P.	8/26/2015	78,500,000	55,428,421	10,929,590	77,144,347	1.59x	26.4%	12.1%	14.3%
2015	Warburg Pincus Private Equity XII, L.P.	12/21/2015	205,500,000	148,849,843	9,005,627	167,765,286	1.19x	11.6%	11.1%	0.5%
2015	ASF VII B L.P.	12/29/2015	94,500,000	31,271,414	3,959,681	36,422,288	1.29x	16.8%	10.9%	5.9%

**New York City Employees' Retirement System  
Private Equity Portfolio  
As of March 31, 2019 (in USD)**

Vintage Year	Investment	First Drawdown	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Multiple	IRR <sup>1</sup>	PME Return <sup>2</sup>	PME Spread <sup>3</sup>
2015	ASF VIII B NYC Co-Invest L.P.	12/29/2015	46,000,000	23,381,531	2,451,699	34,265,055	1.57x	41.1%	9.1%	32.0%
2015	EQT VII, L.P.	1/8/2016	162,577,473	138,963,998	18,086,777	155,764,371	1.25x	14.1%	11.6%	2.5%
2015	American Securities Partners VII, L.P.	1/19/2016	80,000,000	63,207,656	9,406,486	48,496,849	0.92x	(6.4%)	12.5%	(18.9%)
2015	Bridgepoint Europe V L.P.	2/8/2016	61,994,259	56,670,066	8,076,223	60,113,363	1.20x	12.3%	11.6%	0.7%
2015	Bridgepoint Europe V Co-Invest	8/16/2016	18,328,581	17,018,173	1,702,176	25,898,594	1.62x	35.0%	12.1%	22.9%
2015	NYCERS - 2015 Emerging Manager Program <sup>5</sup>	2/22/2016	190,400,000	57,202,103	2,433,935	66,325,833	1.20x	19.8%	10.1%	9.7%
2016	Vista Equity Partners Fund VI, L.P.	6/28/2016	158,000,000	168,958,181	39,435,462	183,097,587	1.32x	19.5%	12.4%	7.1%
2016	Platinum Equity Capital Partners IV, L.P.	3/21/2017	111,000,000	73,297,786	20,327,485	80,970,385	1.38x	36.0%	9.2%	26.9%
2018	Platinum Equity Capital Partners IV Co-Investment, L.P.	9/7/2018	16,000,000	11,200,000	-	10,452,676	0.93x	NM	NM	N/A
2016	Apax IX USD, L.P.	5/12/2017	127,000,000	57,503,233	1,204,490	78,293,022	1.38x	NM	NM	N/A
2017	Green Equity Investors VII, L.P.	5/12/2017	95,000,000	48,339,475	376,189	53,431,706	1.11x	NM	NM	N/A
2017	Ares Corporate Opportunities Fund V, L.P.	6/22/2017	95,000,000	53,385,570	1,635,473	53,926,601	1.04x	NM	NM	N/A
2017	KKR Americas Fund XII, L.P.	10/31/2017	158,000,000	62,078,909	1,041,587	64,732,929	1.06x	NM	NM	N/A
2017	BC European Capital X	12/14/2017	88,894,352	44,279,911	-	43,716,266	0.99x	NM	NM	N/A
2017	BCEC X Co-Investment	3/24/2017	35,924,538	23,489,050	-	24,242,099	1.03x	3.4%	7.4%	(4.1%)
2017	Warburg Pincus Financial Sector, L.P.	1/5/2018	104,000,000	27,217,156	5,304,000	19,072,154	0.90x	NM	NM	N/A
2018	Platinum Equity Small Cap Fund, L.P.	6/27/2018	41,000,000	3,119,044	-	2,452,184	0.79x	NM	NM	N/A
2018	EQT VIII, L.P.	8/10/2018	109,672,014	15,851,062	1,344,326	14,211,162	0.98x	NM	NM	N/A
2018	EQT VIII Co-Investment	11/2/2018	39,879,477	6,040,864	-	6,758,649	1.12x	NM	NM	N/A
2018	CVC Capital Partners VII, L.P.	12/4/2018	154,175,413	24,563,857	231,608	30,083,968	1.23x	NM	NM	N/A
2018	Grain Communications Opportunity Fund II, L.P.	12/26/2018	21,000,000	3,525,644	17,138	2,831,515	0.81x	NM	NM	N/A
2017	Palladium Equity Partners V, L.P.	2/11/2019	33,333,333	5,486,557	-	4,185,039	0.76x	NM	NM	N/A
2018	Vista Equity Partners Fund VII, L.P.	2/13/2019	177,500,000	14,605,521	638	14,355,724	0.98x	NM	NM	N/A
2019	Welsh, Carson, Anderson & Stowe XIII, L.P.	3/14/2019	89,000,000	652,842	-	176,016	0.27x	NM	NM	N/A
2018	Siris Partners IV, L.P.	3/15/2019	89,000,000	13,489,968	-	12,547,400	0.93x	NM	NM	N/A
2018	Apollo Investment Fund IX, L.P.	3/15/2019	256,000,000	23,383,997	2,651	20,116,153	0.86x	NM	NM	N/A
2019	ASF VIII B L.P.	3/15/2019	174,000,000	17,400	-	605,367	34.79x	NM	NM	N/A
2019	ASF VIII B NYC Co-Invest L.P.	3/15/2019	87,000,000	8,700	-	2,179	0.25x	NM	NM	N/A
2019	Warburg Pincus Global Growth, L.P.	3/26/2019	125,500,000	1,485,714	-	1,102,031	0.74x	NM	NM	N/A
2018	Bridgepoint Europe VI	N/A	119,583,513	-	-	(1,470,267)	-	N/A	N/A	N/A
2018	Bridgepoint Europe VI Co-Invest	N/A	29,881,752	-	-	-	-	N/A	N/A	N/A
2018	Crestview Partners IV, L.P.	N/A	71,000,000	-	-	-	-	N/A	N/A	N/A
2018	Crestview Partners IV (Co-Investment), L.P.	N/A	23,666,667	-	-	-	-	N/A	N/A	N/A
2019	KKR European Fund V (USD)	N/A	83,250,000	-	-	-	-	N/A	N/A	N/A
2019	Lexington Capital Partners IX	N/A	106,500,000	-	-	5,008,636	-	NM	N/A	N/A
<b>Total Portfolio<sup>6</sup></b>			<b>\$ 11,310,296,929</b>	<b>\$ 9,329,493,848</b>	<b>\$ 8,722,105,971</b>	<b>\$ 4,731,498,321</b>	<b>1.44x</b>	<b>9.8%</b>	<b>10.2%</b>	<b>(0.4%)</b>

<sup>1</sup> Performance for funds with less than eight (8) quarters of activity is not meaningful.

<sup>2</sup> Russell 3000 PME+ or Long-Nickels PME for investments with no distributed capital as of quarter-end.

<sup>3</sup> PME Spread is calculated as IRR minus PME Return.

<sup>4</sup> NYCERS - 2012 Emerging Manager Program total commitment amount of \$139.6 million has been fully committed as of June 30, 2015.

<sup>5</sup> NYCERS - 2015 Emerging Manager Program total commitment amount includes the full amount allocated to the Program, of which \$158.8 million has been committed as of August 22, 2019.

<sup>6</sup> Total Portfolio includes liquidated investments.

**Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.**

The referenced indices are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

Note: IRRs presented are interim estimates and may not be indicative of the ultimate performance of fund investments due to a number of factors, such as the lack of industry valuation standards and the differences in the investment pace and strategy of various funds. Until a fund is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in early years of a fund is not meaningful given the J-curve effect. The actual IRR performance of any fund is not known until all capital contributed and earnings have been distributed to the investor. The IRRs contained in this report are calculated by StepStone Group LP ("StepStone"), a consultant to the New York City Police Pension Fund, Subchapter 2, based on information provided by the general partners (e.g. cash flows and valuations). The IRR calculations and other information contained in this report have not been reviewed or confirmed by the general partners. The result of the IRR calculation may differ from that generated by the general partner or other limited partners. Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, fund management fees, advisory fees, organizational fees, other fund expenses, sale of distributed stock, and valuations.

**New York City Employees' Retirement System  
 Subsequent Commitments  
 As of March 31, 2019 (in USD)**

Vintage Year	Investment	First Drawdown	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Multiple	IRR <sup>1</sup>	PME Return <sup>2</sup>	PME Spread <sup>3</sup>
<b>Commitments Closed Subsequent to as of Date</b>										
2019	Lindsay Goldberg V, L.P.	N/A	\$ 106,500,000	\$ -	\$ -	\$ -	N/A	N/A	N/A	N/A
2019	Lexington Co-Invest Partners B, L.P.	N/A	125,500,000	-	-	-	N/A	N/A	N/A	N/A
2019	Platinum Equity Capital Partners V, L.P.	N/A	157,000,000	-	-	-	N/A	N/A	N/A	N/A
2019	Apax X USD L.P.	N/A	104,500,000	-	-	-	N/A	N/A	N/A	N/A
2019	Trilantic Capital Partners VI (North America) L.P.	N/A	51,000,000	-	-	-	N/A	N/A	N/A	N/A
2019	Blackstone Capital Partners VIII L.P.	N/A	109,000,000	-	-	-	N/A	N/A	N/A	N/A
<b>Total Commitments Closed Subsequent to as of Date</b>			<b>\$ 653,500,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

<sup>1</sup> Performance for funds with less than eight (8) quarters of activity is not meaningful.

<sup>2</sup> Russell 3000 PME+

<sup>3</sup> PME Spread is calculated as IRR minus PME Return.

Note: IRRs presented are interim estimates and may not be indicative of the ultimate performance of fund investments due to a number of factors, such as the lack of industry valuation standards and the differences in the investment pace and strategy of various funds. Until a fund is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in early years of a fund is not meaningful given the J-curve effect. The actual IRR performance of any fund is not known until all capital contributed and earnings have been distributed to the investor. The IRRs contained in this report are calculated by StepStone Group LP ("StepStone"), a consultant to the New York City Employees' Retirement System, based on information provided by the general partners (e.g. cash flows and valuations). The IRR calculations and other information contained in this report have not been reviewed or confirmed by the general partners. The result of the IRR calculation may differ from that generated by the general partner or other limited partners. Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, fund management fees, advisory fees, organizational fees, other fund expenses, sale of distributed stock, and valuations.

**Real Estate Quarterly Report (Public):**



# Executive Material

## Quarterly Real Estate Report

For the period ended March 31, 2019



NYC Employees' Retirement System

## Significant Valuation Changes

During the quarter ended March 31, 2019, net of cash flow activity, 56 investments appreciated and 12 depreciated in value from the prior quarter. Below are the top 15 valuation changes (in terms of the absolute value of impact) that occurred in the portfolio during the quarter.

#	Fund	Change in Value		Comments
		\$	%	
1	Lion Industrial Trust	\$5.2	+6%	The appreciation in the Fund was driven by unrealized appreciation due to development projects being completed.
2	Blackstone Real Estate Partners VII L.P.	4.8	+4%	The increase in Fund valuation was a result of appreciation driven in part by the Invitation Homes, India Office, and Cosmopolitan of Las Vegas assets.
3	Prudential PRISA II	3.7	+2%	The Fund increased in value due to income generated throughout the portfolio as well as appreciation and realized gains. Appreciation drivers included the apartment, office, and industrial portfolios.
4	Heitman America Real Estate Trust, L.P.	3.5	+1%	Income drove the increase in overall valuation propelled by the industrial and self-storage sectors.
5	NYCRS-KKR CMBS Retention Partners	3.0	+3%	Income generated throughout the portfolio drove the increase in Fund valuation.
6	Prudential PRISA III	2.9	+2%	The primary driver of the increase in Fund valuation was income across all underlying portfolios. Also contributing was appreciation in the industrial and office portfolios.
7	Brookfield Premier Real Estate Partners	2.4	+2%	The Fund experienced increased unrealized appreciation driven by the logistics portfolio, followed by the multifamily and office portfolios.
8	Blackstone Real Estate Partners VIII L.P.	2.3	+2%	The increase in Fund valuation was a result of appreciation driven in part by the BioMed Realty Trust, Gramercy Property Trust, and Hembra assets.
9	Carlyle Property Investors	2.1	+2%	The increase in Fund appreciation was a result of realized gains as well as unrealized appreciation spread across the portfolio. The realized gains were a result of the sale of 87 Cambridge Park Drive.
10	JP Morgan Special Situation Property Fund	2.0	+2%	The Fund's valuation increased as a result of unrealized appreciation. This was driven primarily by the office sector.
11	RREEF America REIT II	2.0	+2%	The industrial sector provided both increased income and appreciation, driving the Fund to an increased valuation.
12	Prudential PRISA	2.0	+2%	The Fund increased in value due to income generated throughout the portfolio as well as appreciation and realized gains.
13	H2 Special Opportunities III	1.9	+4%	The Fund's valuation increased primarily as a result of unrealized appreciation of underlying assets.
14	Almanac Realty Securities VII	1.7	+4%	The Fund experienced an increase in valuation driven by appreciation related to its Westcore II and PREP investments.
15	H2 Special Opportunities IV	1.7	+14%	The Fund's valuation increased during the quarter almost entirely as a result of unrealized appreciation.
	<b>Total Gain/Loss</b>	<b>60.4</b>	<b>2%</b>	

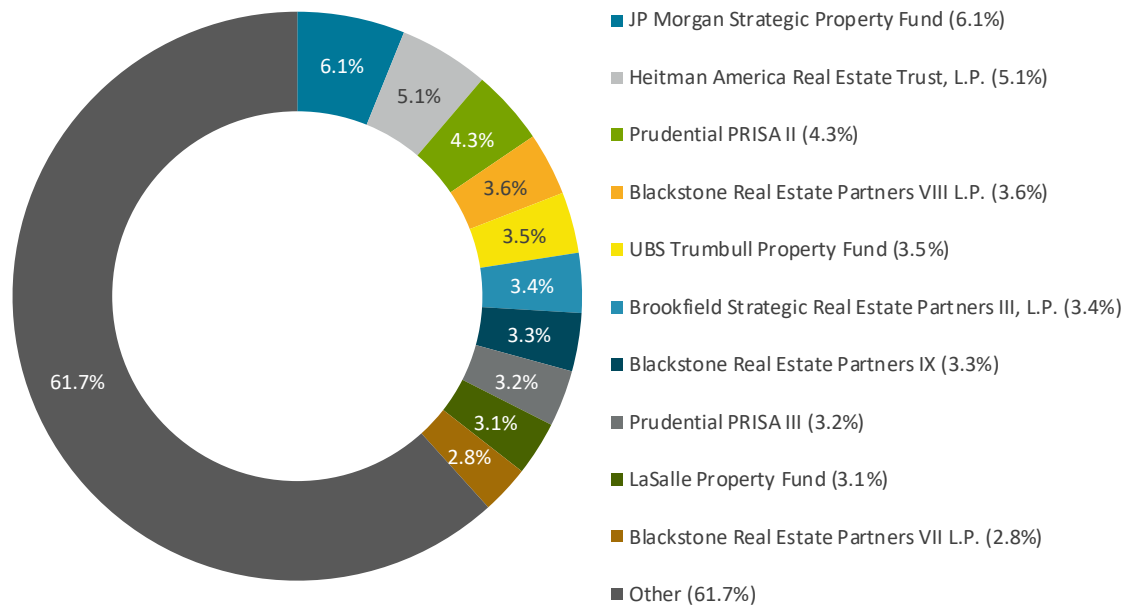


## Top 10 – Portfolio Holdings

The following table shows the Top 10 largest funds in the portfolio in terms of the current market value. These funds comprised approximately 38.3% of the portfolio's market value as of quarter end.

(in USD millions; Active investments only)

#	Fund	Commitment	Contributions	Distributions	NAV	Exposure	% of			
							Portfolio	IRR	TVM	DPI
1	JP Morgan Strategic Property Fund	136.0	169.6	18.9	306.4	306.4	6%	7.0%	1.92x	0.11x
2	Heitman America Real Estate Trust, L.P.	115.0	185.3	70.3	256.9	256.9	5%	7.9%	1.77x	0.38x
3	Prudential PRISA II	141.5	150.9	47.8	214.4	214.4	4%	5.9%	1.74x	0.32x
4	Blackstone Real Estate Partners VIII L.P.	151.0	131.1	43.9	124.0	179.2	4%	15.8%	1.28x	0.33x
5	UBS Trumbull Property Fund	156.0	249.4	214.9	173.8	173.8	3%	6.3%	1.56x	0.86x
6	Brookfield Strategic Real Estate Partners III,	170.0	0.0	0.0	0.0	170.0	3%	0.0%	-	-
7	Blackstone Real Estate Partners IX	166.0	0.0	0.0	0.0	166.0	3%	0.0%	-	-
8	Prudential PRISA III	50.0	77.5	17.1	160.9	160.9	3%	11.9%	2.30x	0.22x
9	LaSalle Property Fund	132.0	49.8	18.7	72.6	154.6	3%	10.6%	1.84x	0.38x
10	Blackstone Real Estate Partners VII L.P.	170.0	209.6	232.1	113.2	138.1	3%	17.3%	1.65x	1.11x
<b>Total - Top 10 Funds</b>		<b>1,387.5</b>	<b>1,223.2</b>	<b>663.7</b>	<b>1,422.1</b>	<b>1,920.2</b>	<b>38%</b>	<b>8.1%</b>	<b>1.71x</b>	<b>0.54x</b>

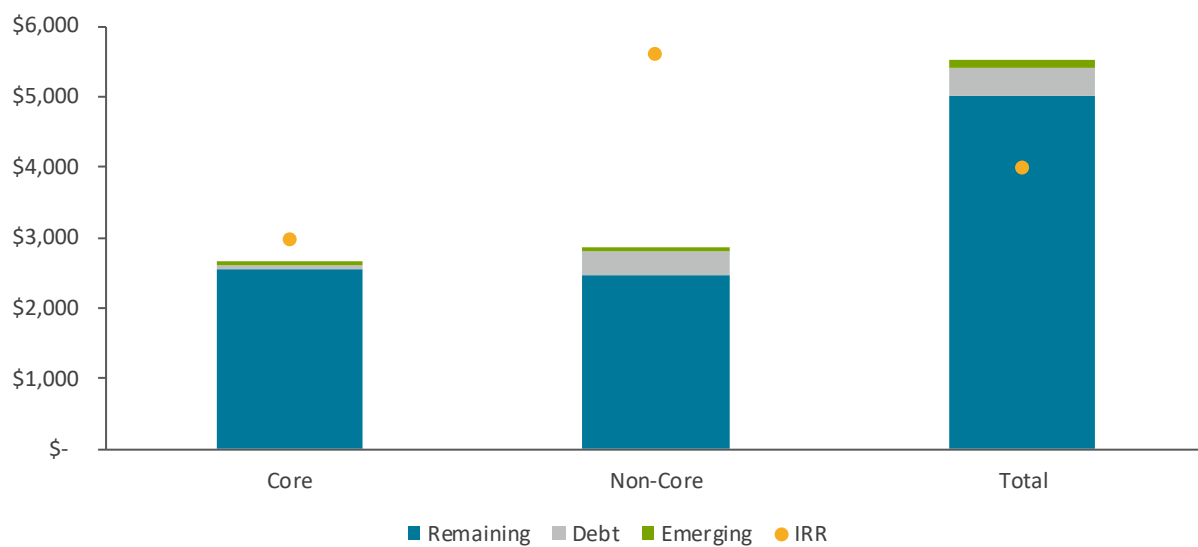


## Performance by Strategy

(in USD millions; includes liquidated investments)

Strategy	No. of		Commitment	Contributions	Distributions	NAV	Unfunded	Exposure	TVM	IRR	PME		
	Active Inv										Spread	Leverage	
Core	26		1,970	1,988	689	2,241	307	2,548	1.5x	6.0%	6.6%	-0.6%	25%
Non-Core	53		3,473	2,673	2,541	1,266	1,115	2,381	1.4x	11.3%	8.8%	2.4%	59%
<b>Total</b>	<b>79</b>		<b>5,443</b>	<b>4,661</b>	<b>3,229</b>	<b>3,508</b>	<b>1,422</b>	<b>4,930</b>	<b>1.4x</b>	<b>8.0%</b>	<b>7.5%</b>	<b>0.5%</b>	<b>39%</b>
Emerging	6		172	147	82	69	36	105	1.0x	0.8%	N/A	N/A	N/A
Debt	8		541	400	245	245	155	400	1.2x	13.2%	N/A	N/A	N/A

The following chart illustrates the portfolio's diversification, first by risk (Core vs Non-Core) and then by underlying strategy within each category.

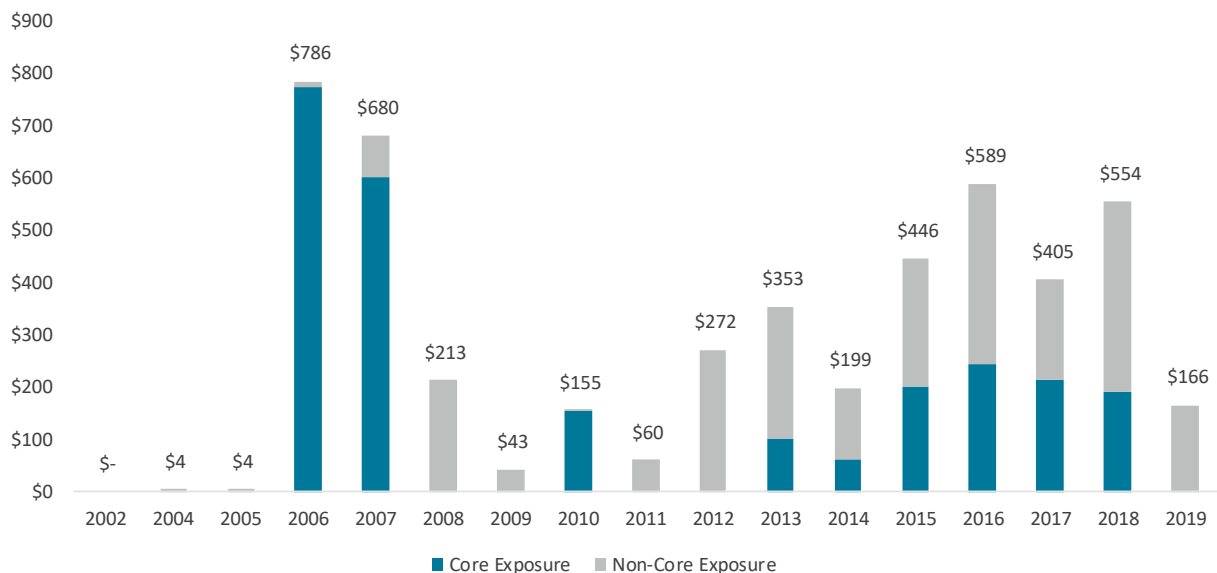


## Performance by Vintage Year

The following table and graph illustrate the Portfolio's since inception investment performance and exposure by vintage year as of the end of March 31, 2019.

(in USD millions; Includes all investments)

Vintage Year	Core				Non-Core				Total Portfolio			
	Exposure	TVM	IRR	Quartile	Exposure	TVM	IRR	Quartile	Exposure	TVM	IRR	Quartile
2002	-	-	-	N/A	0.0	1.19x	11.1%	3rd	0.0	1.19x	11.1%	3rd
2004	-	-	-	N/A	3.8	1.63x	20.5%	1st	3.8	1.63x	20.5%	1st
2005	-	-	-	N/A	4.2	0.45x	-10.5%	4th	4.2	0.45x	-10.5%	4th
2006	774.1	1.64x	5.7%	N/A	12.0	1.14x	1.7%	1st	786.1	1.62x	5.5%	1st
2007	602.4	1.52x	4.8%	N/A	77.6	1.45x	7.4%	2nd	680.1	1.49x	5.5%	2nd
2008	-	-	-	N/A	212.8	1.37x	5.0%	3rd	212.8	1.37x	5.0%	3rd
2009	-	-	-	N/A	42.6	1.36x	9.6%	3rd	42.6	1.36x	9.6%	3rd
2010	154.6	1.84x	10.6%	N/A	0.4	1.35x	11.9%	3rd	155.1	1.65x	10.9%	3rd
2011	-	-	-	N/A	60.0	1.53x	18.2%	2nd	60.0	1.53x	18.2%	2nd
2012	-	-	-	N/A	272.1	1.75x	18.5%	1st	272.1	1.75x	18.5%	1st
2013	102.4	1.63x	14.3%	N/A	251.0	1.41x	13.9%	2nd	353.4	1.45x	14.0%	2nd
2014	63.0	1.45x	9.7%	N/A	135.9	1.38x	15.6%	1st	199.0	1.40x	13.3%	2nd
2015	199.9	1.24x	11.1%	N/A	245.8	1.27x	14.5%	2nd	445.7	1.25x	12.9%	2nd
2016	245.5	1.22x	12.1%	N/A	343.6	1.16x	13.0%	2nd	589.2	1.20x	12.4%	2nd
2017	214.8	1.18x	11.8%	N/A	190.6	1.10x	11.2%	1st	405.5	1.15x	11.6%	1st
2018	191.6	1.01x	5.0%	N/A	362.9	1.08x	15.6%	1st	554.4	1.04x	11.8%	1st
2019	0.0	N/A	0.0%	N/A	166.0	N/A	0.0%	3rd	166.0	N/A	0.0%	3rd
<b>Total</b>	<b>2,548.4</b>	<b>1.47x</b>	<b>6.0%</b>	<b>N/A</b>	<b>2,381.3</b>	<b>1.42x</b>	<b>11.3%</b>	<b>2nd</b>	<b>4,929.8</b>	<b>1.45x</b>	<b>8.0%</b>	<b>2nd</b>



## Investments by Vintage Years

(in USD millions)

Fund	Vintage Year	First Cash Flow	Commitment	Contributions	Distributions	NAV	Unfunded	Exposure	TVM	DPI	IRR	Quartile Ranking
<i>Active Investments</i>												
Blackstone Real Estate Partners IV L.P.	2004	5/14/2004	30.0	38.4	50.0	3.4	0.0	3.4	1.39x	1.30x	9.9%	Third
The City Investment Fund I	2004	3/16/2004	225.0	221.9	224.4	0.4	0.0	0.4	1.01x	1.01x	0.3%	Third
Canyon-Johnson Urban II	2005	5/11/2005	40.0	36.0	15.9	0.1	4.0	4.2	0.45x	0.44x	-10.5%	Fourth
Apollo Real Estate Investment Fund V	2006	6/15/2006	25.0	25.0	19.0	9.5	2.5	12.0	1.14x	0.76x	1.7%	Second
Colony Realty Partners II	2006	12/20/2006	20.0	24.7	9.0	0.0	0.0	0.0	0.36x	0.36x	-13.3%	N/A
JP Morgan Strategic Property Fund	2006	12/5/2006	136.0	169.6	18.9	306.4	0.0	306.4	1.92x	0.11x	7.0%	N/A
Prologis Targeted US Logistics Fund	2006	10/1/2006	25.0	34.3	11.3	46.6	0.0	46.6	1.69x	0.33x	5.5%	N/A
Prudential PRISA	2006	9/29/2006	86.0	92.7	35.0	122.4	0.0	122.4	1.70x	0.38x	4.9%	N/A
RREEF America REIT II	2006	10/2/2006	86.0	113.5	58.6	124.9	0.0	124.9	1.62x	0.52x	5.3%	N/A
UBS Trumbull Property Fund	2006	9/28/2006	156.0	249.4	214.9	173.8	0.0	173.8	1.56x	0.86x	6.3%	N/A
American Value Partners Fund I	2007	10/18/2007	55.0	39.3	41.4	4.3	15.7	20.0	1.16x	1.05x	3.1%	Third
Blackstone Real Estate Partners VI L.P.	2007	7/28/2006	110.0	123.5	235.7	9.8	5.6	15.4	1.99x	1.91x	13.3%	First
Carlyle Realty Partners V, L.P.	2007	8/27/2007	20.0	25.8	30.5	5.9	4.4	10.3	1.41x	1.18x	8.3%	First
Heitman America Real Estate Trust, L.P.	2007	3/29/2007	115.0	185.3	70.3	256.9	0.0	256.9	1.77x	0.38x	7.9%	N/A
JP Morgan Special Situation Property Fund	2007	1/5/2007	90.0	109.4	42.2	131.2	0.0	131.2	1.58x	0.39x	4.8%	N/A
Metropolitan Workforce Housing Fund	2007	7/12/2007	14.0	14.0	16.7	0.3	0.0	0.3	1.21x	1.19x	3.9%	Second
Prudential PRISA II	2007	6/29/2007	141.5	150.9	47.8	214.4	0.0	214.4	1.74x	0.32x	5.9%	N/A
Thor Urban Property Fund II	2007	10/30/2008	40.0	54.8	54.8	14.3	3.0	17.3	1.26x	1.00x	6.8%	Second
Westbrook Real Estate Fund VII, L.P.	2007	12/3/2007	40.0	43.9	42.2	10.6	3.8	14.4	1.21x	0.96x	3.2%	First
Ares European Real Estate Fund III	2008	5/20/2008	30.0	30.5	33.2	0.6	0.0	0.6	1.11x	1.09x	2.6%	Third
Blackstone Real Estate Partners Europe III - USD	2008	10/24/2008	50.0	52.0	68.2	9.2	6.6	15.8	1.49x	1.31x	11.1%	First
Capri Urban Investors	2008	6/3/2008	60.0	60.0	27.5	16.6	0.0	16.6	0.74x	0.46x	-4.3%	Third
Prudential PRISA III	2008	9/30/2008	50.0	77.5	17.1	160.9	0.0	160.9	2.30x	0.22x	11.9%	Second
Silverpeak Legacy Partners III	2008	6/4/2008	50.0	23.5	4.0	4.3	0.0	4.3	0.35x	0.17x	-11.6%	Fourth
Stockbridge Real Estate III	2008	9/9/2008	27.0	27.0	16.8	14.7	0.0	14.7	1.17x	0.62x	2.3%	Fourth
Walton Street Real Estate Fund VI	2009	4/27/2009	50.0	44.3	47.9	20.5	7.8	28.3	1.54x	1.08x	8.8%	First
Westbrook Real Estate Fund VIII, L.P.	2009	12/28/2009	50.0	59.6	69.0	10.0	4.3	14.3	1.32x	1.16x	11.5%	Third
Canyon Johnson Urban Fund III	2010	3/29/2010	30.0	30.0	40.4	0.0	0.4	0.4	1.35x	1.35x	11.9%	First
LaSalle Property Fund	2010	7/1/2010	132.0	49.8	18.7	72.6	82.0	154.6	1.84x	0.38x	10.6%	N/A
Carlyle Realty Partners VI, L.P.	2011	9/28/2011	70.0	75.5	106.0	9.3	46.1	55.3	1.53x	1.41x	21.1%	First
H2 Special Opportunities Fund II	2011	2/14/2011	40.0	40.0	57.0	4.7	0.0	4.7	1.54x	1.42x	14.5%	Second
Blackstone Real Estate Partners VII L.P.	2012	4/13/2012	170.0	209.6	232.1	113.2	25.0	138.1	1.65x	1.11x	17.3%	Second
Brookfield Strategic Real Estate Partners	2012	9/20/2012	100.0	118.7	154.8	75.7	12.8	88.5	1.94x	1.30x	21.3%	First
Taconic New York City Investment Fund	2012	7/5/2012	70.0	29.3	47.0	4.6	40.7	45.4	1.76x	1.60x	15.9%	Second

(in USD millions)

Fund	Vintage Year	First Cash Flow	Commitment	Contributions	Distributions	NAV	Unfunded	Exposure	TVM	DPI	IRR	Quartile Ranking
<i>Active Investments (continued)</i>												
Blackstone Real Estate Partners Europe IV L.P. - USD	2013	12/23/2013	\$169.0	\$166.9	\$162.1	\$89.3	\$31.0	\$120.3	1.51x	0.97x	15.7%	Second
Lone Star Real Estate Fund III, L.P.	2013	2/28/2014	100.0	95.6	115.5	13.3	6.3	19.6	1.35x	1.21x	14.9%	Second
NYC Asset Investor #1	2013	6/25/2013	50.0	56.1	23.4	47.5	10.7	58.2	1.26x	0.42x	6.7%	Fourth
NYC Asset Investor #2	2013	7/9/2013	75.0	73.2	21.9	97.6	4.8	102.4	1.63x	0.30x	14.3%	N/A
NYC Asset Investor #3	2013	9/20/2013	50.0	31.5	5.5	34.5	18.5	52.9	1.27x	0.17x	8.6%	Fourth
Carlyle Realty Partners VII, L.P.	2014	7/1/2014	80.0	66.9	41.1	50.3	42.9	93.2	1.37x	0.61x	14.8%	First
DivcoWest Fund IV	2014	1/15/2014	23.0	22.8	33.0	5.0	2.1	7.0	1.67x	1.45x	26.3%	First
H2 Special Opportunities III	2014	12/29/2014	65.0	65.0	48.7	35.7	0.0	35.7	1.30x	0.75x	11.9%	Second
MetLife Core Property Fund	2014	7/1/2014	50.0	50.0	9.5	63.0	0.0	63.0	1.45x	0.19x	9.7%	N/A
Almanac Realty Securities VII	2015	4/24/2015	65.0	49.2	12.5	50.6	21.2	71.8	1.28x	0.25x	14.2%	N/A
Almanac Realty Securities VII (Sidecar IV)	2015	12/9/2015	20.0	11.1	1.4	13.6	9.0	22.6	1.36x	0.12x	17.7%	N/A
Avanath Affordable Housing II	2015	7/14/2015	8.0	8.1	0.7	11.6	0.2	11.8	1.52x	0.09x	13.0%	Second
Blackstone Real Estate Partners VIII L.P.	2015	8/18/2015	151.0	131.1	43.9	124.0	55.1	179.2	1.28x	0.33x	15.8%	First
Tristan European Property Investors Special Opp IV	2015	12/18/2015	49.7	34.9	2.2	37.8	16.9	54.8	1.15x	0.06x	9.5%	Third
USAA Eagle Real Estate Fund	2015	12/1/2015	90.0	80.0	5.7	89.7	15.7	105.4	1.19x	0.07x	8.6%	N/A
Artemis Co-Investment	2016	2/24/2016	53.0	51.7	19.0	43.5	11.8	55.3	1.21x	0.37x	19.0%	N/A
Brookfield Premier Real Estate Partners	2016	11/22/2016	91.0	98.4	7.4	115.4	0.0	115.4	1.25x	0.08x	11.6%	N/A
DivcoWest Fund V	2016	12/21/2016	60.0	29.0	0.0	30.7	31.0	61.7	1.06x	0.00x	4.4%	Third
Exeter Core Industrial Club Fund II	2016	5/20/2016	28.0	19.7	2.4	21.5	8.3	29.8	1.21x	0.12x	13.3%	N/A
Exeter Industrial Value Fund IV, L.P.	2016	6/30/2017	30.0	16.5	0.0	18.2	13.5	31.7	1.11x	0.00x	11.9%	Second
H2 Special Opportunities IV	2016	11/15/2016	91.0	17.7	0.7	18.1	74.0	92.0	1.06x	0.04x	4.6%	Third
Jamestown Premier Property Fund	2016	2/4/2016	48.7	46.2	20.1	35.4	9.7	45.1	1.20x	0.44x	9.0%	N/A
Pramerica Real Estate Capital VI	2016	4/20/2017	61.0	30.1	13.4	22.3	40.7	63.0	1.19x	0.45x	17.7%	First
PW Real Estate Fund III	2016	10/7/2016	49.9	28.8	3.7	35.4	21.0	56.5	1.36x	0.13x	22.4%	First
Westbrook Real Estate Fund X Co-Investment	2016	7/18/2016	36.0	21.2	4.1	19.8	19.0	38.8	1.13x	0.19x	11.4%	Second
Basis Investment Group Real Estate Fund I	2017	11/16/2017	17.0	10.2	2.0	9.0	8.1	17.1	1.08x	0.20x	14.3%	Second
Carlyle Property Investors	2017	7/3/2017	91.0	96.1	5.1	100.7	0.0	100.7	1.10x	0.05x	7.1%	N/A
DRA Growth and Income Fund IX	2017	3/9/2017	49.0	29.4	7.9	26.9	24.1	51.0	1.18x	0.27x	18.5%	First
Lion Industrial Trust	2017	1/3/2017	90.0	95.8	5.8	114.1	0.0	114.1	1.25x	0.06x	15.9%	N/A
NYCRS-KKR CMBS Retention Partners	2017	6/30/2017	122.0	96.0	7.7	96.2	26.3	122.5	1.08x	0.08x	8.6%	Second
Aermon Capital Real Estate Fund IV	2018	N/A	74.1	0.0	0.0	0.0	74.1	74.1	-	-	-	-
Almanac Realty Securities VIII	2018	12/21/2018	51.0	0.7	0.0	0.4	50.3	50.7	0.56x	0.00x	NM	N/A
Almanac Realty Securities VIII (Sidecar II)	2018	12/21/2018	34.0	0.6	0.0	0.6	33.4	34.0	1.03x	0.00x	NM	N/A
Artemis Income and Growth Fund	2018	N/A	61.0	0.0	0.0	0.0	61.0	61.0	-	-	-	-
Brookfield Strategic Real Estate Partners III, L.P.	2018	N/A	170.0	0.0	0.0	0.0	170.0	170.0	-	-	-	-
Heitman Core Real Estate Debt Income Trust	2018	11/7/2018	45.0	45.3	0.3	45.9	0.0	45.9	1.02x	0.01x	NM	N/A
KKR Real Estate Partners Americas II	2018	2/9/2018	118.7	41.3	6.4	38.0	80.8	118.8	1.08x	0.16x	NM	N/A
Blackstone Real Estate Partners IX L.P.	2019	N/A	166.0	0.0	0.0	0.0	166.0	166.0	-	-	-	-
<b>Total: Active Investments</b>			<b>5,116.5</b>	<b>4,396.7</b>	<b>2,811.5</b>	<b>3,507.5</b>	<b>1,422.2</b>	<b>4,929.8</b>	<b>1.44x</b>	<b>0.64x</b>	<b>7.4%</b>	<b>N/A</b>

(in USD millions)

Fund	Vintage Year	First Cash Flow	Commitment	Contributions	Distributions	NAV	Unfunded	Exposure	TVM	DPI	IRR	Quartile Ranking	
<i>Liquidated Investments</i>													
BlackRock Carbon Capital III Co-Investments	2009	7/2/2009	\$40.0	\$43.8	\$53.2	\$0.0	\$0.0	\$0.0	1.22x	1.22x	8.9%	Third	
Canyon-Johnson Urban	2002	12/6/2002	15.0	13.7	16.4	0.0	0.0	0.0	1.19x	1.19x	11.1%	Third	
JPM Urban REN PTY FD	2008	12/16/2008	16.4	4.2	4.2	0.0	0.0	0.0	1.00x	1.00x	0.0%	Third	
KTR Industrial Fund III	2013	6/28/2013	40.0	18.2	28.4	0.0	0.0	0.0	1.56x	1.56x	40.5%	First	
RREEF America REIT III	2003	10/1/2007	90.0	90.0	51.2	0.0	0.0	0.0	0.57x	0.57x	-7.5%	Fourth	
Tishman Speyer Citigroup Alt Inv V&VI NYC	2004	12/16/2003	100.0	71.1	261.9	0.0	0.0	0.0	3.69x	3.69x	63.2%	First	
UrbanAmerica II	2005	1/30/2007	25.0	23.2	2.6	0.0	0.0	0.0	0.11x	0.11x	-25.0%	Fourth	
<b>Total: Liquidated Investments</b>			<b>326.4</b>	<b>264.2</b>	<b>417.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>1.58x</b>	<b>1.58x</b>	<b>27.2%</b>	<b>N/A</b>	
<b>Total: All Investments</b>				<b>5,525.9</b>	<b>4,660.9</b>	<b>3,229.4</b>	<b>3,507.5</b>	<b>1,505.2</b>	<b>5,012.7</b>	<b>1.45x</b>	<b>0.69x</b>	<b>8.0%</b>	<b>Second</b>

## Infrastructure Quarterly Report (Public):



## Infrastructure Monitoring Report

For the period ended March 31, 2019

Report Prepared For:

New York City Employees' Retirement System





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All data is as of March 31, 2019 unless otherwise noted.

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## I. Executive Summary

New York City Employees’ Retirement System (“NYCERS”) established the Infrastructure Program (the “Program”) in December of 2012 on behalf of its beneficiaries to participate in attractive long-term investment opportunities and to provide diversification to its overall pension investment portfolio.

The inclusion of infrastructure in the NYCERS pension portfolio allows for global investments in facilities or assets that provide core essential services critical to the operation and development of economies. Typically infrastructure investments have high barriers to entry due to significant capital expenditure requirements, exclusive long term contracts or regulatory requirements. Infrastructure investments are comprised of long useful-life assets with high tangible value and relatively low value erosion over time.

The Program seeks to invest in opportunities in a variety of infrastructure sectors, including but not limited to, transportation, energy, power, utilities, water, wastewater, communications and social infrastructure.

StepStone Group LP (“StepStone”) was engaged by NYCERS on October 20, 2014 to provide infrastructure advisory services for prospective investment opportunities and monitoring and reporting services for existing and new investments.

Since inception through March 31, 2019, the Program has committed US\$1,284.5 million to 18 partnership investments (the “Portfolio”). This quarterly monitoring report covers the performance of the Portfolio as of March 31, 2019 as well as significant activity that occurred during the first quarter of 2019.

### Allocation Summary

NYCERS has an Infrastructure allocation target of 2% of total pension assets. As of March 31, 2019, the market value of NYCERS Infrastructure Program represented approximately 1.0% of total pension assets, a nine-basis point increase from the prior quarter.

As the Program matures, the percentage of its market value relative to the total NYCERS pension assets will continue to increase.

<i>US\$ in millions*</i>	March 31, 2019	December 31, 2018	March 31, 2018	Quarterly Change	Yearly Change
Total Pension Assets*	\$65,265.0	\$61,679.0	\$64,558.0	\$3,586.0	\$707.0
Total Infrastructure Assets	\$633.7	\$543.7	\$366.3	\$90.0	\$267.4
% Allocation to Infrastructure (Target of 2%)	1.0%	0.9%	0.6%	+9 bps	+40 bps

\*NYCERS total Pension Assets and total Infrastructure Assets are as of quarter-end (or, if not yet available, the most recent month-end prior to quarter-end) as reported by The New York City Comptroller’s Office on [www.comptroller.nyc.gov](http://www.comptroller.nyc.gov)

## Performance Summary

As of March 31, 2019, the Infrastructure Program has achieved a Total Value to Paid-In multiple of 1.2x invested capital and an IRR of 12.8%. Note that, given the relative immaturity of the Portfolio and underlying fund investments, the current performance to-date is not meaningful.

US\$ in millions*	March 31, 2019	December 31, 2018	March 31, 2018	Quarterly Change	Yearly Change
Number of Managers	10	10	10	0	0
Number of Investments	18	16	13	2	5
Committed Capital <sup>1</sup>	\$1,284.5	\$1,091.5	\$896.4	\$192.9	\$388.0
Contributed Capital	\$606.4	\$528.0	\$349.0	\$78.3	\$257.3
Distributed Capital	\$106.0	\$96.5	\$61.9	\$9.5	\$44.1
Market Value	\$633.7	\$543.7	\$366.3	\$90.0	\$267.4
Total Value	\$739.8	\$640.2	\$428.2	\$99.5	\$311.5
Total Gain/(Loss)	\$133.4	\$112.2	\$79.2	\$21.2	\$54.2
Unfunded Commitment	\$734.0	\$618.1	\$583.0	\$115.9	\$151.0
Exposure <sup>2</sup>	\$1,367.7	\$1,161.8	\$949.3	\$205.9	\$418.5
DPI <sup>3</sup>	0.2x	0.2x	0.2x	0.0x	0.0x
TVPI <sup>4</sup>	1.2x	1.2x	1.2x	0.0x	0.0x
IRR <sup>5</sup>	12.8%	12.4%	13.4%	0.4%	-0.6%
TVPI Net of StepStone Fees <sup>6</sup>	1.2x	1.2x	1.2x	0.0x	0.0x
IRR Net of StepStone Fees <sup>6</sup>	12.7%	12.4%	13.3%	0.4%	-0.6%

\* Note that amounts may not total due to rounding. **Past performance is not necessarily indicative of future results and there can be no assurance that the investment will achieve comparable results or avoid substantial losses.**

<sup>1</sup> Committed Capital is presented net of any commitment releases or expirations and reflects foreign currency exchange rate fluctuations. Note that the Base/(US\$) committed capital for foreign currency-denominated investments as of respective quarter-end dates is calculated as follows: (total net amount funded in Base currency) + (unfunded commitment in Local currency \* quarter-end exchange rate). StepStone utilizes S&P Capital IQ as the source for quarter-end exchange rates to calculate committed capital.

<sup>2</sup> Exposure represents the sum of Market Value and Unfunded Commitment.

<sup>3</sup> DPI, or Distributed to Paid-In Multiple, is a performance metric that measures distributions received relative to capital invested. DPI is calculated as Distributed Capital divided by Contributed Capital.

<sup>4</sup> TVPI, or Total Value to Paid-In Multiple, is a performance metric that measures total value created by the Portfolio relative to capital invested, without consideration for time. TVPI is calculated as Total Value, which is comprised of Market Value plus Distributed Capital, divided by Contributed Capital.

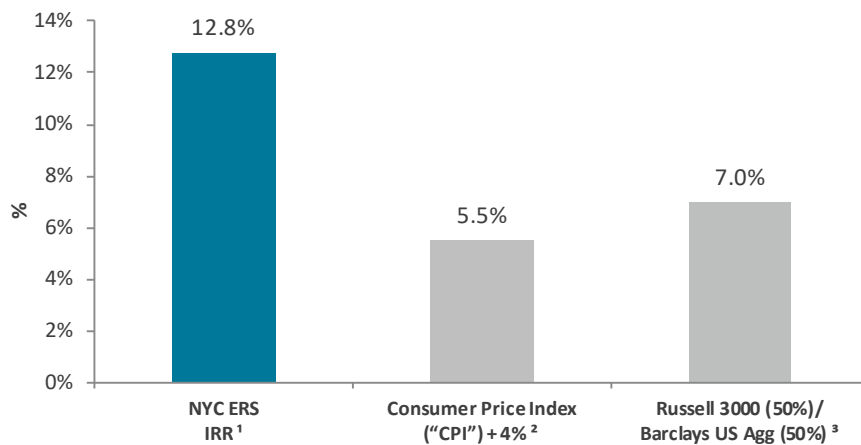
<sup>5</sup> IRR, or Internal Rate of Return, is a performance metric that is calculated based on the Portfolio's daily cash flows and market value as of quarter-end. IRR is net of fund managers' fees, expenses and carried interest.

<sup>6</sup> TVPI and IRR Net of StepStone fees represent TVPI and IRR net of fees paid by NYCERS to StepStone through the quarter-end date.

## Portfolio Performance vs. Benchmarks

The performance benchmark for the Infrastructure Portfolio is to meet or exceed the Consumer Price Index (“CPI”) plus 4% net of fees over a rolling 5-year period. The Infrastructure Portfolio’s performance is also measured against a dollar-weighted public benchmark, which produced the return that would have been earned if NYCERS’s infrastructure cash flows were invested in an index of 50% Russell 3000® and 50% Barclays U.S. Aggregate®. The Infrastructure Portfolio is expected to generate a total return, net of investment management fees, of at least 6.5%.

The following graph illustrates Portfolio IRR performance versus benchmarks as of March 31, 2019.



<sup>1</sup>NYCERS since inception Internal Rate of Return (“IRR”) is calculated based on the Portfolio’s daily cash flows and market value as of quarter-end. IRR is net of fund managers’ fees, expenses and carried interest. **Past performance is not necessarily indicative of future results.**

<sup>2</sup>Consumer Price Index (“CPI”) benchmark represents the compound annual growth rate of the Consumer Price Index for All Urban Consumers and All Items, as provided by the U.S. Department of Labor: Bureau of Labor Statistics, calculated over a five-year rolling period plus a 4.0% premium.

<sup>3</sup> Benchmark is a dollar-weighted PME+ calculation of daily changes in 50% of the Russell 3000® Index and 50% of the Barclays U.S. Aggregate® Index. These index comparisons are being provided solely for informational purposes as an indication of returns that could be earned by investors by making similar investments in the indexes and should not be relied upon for any purpose. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

## Portfolio Diversification

The Program’s objective is to build a Portfolio that is diversified by investment strategy, asset type, and geography. The target investment strategy ranges are as follows:

- Core Infrastructure Investments: 60% to 100%; and
- Non-Core Infrastructure Investments: 0% to 40%.

Actual percentages may differ substantially from these targets during the initial years of the Program. The following table illustrates the current diversification of the Portfolio by fund strategy, geography and industry focus.

As of March 31, 2019. (US\$ In millions)	Market Value		Unfunded Commitment		Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
<b>By Strategy:</b>						
Core	542.9	85.7%	691.7	94.2%	1,234.6	90.3%
Non-Core	90.9	14.3%	42.3	5.8%	133.1	9.7%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>
<b>By Geographic Focus:</b>						
Global	211.0	33.3%	107.0	14.6%	317.9	23.2%
North America	92.4	14.6%	69.2	9.4%	161.6	11.8%
OECD	330.4	52.1%	557.8	76.0%	888.2	64.9%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>
<b>By Industry Focus:</b>						
Diversified	554.0	87.4%	530.3	72.3%	1,084.4	79.3%
Energy	79.7	12.6%	203.7	27.7%	283.3	20.7%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>

## II. Infrastructure Market Overview

### Market Update<sup>1</sup>

During the first quarter of 2019, the North American market faced increasing volatility, as concerns around the U.S.-China trade dispute and Brexit continued to cast uncertainty on the economic outlook. While the U.S. equity market regained some ground from the weak end to 2018, North American Central Banks have remained cautious as economic indicators signal the continuous need for expansionary policies. The Federal Reserve is expected to have no rate hikes this year and the Bank of Canada is also slowing the pace of rate hikes in 2019. Against this economic backdrop, infrastructure funds continue to demonstrate strong appetite for North American midstream, telecom, and renewable assets. Multiple significant midstream transactions were announced in Q1 2019. Blackstone acquired Tallgrass Energy (100% GP interest, 44% economic interest) for US\$3.3 billion in equity. The transaction implies an acquisition multiple of 14.2x EBITDA. Also in the midstream sector, EQM Midstream Partners acquired Hornet Midstream from Morgan Stanley (North Haven Infrastructure Partners) for US\$1.03 billion and Blackstone acquired a 45% interest in Targa Badlands, a crude oil and natural gas gathering and storage business in North Dakota, from Targa Resources for US\$1.6 billion. In the telecom space, Brookfield's US\$1.1 billion acquisition of AT&T data centres reached financial close. Additionally, based on public news sources, a consortium comprising Digital Colony and EQT are reportedly in negotiations to acquire Zayo Corporation, a publicly listed US telecommunications provider with an enterprise value of US\$13.4 billion. The renewable sector remained active with several large-scale brownfield transactions announced: American Electric Power and KKR led the way with acquisitions of Sempra Energy's 2.0GW wind portfolio and NextEra's 1.2GW operating renewable portfolio, respectively.

In Europe, M&A activity in the European transport sector was robust during the first quarter of 2019. In the airports sub-sector, APG, QIC and Swiss Life acquired a 36% stake in Brussels Airport from Macquarie. In the car parking sub-sector, MEAG and Mirova acquired a 49.2% interest in Indigo, a France-based car park operator, from Ardian. Also in the car parking sub-sector, Sumitomo, a Japanese conglomerate, acquired Q-Park's Nordic assets from KKR. In the ports sub-sector, a consortium led by Monaco Resources, acquired a 100% interest in Euroports from Antin, Brookfield and Arcus, with the transaction implying an acquisition multiple of 11.4x EBITDA. Also in the ports sub-sector, PSA International, the Polish Development Fund and IFM acquired a 100% interest in DCT Gdansk, the largest container terminal in Poland, from Macquarie Infrastructure and Real Assets, MTAA Super, AustralianSuper and Statewide Super. No financial information on the deal was disclosed, however based on public news sources, the deal transacted in the range of 16-18x EBITDA. In the telecommunications sector, Basalt Infrastructure Partners acquired Manx-Telecom, a provider of fixed line, broadband, mobile and data services to customers and businesses on the Isle of Man, in the UK. The transaction values Manx-Telecom at 11.7x EBITDA. Also in the telecommunications sector, Mirova acquired a 49% interest in Axione, a French telecom infrastructure operator. In the utilities sector, German energy group Uniper agreed to sell a 48.2% stake in the Offshore LNG Toscana project to First State for €400 million. Ontario Teachers' Pension Plan agreed to sell its 50% stake in InterGen to Sev.en Energy. InterGen owns a total installed capacity of 4,000MW across its CCGT plants in the UK, and two coal-fired power stations in Australia. In the renewables sector, Macquarie agreed to acquire a portfolio of geothermal and hydro projects in Iceland from Canadian developer Innergex Renewable Energy in a transaction that valued the assets at an acquisition multiple of 12.7x EBITDA. In the wind sub-sector, Greencoat UK Wind and HSBC UK Pension Scheme agreed to buy a 49.9% stake in two Scottish wind farms from SSE for £635 million. SSE holds the remaining 50.1% and will continue to operate both assets.

In Latin America, transaction activity over the quarter was robust in the power and renewables sectors, and predominantly in greenfield projects. The largest transaction closing over the quarter consisted of the financial close of Gás Natural Açú ("GNA")'s Porto de Açú project, an LNG-to-power plant in Brazil. GNA is a joint venture formed by Prumo Logística, BP, and

<sup>1</sup> Data used in this section is Q1 2019 data from InfraNews and Preqin.

Siemens. The gas-fired power plant will have a capacity of 1.3GW and is expected to begin commercial operations in 2021. Total construction cost is expected to be US\$1.2 billion. Greenfield activity was also strong in the renewables sector, particularly in Mexico due to its energy auctions of power purchase agreements. Such projects reaching financial close during the quarter include: two 150MW solar energy projects in Zacatecas with equity sponsor Helios Generación (a joint venture between Fomento a la Energía e Infraestructura de México 2 and Pattern Energy Group), requiring capex of US\$370 million; a 220MW wind farm in Puebla with equity sponsor Iberdola S.A. requiring capex of US\$225 million; a 90MW solar power project in Sonora with equity sponsor EDF Renewables requiring capex of US\$115 million. Within the transport sector, Brookfield Infrastructure sold a 33% stake of its Chilean highway concessions, Vespucio Norte and Túnel San Cristóbal, to Chilean infrastructure fund Frontal Trust Infraestructura Alpha Fondo de Inversión for a reported US\$330 million.

In Australia, there were a number of notable transactions that occurred during the quarter across various sectors. In renewables, Tilt Renewables acquired the Liverpool Range Wind Farm project from Epuron. The greenfield project is in pre-construction phase and has received development approval for up to 267 turbines. Upon completion, the project is anticipated to have a total capacity of ~1,000MW, which would make it the largest wind farm in Australia. Elsewhere in the energy sector, QIC-owned Lochard Energy acquired the Heytesbury depleted gas reservoir assets from Origin Energy. The assets are located near Lochard Energy's Iona gas storage facility and have potential to be developed for incremental gas storage for Iona. In telecommunications, Brookfield acquired two data centres from Blackstone's portfolio company DCI for A\$253 million. The two data centres are located in Sydney and Adelaide. The transaction implies an acquisition multiple of ~12.6x EBITDA. In ports, Gateway Infrastructure Investments (managed by Corsair Infrastructure Partners) divested its 37.5% interest in DP World Australia to DP World. In social infrastructure, AMP Capital's Community Infrastructure Fund ("CommIF") acquired a 50% interest in the Optus Stadium from John Laing. The 60,000-seat stadium is located in Perth and is owned under an availability PPP expiring in 2039.

### III. Portfolio Review

#### Quarterly Highlights

- **New Investment Commitment** – During the first quarter of 2019, the Program closed on two new investments totaling US\$192.6 million. This is shown in the table below.

US\$ in millions

Investment	Month and Year Closed	Vintage Year	Strategy	Geographic Focus	Industry Focus	Committed Capital
ARDIAN Infrastructure Fund V B S.C.S., SICAV-RAIF	March 2019	2018	Infrastructure	OECD	Diversified	\$75.2
Global Infrastructure Partners IV, L.P.	March 2019	2019	Infrastructure	OECD	Diversified	117.4
<b>Total</b>						<b>\$192.6</b>

- **Subsequent Investment Commitments** – Subsequent to quarter-end, the Program closed on one new investment commitment totaling US\$101.0 million. This is shown in the table below.

US\$ in millions

Investment	Month and Year Closed	Vintage Year	Strategy	Geographic Focus	Industry Focus	Committed Capital
Brookfield Infrastructure Fund IV, L.P.	May 2019	2019	Infrastructure	Global	Diversified	\$101.0
<b>Total</b>						<b>\$101.0</b>

- **Cash Outflow Increased** – During the first quarter of 2019, the Program made US\$78.3 million of contributions and received US\$9.5 million of distributions, for a net cash outflow of US\$68.8 million. This compared to a net cash outflow of US\$57.0 million during the prior quarter.
- **Valuation Increased** – During the first quarter of 2019, net of cash flow activity, the valuation of the Portfolio increased by approximately US\$21.2 million, or 3.5%, from the prior quarter. The valuation increase primarily reflects the increase in value of underlying investments in Global Infrastructure Partners III L.P.
- **New Underlying Fund Investments** – During the first quarter of 2019, seven new investment positions were added to the Portfolio.

US\$ in millions

Company	Fund(s)	Investment Date	Stage	Industry	Country	Exposed Invested Capital	Exposed Market Value	TVM
SemCAMS Midstream ULC	KKR Global Infrastructure Investors III L.P.	Feb-19	Private	Midstream	Canada	6.6	6.6	1.0x
Indian Gas Pipeline Business	Brookfield Infrastructure Fund III, L.P.	Mar-19	Private	Midstream	India	5.2	5.2	1.0x
Kodiak Gas Services	EQT Infrastructure III (No.2) SCSp	Feb-19	Private	Midstream	United States	4.9	5.0	1.0x
Axium Aurora Solar	Axium Infrastructure Canada II (Intl) L.P.	Feb-19	Private	Renewables	Canada	1.5	1.6	1.0x
Asia Pacific Data Center Business	Brookfield Infrastructure Fund III, L.P.	Jan-19	Private	Telecom	Australia	1.2	1.2	1.0x
Altavair Aircraft Leasing	Axium Infrastructure Canada II (Intl) L.P.	Feb-19	Private	Transportation	Ireland	0.5	0.5	1.0x
Blue Racer Midstream	NYCRS EIG Energy Partners, L.P.	Feb-19	Private	Midstream	United States	0.2	0.3	1.1x

- **Company Exits** – During the first quarter of 2019, one new investment position exited the Portfolio.

US\$ in millions

Company	Fund(s)	Investment Date	Exit Date	Stage	Industry	Country	Invested Capital	Total Value	TVM
Dominion Midstream Partners	Global Energy & Power Infrastructure Fund II	Dec-16	Feb-19	Public	Midstream	United States	1.0	1.3	1.2x



## Performance by Vintage Year

The following table illustrates the Portfolio's since-inception investment performance by vintage year as of March 31, 2019. Note that the performance of funds that are less than two years old is not meaningful.

As of March 31, 2019 (US\$ in millions)

Vintage Year	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Total Value	Total Gain/ (Loss)	Unfunded Commitment	Exposure	DPI	TVPI	IRR
2013	\$75.0	\$61.6	\$17.0	\$74.4	\$91.4	\$29.8	\$17.1	\$91.5	0.3x	1.5x	12.4%
2014	197.0	212.2	69.0	216.8	285.8	73.6	21.0	237.9	0.3x	1.3x	13.9%
2016	261.3	157.3	13.2	164.3	177.5	20.2	115.1	279.4	0.1x	1.1x	10.3%
2017	255.1	158.7	6.9	162.7	169.7	11.0	101.4	264.1	0.0x	1.1x	14.8%
2018	202.0	16.6	-	15.9	15.9	-	185.4	201.3	NM	NM	NM
2019	294.1	0.1	-	-	-	-	294.0	293.5	NM	NM	NM
<b>Total</b>	<b>\$1,284.5</b>	<b>\$606.4</b>	<b>\$106.0</b>	<b>\$633.7</b>	<b>\$739.8</b>	<b>\$133.4</b>	<b>\$734.0</b>	<b>\$1,367.7</b>	<b>0.2x</b>	<b>1.2x</b>	<b>12.8%</b>

## Performance by Strategy and Industry Focus

The following table illustrates the Portfolio's since-inception investment performance by strategy and industry focus as of March 31, 2019.

As of March 31, 2019 (US\$ in millions)

Strategy/Industry	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Total Value	Total Gain/ (Loss)	Unfunded Commitment	Exposure	DPI	TVPI	IRR
<b>Core</b>	<b>\$1,164.1</b>	<b>\$521.3</b>	<b>\$98.7</b>	<b>\$542.9</b>	<b>\$641.6</b>	<b>\$120.3</b>	<b>\$691.7</b>	<b>\$1,234.6</b>	<b>0.2x</b>	<b>1.2x</b>	<b>12.4%</b>
Diversified	949.2	469.7	75.2	498.2	573.3	103.6	523.7	1,021.9	0.2x	1.2x	11.3%
Energy	214.9	51.6	23.6	44.7	68.3	16.7	168.0	212.7	0.5x	1.3x	32.1%
<b>Non-Core</b>	<b>120.4</b>	<b>85.0</b>	<b>7.3</b>	<b>90.9</b>	<b>98.1</b>	<b>13.1</b>	<b>42.3</b>	<b>133.1</b>	<b>0.1x</b>	<b>1.1x</b>	<b>18.9%</b>
Diversified	56.1	51.5	2.3	55.9	58.2	6.8	6.6	62.5	0.0x	1.1x	19.2%
Energy	64.3	33.6	5.0	35.0	39.9	6.4	35.7	70.7	0.1x	1.2x	18.6%
<b>Total</b>	<b>\$1,284.5</b>	<b>\$606.4</b>	<b>\$106.0</b>	<b>\$633.7</b>	<b>\$739.8</b>	<b>\$133.4</b>	<b>\$734.0</b>	<b>\$1,367.7</b>	<b>0.2x</b>	<b>1.2x</b>	<b>12.8%</b>

## Performance by Geographic Focus

The following table and charts illustrate the Portfolio's since-inception investment performance by geographic focus as of March 31, 2019.

As of March 31, 2019 (US\$ in millions)

Geographic Focus	Committed Capital	Contributed Capital	Distributed Capital	Market Value	Total Value	Total Gain/ (Loss)	Unfunded Commitment	Exposure	DPI	TVPI	IRR
Global	\$286.4	\$190.0	\$27.2	\$211.0	\$238.2	\$48.1	\$107.0	\$317.9	0.1x	1.2x	13.0%
North America	160.0	91.7	2.3	92.4	94.7	3.1	69.2	161.6	0.0x	1.1x	7.8%
OECD	838.1	324.7	76.5	330.4	406.9	82.2	557.8	888.2	0.2x	1.3x	12.9%
<b>Total</b>	<b>\$1,284.5</b>	<b>\$606.4</b>	<b>\$106.0</b>	<b>\$633.7</b>	<b>\$739.8</b>	<b>\$133.4</b>	<b>\$734.0</b>	<b>\$1,367.7</b>	<b>0.2x</b>	<b>1.2x</b>	<b>12.8%</b>

\*Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve comparable results or avoid substantial losses.

## Portfolio Diversification

### By Strategy, Geography and Industry Focus

The Program's objective is to build a Portfolio that is diversified by investment strategy, asset type, and geography. The target investment strategy ranges are as follows:

- Core Infrastructure Investments: 60% to 100%; and
- Non-Core Infrastructure Investments: 0% to 40%.

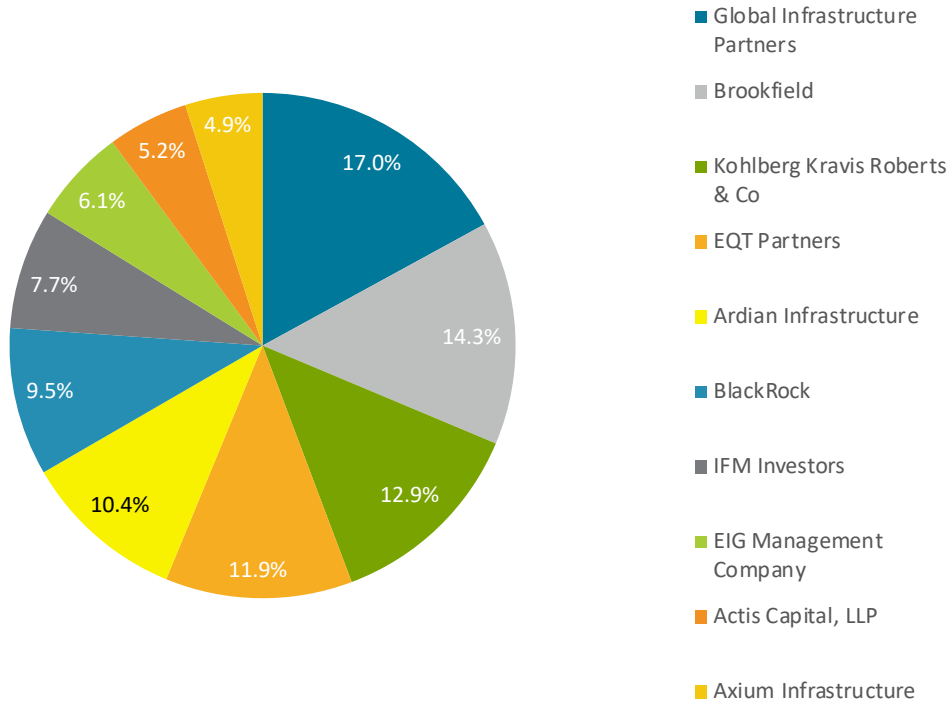
Actual percentages may differ substantially from these targets during the initial years of the Program. The following table illustrates the current diversification of the Portfolio by fund strategy, geography and industry focus.

*As of March 31, 2019. (US\$ In millions)*

	Market Value		Unfunded Commitment		Exposure	
	\$	% of Total	\$	% of Total	\$	% of Total
<b>By Strategy:</b>						
Core	542.9	85.7%	691.7	94.2%	1,234.6	90.3%
Non-Core	90.9	14.3%	42.3	5.8%	133.1	9.7%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>
<b>By Geographic Focus:</b>						
Global	211.0	33.3%	107.0	14.6%	317.9	23.2%
North America	92.4	14.6%	69.2	9.4%	161.6	11.8%
OECD	330.4	52.1%	557.8	76.0%	888.2	64.9%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>
<b>By Industry Focus:</b>						
Diversified	554.0	87.4%	530.3	72.3%	1,084.4	79.3%
Energy	79.7	12.6%	203.7	27.7%	283.3	20.7%
<b>Total</b>	<b>633.7</b>	<b>100.0%</b>	<b>734.0</b>	<b>100.0%</b>	<b>1,367.7</b>	<b>100.0%</b>

**By Investment Manager**

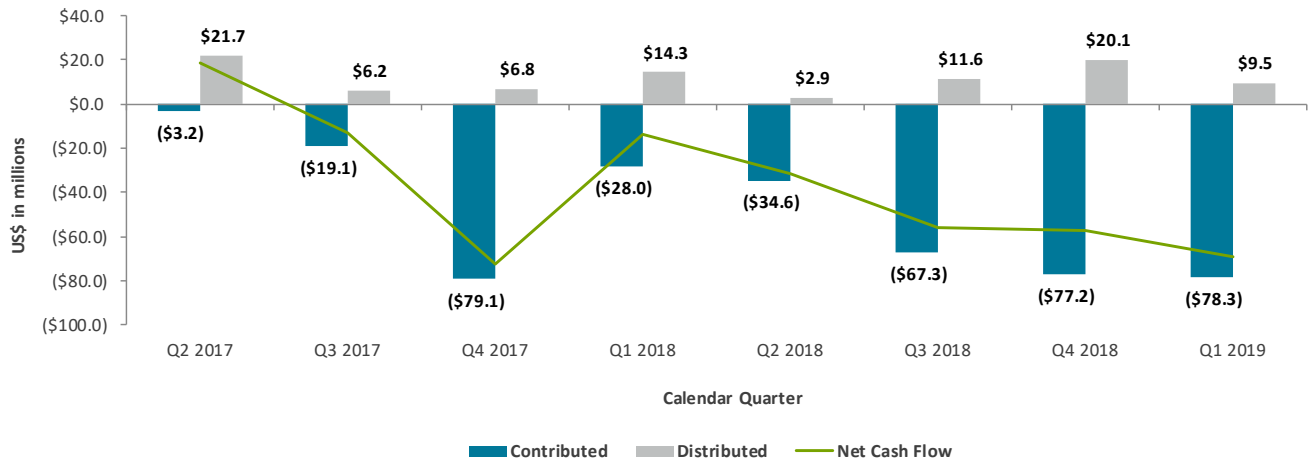
As of March 31, 2019, the Program had made 18 investment commitments to ten managers. NYCERS seeks to limit its exposure to any single manager to no more than 10% of the total Real Assets Program when fully invested. As the Program matures and closes on additional commitments, the single manager exposure is expected to decline significantly. Below is the Portfolio's current exposure by manager.



## Portfolio Cash Flow Analysis

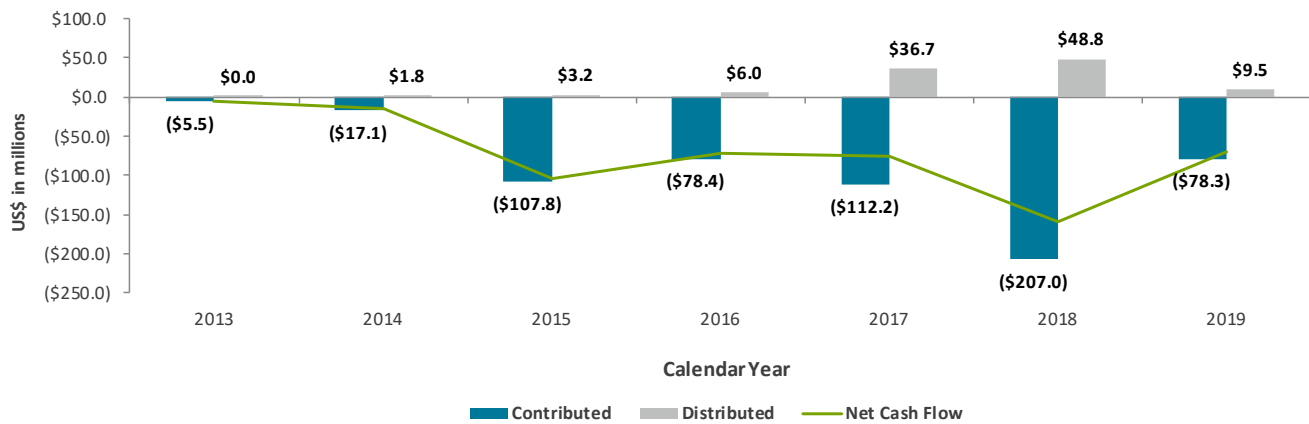
### Quarterly Cash Flow Activity

During the first quarter of 2019, the Program made US\$78.3 million of contributions and received US\$9.5 million of distributions, for a net cash outflow of US\$68.8 million. As of March 31, 2019, 15 fund investments in the Portfolio had cash flow activity. As the Program's commitment and investment activity increases, net cash outflow is expected to increase. The graph below illustrates cash flow activity since inception by calendar quarter.



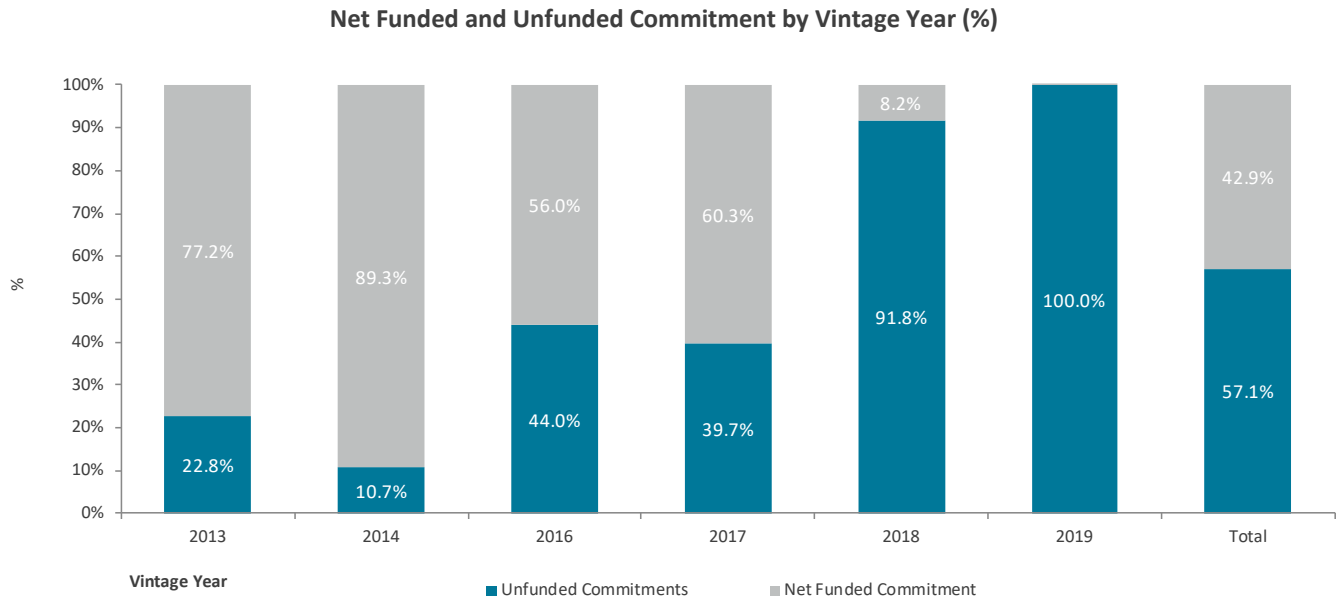
### Annual Cash Flow Activity

During 2019, the Program made US\$78.3 million of contributions and received US\$9.5 million of distributions, for a net cash outflow of US\$68.8 million. The graph below illustrates cash flow activity since inception by calendar year.

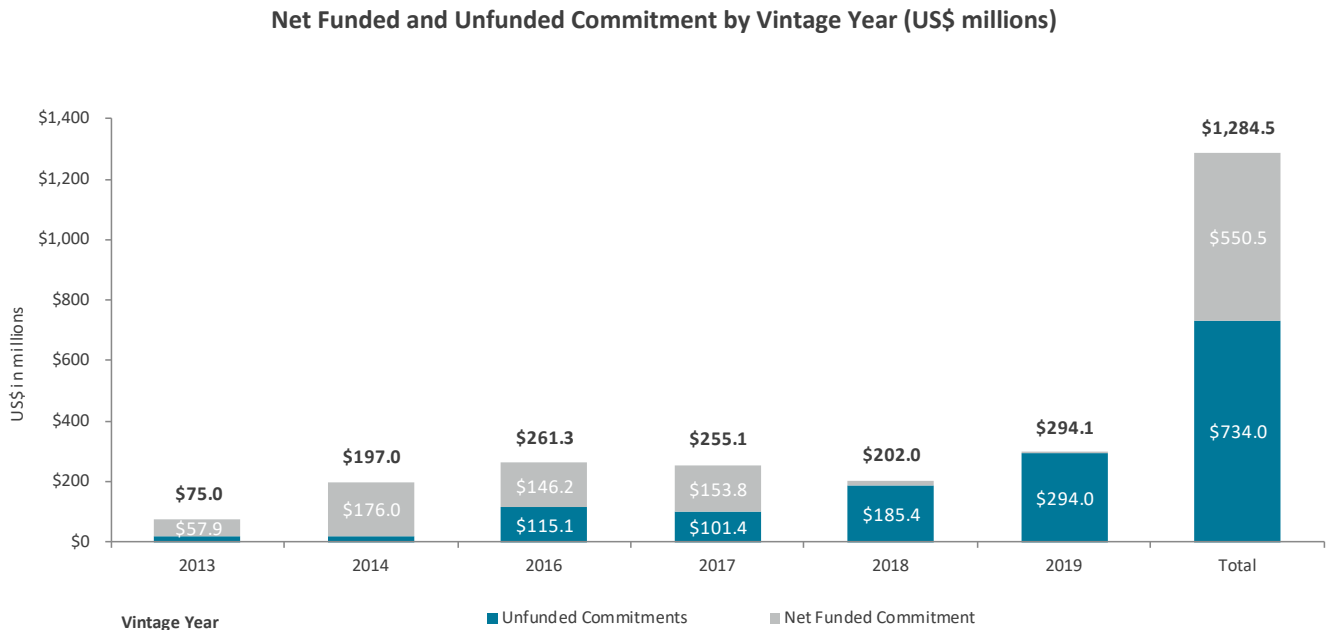


### Net Funded and Unfunded Commitments by Vintage Year

The following chart illustrates the Portfolio's net funded commitments (defined as total contributions inside commitment less any returns of excess capital and recallable distributions) as a percentage of total capital commitments, by fund vintage year, as of March 31, 2019. Overall, the Portfolio was 57.1% unfunded as of quarter-end.



The following chart illustrates the Portfolio's net funded commitments relative to total capital commitments, by fund vintage year, as of March 31, 2019. Overall, the Portfolio had US\$734.0 million of unfunded commitments as of quarter-end.

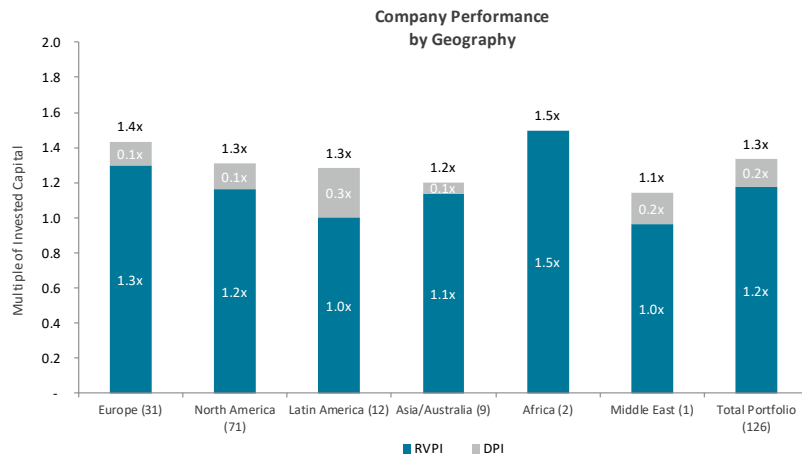
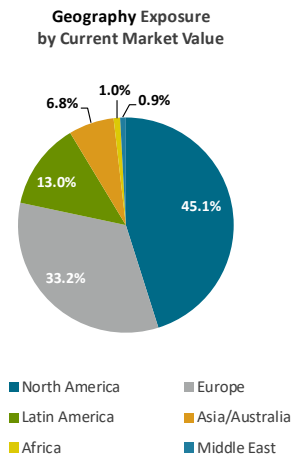


## Portfolio Company-Level Analysis

As of quarter-end, the Portfolio had exposure to 125 unique unrealized portfolio companies/investment positions. As the Portfolio matures, the number of unique portfolio companies/investment positions is expected to increase significantly. On the individual fund level, all current investments are within the single investment limitation of 15% of total fund size. The Program’s individual portfolio investment exposure is relatively concentrated as a result of the relative immaturity of the Program.

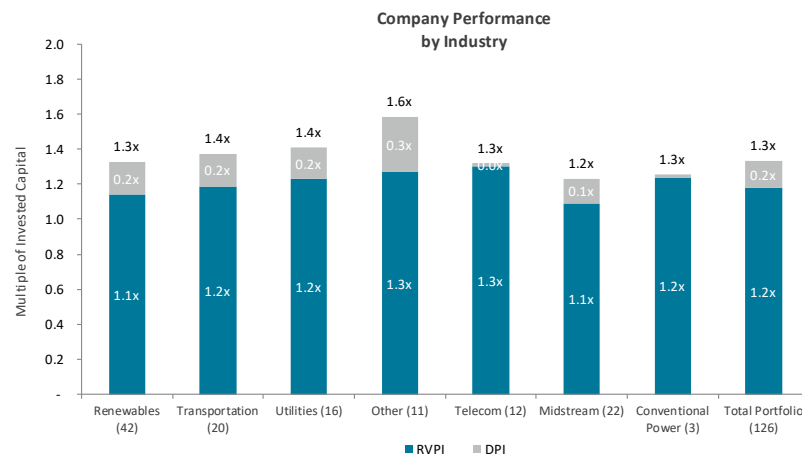
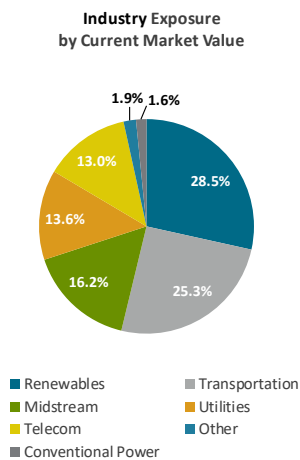
### Geographic Exposure and Performance

The following charts illustrate the Portfolio’s current exposure and performance by geographic region at the portfolio company level.



### Industry Exposure and Performance

The following charts illustrate the Portfolio’s current exposure and performance by industry at the portfolio company level.

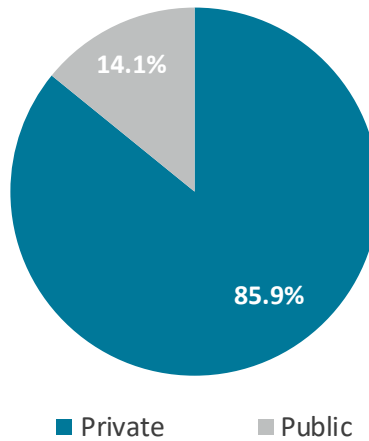


\*Multiples may not add to total multiple due to rounding.

### Public Market Exposure

As of quarter-end, publicly traded investments comprised 14.1% of the Portfolio's exposed market value. The following chart illustrates the current public market exposure at the portfolio company level.

**Public Market Exposure Current Market Value**



## IV. Risk Management Matrix

Category	Requirement	Status	Status Notes
<b>Allocation</b>	NYCERS has an Infrastructure allocation target of 2% of total pension assets.	✓	<p>The market value of NYCERS Infrastructure Program represents approximately 1.0% of total pension assets.</p> <p>As the Program matures, its market value as a percentage of the total NYCERS pension assets and the total Real Assets Program is expected to increase.</p>
<b>Performance vs. Benchmarks</b>	<p>The performance benchmark for the Infrastructure Portfolio is to meet or exceed: (i) The Consumer Price Index (“CPI”) plus 4% net of fees over a rolling 5-year period and (ii) A dollar-weighted PME+ (“PME”) calculation of daily changes in 50% of the Russell 3000® Index and 50% of the Barclays U.S. Aggregate® Index.</p> <p>The Infrastructure Portfolio is expected to generate a total return, net of investment management fees, of at least 6.5%.</p>	✓	<p>As of March 31, 2019, the Portfolio outperformed the CPI and PME benchmark by 7.3% and 5.8%, respectively.</p> <p>However, given the relative immaturity of the Portfolio, the current performance to-date versus benchmarks is not meaningful.</p>
<b>Strategy Diversification</b>	<p>Core Infrastructure Investments: 60-100% Non-Core Infrastructure Investments: 0-40%</p> <p>Actual percentages may differ substantially from these targets during the initial years of the Program.</p>	✓	<p>The Program is in compliance with the Core/Non-Core allocation ranges. Currently the Program has 90.3% exposure to Core investments and 9.7% exposure to Non-Core investments.</p>
<b>Asset Type &amp; Location Diversification</b>	<p>The Program will seek diversification by asset type, revenue drivers, and geography. The portfolio may include a variety of assets including but not limited to electricity transmission, pipelines, airports, toll roads, communication towers and electric generators, windmills etc. to vary the sources of revenue to the portfolio.</p>	✓	<p>Given the relative immaturity of the Portfolio, it is not yet diversified by asset type.</p> <p>The asset types and geographic location of current Portfolio investments are in compliance with the Program’s Investment Policy Statement and Permissible Markets.</p>
<b>Leverage</b>	<p>The average leverage of all investments in the Program is to be no higher than 65%.</p>	✓	<p>The Program is in compliance with the average leverage limitation. The current leverage level is 35.7%<sup>1</sup>.</p>
<b>Single Investment Size &amp; Manager Diversification</b>	<p>The maximum commitment to a single investment is limited to no more than 15% of the aggregate committed capital of each fund.</p> <p>The maximum commitment to a single manager is limited to 10% of the total Real Assets Program allocation when fully invested.</p>	✓	<p>On the individual fund level, all current investments are in compliance with the single investment limitation of 15% of total fund size.</p> <p>The Program is in compliance with the single manager limitation of 10% of the total Infrastructure Program.</p> <p>The Program’s manager exposure is currently relatively concentrated as a result of the relative immaturity of the Program. Manager diversification is expected to increase as the Program closes on new investment commitments.</p>

<sup>1</sup>The Program’s leverage level is calculated by using a weighted average of each underlying investment’s leverage and Net Asset Value as of March 31, 2019.



**New York City Employees' Retirement System**  
**Infrastructure Portfolio**  
**As of March 31, 2019**

Vintage Year	Investment	Closing Date	Committed Capital	Contributed Capital	Distributed Capital	Market Value	TVPI	IRR
<b>Active Investments:</b>								
2013	Brookfield Infrastructure Fund II, L.P.	7/8/2013	\$75,000,000	\$61,554,101	\$16,966,063	\$74,418,995	1.5x	12.4%
2014	IFM Global Infrastructure Fund	1/2/2014	\$75,000,000	\$100,136,579	\$37,106,368	\$105,392,569	1.4x	12.4%
2014	Global Energy & Power Infrastructure Fund II	4/16/2014	\$45,000,000	\$38,036,298	\$23,153,513	\$30,731,347	1.4x	34.8%
2014	KKR Global Infrastructure Investors II L.P.	6/12/2015	\$77,000,000	\$74,009,380	\$8,708,101	\$80,725,528	1.2x	10.9%
2016	Global Infrastructure Partners III-A/B, L.P.	1/29/2016	\$106,000,000	\$80,259,082	\$5,246,450	\$83,646,386	1.1x	8.2%
2016	Brookfield Infrastructure Fund III, L.P.	4/15/2016	\$91,000,000	\$43,452,473	\$2,957,257	\$45,689,825	1.1x	9.3%
2016	Actis Energy 4	12/16/2016	\$64,300,000	\$33,577,419	\$4,952,281	\$34,987,407	1.2x	18.6%
2017	EQT Infrastructure III (No.2) SCSp	2/18/2017	\$56,133,762	\$51,453,569	\$2,337,792	\$55,867,250	1.1x	19.2%
2017	ASF VII Infrastructure L.P.	4/24/2017	\$66,000,000	\$26,076,825	\$2,273,032	\$25,365,450	1.1x	27.7%
2017	Axiom Infrastructure North America	8/14/2017	\$67,104,915	\$67,584,787	\$1,899,872	\$67,559,443	1.0x	7.0%
2017	NYCRS EIG Energy Partners, L.P.	8/14/2017	\$65,880,000	\$13,583,138	\$438,014	\$13,951,139	1.1x	10.6%
2018	NYCRS EIG Energy Partners Co-Investment, L.P.	1/12/2018	\$16,470,000	-	-	-	NM	NM
2018	KKR Global Infrastructure Investors III L.P.	3/29/2018	\$87,500,000	\$6,062,730	-	\$5,023,425	NM	NM
2018	Global Energy & Power Infrastructure Fund III, L.P.	7/3/2018	\$87,500,000	-	-	-	NM	NM
2018	Cardinal NR Sidecar Holdings L.P.	10/5/2018	\$10,500,000	\$10,500,000	-	\$10,872,289	NM	NM
2019	EQT Infrastructure IV (No.2) USD SCSp	12/20/2018	\$101,500,000	-	-	(\$585,938)	NM	NM
2019	Ardian Infrastructure Fund V B	3/4/2019	\$75,195,959	\$77,090	-	\$70,732	NM	NM
2019	Global Infrastructure Partners IV-A/B, L.P.	3/11/2019	\$117,400,000	-	-	-	NM	NM
<b>Total</b>			<b>\$1,284,484,636</b>	<b>\$606,363,471</b>	<b>\$106,038,742</b>	<b>\$633,715,847</b>	<b>1.2x</b>	<b>12.8%</b>

Note: IRRs presented are interim estimates and may not be indicative of the ultimate performance of fund investments due to a number of factors, such as the lack of industry valuation standards and the differences in the investment pace and strategy of various funds. Until a fund is liquidated, typically over 10 to 12 years, the IRR is only an interim estimated return. The IRR calculated in the early years of a fund is usually not meaningful given the J-Curve effect. The actual IRR performance of any fund is not known until all capital contributed and earnings have been distributed to the investor. The IRRs contained in this report are calculated by StepStone Group LP, a consultant to the New York City Retirement Systems, based on information provided by the general partners of each investment (e.g. cash flows and valuations). The IRR calculations and other information contained in this report have not been reviewed or confirmed by the general partners. The result of the IRR calculation may differ from that generated by the general partner or other limited partners. Differences in IRR calculations can be affected by cash-flow timing, the accounting treatment of carried interest, fund management fees, advisory fees, organizational fees, other fund expenses, sale of distributed stock, and valuations.

**Risk Quarterly Report (Public):**

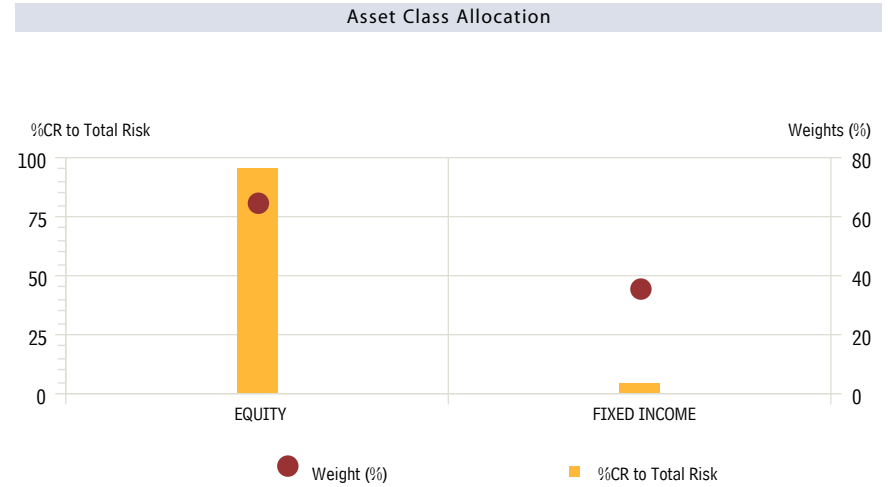
# BarraOne Total Plan Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: zTest\_NYCERS\_Total Plan  
BENCHMARK: zTest\_NYCERS\_New\_Policy  
POSITIONS: 28,071

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 66,127,652,791  
ACCEPTED: 27,627

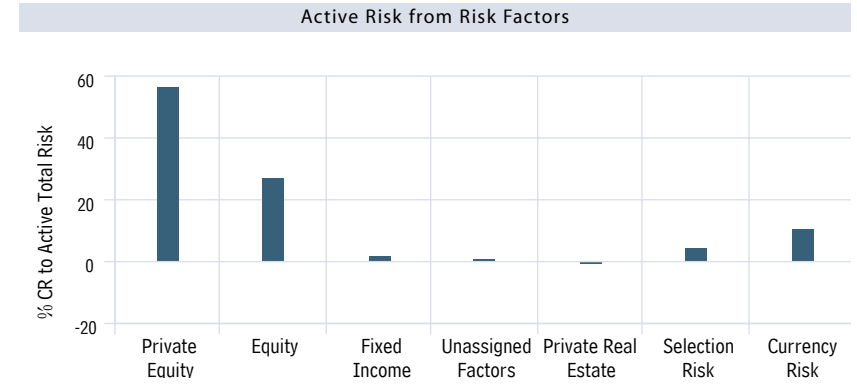
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	7.92	<b>Total</b>	<b>66,127,652,791</b>	<b>100.00</b>	<b>7.92</b>	<b>7.92</b>	<b>100.00</b>
Benchmark Risk	7.48	EQUITY	42,442,115,771	64.18	11.87	7.57	95.56
Active Risk	1.14	FIXED INCOME	23,685,537,021	35.82	2.64	0.35	4.44
Portfolio Beta	1.05						
Effective Duration	2.14						



## Risk Factor Breakdown

Risk Source	Portfolio			Active		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>7.92</b>	<b>100.00</b>	<b>1.00</b>	<b>1.14</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	7.44	93.98	0.99	1.02	89.88	0.96
Common Factor Risk	7.42	93.73	0.99	0.97	85.52	0.93
Equity	6.92	87.38	0.97	0.30	26.82	0.53
Fixed Income	0.19	2.44	0.20	0.02	2.03	0.12
Private Real Estate	0.22	2.73	0.58	-0.00	-0.08	-0.00
Private Equity	0.09	1.17	0.11	0.64	56.68	0.75
Selection Risk	0.02	0.25	0.05	0.05	4.37	0.21
Currency Risk	0.48	6.02	0.44	0.11	10.12	0.35



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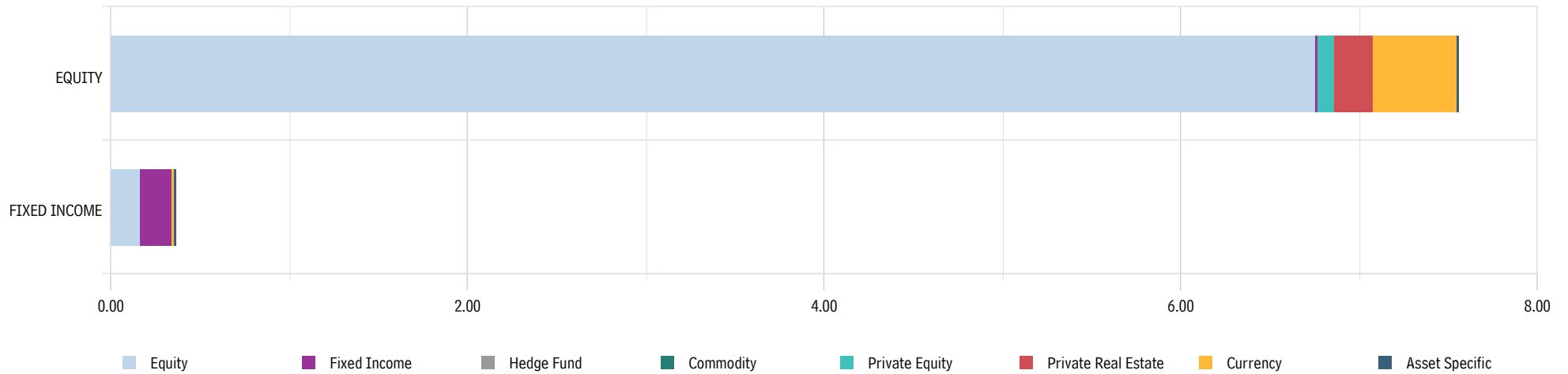
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## Risk Contribution Breakdown by Risk Type

Asset Name	Mkt Value	Weight (%)	Eff Weight (%)	Total Risk	%CR to Total Risk	Port Risk Contribution	Risk Contribution								
							Equity	Fixed Income	Hedge Fund	Commodity	Private Real Estate	Private Equity	Currency	Asset Specific	
<b>Total</b>	<b>66,127,652,791</b>	<b>100.00</b>	<b>100.00</b>	<b>7.92</b>	<b>100.00</b>	<b>7.92</b>	<b>6.92</b>	<b>0.19</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.22</b>	<b>0.09</b>	<b>0.48</b>	<b>0.02</b>
EQUITY	42,442,115,771	64.18	64.18	11.87	95.56	7.57	6.76	0.01	0.00	0.00	0.00	0.22	0.09	0.47	0.02
FIXED INCOME	23,685,537,021	35.82	35.82	2.64	4.44	0.35	0.16	0.18	0.00	0.00	0.00	0.00	0.00	0.01	0.00



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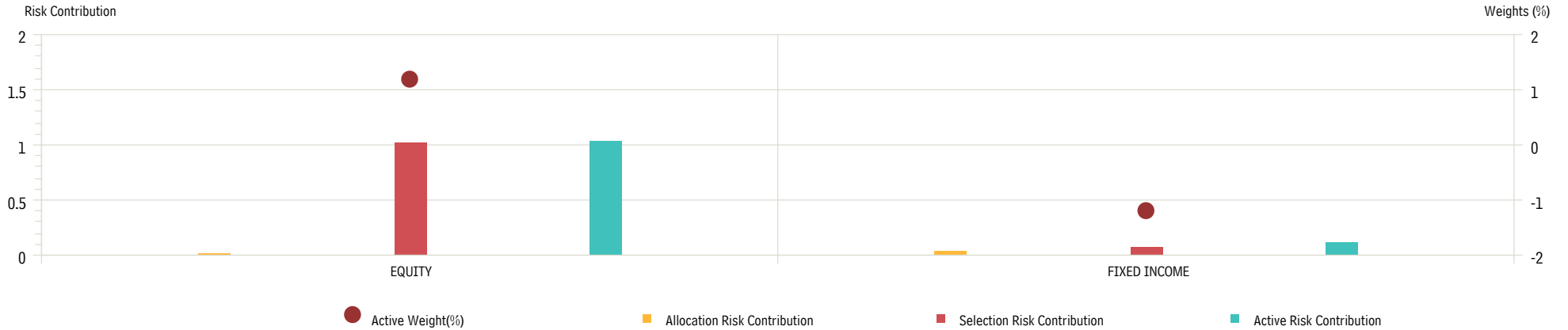
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## Allocation Selection

Asset Class	Active Weight(%)	Allocation			Selection			Active	
		Volatility	Correlation	Risk Contribution	Volatility	Correlation	Risk Contribution	Risk Contribution	Risk Contribution
<b>Active Total Risk</b>				<b>0.05</b>			<b>1.09</b>	<b>1.14</b>	
EQUITY	1.18	4.26	0.35	<b>0.02</b>	1.65	0.96	<b>1.01</b>	<b>1.03</b>	
FIXED INCOME	-1.18	7.26	-0.35	<b>0.03</b>	0.63	0.34	<b>0.08</b>	<b>0.11</b>	



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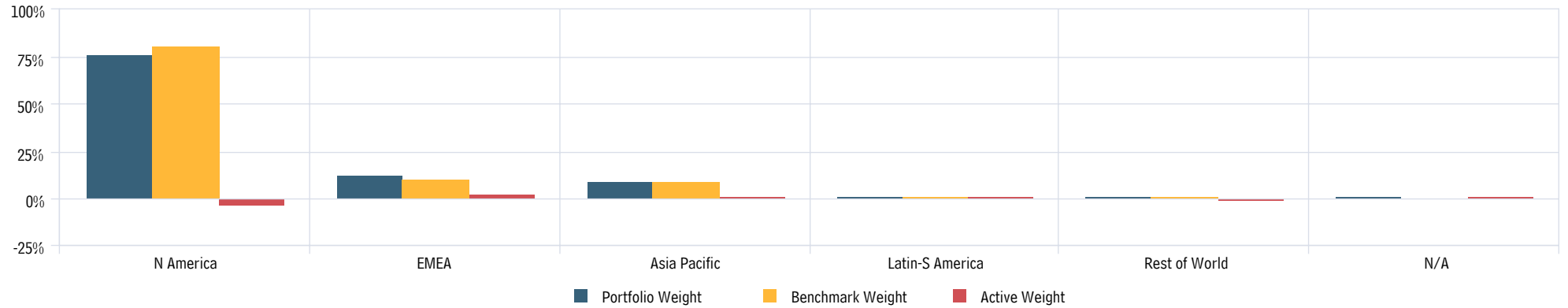
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## Portfolio Allocation by Region

Region	Weight (%)			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>7.92</b>	<b>1.14</b>	<b>100.00</b>	<b>0.01</b>
N America	76.34	80.13	-3.79	7.13	0.79	69.53	-0.00
EMEA	12.23	9.53	2.70	13.03	0.23	20.55	0.03
Asia Pacific	9.22	8.86	0.36	12.43	0.07	6.22	0.02
Latin-S America	1.41	1.01	0.40	20.90	0.03	2.91	0.05
Rest of World	0.41	0.46	-0.06	6.38	0.00	0.26	-0.02
N/A	0.40	0.00	0.40	9.40	0.01	0.53	0.02



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## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>7.92</b>	<b>1.14</b>	<b>100.00</b>	<b>0.01</b>
United States	74.26	77.78	-3.52	7.06	0.74	65.40	-0.01
United Kingdom	3.36	2.26	1.10	14.16	0.07	6.56	0.04
Japan	2.74	2.70	0.04	14.36	0.02	1.39	0.01
S. Korea	1.54	0.89	0.65	18.14	0.03	2.25	0.04
Germany	1.45	1.11	0.34	14.90	0.03	2.47	0.04
France	1.30	1.35	-0.05	14.38	0.01	0.69	0.04
India	1.28	0.63	0.65	21.05	0.02	2.16	0.04
Canada	1.28	1.73	-0.45	10.41	0.01	0.90	0.02
Switzerland	1.24	1.06	0.18	12.23	0.01	1.28	0.03
Taiwan	1.18	0.76	0.42	15.70	0.01	1.00	0.03
Brazil	1.12	0.56	0.55	29.91	0.05	4.61	0.08
Netherlands	0.72	0.66	0.06	14.59	0.02	1.56	0.03
South Africa	0.68	0.43	0.25	25.79	0.02	1.48	0.06
Australia	0.59	0.83	-0.24	13.81	-0.01	-0.59	0.02
Italy	0.54	0.34	0.20	18.12	0.02	1.55	0.04
Hong Kong	0.54	0.41	0.13	18.87	0.00	0.28	0.02
Sweden	0.49	0.33	0.16	17.06	0.01	1.22	0.04
Spain	0.46	0.35	0.11	14.26	0.00	0.37	0.02
Denmark	0.44	0.19	0.25	15.93	0.01	0.96	0.04
N/A	0.41	0.00	0.41	9.44	0.01	0.55	0.02
Mexico	0.38	0.28	0.10	19.78	0.01	0.71	0.03
Thailand	0.37	0.21	0.16	15.40	0.00	0.33	0.02
Singapore	0.33	0.19	0.14	13.95	0.00	0.27	0.02
Indonesia	0.30	0.20	0.10	20.99	0.00	0.39	0.02
Malaysia	0.26	0.15	0.11	14.85	0.00	0.24	0.02
Ireland	0.23	0.13	0.09	8.36	0.00	0.11	0.01
Poland	0.21	0.09	0.12	21.11	0.01	0.73	0.06
Luxembourg	0.19	0.20	-0.01	7.41	0.00	0.01	-0.01
Norway	0.18	0.10	0.08	19.87	0.01	0.71	0.05
China International	0.17	2.09	-1.92	21.94	-0.02	-1.53	0.01



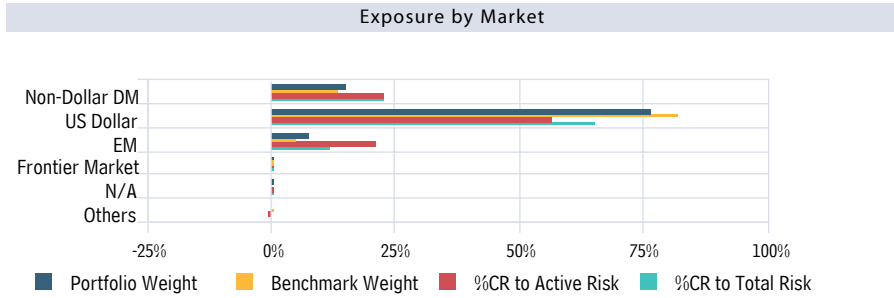
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# BarraOne Total Plan Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: zTest\_NYCERS\_Total Plan  
BENCHMARK: zTest\_NYCERS\_New\_Policy  
POSITIONS: 28,071

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 66,127,652,791  
ACCEPTED: 27,627

## Portfolio Allocation by Currency



Developed Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	50,757,694,600.34	66.96	65.21
Euro	3,321,615,924.88	8.15	7.95
British Pound Sterling	1,993,916,896.74	6.48	4.74
Japanese Yen	1,797,884,288.80	1.16	3.42
Swiss Franc	788,579,158.43	1.28	1.55

Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
Korean Won	986,626,126.47	2.07	2.35
Indian Rupee	848,615,373.39	2.15	1.61
New Taiwan Dollar	781,811,306.00	1.00	1.58
Brazilian Real	718,013,483.80	4.62	2.09
South African Rand	449,091,102.08	1.47	1.39

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)								
	Portfolio	Benchmark	Active	Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)	
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>7.92</b>	<b>7.92</b>	<b>100.00</b>	<b>1.14</b>	<b>100.00</b>	
US Dollar	76.76	81.70	-4.94	6.92	5.16	65.21	0.76	66.96	
Euro	5.02	3.47	1.56	14.50	0.63	7.95	0.09	8.15	
British Pound Sterling	3.02	1.82	1.19	15.63	0.38	4.74	0.07	6.48	
Japanese Yen	2.72	2.58	0.14	14.47	0.27	3.42	0.01	1.16	
Korean Won	1.49	0.87	0.63	18.10	0.19	2.35	0.02	2.07	
Indian Rupee	1.28	0.63	0.66	21.05	0.13	1.61	0.02	2.15	
Swiss Franc	1.19	1.01	0.18	12.65	0.12	1.55	0.01	1.28	
New Taiwan Dollar	1.18	0.76	0.42	15.70	0.13	1.58	0.01	1.00	
Brazilian Real	1.09	0.54	0.55	30.71	0.17	2.09	0.05	4.62	
Canadian Dollar	0.80	1.11	-0.31	14.83	0.10	1.28	0.01	0.53	
South African Rand	0.68	0.42	0.26	25.82	0.11	1.39	0.02	1.47	
Hong Kong Dollar	0.60	1.95	-1.35	18.28	0.07	0.91	-0.01	-0.90	
Australian Dollar	0.55	0.77	-0.23	14.44	0.06	0.79	-0.01	-0.67	
Danish Krone	0.44	0.19	0.25	15.93	0.04	0.55	0.01	0.95	
Swedish Krona	0.42	0.29	0.14	17.00	0.06	0.75	0.01	0.85	



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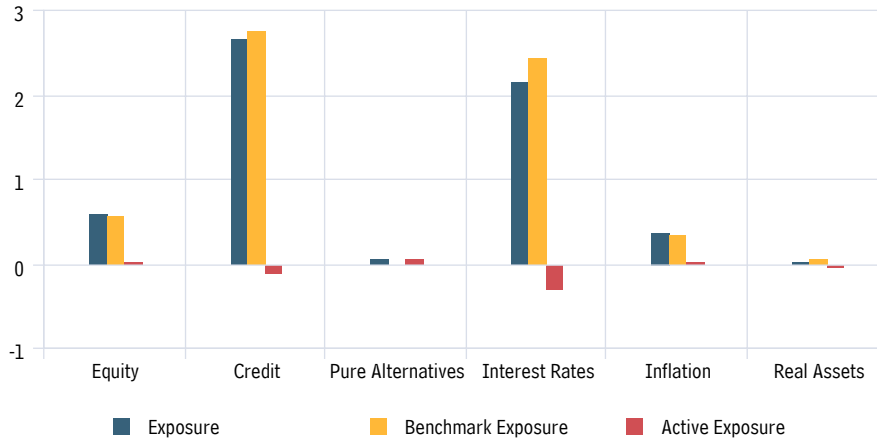
# BarraOne Total Plan Macro Summary

Macro factor models attribute the risk of the Barra Integrated Model to a far smaller set of factors. At the highest level, we use just six factors, representing the primary drivers of total risk and return for a global, multi-asset class portfolio that reduces the number of factors in an integrated factor model by aggregating selected groups of factors into single factors. Tier I is the highest level of the Macro Factor Scheme which has 6 factors.

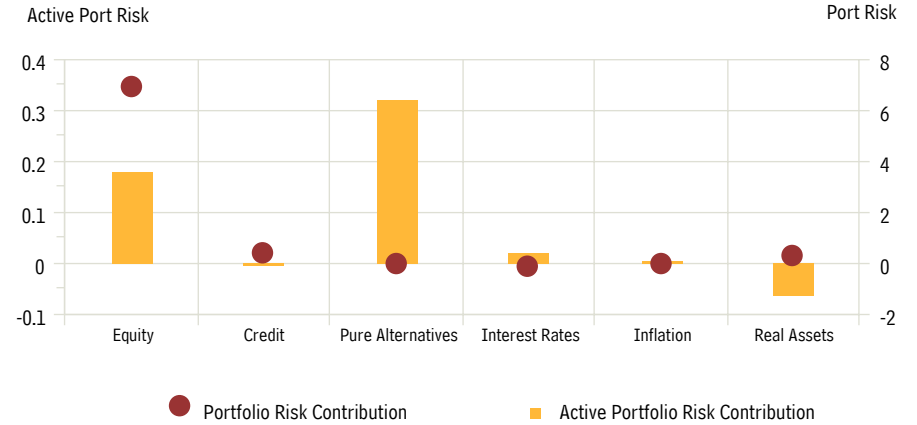
COMPANY: NYCERS - NYCERS  
PORTFOLIO: zTest\_NYCERS\_Total Plan  
BENCHMARK: zTest\_NYCERS\_New\_Policy  
POSITIONS: 28,071  
MODEL: BIM303L (Tier 1 Macro Factors)

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 66,127,652,791  
ACCEPTED: 27,627

Macro Factor Exposures



Macro Factor Risk Contribution



Risk Decomposition

Risk Source	Exposure			Contribution			
	Exposure	Benchmark Exposure	Active Exposure	Portfolio Risk Contribution	% Portfolio Risk	Active Portfolio Risk Contribution	% Active Risk
<b>Total Risk</b>	-	-	-	<b>7.94</b>	<b>100.00</b>	<b>1.14</b>	<b>100.00</b>
Local Market Risk	-	-	-	7.47	94.02	1.03	90.10
Common Factor Risk	-	-	-	7.45	93.77	0.98	85.77
Equity	0.61	0.57	0.04	6.94	87.37	0.18	15.49
Credit	2.67	2.75	-0.08	0.42	5.34	-0.01	-0.62
Pure Alternatives	0.07	0.00	0.07	0.05	0.58	0.32	28.01
Interest Rates	2.16	2.45	-0.29	-0.12	-1.52	0.02	1.94
Inflation	0.38	0.34	0.03	0.04	0.46	0.00	0.13
Real Assets	0.05	0.06	-0.02	0.27	3.41	-0.06	-5.56
Factor Residual Risk	-	-	-	-0.15	-1.86	0.53	46.37
Selection Risk	-	-	-	0.02	0.25	0.05	4.33
Currency Risk	-	-	-	0.47	5.98	0.11	9.90

Tier 1 Macro Factor Scheme has six factors

Factor	Exposure Type	Description
Equity	Membership (weights)	Global Public and Private Equity
Credit	Sensitivities (durations)	Sensitivity to global credit spreads
Pure Alternatives	Membership (weights)	Investment strategy return of Private Equity and Hedge Funds net of public factor returns
Interest Rates	Sensitivities (durations)	Sensitivity to global interest rates
Inflation	Sensitivities (durations)	Sensitivity to breakeven inflation
Real Assets	Membership (weights)	Real Estate and Commodities

Factor Residual Risk

Risk Source	Portfolio Risk Contribution	% Portfolio Risk	Active Portfolio Risk Contribution	% Active Risk
Commodities	0.00	0.00	0.00	0.00
Equity	-0.01	-0.17	0.13	11.78
Fixed Income	-0.15	-1.86	0.01	0.69
Hedge Fund	0.00	0.00	0.00	0.00
Private Equity	0.05	0.58	0.32	28.00
Private Real Estate	-0.05	-0.69	0.06	5.29
Unassigned Factors	0.02	0.28	0.01	0.62



# BarraOne Total Plan Summary

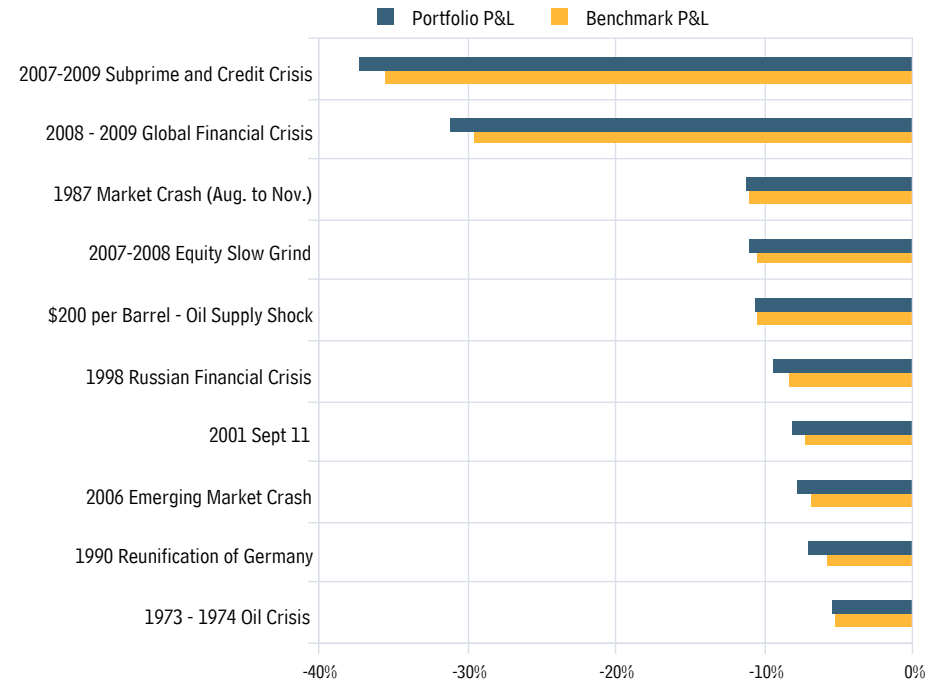
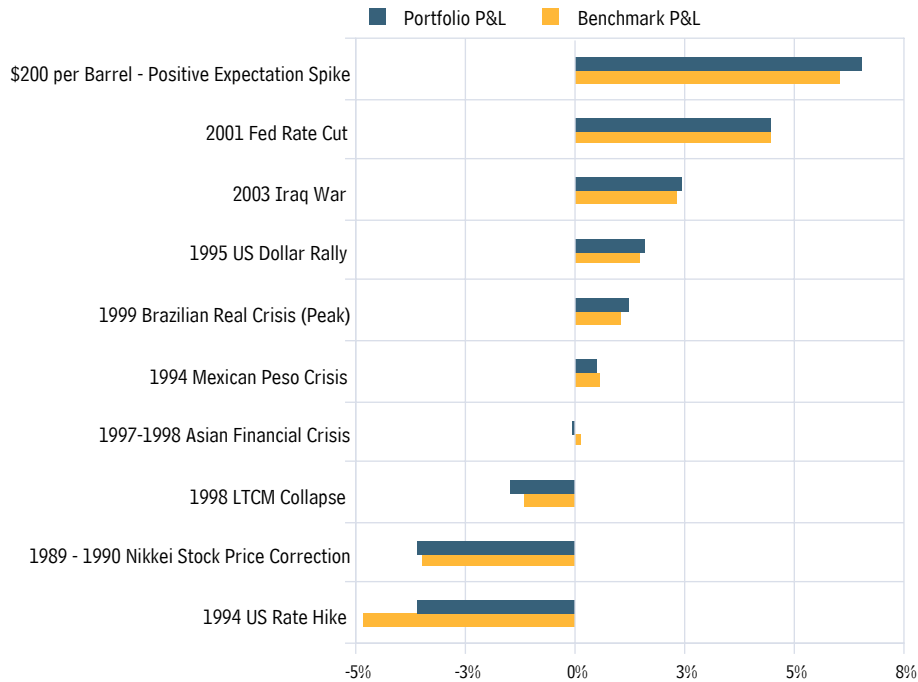
COMPANY: NYCERS - NYCERS  
 PORTFOLIO: zTest\_NYCERS\_Total Plan  
 BENCHMARK: zTest\_NYCERS\_New\_Policy  
 POSITIONS: 28,071  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 66,127,652,791  
 ACCEPTED: 27,627

## Stress Scenarios

Top 10 Best Scenarios			
Scenario	Portfolio P&L	Benchmark P&L	Market Change (\$)
\$200 per Barrel - Positive Expectation S	6.50	6.02	4,297,370,540
2001 Fed Rate Cut	4.45	4.46	2,944,350,721
2003 Iraq War	2.43	2.31	1,604,659,605
1995 US Dollar Rally	1.61	1.47	1,067,670,206
1999 Brazilian Real Crisis (Peak)	1.24	1.06	820,845,933
1994 Mexican Peso Crisis	0.49	0.57	321,150,235
1997-1998 Asian Financial Crisis	-0.01	0.13	-6,733,006
1998 LTCM Collapse	-1.44	-1.18	-953,662,423
1989 - 1990 Nikkei Stock Price Correctio	-3.57	-3.51	-2,361,884,826
1994 US Rate Hike	-3.60	-4.83	-2,379,358,508

Top 10 Worst Scenarios			
Scenario	Portfolio P&L	Benchmark P&L	Market Change (\$)
2007-2009 Subprime and Credit Crisis	-37.26	-35.49	-24,637,028,982
2008 - 2009 Global Financial Crisis	-31.14	-29.62	-20,595,178,476
1987 Market Crash (Aug. to Nov.)	-11.22	-11.04	-7,418,928,601
2007-2008 Equity Slow Grind	-10.99	-10.46	-7,264,183,582
\$200 per Barrel - Oil Supply Shock	-10.61	-10.45	-7,013,553,230
1998 Russian Financial Crisis	-9.44	-8.21	-6,240,504,388
2001 Sept 11	-8.16	-7.30	-5,396,840,494
2006 Emerging Market Crash	-7.66	-6.87	-5,064,769,298
1990 Reunification of Germany	-6.96	-5.81	-4,599,234,459
1973 - 1974 Oil Crisis	-5.42	-5.27	-3,581,495,260



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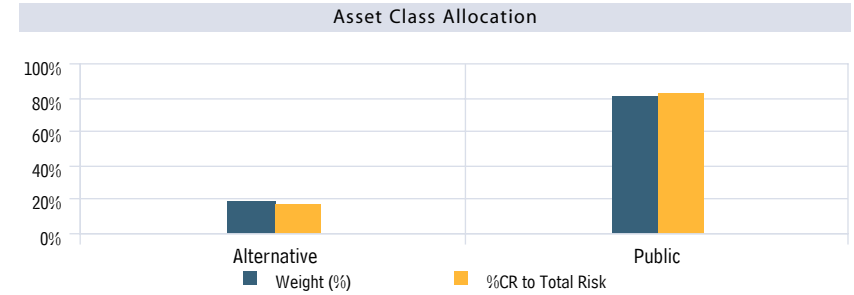
# BarraOne Equity Summary

COMPANY: NYCRS - NYCERS  
PORTFOLIO: EQUITY  
BENCHMARK: EQUITY  
POSITIONS: 18,535  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 42,442,115,771  
ACCEPTED: 18,156

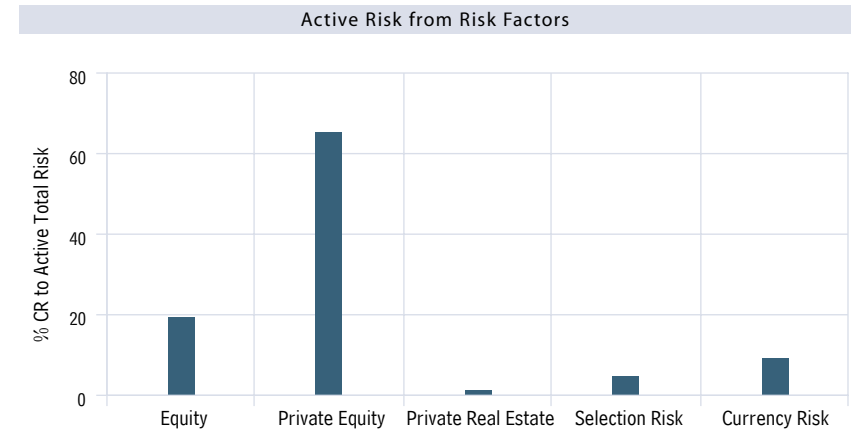
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	11.87	<b>Total</b>	<b>42,442,115,771</b>	<b>100.00</b>	<b>11.87</b>	<b>11.87</b>	<b>100.00</b>
Benchmark Risk	11.52	Alternative	8,280,461,810	19.51	12.68	2.16	18.20
Active Risk	1.65	Public	34,161,653,960	80.49	12.15	9.71	81.80
Portfolio Beta	1.02						



## Risk Factor Breakdown

Risk Source	Portfolio			Active		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>11.87</b>	<b>100.00</b>	<b>1.00</b>	<b>1.65</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	11.17	94.13	0.99	1.50	90.94	0.96
Common Factor Risk	11.14	93.87	0.99	1.42	85.96	0.93
Equity	10.65	89.73	0.98	0.32	19.28	0.46
Style	0.21	1.73	0.53	0.09	5.49	0.26
Industry	10.44	88.00	0.98	0.23	13.79	0.39
Fixed Income	0.01	0.11	0.30	0.00	0.22	0.10
Nominal Rates	-0.01	-0.10	-0.29	-0.00	-0.09	-0.03
Credit	0.02	0.21	0.65	0.01	0.50	0.22
Private Real Estate	0.33	2.76	0.56	0.02	1.35	0.07
Private Equity	0.15	1.25	0.11	1.07	65.07	0.81
Selection Risk	0.03	0.26	0.05	0.08	4.98	0.22
Currency Risk	0.70	5.87	0.42	0.15	9.06	0.32



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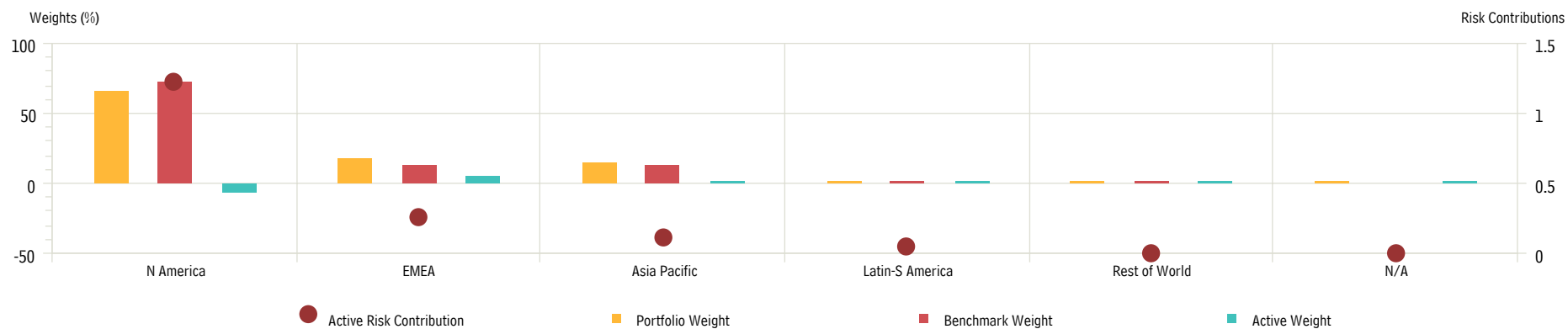
# BarraOne Equity Summary

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 PORTFOLIO: EQUITY  
 BENCHMARK: EQUITY  
 POSITIONS: 18,535  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 42,442,115,771  
 ACCEPTED: 18,156

## Portfolio Allocation by Region

Region	Weight (%)			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>11.87</b>	<b>1.65</b>	<b>100.00</b>	<b>0.02</b>
Asia Pacific	14.18	13.42	0.77	12.56	0.11	6.89	0.01
EMEA	17.00	12.44	4.57	14.32	0.26	16.01	0.03
Latin-S America	1.94	1.28	0.65	23.41	0.05	2.76	0.06
N America	66.59	72.68	-6.09	12.20	1.22	74.31	0.01
N/A	0.00	0.00	0.00	9.78	0.00	0.00	0.00
Rest of World	0.28	0.19	0.10	13.42	0.00	0.03	0.01



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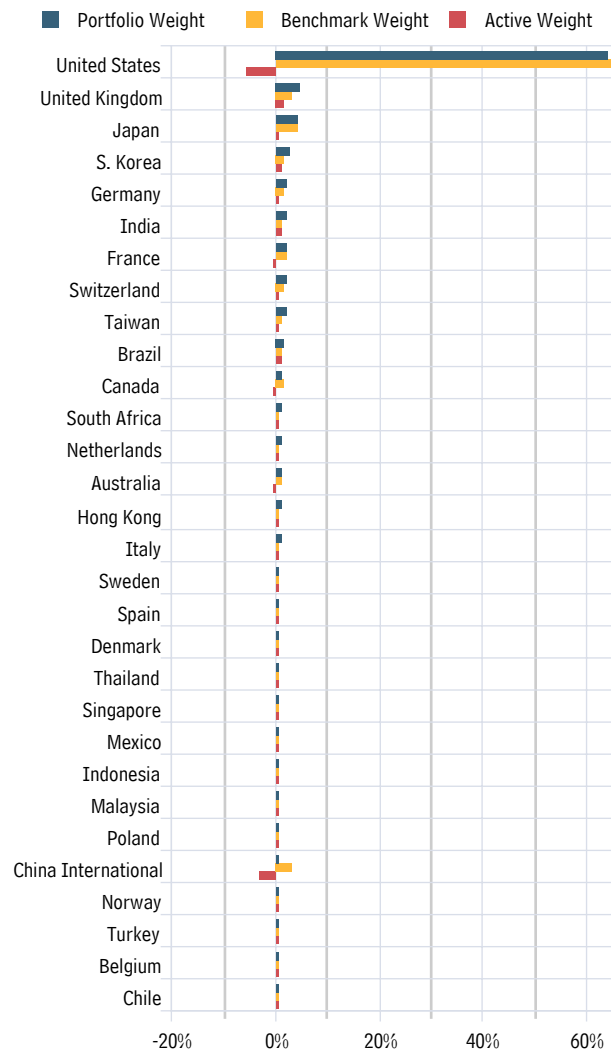
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: EQUITY  
BENCHMARK: EQUITY  
POSITIONS: 18,535  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 42,442,115,771  
ACCEPTED: 18,156

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>11.87</b>	<b>1.65</b>	<b>100.00</b>	<b>0.02</b>
United States	64.10	69.92	-5.83	12.22	1.15	69.69	0.02
United Kingdom	4.67	2.89	1.78	15.67	0.08	5.15	0.05
Japan	4.24	4.09	0.15	14.47	0.01	0.75	0.02
S. Korea	2.38	1.37	1.01	18.24	0.03	1.69	0.04
Germany	2.15	1.52	0.62	15.65	0.03	1.74	0.05
India	2.00	1.00	1.00	21.05	0.04	2.36	0.06
France	1.95	1.97	-0.02	14.81	0.01	0.63	0.05
Switzerland	1.86	1.61	0.26	12.63	0.02	0.94	0.04
Taiwan	1.84	1.20	0.64	15.70	0.01	0.66	0.03
Brazil	1.69	0.85	0.84	30.67	0.07	4.36	0.10
Canada	1.29	1.76	-0.48	14.75	0.01	0.90	0.04
South Africa	1.06	0.66	0.40	25.84	0.02	1.20	0.07
Netherlands	0.87	0.62	0.25	18.02	0.02	0.96	0.05
Australia	0.87	1.23	-0.35	14.39	-0.01	-0.36	0.03
Hong Kong	0.83	0.65	0.19	18.90	0.00	0.14	0.03
Italy	0.83	0.40	0.43	18.46	0.02	1.15	0.05
Sweden	0.76	0.46	0.30	17.31	0.01	0.90	0.05
Spain	0.67	0.51	0.15	15.34	0.00	0.29	0.04
Denmark	0.67	0.30	0.37	16.19	0.01	0.84	0.05
Thailand	0.57	0.33	0.24	15.40	0.00	0.26	0.03
Singapore	0.50	0.27	0.23	14.27	0.00	0.19	0.03
Mexico	0.49	0.28	0.21	23.20	0.01	0.59	0.06
Indonesia	0.43	0.24	0.19	22.49	0.01	0.38	0.05
Malaysia	0.40	0.24	0.17	14.85	0.00	0.18	0.03
Poland	0.33	0.12	0.20	21.29	0.01	0.62	0.07
China International	0.26	3.32	-3.06	21.98	0.02	1.38	0.01
Norway	0.26	0.12	0.15	21.00	0.01	0.46	0.05
Turkey	0.23	0.06	0.17	36.49	0.01	0.70	0.08
Belgium	0.19	0.17	0.03	18.51	0.00	0.28	0.05
Chile	0.19	0.10	0.09	19.91	0.00	0.15	0.04



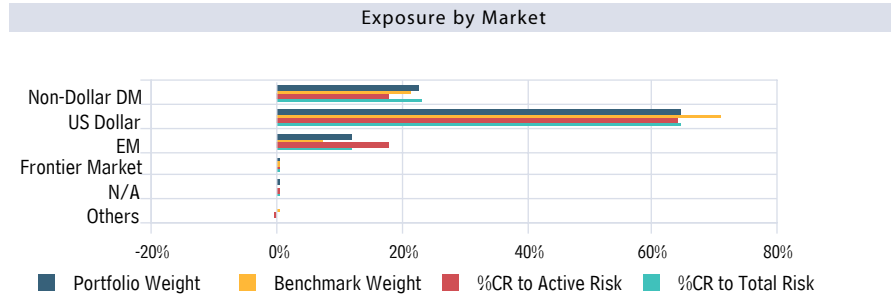
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# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: EQUITY  
BENCHMARK: EQUITY  
POSITIONS: 18,535  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 42,442,115,771  
ACCEPTED: 18,156

## Portfolio Allocation by Currency



Developed Market Currency				Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)	Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	27,436,422,666.21	70.47	64.43	Korean Won	986,620,084.05	1.57	2.42
Euro	2,999,325,682.41	5.79	7.82	Indian Rupee	848,615,373.39	2.36	1.61
British Pound Sterling	1,971,293,296.51	5.15	4.95	New Taiwan Dollar	781,811,241.61	0.66	1.64
Japanese Yen	1,797,884,288.79	0.75	3.57	Brazilian Real	718,013,483.80	4.36	2.15
Swiss Franc	788,563,422.47	0.94	1.61	South African Rand	449,091,102.08	1.20	1.44

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)				Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>11.87</b>	<b>11.87</b>	<b>100.00</b>	<b>1.65</b>	<b>100.00</b>	
US Dollar	64.64	70.95	-6.31	12.19	7.65	64.43	1.16	70.47	
Euro	7.07	5.50	1.56	15.10	0.93	7.82	0.10	5.79	
British Pound Sterling	4.64	2.90	1.75	15.73	0.59	4.95	0.08	5.15	
Japanese Yen	4.24	4.09	0.15	14.47	0.42	3.57	0.01	0.75	
Korean Won	2.32	1.37	0.95	18.10	0.29	2.42	0.03	1.57	
Indian Rupee	2.00	1.00	1.00	21.05	0.19	1.61	0.04	2.36	
Swiss Franc	1.86	1.61	0.25	12.65	0.19	1.61	0.02	0.94	
New Taiwan Dollar	1.84	1.20	0.64	15.70	0.19	1.64	0.01	0.66	
Brazilian Real	1.69	0.85	0.84	30.71	0.26	2.15	0.07	4.36	
Canadian Dollar	1.23	1.76	-0.54	14.80	0.16	1.31	0.01	0.85	
South African Rand	1.06	0.66	0.40	25.82	0.17	1.44	0.02	1.20	
Hong Kong Dollar	0.93	3.10	-2.17	18.28	0.11	0.95	0.02	1.13	
Australian Dollar	0.85	1.23	-0.38	14.44	0.10	0.81	-0.01	-0.37	
Danish Krone	0.67	0.30	0.37	16.19	0.07	0.57	0.01	0.84	
Swedish Krona	0.65	0.46	0.20	17.12	0.09	0.78	0.01	0.71	



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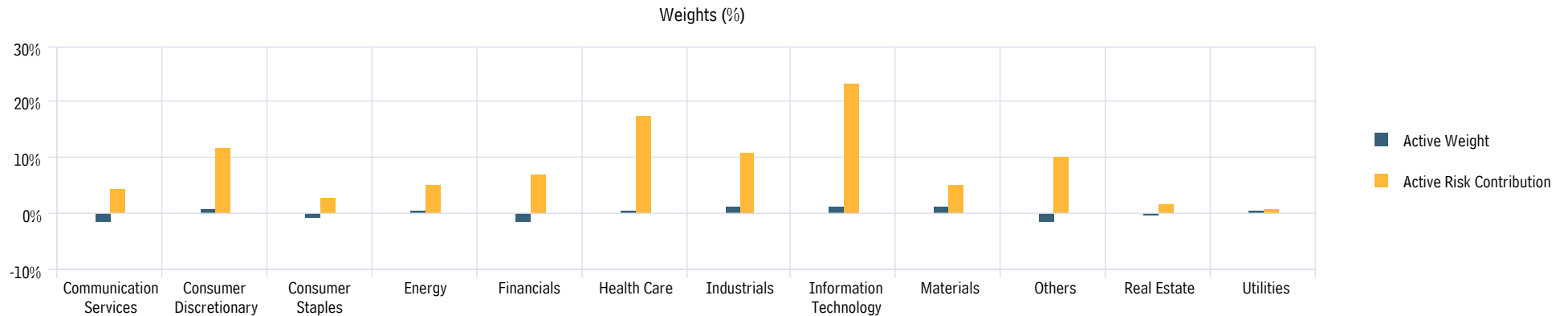
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: EQUITY  
BENCHMARK: EQUITY  
POSITIONS: 18,535  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 42,442,115,771  
ACCEPTED: 18,156

## Portfolio Allocation by GICS Sector

GICS Sector	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>11.87</b>	<b>1.65</b>	<b>100.00</b>	<b>0.02</b>
Communication Services	6.35	7.79	-1.44	12.45	0.07	4.35	0.02
Consumer Discretionary	10.58	9.79	0.79	14.71	0.19	11.67	0.04
Consumer Staples	5.92	6.62	-0.70	9.89	0.05	2.84	0.03
Energy	5.19	5.00	0.19	19.45	0.08	4.98	0.06
Financials	13.48	14.96	-1.47	13.21	0.12	7.15	0.03
Health Care	11.09	10.70	0.39	13.84	0.29	17.48	0.05
Industrials	10.70	9.42	1.28	14.45	0.18	10.73	0.05
Information Technology	16.77	15.70	1.06	15.81	0.38	23.29	0.05
Materials	5.11	4.10	1.01	15.60	0.08	4.89	0.05
Others	8.27	9.67	-1.40	8.13	0.17	10.28	0.00
Real Estate	3.34	3.35	-0.01	11.13	0.03	1.73	0.02
Utilities	3.21	2.90	0.31	9.68	0.01	0.60	0.02



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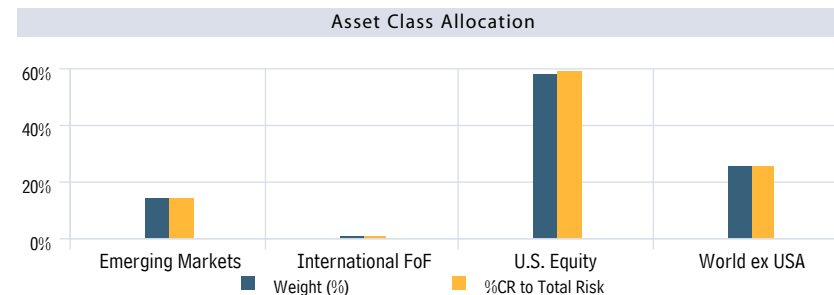
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Public Equity  
 BENCHMARK: zTest\_NYCERS\_PublicEquity  
 POSITIONS: 18,156  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 34,161,653,960  
 ACCEPTED: 17,815

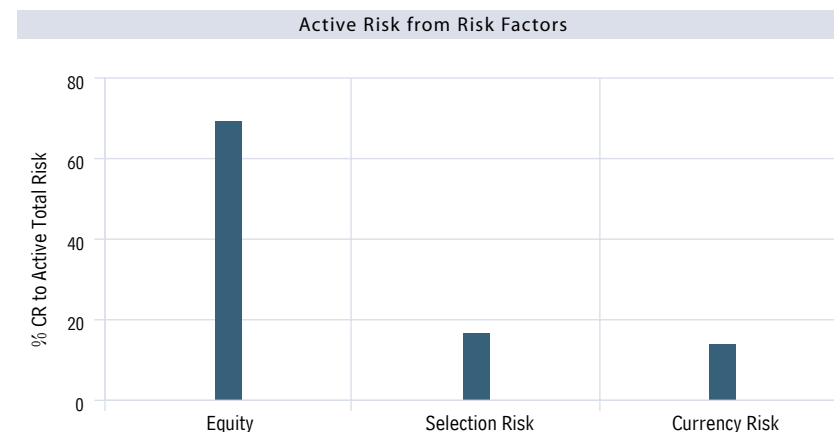
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	12.15	<b>Total</b>	<b>34,161,653,960</b>	<b>100.00</b>	<b>12.15</b>	<b>12.15</b>	<b>100.00</b>
Benchmark Risk	12.11	Emerging Markets	4,857,257,295	14.22	15.09	1.73	14.24
Active Risk	0.82	International FoF	469,430,125	1.37	12.01	0.15	1.26
Portfolio Beta	1.00	U.S. Equity	19,933,555,599	58.35	12.74	7.16	58.93
		World ex USA	8,901,410,942	26.06	12.69	3.11	25.57



## Risk Factor Breakdown

Risk Source	Portfolio			Active		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>12.15</b>	<b>100.00</b>	<b>1.00</b>	<b>0.82</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	11.36	93.47	0.99	0.71	86.01	0.93
Common Factor Risk	11.31	93.09	0.99	0.57	69.22	0.84
Equity	11.31	93.09	0.99	0.57	69.22	0.84
Style	0.24	1.97	0.55	0.13	16.10	0.37
Industry	11.07	91.12	0.99	0.44	53.12	0.69
Selection Risk	0.05	0.38	0.06	0.14	16.79	0.41
Currency Risk	0.79	6.53	0.43	0.12	13.99	0.39



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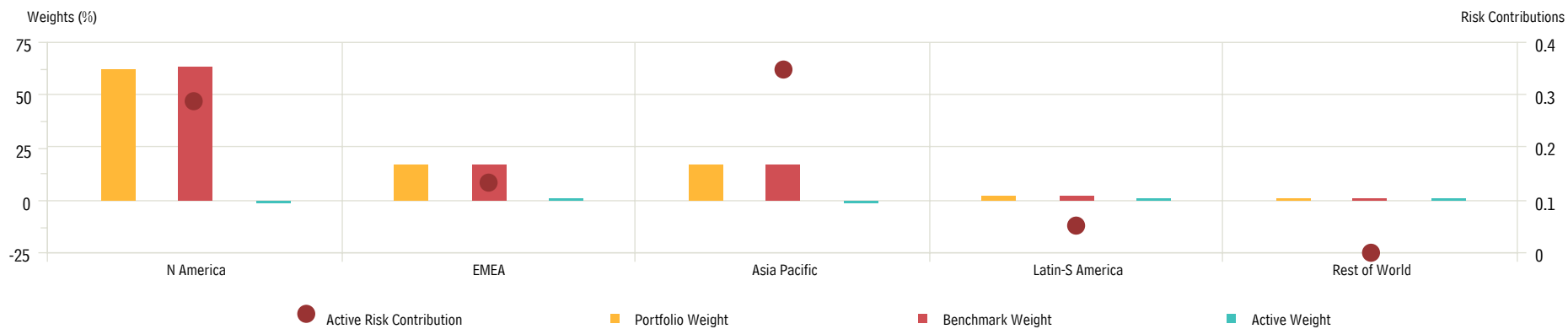
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Public Equity  
 BENCHMARK: zTest\_NYCERS\_PublicEquity  
 POSITIONS: 18,156  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 34,161,653,960  
 ACCEPTED: 17,815

## Portfolio Allocation by Region

Region	Weight (%)			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>12.15</b>	<b>0.82</b>	<b>100.00</b>	<b>0.01</b>
Asia Pacific	17.08	17.56	-0.48	12.53	0.35	42.19	0.00
EMEA	17.62	16.81	0.81	14.33	0.13	16.33	0.02
Latin-S America	2.30	1.61	0.69	23.52	0.05	6.41	0.08
N America	62.70	63.77	-1.07	12.64	0.29	34.97	0.00
Rest of World	0.30	0.24	0.06	14.61	0.00	0.11	0.02



# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Public Equity  
 BENCHMARK: zTest\_NYCERS\_PublicEquity  
 POSITIONS: 18,156  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 34,161,653,960  
 ACCEPTED: 17,815

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>12.15</b>	<b>0.82</b>	<b>100.00</b>	<b>0.01</b>
United States	59.86	60.11	-0.25	12.69	0.12	15.03	0.00
Japan	5.26	5.58	-0.32	14.47	0.02	2.60	0.00
United Kingdom	4.48	3.95	0.53	15.56	0.02	2.87	0.01
S. Korea	2.96	1.73	1.22	18.25	0.04	5.37	0.04
India	2.31	1.26	1.05	21.15	0.08	9.38	0.07
Taiwan	2.29	1.52	0.77	15.70	0.01	1.80	0.02
Germany	2.24	2.08	0.16	16.37	0.01	1.65	0.02
Switzerland	2.16	2.19	-0.03	12.51	0.01	1.13	0.01
France	2.05	2.69	-0.64	14.70	-0.01	-0.66	0.01
Brazil	2.02	1.07	0.95	30.95	0.11	12.91	0.11
Canada	1.35	2.41	-1.05	14.79	-0.00	-0.35	0.01
South Africa	1.31	0.83	0.48	25.84	0.03	3.82	0.07
Hong Kong	1.03	0.88	0.14	18.95	0.00	0.43	-0.00
Australia	0.99	1.68	-0.68	14.74	-0.00	-0.56	0.01
Netherlands	0.95	0.85	0.10	18.79	0.01	0.93	0.02
Italy	0.75	0.55	0.21	21.01	0.01	1.32	0.02
Thailand	0.71	0.42	0.29	15.41	0.01	1.04	0.03
Sweden	0.71	0.63	0.08	17.64	0.00	0.48	0.02
Denmark	0.66	0.40	0.26	15.96	0.01	0.63	0.02
Spain	0.63	0.70	-0.07	17.61	0.00	0.20	0.02
Mexico	0.60	0.36	0.24	23.36	0.01	1.66	0.06
Singapore	0.60	0.37	0.22	14.41	0.00	0.47	0.02
Indonesia	0.51	0.30	0.22	22.75	0.01	1.55	0.06
Malaysia	0.50	0.30	0.20	14.85	0.00	0.60	0.03
Poland	0.33	0.16	0.17	21.78	0.01	0.90	0.05
Turkey	0.28	0.07	0.21	36.49	0.02	2.35	0.09
Norway	0.28	0.16	0.12	21.35	0.00	0.44	0.02
Chile	0.24	0.13	0.11	20.11	0.00	0.42	0.03
Philippines	0.23	0.16	0.07	17.14	0.00	0.32	0.04
Finland	0.22	0.24	-0.02	17.92	0.00	0.07	0.02



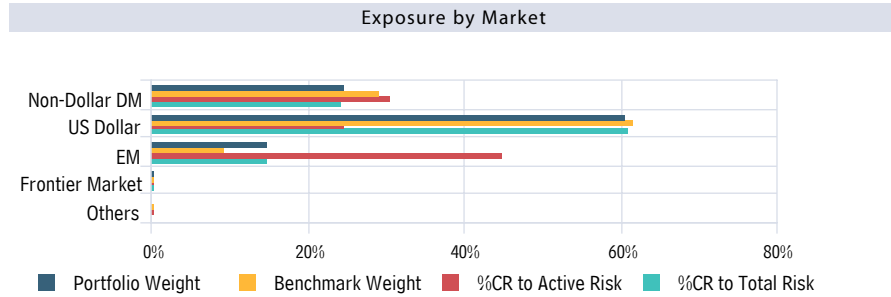
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# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Public Equity  
 BENCHMARK: zTest\_NYCERS\_PublicEquity  
 POSITIONS: 18,156  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 34,161,653,960  
 ACCEPTED: 17,815

## Portfolio Allocation by Currency



Developed Market Currency				Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)	Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	20,635,709,035.36	24.84	60.77	Korean Won	984,468,135.67	4.94	2.99
Euro	2,515,425,056.44	4.30	8.16	Indian Rupee	787,498,270.40	9.38	1.85
Japanese Yen	1,796,818,589.31	2.60	4.42	New Taiwan Dollar	781,811,241.61	1.80	2.03
British Pound Sterling	1,525,751,604.62	2.87	4.63	Brazilian Real	690,602,672.55	12.91	2.57
Swiss Franc	736,908,605.18	1.13	1.81	South African Rand	449,091,102.08	3.82	1.79

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)			Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>12.15</b>	<b>12.15</b>	<b>100.00</b>	<b>0.82</b>	<b>100.00</b>
US Dollar	60.41	61.41	-1.01	12.67	7.39	60.77	0.20	24.84
Euro	7.36	7.51	-0.15	15.31	0.99	8.16	0.04	4.30
Japanese Yen	5.26	5.58	-0.32	14.47	0.54	4.42	0.02	2.60
British Pound Sterling	4.47	3.95	0.51	15.57	0.56	4.63	0.02	2.87
Korean Won	2.88	1.73	1.15	18.10	0.36	2.99	0.04	4.94
Indian Rupee	2.31	1.26	1.05	21.15	0.22	1.85	0.08	9.38
New Taiwan Dollar	2.29	1.52	0.77	15.70	0.25	2.03	0.01	1.80
Swiss Franc	2.16	2.19	-0.03	12.51	0.22	1.81	0.01	1.13
Brazilian Real	2.02	1.07	0.95	30.95	0.31	2.57	0.11	12.91
Canadian Dollar	1.32	2.41	-1.09	14.51	0.16	1.34	-0.00	-0.45
South African Rand	1.31	0.83	0.48	25.82	0.22	1.79	0.03	3.82
Hong Kong Dollar	1.14	3.97	-2.83	18.33	0.14	1.15	0.17	20.10
Australian Dollar	0.97	1.68	-0.71	14.80	0.11	0.93	-0.00	-0.59
Thai Baht	0.71	0.42	0.29	15.41	0.07	0.54	0.01	1.04
Danish Krone	0.66	0.40	0.26	15.96	0.06	0.50	0.01	0.63



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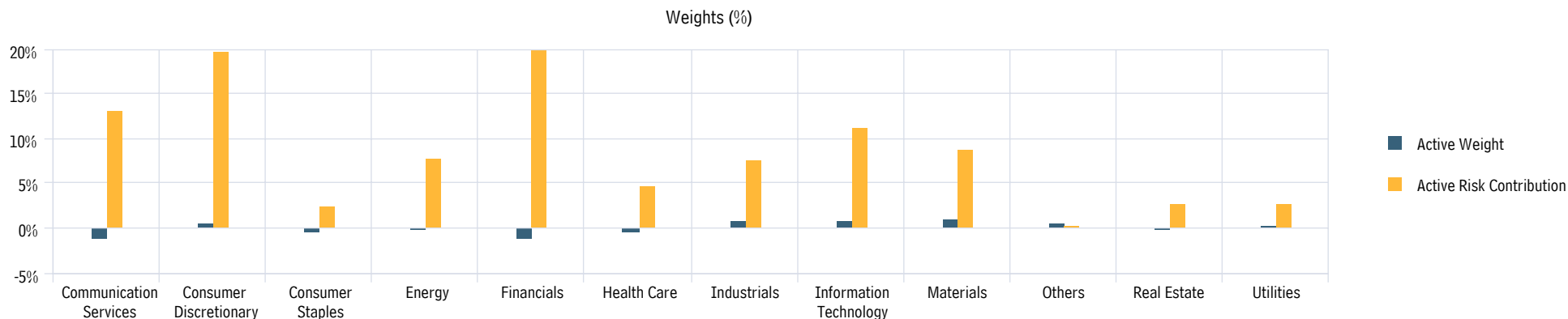
# BarraOne Equity Summary

COMPANY: NYCRS - NYCERS  
 PORTFOLIO: Public Equity  
 BENCHMARK: zTest\_NYCERS\_PublicEquity  
 POSITIONS: 18,156  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 34,161,653,960  
 ACCEPTED: 17,815

## Portfolio Allocation by GICS Sector

GICS Sector	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>0.00</b>	<b>12.15</b>	<b>0.82</b>	<b>100.00</b>	<b>0.01</b>
Communication Services	7.28	8.46	-1.18	12.47	0.11	13.01	-0.01
Consumer Discretionary	11.37	10.87	0.50	14.49	0.16	19.59	0.01
Consumer Staples	6.95	7.51	-0.56	9.70	0.02	2.52	0.01
Energy	5.57	5.70	-0.13	19.29	0.06	7.67	0.03
Financials	15.78	17.08	-1.30	13.20	0.16	19.84	0.01
Health Care	10.93	11.45	-0.51	13.04	0.04	4.58	-0.00
Industrials	11.29	10.53	0.76	14.42	0.06	7.41	0.01
Information Technology	17.31	16.50	0.81	15.68	0.09	11.15	0.00
Materials	5.85	4.84	1.01	15.70	0.07	8.72	0.03
Others	0.71	0.19	0.52	2.21	0.00	0.03	0.00
Real Estate	3.50	3.66	-0.15	11.56	0.02	2.70	0.01
Utilities	3.46	3.21	0.25	10.66	0.02	2.78	0.01



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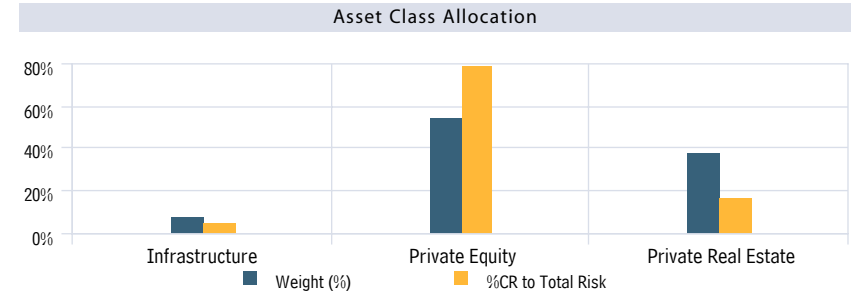
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Alternative  
BENCHMARK: Alternative  
POSITIONS: 379  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 8,280,461,810  
ACCEPTED: 341

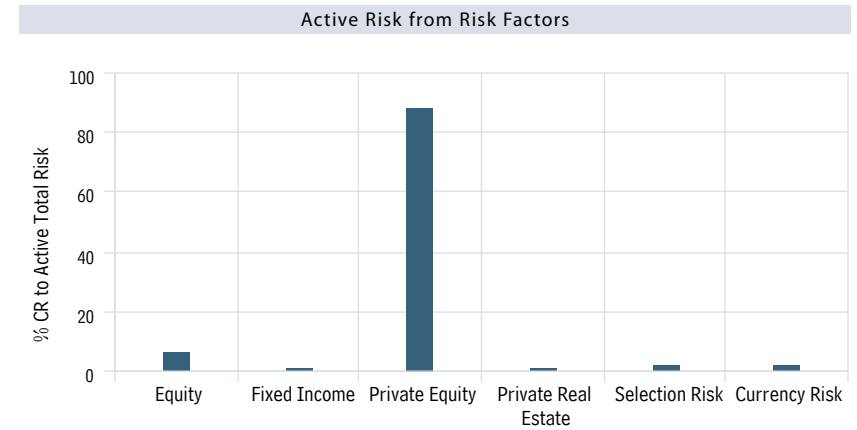
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	12.68	<b>Total</b>	<b>8,280,461,810</b>	<b>100.00</b>	<b>12.68</b>	<b>12.68</b>	<b>100.00</b>
Benchmark Risk	9.91	Infrastructure	650,658,341	7.86	10.46	0.67	5.25
Active Risk	7.25	Private Equity	4,477,820,460	54.08	18.95	9.98	78.72
Portfolio Beta	1.05	Private Real Estate	3,145,004,106	37.98	8.31	2.03	16.02



## Risk Factor Breakdown

Risk Source	Risk Decomposition			Risk Decomposition		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>12.68</b>	<b>100.00</b>	<b>1.00</b>	<b>7.25</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	12.39	97.74	1.00	7.09	97.76	0.99
Common Factor Risk	12.37	97.58	1.00	6.97	96.05	0.98
Equity	6.84	53.92	0.81	0.48	6.59	0.24
Style	0.08	0.63	0.18	0.04	0.57	0.09
Industry	6.76	53.29	0.81	0.44	6.02	0.23
Fixed Income	0.06	0.46	0.28	0.01	0.12	0.05
Nominal Rates	-0.04	-0.35	-0.20	-0.01	-0.20	-0.07
Real Rates	0.00	0.00	0.00	-0.01	-0.13	-0.08
Credit	0.10	0.81	0.52	0.03	0.45	0.17
Private Real Estate	1.81	14.30	0.60	0.09	1.24	0.07
Private Equity	3.65	28.82	0.54	6.39	88.05	0.94
Unassigned Factors	0.01	0.08	0.31	0.00	0.04	0.09
Selection Risk	0.02	0.16	0.04	0.12	1.70	0.13
Currency Risk	0.29	2.26	0.29	0.16	2.24	0.16



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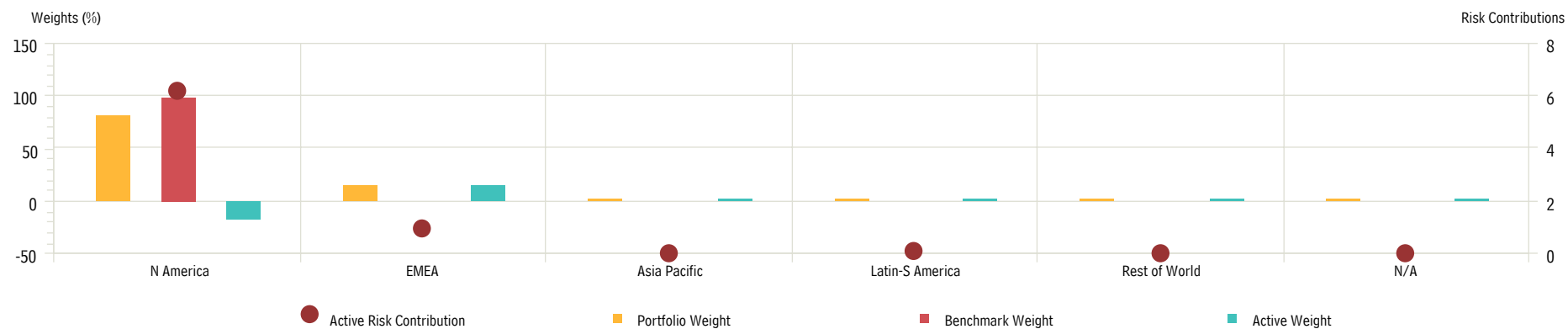
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Alternative  
 BENCHMARK: Alternative  
 POSITIONS: 379  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 8,280,461,810  
 ACCEPTED: 341

## Portfolio Allocation by Region

Region	Weight (%)			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>12.68</b>	<b>7.25</b>	<b>100.00</b>	<b>0.07</b>
Asia Pacific	2.23	0.00	2.23	17.17	0.03	0.37	0.01
EMEA	14.46	0.00	14.46	17.67	0.94	12.93	0.06
Latin-S America	0.42	0.00	0.42	31.60	0.08	1.12	0.19
N America	82.65	100.00	-17.35	13.11	6.20	85.54	0.03
N/A	0.01	0.00	0.01	9.78	0.00	0.00	0.01
Rest of World	0.22	0.00	0.22	21.17	0.00	0.04	0.01



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# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Alternative  
BENCHMARK: Alternative  
POSITIONS: 379  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 8,280,461,810  
ACCEPTED: 341

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>12.68</b>	<b>7.25</b>	<b>100.00</b>	<b>0.07</b>
United States	81.59	100.00	-18.41	13.08	6.08	83.83	0.03
United Kingdom	5.46	0.00	5.46	19.44	0.37	5.10	0.07
Germany	1.75	0.00	1.75	15.07	0.09	1.20	0.05
France	1.52	0.00	1.52	20.60	0.10	1.42	0.07
Italy	1.12	0.00	1.12	15.04	0.05	0.71	0.05
Canada	1.00	0.00	1.00	19.02	0.12	1.68	0.13
Sweden	0.97	0.00	0.97	20.43	0.06	0.86	0.07
Spain	0.84	0.00	0.84	11.69	0.02	0.26	0.03
China International	0.75	0.00	0.75	24.91	0.02	0.21	0.03
India	0.74	0.00	0.74	23.40	0.01	0.10	0.02
Denmark	0.69	0.00	0.69	24.15	0.05	0.71	0.08
Switzerland	0.64	0.00	0.64	21.29	0.04	0.62	0.08
Netherlands	0.57	0.00	0.57	17.50	0.04	0.57	0.08
Australia	0.38	0.00	0.38	13.12	0.00	0.05	0.02
Ireland	0.37	0.00	0.37	14.97	0.01	0.20	0.05
Brazil	0.34	0.00	0.34	36.87	0.08	1.04	0.23
Poland	0.34	0.00	0.34	25.30	0.02	0.28	0.07
Belgium	0.30	0.00	0.30	24.06	0.02	0.33	0.09
Norway	0.19	0.00	0.19	27.29	0.01	0.19	0.08
Portugal	0.19	0.00	0.19	14.67	0.01	0.11	0.05
Vietnam	0.17	0.00	0.17	26.46	0.00	0.01	0.01
Israel	0.16	0.00	0.16	28.63	0.01	0.19	0.10
Singapore	0.12	0.00	0.12	18.66	0.00	0.01	0.01
China	0.12	0.00	0.12	21.42	0.00	0.02	0.01
Greece	0.11	0.00	0.11	40.30	0.01	0.13	0.09
Indonesia	0.09	0.00	0.09	29.64	-0.00	-0.00	0.01
Finland	0.07	0.00	0.07	27.07	0.01	0.07	0.08
Mexico	0.05	0.00	0.05	24.02	0.01	0.07	0.11
United Arab Emirates	0.05	0.00	0.05	24.89	0.00	0.03	0.05
Hong Kong	0.03	0.00	0.03	22.48	0.00	0.00	0.02



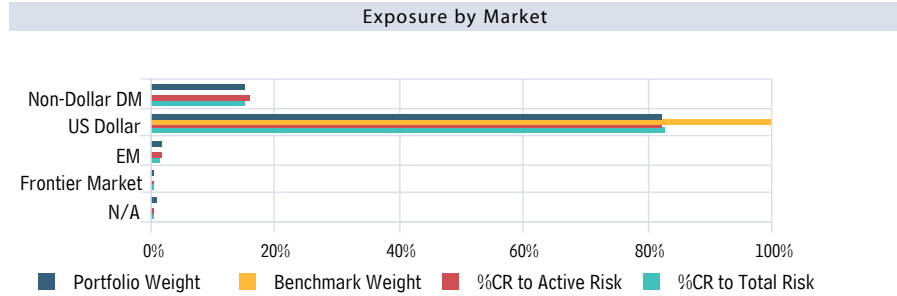
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# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Alternative  
BENCHMARK: Alternative  
POSITIONS: 379  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 8,280,461,810  
ACCEPTED: 341

## Portfolio Allocation by Currency



Developed Market Currency				Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)	Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	6,800,713,630.85	83.83	82.79	Indian Rupee	61,117,102.99	0.10	0.42
Euro	483,900,625.96	5.00	5.38	CNH	59,699,199.51	0.19	0.64
British Pound Sterling	445,541,691.89	5.10	5.38	Polish Zloty	28,133,321.45	0.28	0.28
Swedish Krona	80,207,271.68	0.86	0.99	Brazilian Real	27,410,811.25	1.04	0.58
Canadian Dollar	71,702,947.10	1.68	1.23	Vietnamese Dong	14,165,650.17	0.01	0.05

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)			Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>12.68</b>	<b>12.68</b>	<b>100.00</b>	<b>7.25</b>	<b>100.00</b>
US Dollar	82.13	100.00	-17.87	13.00	10.50	82.79	6.08	83.83
Euro	5.84	0.00	5.84	17.16	0.68	5.38	0.36	5.00
British Pound Sterling	5.38	0.00	5.38	19.73	0.68	5.38	0.37	5.10
Swedish Krona	0.97	0.00	0.97	20.43	0.12	0.99	0.06	0.86
Canadian Dollar	0.87	0.00	0.87	21.84	0.16	1.23	0.12	1.68
Indian Rupee	0.74	0.00	0.74	23.40	0.05	0.42	0.01	0.10
CNH	0.72	0.00	0.72	24.50	0.08	0.64	0.01	0.19
Danish Krone	0.69	0.00	0.69	24.15	0.09	0.71	0.05	0.71
Swiss Franc	0.62	0.00	0.62	21.83	0.08	0.64	0.04	0.62
Australian Dollar	0.38	0.00	0.38	13.12	0.03	0.21	0.00	0.05
Polish Zloty	0.34	0.00	0.34	25.30	0.04	0.28	0.02	0.28
Brazilian Real	0.33	0.00	0.33	38.23	0.07	0.58	0.08	1.04
Norwegian Krone	0.18	0.00	0.18	29.74	0.03	0.22	0.01	0.20
Vietnamese Dong	0.17	0.00	0.17	26.46	0.01	0.05	0.00	0.01
New Israeli Sheqel	0.16	0.00	0.16	28.63	0.02	0.18	0.01	0.19



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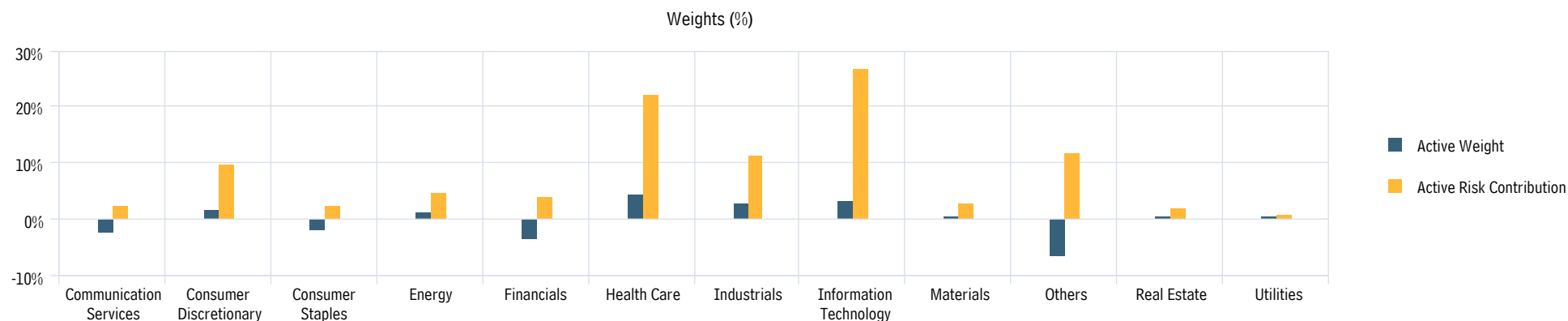
# BarraOne Equity Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Alternative  
 BENCHMARK: Alternative  
 POSITIONS: 379  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019  
 MARKET VALUE: 8,280,461,810  
 ACCEPTED: 341

## Portfolio Allocation by GICS Sector

GICS Sector	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>12.68</b>	<b>7.25</b>	<b>100.00</b>	<b>0.07</b>
Communication Services	2.51	4.91	-2.40	16.21	0.16	2.26	0.04
Consumer Discretionary	7.30	5.62	1.68	18.96	0.70	9.68	0.07
Consumer Staples	1.66	3.48	-1.82	18.03	0.18	2.51	0.04
Energy	3.63	2.51	1.12	23.53	0.34	4.72	0.09
Financials	4.00	7.33	-3.33	16.25	0.29	4.06	0.05
Health Care	11.74	7.54	4.20	21.00	1.61	22.14	0.10
Industrials	8.27	5.44	2.82	17.45	0.81	11.13	0.08
Information Technology	14.54	11.52	3.03	20.94	1.94	26.69	0.09
Materials	2.06	1.61	0.45	18.20	0.19	2.69	0.08
Others	39.46	46.19	-6.73	8.68	0.85	11.68	0.00
Real Estate	2.64	2.12	0.52	10.61	0.13	1.86	0.03
Utilities	2.19	1.73	0.46	6.13	0.04	0.59	0.01



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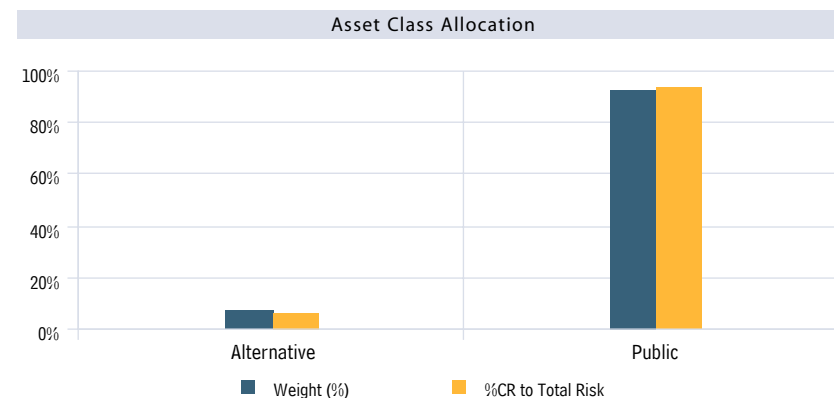
# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

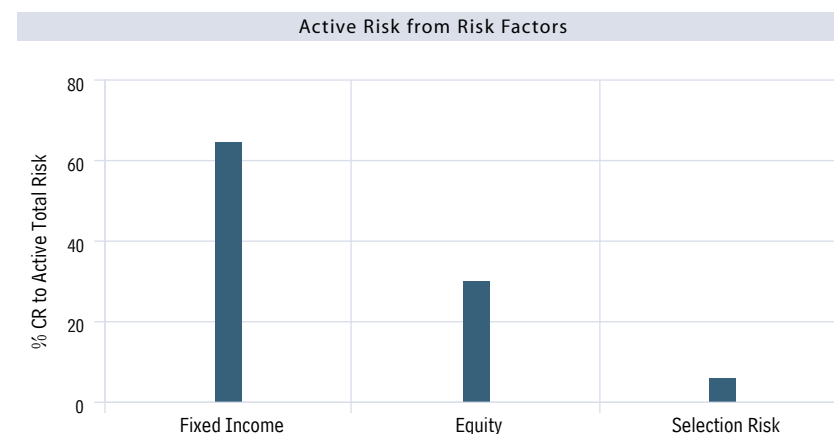
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	2.64	<b>Total</b>	<b>23,685,537,021</b>	<b>100.00</b>	<b>2.64</b>	<b>2.64</b>	<b>100.00</b>
Benchmark Risk	3.00	Alternative	1,714,481,898	7.24	7.74	0.17	6.56
Active Risk	0.63	Public	21,971,055,122	92.76	2.72	2.46	93.44
Portfolio Beta	0.86						
Cont. to Eff. Duration	5.89						
Convexity	0.85						
Yield to Worst (%)	infinity						
OAS to Swap (bp)	132.96						



## Risk Factor Breakdown

Risk Source	Risk Decomposition			Risk Decomposition		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>2.64</b>	<b>100.00</b>	<b>1.00</b>	<b>0.63</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	2.62	99.34	1.00	0.64	100.54	0.99
Common Factor Risk	2.61	98.98	1.00	0.60	94.31	0.96
Equity	0.09	3.54	0.19	0.19	29.74	0.58
Style	0.01	0.37	0.06	0.05	8.65	0.30
Industry	0.08	3.16	0.19	0.13	21.09	0.49
Fixed Income	2.52	95.44	0.98	0.41	64.49	0.81
Nominal Rates	1.92	73.00	0.76	0.41	65.07	0.79
Real Rates	0.39	14.81	0.85	-0.04	-6.41	-0.51
Credit	0.20	7.63	0.15	0.04	5.84	0.12
Selection Risk	0.01	0.36	0.06	0.04	6.23	0.25
Currency Risk	0.02	0.66	0.25	-0.00	-0.54	-0.05



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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

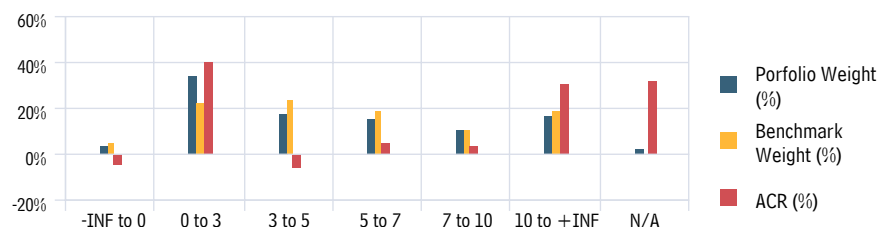
CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

## Portfolio by Factor Breakdowns

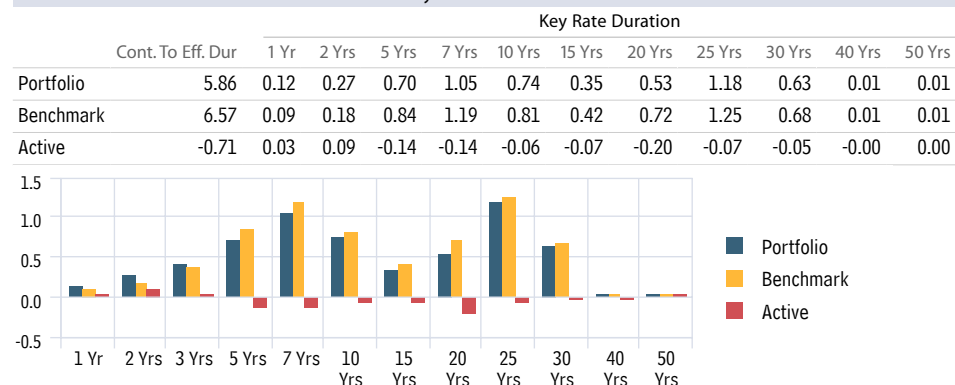
Spread Factor	Top 10 Spread Factor									
	Volatility	Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR		Active Port	to TR	to AR	to AR%
US Swap Shift	0.14	3.97	2.79	1.18	0.00	0.45	-0.02	0.07	11.79	
US Conventional 30 yr Mortgage	0.35	0.24	0.50	-0.26	-0.00	-0.17	0.02	0.02	2.45	
US CCC	2.79	0.02	0.01	0.01	0.01	0.32	0.01	0.01	2.03	
US Consumer Discretionary CCC	3.16	0.02	0.02	0.01	0.01	0.28	0.01	0.01	0.85	
US Materials B	2.23	0.03	0.02	0.01	0.01	0.33	0.01	0.00	0.77	
US Swap Butterfly	0.06	-1.45	-0.55	-0.90	-0.00	-0.07	0.01	0.00	0.65	
US Materials CCC	3.07	0.01	0.00	0.00	0.01	0.27	0.00	0.00	0.41	
US Utilities BB	0.84	0.02	0.01	0.01	0.00	0.29	0.00	0.00	0.37	
US Industrials CCC	2.37	0.01	0.01	0.00	0.01	0.31	0.00	0.00	0.22	
EUR Swap Shift	0.16	0.04	0.00	0.04	0.00	0.16	-0.00	0.00	0.17	

Term Structure	Top 10 Term Structure									
	Volatility	Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR		Active Port	to TR	to AR	to AR%
US Shift	0.49	4.78	5.70	-0.92	-0.00	-0.78	1.73	0.35	54.73	
US Twist	0.17	1.83	2.60	-0.77	-0.00	-0.52	0.16	0.07	10.65	
US Butterfly	0.12	-0.21	-0.36	0.16	0.00	0.32	0.01	0.01	0.98	
US Implied Volatility	16.23	-0.00	-0.00	0.00	0.01	0.05	0.01	0.00	0.15	
FR Shift	0.38	-0.00	0.00	-0.00	-0.00	-0.46	-0.00	0.00	0.05	
EUR Implied Volatility	11.63	-0.00	0.00	-0.00	-0.00	-0.03	0.00	0.00	0.02	
GB Twist	0.17	-0.00	0.00	-0.00	-0.00	-0.30	-0.00	0.00	0.00	
EUR Butterfly	0.09	0.00	0.00	0.00	0.00	0.06	-0.00	0.00	0.00	
FR Butterfly	0.10	0.00	0.00	0.00	0.00	0.08	-0.00	0.00	0.00	
SE Twist	0.22	-0.00	0.00	-0.00	-0.00	-0.32	-0.00	0.00	0.00	

%CR to Active Risk by Duration Buckets



Key Rate Duration



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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>2.64</b>	<b>0.63</b>	<b>100.00</b>	<b>0.01</b>
United States	92.47	91.15	1.32	2.69	0.58	90.72	-0.01
Canada	1.27	1.66	-0.39	3.98	-0.01	-0.91	-0.00
N/A	1.14	0.00	1.14	9.45	0.06	10.15	0.04
United Kingdom	1.03	1.18	-0.16	3.33	0.00	0.05	-0.00
Luxembourg	0.54	0.55	-0.02	7.43	0.00	0.06	0.01
Netherlands	0.45	0.74	-0.28	4.70	-0.00	-0.73	0.00
Euro. Monetary Union	0.39	0.00	0.39	6.46	0.01	0.79	-0.01
Ireland	0.31	0.21	0.10	2.75	0.00	0.02	-0.01
Jersey	0.22	0.02	0.19	6.91	0.00	0.40	-0.00
Germany	0.20	0.39	-0.19	2.00	-0.00	-0.24	-0.01
Mexico	0.18	0.27	-0.08	7.02	0.00	0.05	-0.02
Caymans	0.15	0.07	0.08	6.71	0.00	0.39	0.01
France	0.15	0.31	-0.16	8.65	-0.00	-0.22	0.01
Switzerland	0.12	0.13	-0.01	2.61	0.00	0.10	-0.01
Israel	0.10	0.03	0.07	4.58	0.00	0.17	-0.00
Colombia	0.10	0.09	0.02	6.45	0.00	0.06	-0.02
Spain	0.10	0.07	0.03	3.84	0.00	0.21	-0.01
World	0.10	0.41	-0.32	3.94	0.00	0.05	-0.02
Belgium	0.09	0.16	-0.07	7.79	0.00	0.13	-0.04
Brazil	0.08	0.07	0.01	6.55	0.00	0.03	-0.00
Australia	0.08	0.15	-0.07	6.66	0.00	0.02	-0.00
United Arab Emirates	0.07	0.03	0.04	5.00	0.00	0.10	-0.01
Indonesia	0.07	0.13	-0.06	9.38	-0.00	-0.05	-0.02
Austria	0.06	0.02	0.04	17.01	0.00	0.64	0.04
Japan	0.06	0.34	-0.28	2.44	-0.00	-0.29	-0.01
New Zealand	0.05	0.04	0.01	4.86	0.00	0.04	0.01
Chile	0.05	0.03	0.02	4.67	0.00	0.01	-0.02
Venezuela	0.05	0.00	0.05	10.47	0.00	0.17	0.00
Bermuda	0.05	0.06	-0.01	6.12	0.00	0.01	0.00
Norway	0.03	0.07	-0.03	10.88	0.00	0.12	-0.01



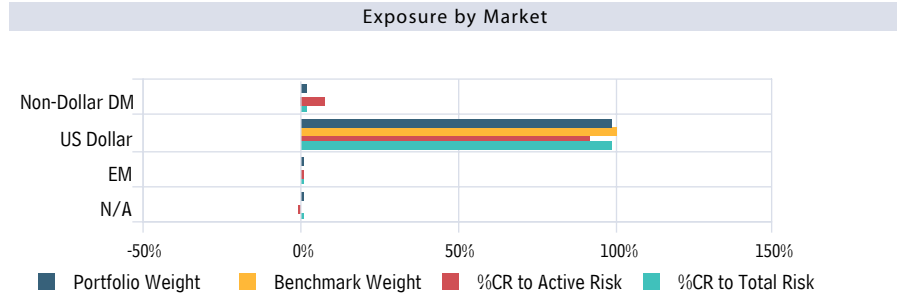
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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

## Portfolio Allocation by Currency



Developed Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	23,321,271,934.13	87.56	98.38
Euro	322,290,242.47	10.87	1.47
British Pound Sterling	22,623,600.23	0.71	0.06
Canadian Dollar	8,863,147.65	0.60	0.05
Danish Krone	5,485,251.98	0.09	0.02

Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
CNH	234,181.43	0.00	0.00
Korean Won	6,042.42	0.00	0.00
New Taiwan Dollar	64.39	0.00	0.00
Mexican Peso	0.05	0.00	0.00

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)				Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active						
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>		<b>2.64</b>	<b>2.64</b>	<b>100.00</b>	<b>0.63</b>	<b>100.00</b>
US Dollar	98.46	100.00	-1.54		2.64	2.59	98.38	0.56	87.56
Euro	1.36	0.00	1.36		9.56	0.04	1.47	0.07	10.87
British Pound Sterling	0.10	0.00	0.10		12.64	0.00	0.06	0.00	0.71
Canadian Dollar	0.04	0.00	0.04		34.46	0.00	0.05	0.00	0.60
Danish Krone	0.02	0.00	0.02		12.24	0.00	0.02	0.00	0.09
Swedish Krona	0.01	0.00	0.01		8.54	0.00	0.01	0.00	0.05
Norwegian Krone	0.01	0.00	0.01		51.47	0.00	0.01	0.00	0.11
CNH	0.00	0.00	0.00		12.42	0.00	0.00	0.00	0.00
Australian Dollar	0.00	0.00	0.00		11.65	0.00	0.00	0.00	0.00
Singapore Dollar	0.00	0.00	0.00		3.96	0.00	0.00	0.00	0.00
Swiss Franc	0.00	0.00	0.00		73.68	0.00	0.00	0.00	0.00
Korean Won	0.00	0.00	0.00		6.81	0.00	0.00	0.00	0.00
New Taiwan Dollar	0.00	0.00	0.00		3.55	0.00	0.00	0.00	0.00
Mexican Peso	0.00	0.00	0.00		11.29	0.00	0.00	0.00	0.00
Japanese Yen	0.00	0.00	0.00		7.32	0.00	0.00	-0.00	-0.00



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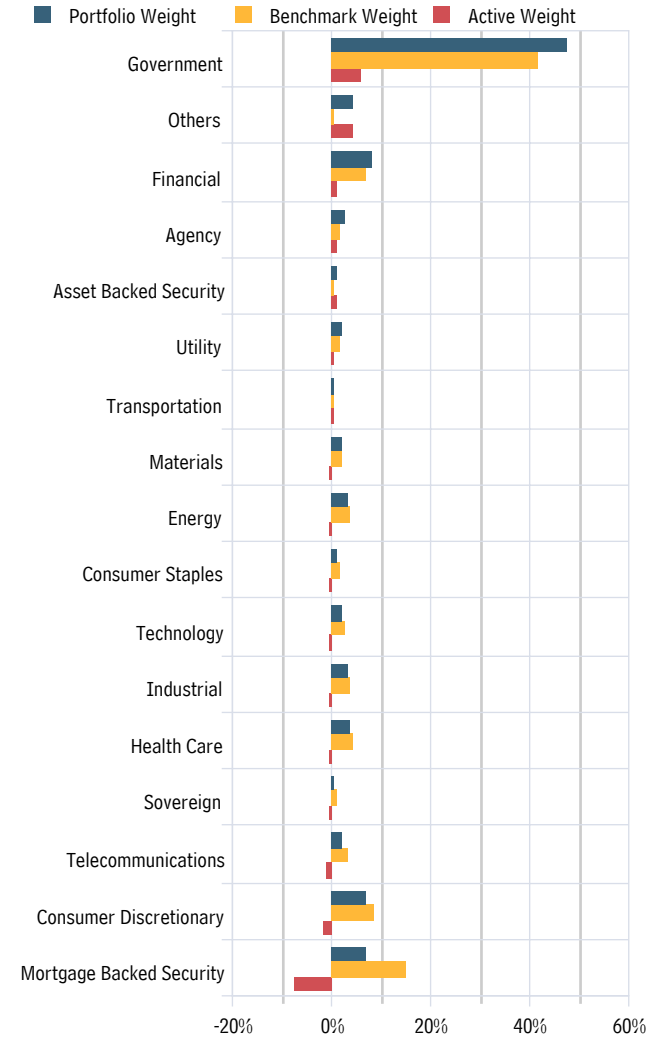
# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

## Portfolio Allocation by Bond Sector

Sector	Weight (%)			Cont. To Eff. Dur	Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>5.86</b>	<b>2.64</b>	<b>0.63</b>	<b>100.00</b>	<b>0.01</b>
Government	47.37	41.68	5.68	4.00	4.07	0.26	40.41	-0.03
Financial	8.27	6.95	1.31	0.26	2.23	0.05	8.29	-0.01
Mortgage Backed Security	7.26	14.98	-7.72	0.28	2.72	-0.03	-4.86	-0.01
Consumer Discretionary	6.91	8.53	-1.62	0.18	3.71	-0.03	-4.84	0.00
Others	4.11	0.02	4.09	0.04	8.89	0.29	45.98	0.02
Health Care	3.68	4.33	-0.65	0.13	3.46	0.00	0.17	-0.00
Industrial	3.19	3.80	-0.61	0.08	3.58	0.00	0.44	0.00
Energy	3.13	3.58	-0.45	0.14	7.07	-0.01	-1.73	0.00
Agency	2.71	1.46	1.26	0.16	3.47	-0.01	-1.59	-0.02
Telecommunications	2.42	3.25	-0.82	0.09	4.66	-0.02	-2.91	-0.00
Technology	2.38	2.96	-0.58	0.10	4.06	-0.02	-3.54	0.01
Materials	2.28	2.37	-0.08	0.07	4.63	0.01	0.93	0.00
Utility	2.00	1.63	0.38	0.10	6.50	0.05	7.45	-0.01
Consumer Staples	1.35	1.83	-0.48	0.05	2.55	0.01	0.87	-0.01
Asset Backed Security	1.18	0.11	1.07	0.03	2.33	0.02	3.50	0.00
Transportation	0.72	0.70	0.01	0.03	2.87	0.01	0.82	-0.01
Sovereign	0.35	1.08	-0.73	0.02	4.89	0.00	0.32	-0.02
Commercial Mortgage Backed	0.35	0.07	0.28	0.01	2.74	0.00	0.71	-0.00
Local/Provincial	0.20	0.25	-0.05	0.02	5.10	-0.00	-0.17	-0.02
Supranational	0.10	0.41	-0.32	0.01	3.94	0.00	0.05	-0.02
Collateralized Loan Obligat	0.03	0.00	0.03	0.06	603.25	0.06	9.67	2.26
Collateralized Debt Obligat	0.01	0.00	0.01	0.00	16.05	0.00	0.03	0.01
Covered bond	0.00	0.00	-0.00	0.00	0.48	-0.00	-0.00	-0.00
Corporation	0.00	0.00	-0.00	0.00	0.00	-0.00	-0.02	0.01



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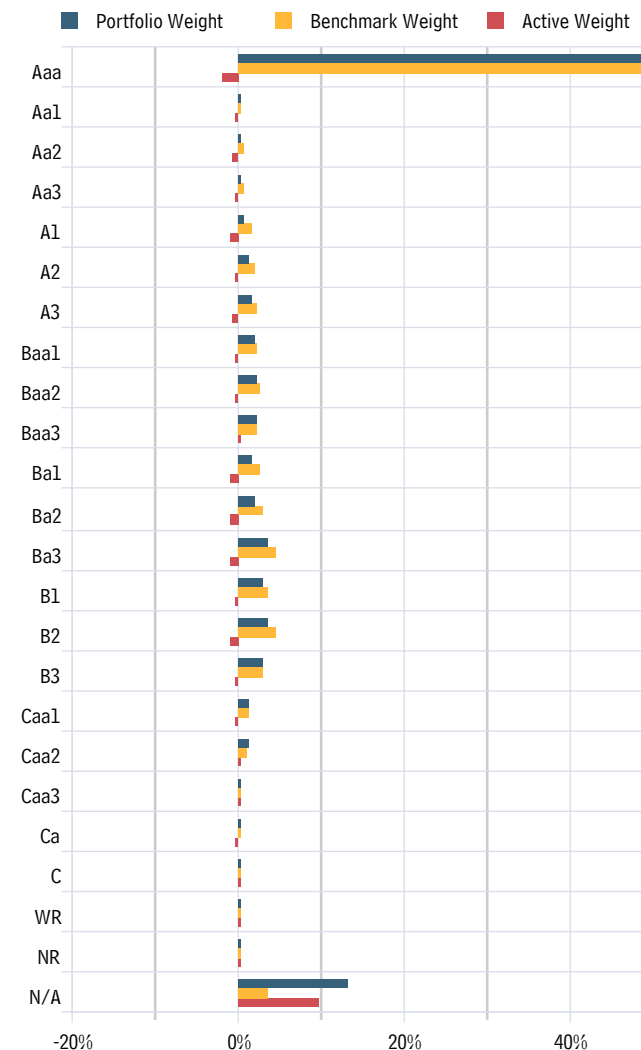
# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: FIXED INCOME  
BENCHMARK: Fixed Income  
POSITIONS: 9,536  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 23,685,537,021  
ACCEPTED: 9,471

## Portfolio Allocation by Moody's Rating

Rating	Weight (%)			Cont. To Eff. Dur	Spread Duration	Total Risk	Active Risk CR	%CR to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>5.86</b>	<b>6.34</b>	<b>2.64</b>	<b>0.63</b>	<b>100.00</b>
Aaa	56.27	58.22	-1.95	4.43	8.02	3.82	0.21	32.81
Aa1	0.22	0.28	-0.06	0.02	8.73	5.60	-0.00	-0.20
Aa2	0.14	0.65	-0.51	0.02	10.97	5.89	-0.00	-0.14
Aa3	0.22	0.65	-0.43	0.02	8.62	4.22	-0.00	-0.25
A1	0.49	1.56	-1.07	0.03	6.94	3.39	0.00	0.72
A2	1.34	1.80	-0.46	0.09	6.49	3.54	0.01	1.82
A3	1.48	2.13	-0.65	0.11	7.46	3.76	0.01	1.22
Baa1	1.96	2.29	-0.33	0.14	7.32	3.60	0.01	2.08
Baa2	2.34	2.66	-0.32	0.18	7.76	3.91	0.00	0.69
Baa3	2.41	2.14	0.27	0.13	5.54	2.79	0.01	1.04
Ba1	1.58	2.57	-1.00	0.05	4.21	3.24	-0.02	-2.89
Ba2	2.07	2.89	-0.82	0.05	3.16	2.89	-0.02	-2.67
Ba3	3.64	4.48	-0.85	0.09	3.14	3.14	-0.02	-3.08
B1	2.99	3.44	-0.45	0.06	2.84	4.41	-0.01	-1.62
B2	3.67	4.53	-0.86	0.06	2.83	4.95	-0.03	-4.11
B3	2.74	2.91	-0.16	0.07	2.95	5.10	-0.01	-0.85
Caa1	1.19	1.39	-0.20	0.02	2.57	6.27	-0.00	-0.59
Caa2	1.28	1.12	0.15	0.03	3.02	8.35	0.01	0.79
Caa3	0.15	0.11	0.04	0.00	2.81	7.85	0.00	0.31
Ca	0.04	0.16	-0.12	0.00	1.91	13.27	-0.00	-0.49
C	0.04	0.03	0.01	0.01	12.47	36.34	-0.00	-0.05
WR	0.44	0.43	0.01	0.02	4.84	26.49	0.03	4.44
NR	0.06	0.03	0.04	0.06	115.15	250.06	0.06	9.80
Not Rated	13.23	3.53	9.69	0.19	2.19	3.97	0.39	61.22



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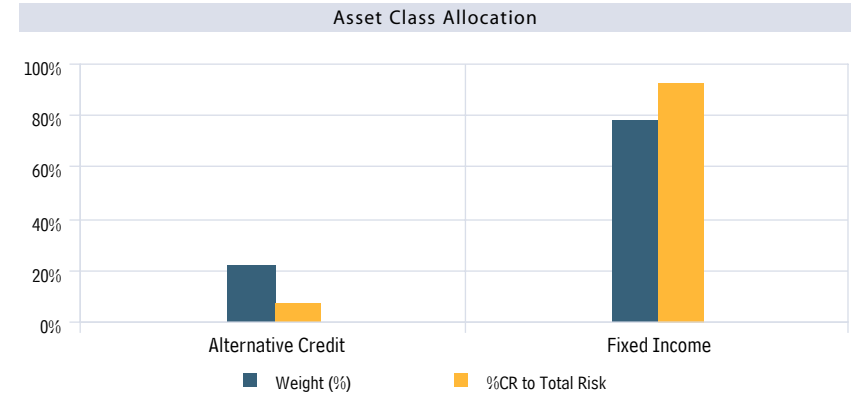
# BarraOne Fixed Income Summary

COMPANY: NYCRS - NYCERS  
PORTFOLIO: Public  
BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

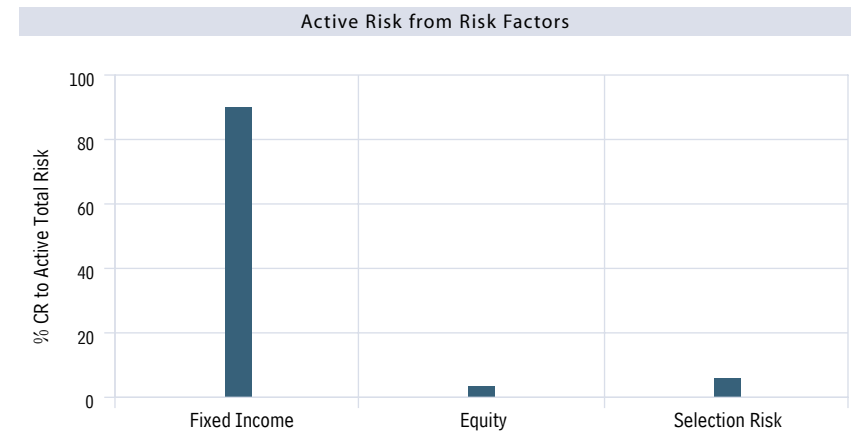
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	2.72	<b>Total</b>	<b>21,971,055,122</b>	<b>100.00</b>	<b>2.72</b>	<b>2.72</b>	<b>100.00</b>
Benchmark Risk	3.00	Alternative Credit	4,903,588,057	22.32	4.05	0.20	7.34
Active Risk	0.37	Fixed Income	17,067,467,065	77.68	3.43	2.52	92.66
Portfolio Beta	0.90						
Cont. to Eff. Duration	6.11						
Convexity	0.65						
Yield to Worst (%)	2.34						
OAS to Swap (bp)	93.35						



## Risk Factor Breakdown

Risk Source	Risk Decomposition			Risk Decomposition		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>2.72</b>	<b>100.00</b>	<b>1.00</b>	<b>0.37</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	2.72	100.00	1.00	0.37	99.98	1.00
Common Factor Risk	2.71	99.89	1.00	0.35	93.73	0.97
Equity	0.01	0.27	0.04	0.01	3.54	0.21
Style	-0.00	-0.01	-0.01	0.02	4.22	0.25
Industry	0.01	0.27	0.04	-0.00	-0.68	-0.07
Fixed Income	2.71	99.62	1.00	0.33	90.19	0.95
Nominal Rates	2.27	83.72	0.86	0.19	51.21	0.45
Real Rates	0.43	15.91	0.87	-0.06	-16.74	-0.53
Credit	-0.00	-0.01	-0.00	0.21	55.72	0.55
Selection Risk	0.00	0.11	0.03	0.02	6.25	0.25



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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Public  
BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

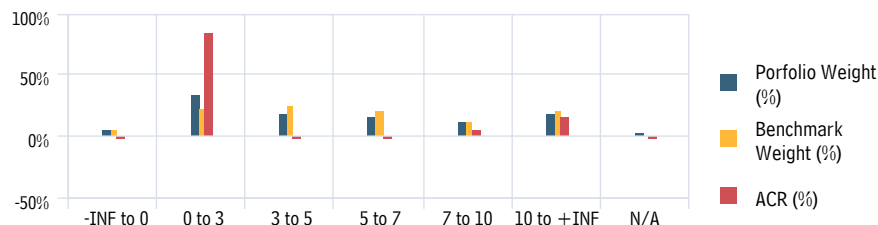
CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

## Portfolio by Factor Breakdowns

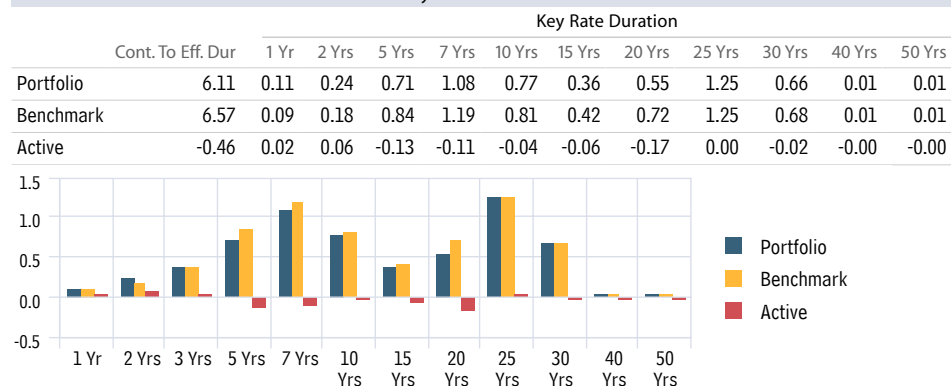
Spread Factor	Volatility	Top 10 Spread Factor								
		Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR	Active Port	to TR	to AR	to AR%	
US Conventional 30 yr Mortgage	0.35	0.26	0.50	-0.24	-0.00	-0.47	0.02	0.04	10.80	
US Consumer Discretionary B	1.76	0.07	0.09	-0.02	-0.01	-0.44	0.00	0.02	4.40	
US Energy CCC	7.43	0.00	0.01	-0.01	-0.02	-0.28	-0.00	0.01	3.85	
US GNMA 30 yr Mortgage Spread	0.30	0.11	0.21	-0.10	-0.00	-0.37	0.00	0.01	2.91	
US Financials BB	1.11	0.02	0.04	-0.02	-0.00	-0.40	0.00	0.01	2.49	
US Telecom B	1.90	0.03	0.04	-0.01	-0.01	-0.40	-0.00	0.01	2.43	
US Health Care CCC	2.43	0.01	0.02	-0.01	-0.01	-0.39	0.00	0.01	2.30	
US Telecom CCC	4.46	0.00	0.01	-0.00	-0.02	-0.37	0.00	0.01	1.88	
US Consumer Discretionary CCC	3.16	0.01	0.02	-0.01	-0.01	-0.40	0.00	0.01	1.74	
US Consumer Discretionary BB	0.92	0.02	0.04	-0.01	-0.00	-0.42	-0.00	0.01	1.58	

Term Structure	Volatility	Top 10 Term Structure								
		Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR	Active Port	to TR	to AR	to AR%	
US Shift	0.49	4.97	5.70	-0.73	-0.00	-0.41	2.05	0.15	39.20	
US Twist	0.17	2.09	2.60	-0.51	-0.00	-0.40	0.20	0.03	9.29	
US Implied Volatility	16.23	-0.00	-0.00	0.00	0.07	0.43	0.01	0.01	2.08	
US Butterfly	0.12	-0.15	-0.36	0.21	0.00	0.17	0.01	0.00	1.21	
US Inflation-protected	0.31	0.41	0.32	0.09	0.00	0.02	0.01	0.00	0.14	
US Municipal Butterfly	0.16	-0.00	-0.00	-0.00	0.00	0.05	0.00	-0.00	-0.01	
US Municipal Twist	0.23	0.01	0.00	0.01	-0.00	-0.23	0.00	-0.00	-0.10	
US Inflation-protected	0.14	-0.25	-0.19	-0.06	0.00	0.13	0.01	-0.00	-0.31	
US Municipal Shift	0.43	0.01	0.00	0.01	-0.00	-0.50	0.00	-0.00	-0.46	
US Inflation-protected	0.46	1.13	0.87	0.26	-0.00	-0.50	0.41	-0.06	-16.56	

%CR to Active Risk by Duration Buckets



Key Rate Duration



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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Public  
BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>2.72</b>	<b>0.37</b>	<b>100.00</b>	<b>0.00</b>
United States	94.36	91.15	3.21	2.78	0.34	91.30	-0.02
Canada	1.26	1.66	-0.40	3.49	-0.00	-0.79	-0.02
United Kingdom	0.93	1.18	-0.25	3.08	0.01	1.60	-0.03
Luxembourg	0.52	0.55	-0.03	6.36	0.00	0.35	-0.02
Netherlands	0.43	0.74	-0.31	4.98	0.00	0.18	-0.02
Ireland	0.31	0.21	0.10	2.65	0.00	0.59	-0.02
Jersey	0.23	0.02	0.20	0.00	0.01	1.40	-0.00
Germany	0.21	0.39	-0.18	1.81	-0.00	-0.74	-0.01
Mexico	0.20	0.27	-0.07	7.02	0.00	0.59	-0.05
France	0.16	0.31	-0.14	5.56	-0.00	-0.18	-0.02
Switzerland	0.13	0.13	-0.00	2.60	0.00	0.42	-0.02
Colombia	0.11	0.09	0.02	6.45	0.00	0.11	-0.04
World	0.11	0.41	-0.31	3.94	-0.00	-0.98	-0.01
Belgium	0.10	0.16	-0.06	7.79	0.00	0.09	-0.04
Israel	0.09	0.03	0.06	4.05	0.00	0.42	-0.02
Australia	0.09	0.15	-0.06	6.74	-0.00	-0.23	-0.02
Spain	0.08	0.07	0.01	2.31	0.00	0.41	-0.02
Indonesia	0.07	0.13	-0.06	9.50	0.00	0.14	-0.05
United Arab Emirates	0.07	0.03	0.03	4.66	0.00	0.32	-0.02
Caymans	0.06	0.07	-0.01	8.08	-0.00	-0.04	-0.02
Brazil	0.06	0.07	-0.01	7.23	0.00	0.00	-0.04
Japan	0.06	0.34	-0.28	2.44	-0.00	-0.77	-0.01
New Zealand	0.06	0.04	0.01	4.86	0.00	0.06	-0.01
Chile	0.05	0.03	0.03	4.67	-0.00	-0.01	-0.02
Bermuda	0.04	0.06	-0.02	6.82	0.00	0.15	-0.03
Italy	0.04	0.23	-0.20	10.13	0.00	1.24	-0.05
Norway	0.03	0.07	-0.04	2.32	-0.00	-0.08	-0.01
S. Korea	0.03	0.06	-0.03	4.08	-0.00	-0.10	-0.02
Panama	0.02	0.05	-0.03	4.50	0.00	0.21	-0.04
Venezuela	0.02	0.00	0.02	2.26	0.00	0.08	-0.00



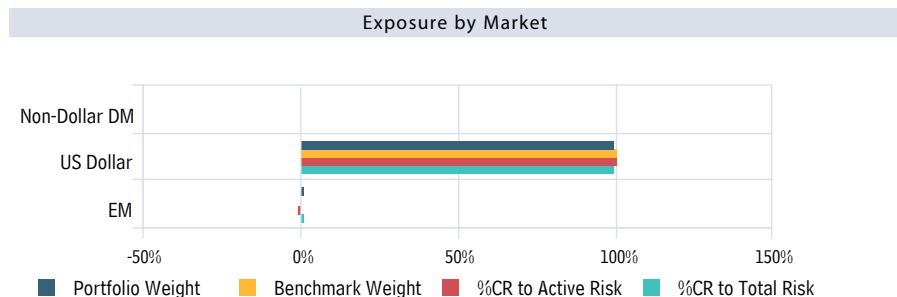
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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Public  
BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

## Portfolio Allocation by Currency



Developed Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	21,971,049,015.39	100.00	100.00
Swiss Franc	0.00	0.00	0.00
Danish Krone	0.00	0.00	0.00
Euro	0.00	0.00	0.00

Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
Korean Won	6,042.42	-0.00	0.00
New Taiwan Dollar	64.39	0.00	0.00

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)			Active	Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active						
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>2.72</b>	<b>2.72</b>	<b>100.00</b>	<b>0.37</b>	<b>100.00</b>	
US Dollar	100.00	100.00	-0.00	2.72	2.72	100.00	0.37	100.00	
Korean Won	0.00	0.00	0.00	6.81	0.00	0.00	-0.00	-0.00	
New Taiwan Dollar	0.00	0.00	0.00	3.55	0.00	0.00	0.00	0.00	
Swiss Franc	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Danish Krone	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Euro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	



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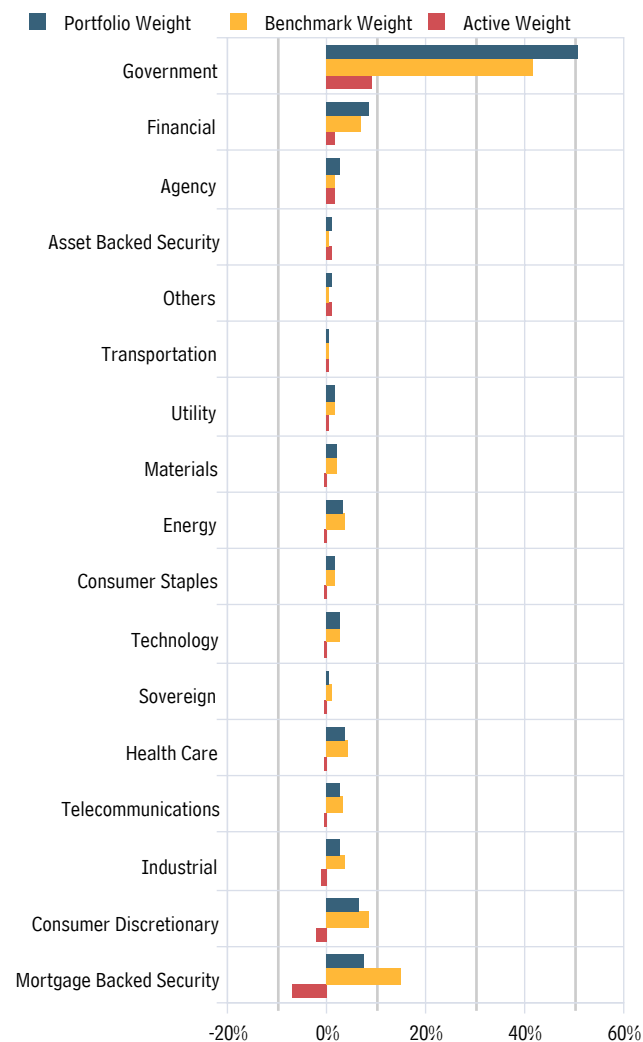
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BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

## Portfolio Allocation by Bond Sector

Sector	Weight (%)			Cont. To Eff. Dur	Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>6.11</b>	<b>2.72</b>	<b>0.37</b>	<b>100.00</b>	<b>0.00</b>
Government	50.77	41.68	9.08	4.28	4.06	0.22	58.86	-0.02
Financial	8.45	6.95	1.50	0.26	2.13	0.06	17.39	-0.02
Mortgage Backed Security	7.80	14.98	-7.18	0.30	2.72	-0.05	-12.37	-0.02
Consumer Discretionary	6.26	8.53	-2.28	0.18	3.61	0.01	1.86	-0.02
Health Care	3.55	4.33	-0.78	0.14	3.51	0.01	1.76	-0.03
Energy	3.24	3.58	-0.34	0.15	7.04	0.02	4.40	-0.04
Agency	2.92	1.46	1.47	0.18	3.47	0.01	3.49	-0.02
Industrial	2.82	3.80	-0.98	0.07	3.45	-0.01	-1.44	-0.02
Technology	2.47	2.96	-0.49	0.11	4.15	0.01	3.43	-0.03
Telecommunications	2.44	3.25	-0.81	0.09	4.59	0.01	2.89	-0.03
Materials	2.18	2.37	-0.19	0.06	4.30	0.00	0.45	-0.02
Utility	1.66	1.63	0.04	0.09	3.04	0.01	1.79	-0.02
Consumer Staples	1.43	1.83	-0.39	0.06	2.63	0.00	0.52	-0.02
Asset Backed Security	1.26	0.11	1.15	0.03	2.26	0.02	6.01	-0.00
Others	0.96	0.02	0.94	0.01	0.22	0.02	6.05	-0.00
Transportation	0.76	0.70	0.05	0.03	2.87	0.00	0.45	-0.02
Commercial Mortgage Backed	0.36	0.07	0.30	0.01	2.66	0.00	1.32	-0.01
Sovereign	0.35	1.08	-0.73	0.02	5.11	0.02	4.81	-0.04
Local/Provincial	0.19	0.25	-0.06	0.02	5.06	-0.00	-0.71	-0.02
Supranational	0.11	0.41	-0.31	0.01	3.94	-0.00	-0.98	-0.01
Covered bond	0.00	0.00	-0.00	0.00	0.48	-0.00	-0.00	-0.00
Collateralized Debt Obligat	0.00	0.00	-0.00	0.00	0.00	-0.00	-0.00	-0.00
Corporation	0.00	0.00	-0.00	0.00	0.00	-0.00	-0.01	-0.01



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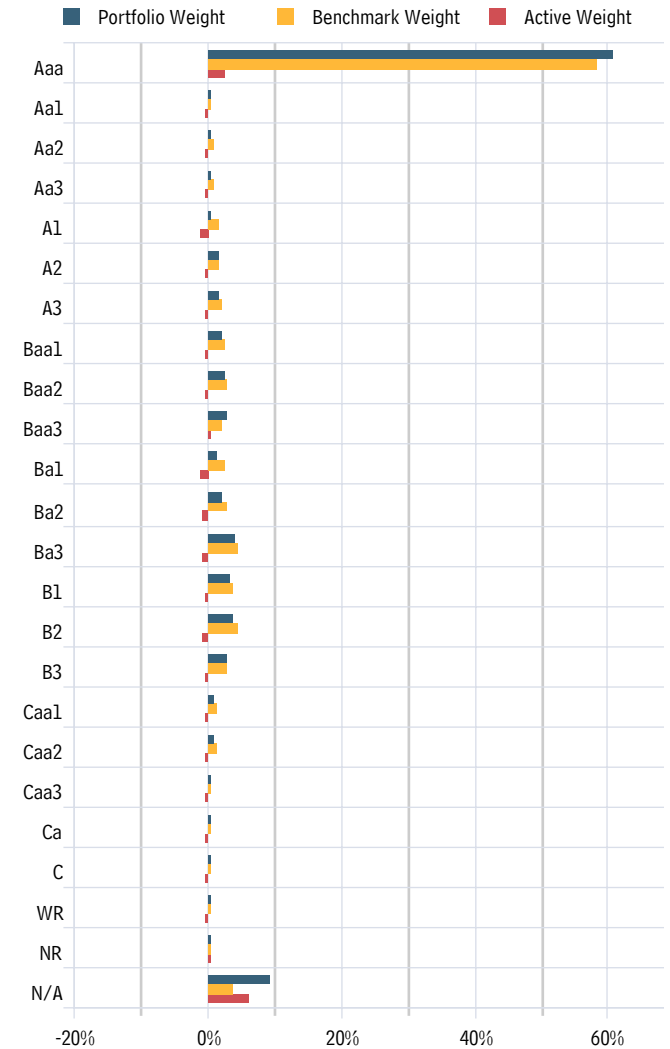
# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
PORTFOLIO: Public  
BENCHMARK: Fixed Income  
POSITIONS: 9,516  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019  
MARKET VALUE: 21,971,055,122  
ACCEPTED: 9,456

## Portfolio Allocation by Moody's Rating

Rating	Weight (%)			Cont. To Eff. Dur	Spread Duration	Total Risk	Active Risk CR	%CR to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>6.11</b>	<b>6.40</b>	<b>2.72</b>	<b>0.37</b>	<b>100.00</b>
Aaa	60.56	58.22	2.34	4.76	8.02	3.81	0.16	44.17
Aa1	0.23	0.28	-0.04	0.02	8.73	5.60	-0.00	-0.86
Aa2	0.19	0.65	-0.45	0.02	9.64	4.75	-0.00	-0.95
Aa3	0.24	0.65	-0.41	0.02	8.62	4.22	-0.00	-0.26
A1	0.53	1.56	-1.03	0.04	6.94	3.39	0.00	0.62
A2	1.44	1.80	-0.36	0.09	6.49	3.54	-0.00	-0.68
A3	1.60	2.13	-0.53	0.12	7.46	3.76	0.01	1.76
Baa1	2.12	2.29	-0.17	0.15	7.33	3.61	0.01	2.27
Baa2	2.55	2.66	-0.11	0.20	7.84	3.95	0.00	1.28
Baa3	2.62	2.14	0.48	0.14	5.56	2.81	0.01	3.15
Ba1	1.37	2.57	-1.20	0.05	4.25	3.30	0.01	1.88
Ba2	2.17	2.89	-0.72	0.06	3.18	2.92	-0.01	-1.69
Ba3	3.82	4.48	-0.66	0.09	3.11	3.09	-0.00	-0.47
B1	3.06	3.44	-0.39	0.06	2.83	4.32	-0.01	-1.64
B2	3.59	4.53	-0.94	0.06	2.86	5.03	-0.01	-1.74
B3	2.68	2.91	-0.23	0.07	2.92	5.07	0.00	1.14
Caa1	0.92	1.39	-0.47	0.02	2.34	5.43	0.01	2.98
Caa2	0.63	1.12	-0.49	0.02	3.29	10.27	0.01	3.93
Caa3	0.02	0.11	-0.09	0.00	2.22	7.85	0.00	0.25
Ca	0.01	0.16	-0.14	0.00	2.87	19.35	0.00	0.63
C	0.00	0.03	-0.03	0.00	2.04	15.77	0.00	0.09
WR	0.18	0.43	-0.25	0.00	2.48	3.18	-0.00	-1.25
NR	0.04	0.03	0.01	0.00	1.31	0.85	0.00	0.22
Not Rated	9.42	3.53	5.89	0.13	1.81	1.99	0.17	45.18



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# BarraOne Fixed Income Summary

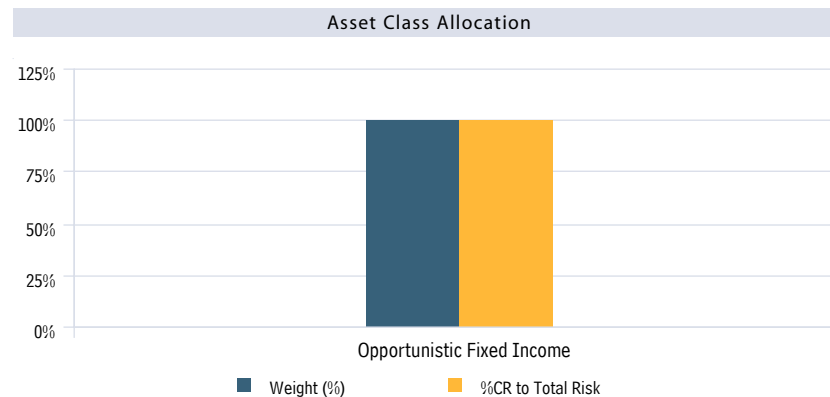
COMPANY: NYCERS - NYCERS  
PORTFOLIO: Alternative  
BENCHMARK: FI\_Alternative  
POSITIONS: 20  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019

ACCEPTED: 15

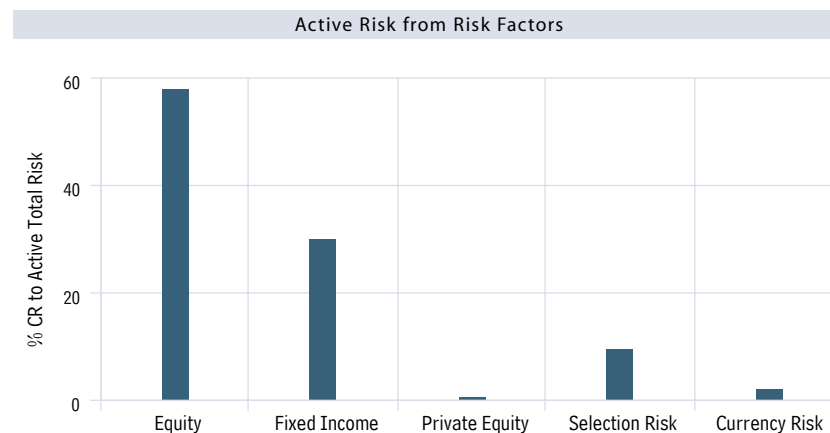
## Total Plan Summary

Risk Summary		Asset Class Contribution to Risk					
Statistic	Value	Asset Class	Mkt Value	Weight (%)	Total Risk	Risk Contribution	%CR to TR
Total Risk	7.74	<b>Total</b>	<b>1,714,481,898</b>	<b>100.00</b>	<b>7.74</b>	<b>7.74</b>	<b>100.00</b>
Benchmark Risk	3.87	Opportunistic Fixed Income	1,714,481,898	100.00	7.74	7.74	100.00
Active Risk	5.73						
Portfolio Beta	1.40						
Cont. to Eff. Duration	3.05						
Convexity	3.35						
Yield to Worst (%)	infinity						
OAS to Swap (bp)	812.80						



## Risk Factor Breakdown

Risk Source	Portfolio			Active		
	Risk Contribution	% Risk	Correlation	Risk Contribution	% Risk	Correlation
<b>Total Risk</b>	<b>7.74</b>	<b>100.00</b>	<b>1.00</b>	<b>5.73</b>	<b>100.00</b>	<b>1.00</b>
Local Market Risk	7.59	98.15	0.99	5.61	97.88	0.99
Common Factor Risk	7.18	92.83	0.97	5.05	88.13	0.94
Equity	3.90	50.36	0.84	3.31	57.75	0.71
Style	1.05	13.57	0.47	1.08	18.85	0.48
Industry	2.85	36.79	0.78	2.23	38.91	0.61
Fixed Income	3.28	42.37	0.79	1.73	30.20	0.48
Nominal Rates	-0.37	-4.73	-0.29	-0.07	-1.24	-0.17
Credit	3.64	47.10	0.80	1.80	31.44	0.50
Private Equity	0.01	0.10	0.03	0.01	0.18	0.04
Selection Risk	0.41	5.32	0.23	0.56	9.75	0.31
Currency Risk	0.14	1.85	0.15	0.12	2.12	0.13



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# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Alternative  
 BENCHMARK: FI\_Alternative  
 POSITIONS: 20  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019

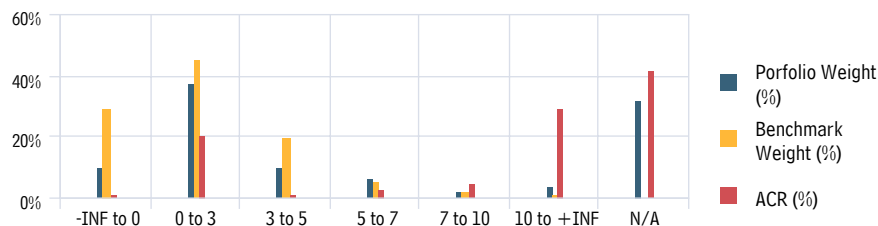
ACCEPTED: 15

## Portfolio by Factor Breakdowns

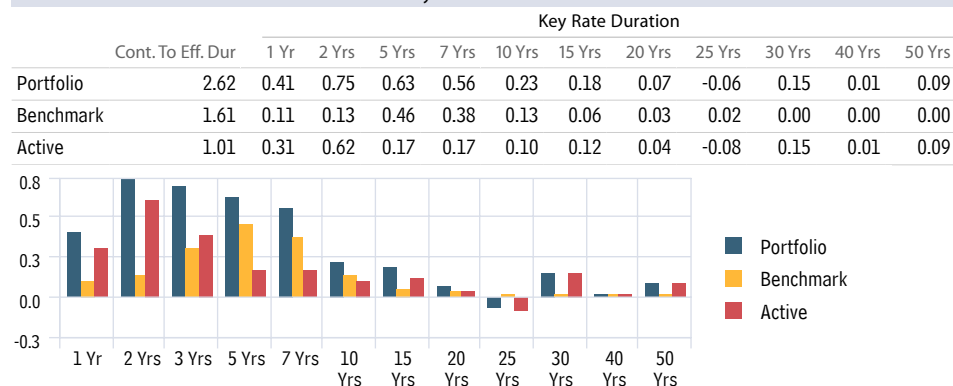
Spread Factor	Top 10 Spread Factor									
	Volatility	Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR		Active Port	to TR	to AR	to AR%
US Swap Shift	0.14	24.80	2.14	22.66	0.00	0.62	1.63	1.98	34.64	
US Swap Butterfly	0.06	-12.55	-1.50	-11.05	-0.00	-0.17	0.12	0.12	2.07	
US CCC	2.79	0.20	0.02	0.18	0.01	0.23	0.36	0.11	2.01	
US Consumer Discretionary CCC	3.16	0.17	0.06	0.11	0.01	0.23	0.31	0.08	1.34	
US Industrials CCC	2.37	0.12	0.05	0.07	0.01	0.21	0.17	0.04	0.63	
US Materials CCC	3.07	0.05	0.01	0.04	0.00	0.15	0.08	0.02	0.32	
EUR Swap Shift	0.16	0.58	0.00	0.58	0.00	0.14	0.01	0.01	0.21	
GB Swap Shift	0.24	0.16	0.00	0.16	0.00	0.30	0.01	0.01	0.19	
US Swap Twist	0.08	-6.38	-0.52	-5.87	-0.00	-0.02	0.06	0.01	0.15	
US Utilities BB	0.84	0.12	0.05	0.07	0.00	0.13	0.05	0.01	0.13	

Term Structure	Top 10 Term Structure									
	Volatility	Exposure (Residual)				Correlation	Contribution (Residual)			
		Portfolio	Benchmark	Active	MCAR		Active Port	to TR	to AR	to AR%
US Twist	0.17	-1.53	-0.44	-1.09	-0.00	-0.09	0.03	0.02	0.29	
EUR Implied Volatility	11.63	-0.01	0.00	-0.01	-0.03	-0.25	0.02	0.02	0.28	
FR Shift	0.38	-0.03	0.00	-0.03	-0.00	-0.11	0.00	0.00	0.02	
US Butterfly	0.12	-0.95	-1.05	0.09	0.00	0.05	-0.01	0.00	0.01	
GB Twist	0.17	-0.01	0.00	-0.01	-0.00	-0.15	0.00	0.00	0.00	
SE Twist	0.22	-0.00	0.00	-0.00	-0.00	-0.08	0.00	0.00	0.00	
ES Shift	0.46	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	
US Inflation-protected	0.46	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	
NO Shift	0.35	-0.00	0.00	-0.00	-0.00	-0.11	0.00	0.00	0.00	
CA Twist	0.15	-0.00	0.00	-0.00	-0.00	-0.08	0.00	0.00	0.00	

%CR to Active Risk by Duration Buckets



Key Rate Duration



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# BarraOne Fixed Income Summary

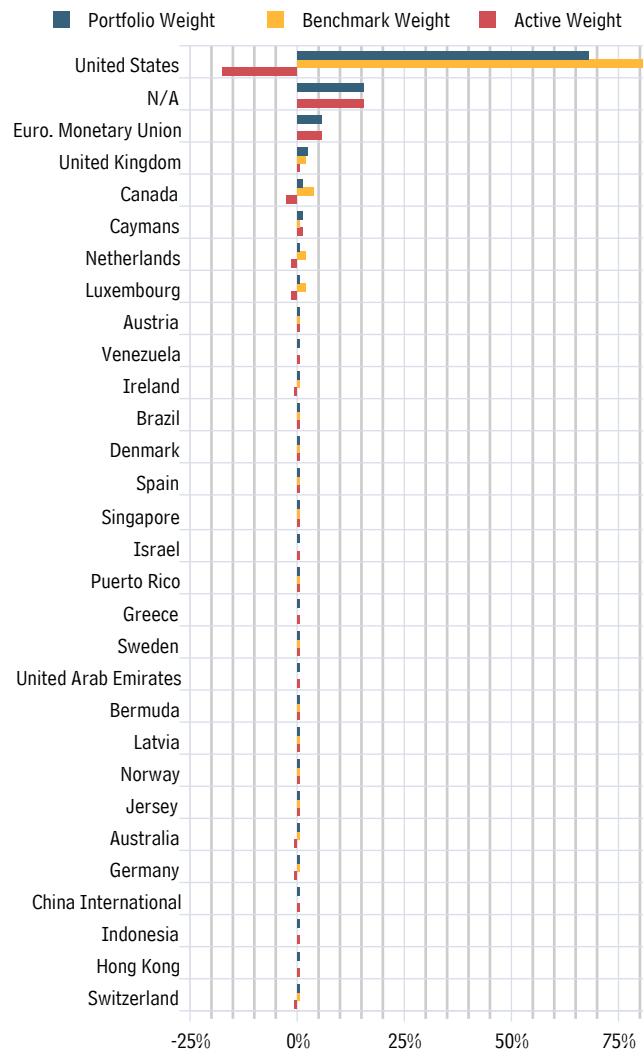
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BENCHMARK: FI\_Alternative  
POSITIONS: 20  
MODEL: BIM303L

CURRENCY: USD  
ANALYSIS DATE: June 30, 2019

ACCEPTED: 15

## Top 30 Countries by Weight%

Country of Exposure	Weight (%)			Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active				
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>7.74</b>	<b>5.73</b>	<b>100.00</b>	<b>0.06</b>
United States	68.24	85.73	-17.48	9.09	4.80	83.86	0.03
N/A	15.72	0.00	15.72	9.45	0.67	11.74	0.05
Euro. Monetary Union	5.42	0.00	5.42	6.46	-0.01	-0.14	0.01
United Kingdom	2.22	2.08	0.15	8.43	0.03	0.59	0.02
Canada	1.37	4.06	-2.69	16.80	0.05	0.89	0.02
Caymans	1.21	0.21	1.00	8.67	0.03	0.47	0.03
Netherlands	0.79	1.90	-1.12	10.05	0.00	0.00	0.01
Luxembourg	0.76	2.14	-1.38	35.81	0.01	0.26	0.02
Austria	0.72	0.02	0.70	19.91	0.04	0.74	0.07
Venezuela	0.46	0.00	0.46	14.96	-0.00	-0.03	0.01
Ireland	0.36	0.51	-0.14	10.33	0.00	0.04	0.01
Brazil	0.33	0.09	0.24	9.13	0.01	0.15	0.03
Denmark	0.32	0.03	0.29	12.24	0.00	0.04	0.02
Spain	0.31	0.06	0.25	14.11	0.00	0.03	0.02
Singapore	0.28	0.09	0.19	4.01	-0.00	-0.04	0.00
Israel	0.25	0.00	0.25	8.18	-0.00	-0.02	0.01
Puerto Rico	0.25	0.01	0.24	13.79	0.01	0.20	0.06
Greece	0.22	0.00	0.22	29.39	0.02	0.27	0.08
Sweden	0.19	0.08	0.11	28.50	0.00	0.06	0.02
United Arab Emirates	0.13	0.00	0.13	9.80	-0.00	-0.01	0.01
Bermuda	0.13	0.05	0.07	9.81	0.00	0.00	0.01
Latvia	0.11	0.01	0.09	9.23	-0.00	-0.00	0.01
Norway	0.09	0.06	0.03	52.86	0.01	0.16	0.06
Jersey	0.06	0.06	0.00	338.77	0.02	0.31	0.17
Australia	0.03	0.34	-0.32	7.57	0.00	0.01	0.01
Germany	0.02	0.40	-0.38	89.37	0.00	0.04	0.01
China International	0.01	0.00	0.01	12.42	0.00	0.00	0.02
Indonesia	0.01	0.00	0.01	5.87	-0.00	-0.00	0.00
Hong Kong	0.01	0.00	0.01	16.07	-0.00	-0.00	0.00
Switzerland	0.00	0.18	-0.18	73.68	-0.00	-0.01	0.01



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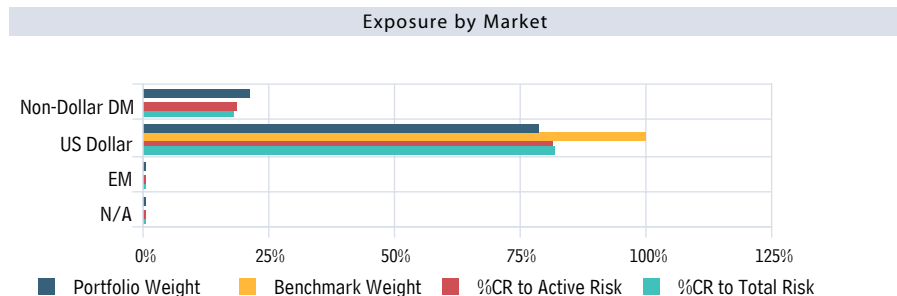
# BarraOne Fixed Income Summary

COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Alternative  
 BENCHMARK: FI\_Alternative  
 POSITIONS: 20  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019

ACCEPTED: 15

## Portfolio Allocation by Currency



Developed Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
US Dollar	1,350,222,918.73	85.13	81.76
Euro	322,290,242.47	13.20	16.12
British Pound Sterling	22,623,600.23	0.64	0.88
Canadian Dollar	8,863,147.65	0.82	0.90
Danish Krone	5,485,251.98	0.04	0.11

Emerging Market Currency			
Top Five	Exposure \$	CR to AR (%)	CR to TR (%)
CNH	234,181.43	0.00	0.01
Mexican Peso	0.05	0.00	0.00

## Top 15 Currencies by Weight%

Currency of Exposure	Weight (%)			Total Risk	CR to TR	CR to TR (%)	CR to AR	CR to AR (%)
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>7.74</b>	<b>7.74</b>	<b>100.00</b>	<b>5.73</b>	<b>100.00</b>
US Dollar	78.75	100.00	-21.25	8.23	6.32	81.76	4.88	85.13
Euro	18.80	0.00	18.80	9.56	1.25	16.12	0.76	13.20
British Pound Sterling	1.32	0.00	1.32	12.64	0.07	0.88	0.04	0.64
Canadian Dollar	0.52	0.00	0.52	34.46	0.07	0.90	0.05	0.82
Danish Krone	0.32	0.00	0.32	12.24	0.01	0.11	0.00	0.04
Swedish Krona	0.16	0.00	0.16	8.54	0.00	0.05	0.00	0.02
Norwegian Krone	0.10	0.00	0.10	51.47	0.01	0.17	0.01	0.15
CNH	0.01	0.00	0.01	12.42	0.00	0.01	0.00	0.00
Australian Dollar	0.01	0.00	0.01	11.65	0.00	0.01	0.00	0.00
Singapore Dollar	0.01	0.00	0.01	3.96	0.00	0.00	-0.00	-0.00
Swiss Franc	0.00	0.00	0.00	73.68	0.00	0.00	0.00	0.00
Mexican Peso	0.00	0.00	0.00	11.29	0.00	0.00	0.00	0.00
Japanese Yen	0.00	0.00	0.00	7.32	-0.00	-0.00	-0.00	-0.00



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# BarraOne Fixed Income Summary

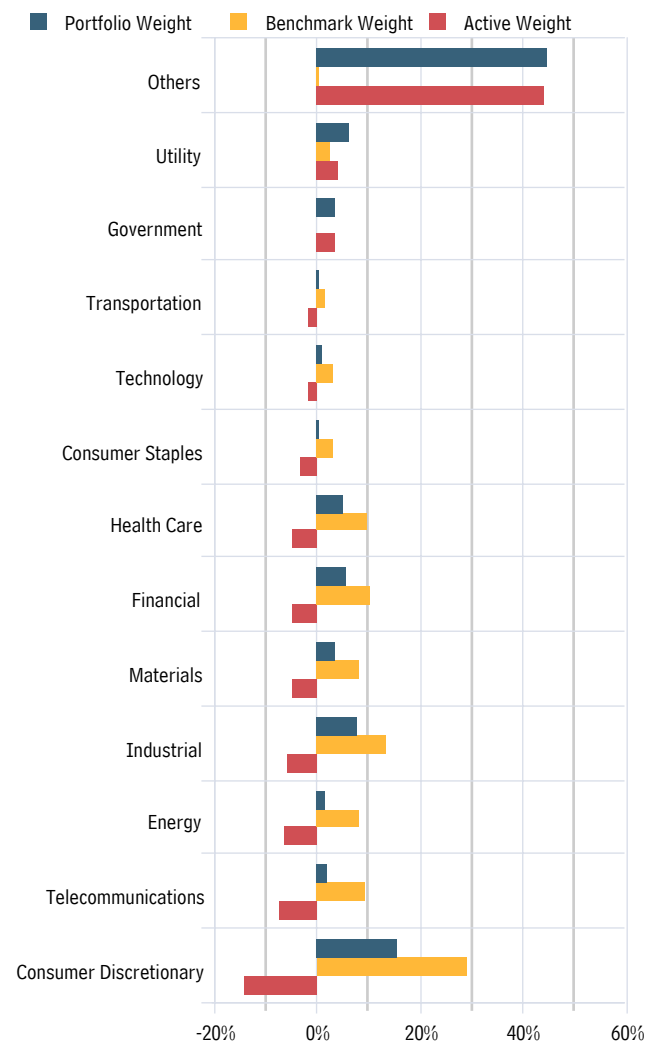
COMPANY: NYCERS - NYCERS  
 PORTFOLIO: Alternative  
 BENCHMARK: FI\_Alternative  
 POSITIONS: 20  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019

ACCEPTED: 15

## Portfolio Allocation by Bond Sector

Sector	Weight (%)			Cont. To Eff. Dur	Total Risk	Active Risk CR	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>2.62</b>	<b>7.74</b>	<b>5.73</b>	<b>100.00</b>	<b>0.06</b>
Others	44.42	0.13	44.29	0.49	11.34	3.49	60.91	0.04
Consumer Discretionary	15.34	29.17	-13.84	0.18	4.83	0.12	2.12	0.01
Industrial	7.90	13.55	-5.65	0.11	5.73	0.10	1.68	0.01
Utility	6.37	2.47	3.90	0.23	24.70	0.48	8.44	0.06
Financial	5.84	10.53	-4.68	0.17	6.53	0.08	1.40	0.02
Health Care	5.29	9.94	-4.65	0.07	4.00	0.03	0.46	0.01
Government	3.78	0.00	3.78	0.38	5.54	-0.07	-1.23	-0.00
Materials	3.59	8.29	-4.71	0.10	10.73	0.04	0.64	0.01
Telecommunications	2.20	9.58	-7.38	0.07	6.83	0.02	0.27	0.01
Energy	1.66	8.12	-6.46	-0.02	11.85	-0.04	-0.71	0.02
Technology	1.20	2.95	-1.75	0.02	4.25	0.00	0.03	0.01
Sovereign	0.44	0.00	0.44	0.00	15.41	-0.00	-0.05	0.00
Mortgage Backed Security	0.43	0.00	0.43	0.02	2.77	-0.00	-0.04	0.00
Collateralized Loan Obligat	0.37	0.00	0.37	0.84	603.25	1.43	25.02	3.87
Local/Provincial	0.29	0.12	0.17	0.02	11.99	0.01	0.14	0.05
Transportation	0.22	1.78	-1.57	0.00	6.69	0.01	0.13	0.01
Consumer Staples	0.20	3.25	-3.05	-0.09	47.16	0.03	0.52	0.01
Asset Backed Security	0.17	0.08	0.10	0.01	8.37	0.01	0.11	0.03
Commercial Mortgage Backed	0.17	0.00	0.17	0.01	11.46	0.00	0.07	0.03
Collateralized Debt Obligat	0.11	0.00	0.11	0.01	16.05	0.00	0.06	0.04
Agency	0.02	0.00	0.02	0.00	56.81	0.00	0.03	0.09
Corporation	0.00	0.03	-0.03	0.00	0.00	0.00	0.00	0.01



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# BarraOne Fixed Income Summary

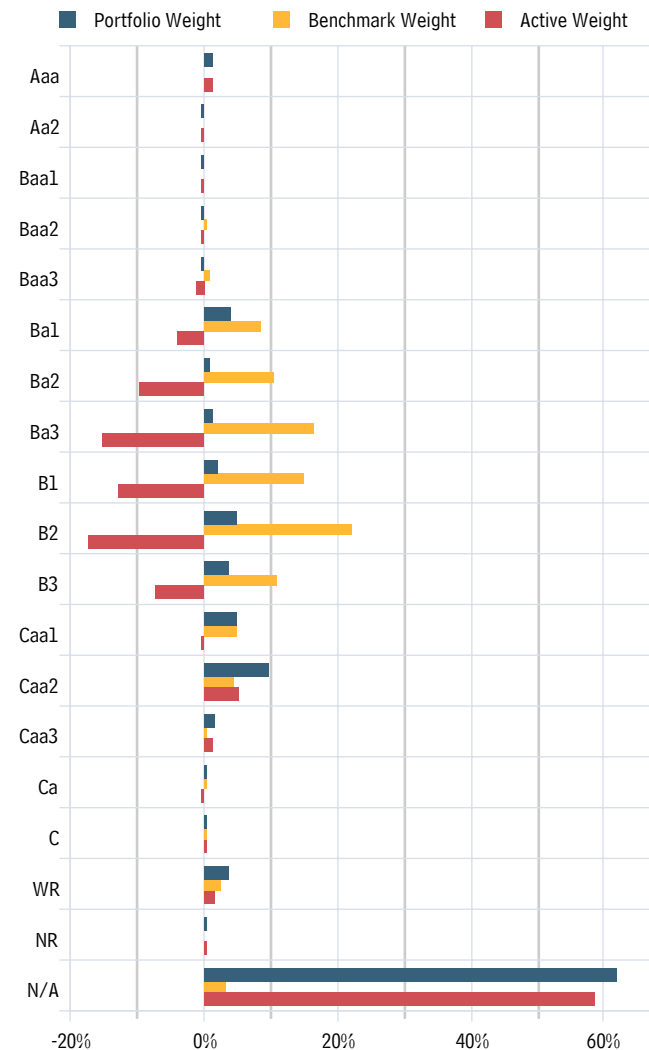
COMPANY: NYCERS - NYCERS  
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 BENCHMARK: FI\_Alternative  
 POSITIONS: 20  
 MODEL: BIM303L

CURRENCY: USD  
 ANALYSIS DATE: June 30, 2019

ACCEPTED: 15

## Portfolio Allocation by Moody's Rating

Rating	Weight (%)			Cont. To Eff. Dur	Spread Duration	Total Risk	Active Risk CR	%CR to Active TR
	Portfolio	Benchmark	Active					
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>-0.00</b>	<b>2.62</b>	<b>5.29</b>	<b>7.74</b>	<b>5.73</b>	<b>100.00</b>
Aaa	1.37	0.00	1.37	0.15	11.10	5.90	-0.03	-0.45
Aa2	-0.53	0.00	-0.53	-0.03	4.72	6.39	0.00	0.02
Baa1	-0.08	0.00	-0.08	-0.01	9.11	11.81	0.00	0.01
Baa2	-0.31	0.05	-0.36	-0.05	16.08	10.13	0.01	0.11
Baa3	-0.28	0.78	-1.06	-0.03	8.66	17.11	0.00	0.09
Ba1	4.22	8.35	-4.13	0.03	4.06	4.70	0.01	0.13
Ba2	0.82	10.37	-9.55	0.02	2.62	4.19	0.03	0.52
Ba3	1.29	16.49	-15.20	0.04	4.16	8.82	0.05	0.88
B1	2.10	15.02	-12.92	0.04	3.03	6.55	0.01	0.16
B2	4.73	21.95	-17.22	0.05	2.55	4.36	-0.02	-0.34
B3	3.59	11.00	-7.40	0.09	3.28	5.93	-0.01	-0.12
Caa1	4.66	4.89	-0.23	0.08	3.16	10.07	0.03	0.60
Caa2	9.59	4.47	5.13	0.13	2.79	7.92	0.05	0.81
Caa3	1.75	0.47	1.27	0.01	2.90	8.54	0.02	0.27
Ca	0.35	0.52	-0.17	0.01	1.39	11.81	0.00	0.02
C	0.60	0.08	0.52	0.07	12.54	36.59	0.02	0.33
WR	3.77	2.22	1.55	0.23	6.30	41.12	0.53	9.17
NR	0.38	0.00	0.38	0.84	271.66	593.72	1.43	25.03
Not Rated	61.99	3.36	58.63	0.94	3.86	8.36	3.60	62.75



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## APPENDICES:

**Basket Clause**

<b>Basket Limit</b>	<b>25.00%</b>
<b>Basket Consumed</b>	<b>21.67%</b>
<b>Remaining Capacity</b>	<b>3.33%</b>

	Basket-Eligible Assets*			Basket Assets	Total
	Non-Basket Assets	Non-Contributing	Contributing		
<b>FIXED INCOME</b>	<b>32.63%</b>	<b>3.83%</b>	<b>0.02%</b>	<b>5.41%</b>	<b>41.89%</b>
<b>U.S. Fixed</b>	<b>16.29%</b>	<b>3.24%</b>	<b>0.02%</b>	<b>5.06%</b>	<b>24.61%</b>
Cash/Equivalent	9.01%	---	---	0.00%	9.01%
TIPS	4.04%	---	---	---	4.04%
Convertible Bonds	1.01%	0.01%	0.01%	0.03%	1.06%
OFI	0.03%	0.12%	0.01%	2.76%	2.92%
High Yield	0.27%	3.00%	0.00%	0.76%	4.04%
Bank Loans	0.08%	0.05%	0.00%	1.49%	1.61%
ETI Investments	1.16%	---	---	0.02%	1.18%
Core/Core Plus	0.68%	0.06%	---	0.01%	0.75%
<b>U.S. Structured</b>	<b>16.34%</b>	<b>0.59%</b>	<b>---</b>	<b>0.35%</b>	<b>17.28%</b>
Credit	2.76%	0.56%	---	0.07%	3.39%
Mortgages	2.22%	---	---	0.28%	2.50%
ST Treasury	3.00%	---	---	---	3.00%
Treasury/Agency	8.34%	0.03%	---	---	8.37%
MT Treasury	0.01%	---	---	---	0.01%
<b>EQUITY</b>	<b>26.18%</b>	<b>15.69%</b>	<b>9.75%</b>	<b>6.49%</b>	<b>58.11%</b>
<b>Public Equity</b>	<b>26.18%</b>	<b>9.98%</b>	<b>9.75%</b>	<b>0.20%</b>	<b>46.11%</b>
U.S. Equity	25.63%	0.58%	0.57%	0.13%	26.92%
EAFE	0.25%	6.05%	5.91%	0.05%	12.27%
Emerging Markets	0.06%	3.28%	3.20%	0.02%	6.55%
Global	0.24%	0.07%	0.07%	0.00%	0.38%
<b>Alternative Investments</b>	<b>0.00%</b>	<b>5.71%</b>	<b>---</b>	<b>6.28%</b>	<b>12.00%</b>
Hedge Funds	---	---	---	0.01%	0.01%
Infrastructure	0.00%	0.88%	---	---	0.89%
Private RE/Core	---	3.05%	---	---	3.05%
Private RE/Non-Core	0.00%	1.77%	---	---	1.78%
Private Equity	0.00%	---	---	6.27%	6.27%
<b>TOTAL ASSETS</b>	<b>58.80%</b>	<b>19.52%</b>	<b>9.77%</b>	<b>11.90%</b>	<b>100.00%</b>
	<b>Non-Basket:</b>	<b>78.33%</b>	<b>Basket:</b>	<b>21.67%</b>	

This analysis shows basket consumption by investment mandate on a security look-through basis.

\* Basket Eligible Assets are subject to the following thresholds - above which investment consumes basket capacity: 10% aggregate portfolio weight for investments in non-U.S. listed equities; 10% aggregate portfolio weight for real assets; and 10% aggregate portfolio weight for investments in high yield bonds and foreign debt issues that are registered with the SEC. To the extent that the value of investments in a particular category exceeds a threshold, the excess consumes basket capacity.

In the above table, the investment of cash held as collateral under the system's securities lending program, is included as a Non-Basket Asset in the Cash/Equivalent line.

# Liquidity Analysis

AUM as of June 30, 2019

	Current MV	Liquid Assets		
		Today	1 Year	2 Years
<b>PUBLIC EQUITY</b>	<b>\$34,257</b>	<b>\$34,257</b>	<b>\$34,257</b>	<b>\$34,257</b>
U.S.	19,970	19,970	19,970	19,970
EAFE Equity	8,667	8,667	8,667	8,667
Emerging Markets	5,338	5,338	5,338	5,338
Global Equity	281	281	281	281
<b>PUBLIC FIXED INCOME</b>	<b>\$22,879</b>	<b>\$22,153</b>	<b>\$22,480</b>	<b>\$22,480</b>
Short Term Securities	760	760	760	760
U.S. Government	8,445	8,445	8,445	8,445
Mortgages				
Core Mortgages	1,816	1,816	1,816	1,816
ETI	883	157	484	484
Credit - Investment Grade	3,850	3,850	3,850	3,850
Corporate - High Yield	2,951	2,951	2,951	2,951
Corporate - Bank Loans	1,178	1,178	1,178	1,178
UST - Inflation Protected	2,996	2,996	2,996	2,996
<b>ALTERNATIVE ASSETS</b>	<b>\$11,052</b>	<b>\$1,603</b>	<b>\$2,143</b>	<b>\$2,145</b>
Private Equity	4,672	0	0	0
Private Real Estate	3,579	0	0	0
Infrastructure	656	0	0	0
Opportunistic Fixed Income	2,138	1,603	2,138	2,138
Hedge Funds	7	0	5	7
<b>Total Assets</b>	<b>\$68,187</b>	<b>\$58,013</b>	<b>\$58,880</b>	<b>\$58,882</b>
<b>Total Illiquid \$</b>		\$10,175	\$9,308	\$9,306
<b>Total Illiquid %</b>		14.9%	13.7%	13.6%
Unfunded OFI Commitments	\$593			
Unfunded INF Commitments	\$825			
Unfunded PE Commitments	\$3,204			
Unfunded RE Commitments	\$1,770			
<b>Total commitments \$</b>	<b>\$6,393</b>			
<b>Total commitments %</b>	<b>9.4%</b>			



## NYCERS Liquidity Profile - Static Analysis

06/30/19

AUM as of June 30, 2019

**Denominator Effect - Decrease AUM by One-Third**

<b>Total Illiquid \$</b>	\$10,175	\$9,308	\$9,306
<b>Total Illiquid %</b>	22.4%	20.5%	20.5%

Note: Assumes zero realizations, no new commitments and a five-year investment period; funded out of liquids

	Current MV	Liquid Assets		
		Today	1 Year	2 Years
<b>Total Assets</b>	<b>\$68,187</b>	<b>\$58,013</b>	<b>\$58,880</b>	<b>\$58,882</b>

**Private Equity, Real Estate, Infrastructure and Opportunistic Fixed Income Stress Case**

Unfunded OFI Commitments	\$119	\$237
Unfunded INF Commitments	\$165	\$330
Unfunded PE Commitments Drawn	\$641	\$1,282
Unfunded RE Commitments Drawn	\$354	\$708
<b>Total commitments \$</b>	<b>\$1,279</b>	<b>\$2,557</b>
<b>Total commitments %</b>	1.9%	3.8%

<b>Total Illiquid \$</b>	\$10,586	\$11,863
<b>Total Illiquid %</b>	15.5%	17.4%

Note: Assumes zero realizations, no new commitments and a five-year investment period; funded out of liquids

See Assumptions Page for Full Details

**Denominator Effect - Decrease AUM by One-Third**

<b>Total Illiquid \$</b>	\$10,175	\$10,586	\$11,863
<b>Total Illiquid %</b>	22.4%	23.3%	26.1%

Note: Assumes zero realizations, no new commitments and a five-year investment period; funded out of liquids