UNIVERSITY OF CALIFORNIA

Annual Financial Report

Retirement System

18/19

A university is only as great as its people. And ours are Nobel laureates, National Medal of Science winners and MacArthur “genius” grant awardees who are committed to serving the public good. UC faculty and staff never stop pushing the boundaries of knowledge or pioneering better ways of doing things. That bold, forward-looking spirit is infused in everything we do.

UNIVERSITY OF CALIFORNIA

Retirement System 18/19 Annual Financial Report

TABLE OF CONTENTS

University of California Retirement System

The University of California Retirement System (UCRS) is a valuable component of the comprehensive benefits package offered to employees of the University. UCRS consists of two defined benefit plans and four defined contribution plans. The defined benefit plans (DB Plans) include the University of California Retirement Plan (UCRP) for members and the Voluntary Early Retirement Incentive Plan (UC-VERIP) for certain University employees that were members of the California Public Employees' Retirement System (CalPERS) who elected early retirement. The University of California Retirement Savings Program (UCRSP) includes four defined contribution plans, collectively referred to as the UCRSP Plans: Defined Contribution Plan (DC Plan), Supplemental Defined Contribution Plan (SDC Plan), Tax-Deferred 403(b) Plan (403(b) Plan) and 457(b) Deferred Compensation Plan (457(b) Plan). The Regents of the University of California (The Regents) acts as trustee associated with each of the UCRS Plans other than the UCRSP Plans for which the Office of the Chief Investment Officer (OCIO) of The Regents acts as custodian. Administrative authority with respect to the UCRS Plans is vested in the President of the University (the President) as plan administrator and the President has delegated that authority within UCRS, under University policies and procedures, to the Vice President - Human Resources.

SUMMARY STATEMENT

This section contains information on the UCRS defined benefit plans, which provide lifetime retirement income, disability income, death benefits and post-retirement and preretirement survivor benefits to eligible employees of the University of California (the University) and its affiliate, Hastings College of the Law, and the survivors and beneficiaries as of and for the fiscal year ended June 30, 2019. Significant statistics relating to the defined benefit plans' financial information and membership base as of June 30, 2019, are as follows:

Net position	$70.3 billion
Net investment income	$4.0 billion
Contributions	$3.4 billion
Benefit payments (excluding member withdrawals and lump sum cashouts)	$3.3 billion
Plan administrative and other expenses	$62.0 million
ACTIVE PLAN MEMBERSHIP	
Senate Faculty and Non-Faculty Academics	23,481 members
Management/Senior Professional	13,722 members
Professional/Support Staff	90,724 members
TOTAL	**127,927 members**
AVERAGE ANNUAL SALARY	
Senate Faculty	$163,329
Non-Faculty Academics	$104,398
Management/Senior Professional	$146,752
Professional/Support Staff	$81,264
AVERAGE AGE	
Senate Faculty	51 years
Non-Faculty Academics	47 years
Management/Senior Professional	49 years
Professional/Support Staff	43 years
INACTIVE PLAN MEMBERSHIP/OTHER *(Not yet receiving benefits)*[1]	
TOTAL	100,864 members
RETIREE MEMBERSHIP *(Receiving benefits)*	
Faculty	7,329 members
Management/Senior Professional	11,787 members
Professional/Support Staff	49,230 members
TOTAL	**68,346 members**
AVERAGE RETIREMENT AGE	
Faculty	64 years
Management/Senior Professional	61 years
Professional/Support Staff	60 years
AVERAGE SERVICE CREDIT AT RETIREMENT	
Faculty	24 years
Management/Senior Professional	21 years
Professional/Support Staff	20 years
AVERAGE ANNUAL UCRP INCOME	
Faculty	$88,862
Management/Senior Professional	$63,693
Professional/Support Staff	$35,708
Survivor/Beneficiary	9,400 members
Disabled	1,338 members

[1] Includes terminated nonvested members eligible for a refund of Plan accumulations or CAP payment and members that were employed by Los Alamos National Laboratory (LANL) or Lawrence Livermore National Laboratory (LLNL) prior to the transition of management of these laboratories from UC to holding companies, and are eligible for a CAP payment from UCRP after they separate from employment at LANL or LLNL.

PLAN OVERVIEW AND ADMINISTRATION

UCRP is a key component of the comprehensive benefits package offered to employees of the University of California and its affiliate, Hastings College of the Law. UCRP is a governmental defined benefit pension plan intended to be qualified under §401(a) of the Internal Revenue Code (IRC).

The University's pension program dates back to 1904, with a plan that provided for the purchase of commercial annuities for retiring professors at UC Berkeley and UC San Francisco. The current retirement pension plan was designed in 1961, before the University's participation in Social Security and before the introduction of employee life and disability insurance coverage. Over the years, UCRP has evolved to include provisions for:

- Basic retirement income (includes post-retirement survivor benefits) and four alternative monthly payments;
- Lump sum cashouts in lieu of monthly retirement income (except for the 2013 Tier and 2016 Tier);
- Disability income;
- Death benefits;
- Preretirement survivor benefits.

Further, in lieu of lifetime retirement benefits, members may choose a refund of their accumulated employee contributions and earnings.

At June 30, 2019, active UCRP members included 127,927 employees at the University's ten campuses, five medical centers, Lawrence Berkeley National Laboratory and Hastings College of the Law.

The Vice President — Human Resources of the University carries out administrative duties delegated by the President for the day-to-day management and operation of the Plan. These duties include conducting policy research, implementing changes to the Plan document and regulations to preserve the Plan's qualification under the IRC and overseeing the recordkeeping and accounting functions and the receipt and disbursement of UCRP assets to eligible members, their beneficiaries and survivors.

Summary plan descriptions are updated periodically to reflect legislative, Plan and administrative changes. These booklets are available online on UCnet (https://ucnet.universityofcalifornia.edu/compensation-and-benefits/index.html) or through the local Benefits Offices.

PLAN MEMBERSHIP

Employees participate in UCRP in one of five plan membership categories/tiers:

- Members of the 1976 Tier
- Members of the 2013 Tier (including the Modified 2013 Tier for certain collectively bargained units)
- Members of the 2016 Tier
- Safety Members (police and firefighters)
- Tier Two Members

The following table reflects UCRP Plan membership by category over the past 10 years ended June 30:

ACTIVE AND INACTIVE PLAN MEMBERSHIP

YEAR	1976 TIER	2013 TIER	MODIFIED 2013 TIER	2016 TIER	SAFETY MEMBERS	TIER TWO	TOTAL ACTIVE	INACTIVE MEMBERS/ OTHERS	TOTAL ACTIVE AND INACTIVE PLAN MEMBERSHIP
2019	69,082[1]	18,874[2]	23,255	16,306[3]	406	4[4]	127,927	100,864	228,791
2018	75,100	21,307	22,672	10,384	412	4	129,879	92,617	222,496
2017	81,270	24,531	18,680	4,494	403	4	129,382	87,052	216,434
2016	88,148	25,450	14,510		399	6	128,513	81,595	210,108
2015	96,270	17,710	9,385		395	8	123,768	75,165	198,933
2014	106,162	9,510	4,482		404	10	120,568	78,229	198,797
2013	117,922				390	9	118,321	73,589	191,910
2012	116,481				396	11	116,888	67,318	184,206
2011	115,149				404	15	115,568	60,903	176,471
2010	114,496				418	14	114,928	55,037	169,965

[1] *Includes 224 plan members whose service is not coordinated with Social Security.*
[2] *Includes 7 multi-tier members that have 1976 Tier service not coordinated with Social Security.*
[3] *Includes 5 multi-tier members that have 1976 Tier service not coordinated with Social Security.*
[4] *Includes 3 plan members whose service is not coordinated with Social Security.*

PLAN BENEFITS

UCRP paid approximately $3.4 billion in periodic retirement, disability and preretirement survivor benefits to 68,346 members and their beneficiaries and survivors during fiscal year 2018-19. The retirement payments described include cost-of-living adjustments (COLAs) and exclude lump sum cashouts and member withdrawals. Payments to survivors include basic death payments and survivor annuities. The table below reflects total benefits paid in each category over the past 10 years.

UCRP BENEFIT PAYMENTS *($ in thousands)*

YEAR ENDED JUNE 30	RETIREMENT	DISABILITY	DEATH & SURVIVOR	TOTAL[1]
2019	$3,309,505	$30,102	$59,039	$3,398,646
2018	3,008,236	30,259	58,769	3,097,264
2017	2,800,437	30,470	57,146	2,888,053
2016	2,596,632	30,769	56,212	2,683,613
2015	2,412,393	32,201	53,753	2,498,347
2014	2,240,565	33,411	50,271	2,324,247
2013	2,068,402	34,376	49,212	2,151,990
2012	1,908,831	35,189	47,262	1,991,282
2011	1,761,580	35,298	45,059	1,841,937
2010	1,634,114	35,331	41,129	1,710,574

[1]Does not include non-periodic member withdrawals (including Capital Accumulation Payment (CAP) distributions and lump sum cashouts.)

The number of UCRP benefit recipients in each category for the year ended June 30 for each of the past 10 years is shown below.

UCRP BENEFIT RECIPIENTS

YEAR ENDED JUNE 30	RETIRED MEMBERS	DISABLED MEMBERS	SURVIVORS	TOTAL	DECEASED MEMBERS
2019	68,346	1,338	9,400	79,084	1,747
2018	65,438	1,386	9,100	75,924	2,319
2017	62,753	1,440	8,802	72,995	1,671
2016	60,178	1,519	8,380	70,077	1,609
2015	57,581	1,620	8,120	67,321	1,678
2014	54,714	1,763	7,714	64,191	1,709
2013	52,300	1,897	7,518	61,715	1,406
2012	49,675	2,000	7,259	58,934	1,377
2011	47,243	2,084	6,969	56,296	1,790
2010	45,111	2,110	6,681	53,902	1,920

INVESTMENT AND PROXY POLICIES

The defined benefit plans bear the mortality and investment risk because members' benefits are based on the employer's promise rather than the contributions or plan assets and their earnings available to pay the benefits.

The Office of the Chief Investment Officer (OCIO) has primary responsibility for investing the defined benefit plan assets consistent with policies established by The Regents. The Regents has fiduciary responsibility for establishing the investment policy for the defined benefit plans and for overseeing the implementation of that policy.

The assets of the Plans are held in trust by The Regents separately from the University's assets and are maintained in a custodial account at State Street Bank & Trust Co. The bank carries insurance against loss of property caused by employee dishonesty, theft, misplacement, damage, distribution or mysterious disappearance.

HISTORICAL INVESTMENT PERFORMANCE

ANNUALIZED RATES OF RETURN AT JUNE 30, 2019 *(shown as percentage)*

	1-YEAR	3-YEAR	5-YEAR	10-YEAR
UCRP	**6.0%**	**9.4%**	**6.0%**	**9.3%**
Policy Benchmark	5.9%	8.9%	5.6%	8.7%
PUBLIC EQUITY	**5.2%**	**12.6%**	**6.8%**	**11.0%**
UCRP Public Equity	4.7%	11.7%	6.2%	10.6%
FIXED INCOME				
Core Fixed Income	**7.4%**	**2.9%**	**3.2%**	**4.4%**
Barclays U.S. Aggregate Bond Index	7.9%	2.3%	2.9%	3.9%
High Yield	**7.0%**	**6.9%**	**4.6%**	**9.2%**
Merrill Lynch High Yield Cash Pay Index	7.6%	7.5%	4.7%	9.2%
Emerging Market Debt	**12.0%**	**5.1%**	**4.2%**	**6.5%**
JP Morgan Emerging Markets Bond Index	12.4%	5.5%	5.3%	7.5%
TIPS	**5.1%**	**2.4%**	**2.0%**	**3.9%**
Barclays U.S. TIPS	4.8%	2.1%	1.8%	3.6%
OTHER INVESTMENTS				
Private Equity	**13.7%**	**15.5%**	**13.1%**	**14.4%**
Private Equity Benchmark	10.5%	13.6%	11.9%	13.8%
Absolute Return	**6.9%**	**6.1%**	**3.9%**	**6.2%**
Custom Absolute Return Benchmark	1.1%	4.3%	1.0%	1.5%
Real Estate	**6.6%**	**7.7%**	**10.5%**	**7.4%**
NCREIF-ODCE Index	6.5%	7.0%	9.3%	6.7%
Real Assets	**3.8%**	**7.2%**	**(0.4%)**	
Cash	**2.5%**	**1.7%**	**1.6%**	**3.0%**


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B. LOAN

SUMMARY STATEMENT

This section contains information about the University of California Retirement Savings Program (UCRSP), which consists of four defined contribution plans, two plans structured under §401(a) of the IRC; one plan structured under §403(b) of the IRC and a deferred compensation plan structured under §457(b) of the IRC, collectively referred to as the UCRSP Plans. The UCRSP Plans were created to provide savings incentives and additional retirement security for eligible University employees. The Defined Contribution Plan (DC Plan) was established by resolution of The Regents to accept after-tax contributions effective July 1, 1967, and pretax contributions effective November 1, 1990. The Regents established the Supplemental Defined Contribution Plan (SDC Plan) effective January 1, 2009, to provide retirement benefits to designated employees of the University and their beneficiaries. The 403(b) Plan, also established by Regental resolution, became effective July 1, 1969. The Regents established the 457(b) Plan effective September 1, 2004. Significant statistics relating to the UCRSP Plans' financial information and membership base as of fiscal year ended June 30, 2019, are as follows:

Net position	$25.8 billion
Total contributions	$1.4 billion
Net investment income	$1.4 billion
Program administrative expenses	$6.0 million

Significant statistics relating to the Plans and their participants as of the 2018-2019 fiscal year-end are as follows:

DEFINED CONTRIBUTION PLAN	
Pretax Participants:	
Faculty/Other Academic	1,895
Management/Senior Professional	2,645
Professional/Support Staff/Other	34,934
Hastings College of the Law	29
Total Pretax Participants	**39,503**
Average Pretax monthly contribution	$396
Average Pretax Account value	$8,789
After-Tax Account Participants:	
Faculty/Other Academic	926
Management/Senior Professional	783
Professional/Support Staff/Other	4,210
Hastings College of the Law	2
Total After-Tax Account Participants	**5,921**
Average After-Tax monthly contribution	$546
Average After-Tax Account value	$18,388
Inactive Plan Participation (Including Pretax Accounts)	**177,800**

TAX-DEFERRED 403(b) PLAN	
Participants:	
Faculty/Other Academic	10,549
Management/Senior Professional	12,478
Professional/Support Staff/Other	49,344
Hastings College of the Law	125
Total	**72,496**
Average percent of salary contributed	8.3%
Average monthly contribution	$802
Average Plan Account value	$100,527
Outstanding Loan Program loans	19,802
Aggregate outstanding loan principal	$193.8 million
Inactive Plan Participation	**55,953**

457(b) DEFERRED COMPENSATION PLAN	
Participants:	
Faculty/Other Academic	5,492
Management/Senior Professional	4,353
Professional/Support Staff/Other	9,328
Hastings College of the Law	39
Total	**19,212**
Average monthly contribution	$1,150
Average Plan Account balance	$93,465
Inactive Plan Participation	**10,416**

PLAN OVERVIEW AND ADMINISTRATION

Benefits from UCRSP Plans are based on participants' mandatory and voluntary contributions, and certain University contributions, plus earnings. While their savings accumulate, employees have the benefit of reductions in their personal income taxes.

A defined contribution plan was first made available to University employees in 1967. Employees could invest after-tax contributions in two University-managed annuity funds. Two years later, the 403(b) Plan was added for voluntary pretax savings. Over the years, 403(b) Plan features have been expanded to include mutual fund investment options including a brokerage window; a loan program through which participants can borrow from their 403(b) Plan savings; diverse investment options that now include 11 single, diversified target date investment funds for building retirement savings; 12 core asset class options, and a brokerage window.

The 457(b) Plan was established effective September 1, 2004. Although 457(b) plans have been available for many years, the IRC salary deferral contribution limits were applicable to participants' combined annual contributions to both 457(b) and 403(b) plans, so there was no advantage in offering both. A change in tax law, however, allows the maximum limit to be applied separately to each kind of plan. Thus, with the addition of the 457(b) Plan, University faculty and staff can double the amount of their voluntary, pretax retirement savings.

All employee salary deferral and after-tax contributions to UCRSP Plans are deducted from participants' wages. University contributions are made on behalf of academic employees who earn summer term or equivalent salary and eligible senior managers.

The fiduciary oversight structure for UCRSP Plans aligns Regental oversight of the Plans through the Governance and Compensation Committee, which oversees the administration of the Plans carried out by the Human Resources Department and the Investments Committee, which oversees the investment management function carried out by the OCIO.

The Vice President — Human Resources serves as the Plan Administrator and oversees policy research, implements regulations to preserve the Plans' qualification and/or tax-advantaged status under the IRC and provides administrative services as needed.

The Plans' administration and investment management activities are reviewed semiannually by the Retirement Savings Program Advisory Committee.

Fidelity Workplace Services LLC (FWS) acts as the master recordkeeper for the UCRSP Plans. The master recordkeeping and participant services include daily valuation, daily exchanges, processing of distributions, plan loans and withdrawals, administration and a consolidated recordkeeping platform for the Plans and all the funds offered under UCRSP.

For services rendered in connection with the UCRSP Plans, a per-participant quarterly administrative fee of $8.75 is deducted from each participant's account to cover costs of plan administrative services. The administrative fee pays for the Plans' expenses, such as charges for investment management, investor education, accounting, audit, legal and recordkeeping services. There are no front-end or deferred sales loads or other marketing expenses associated with the single, diversified investments and primary asset class options managed by the OCIO. In addition, any fees paid by participants, including loan fees and brokerage window account fees, and any credits that may be awarded for FWS' failure to meet certain performance standards, will be credited to the Plans' recordkeeping fee account.

A participant can obtain information on fees charged by a mutual fund investment option by reviewing the fund prospectus available on the FWS website (netbenefits.fidelity.com).

Summary plan descriptions are updated periodically to reflect legislative, Plan and administrative changes. These booklets are available online at UCnet (https://ucnet.universityofcalifornia.edu/compensation-and-benefits/index.html) or through the local Benefits Offices. Copies of these booklets are mailed directly to active participants once every five years.

CONTRIBUTIONS AND INVESTMENTS

Effective July 1, 2016, UCRP was amended to provide a new tier of pension benefits under the Retirement Choice Program. The new program tier provides eligible University employees hired (or becoming eligible) on or after July 1, 2016 (and certain eligible rehires who return to work after a tier break in service) a choice between two primary retirement benefit options: (1) Pension Choice, which is the UCRP pension benefit with covered compensation for new hires capped at the California Public Employees' Pension Reform Act (PEPRA) salary pensionable compensation limit or, (2), Savings Choice, which is a defined contribution plan-only option on eligible pay up to the IRC section 401(a)(17) compensation limit (IRC limit).

For eligible employees who elect Pension Choice and who are subject to the PEPRA maximum for members coordinated with Social Security, both the University and eligible participants make mandatory DC Plan retirement contributions on a pretax basis for the supplemental benefit to the DC Plan. For designated faculty, the University contributes 5.0 percent on all eligible pay up to the IRC limit. For staff, the University contributes 3.0 percent on eligible pay above the PEPRA maximum up to the IRC limit. Both designated faculty and staff contribute 7.0 percent on eligible pay above the PEPRA maximum up to the IRC limit.

For Savings Choice, the participant contributes 7.0 percent, and the University contributes 8.0 percent. University contributions under Savings Choice are fully vested after one year of service.

Voluntary DC Plan contributions, which employees make on an after-tax basis, are held in the Plan's After-Tax Account. The maximum amount employees may contribute annually as after-tax voluntary contributions is determined by the IRC §415(c) limit. Generally, this amount is the lesser of 100 percent of the participant's adjusted gross University salary or $55,000 in 2018 and $56,000 in 2019. This limit takes into account all annual additions, including any pretax employee and University contributions to the DC Plan. After-tax contributions are deducted from net income and also may be invested in and transferred among any of the investment options available to the UCRSP Plans.

The University makes 403(b) Plan retirement contributions on the summer salaries of eligible academic appointees who teach, conduct research or provide administrative service during the summer session or an equivalent term. To be eligible, the academic appointee must hold an academic year appointment, be an active member of UCRP or another defined benefit plan to which the University contributes, be a Savings Choice participant, or be eligible for a primary retirement benefit option under the Retirement Choice Program even if not yet participating. The contribution rate is 7.0 percent of eligible summer salary, of which 3.5 percent is University-paid and 3.5 percent is employee-paid, both on a pretax basis.

The 403(b) Plan includes voluntary employee salary deferral contributions that are made on a pretax basis. Within IRC limits, a 403(b) Plan participant may make contributions as a percentage of salary or in flat dollar amounts. Contributions to the 403(b) Plan may be invested in and transferred among any of the investment options available to the Plans. The University may also contribute on behalf of eligible senior managers.

The 457(b) Plan includes voluntary salary deferral employee contributions. University contributions may also be made for eligible senior managers on a pretax basis. Within IRC limits, a Plan participant may make contributions as a percentage of their salary or in a flat dollar amount. Plan contributions may be invested in and transferred among any of the investment options available to the Plans.

All four Plans accept rollovers of pretax distributions from other University-sponsored plans, including lump sum cashouts and Capital Accumulation Payment (CAP) distributions from UCRP, 401(a), 401(k), 403(b) and governmental 457(b) Plans, and from traditional IRAs. In addition, the DC and 403(b) Plans accept direct rollovers of after-tax amounts from 401(a), 401(k) and 403(b) Plans. The 457(b) Plan does not accept rollovers of after-tax distributions.

INVESTMENTS

The Office of the Chief Investment Officer (OCIO) has primary responsibility for selecting appropriate asset classes and specific investment options, establishing investment guidelines and benchmarks against which performance is measured and making changes in the UC Funds menu as it deems appropriate based on its periodic evaluations. The OCIO's selection and monitoring responsibilities do not extend to the mutual funds available through the Fidelity brokerage account option. The Regents has fiduciary responsibility for establishing broad investment policy and overseeing the performance of the investment functions.

Proxy Voting Policy

The OCIO has instructed The Regents' custodian bank to vote all proxies on behalf of The Regents according to its guidelines.

Investment Options

In 2018-2019, all UCRSP participants had the following investment options:

Tier I: UC Pathway Funds, with specific target dates
Tier II: Main Fund Menu — Bond and Stock Investments
Tier III: BrokerageLink®

Current detailed information regarding the UC Funds and other investment options is available on the FWS website (netbenefits.fidelity.com).

UC Funds Investment Performance

UC FUNDS INVESTMENT PERFORMANCE FOR PERIODS ENDED JUNE 30, 2019

(shown as percentage)

	1-YEAR	3-YEAR	5-YEAR
TARGET DATE FUNDS			
Pathway Income Fund	**5.2%**	**5.2%**	**3.5%**
Policy Benchmark[1]	5.4%	5.2%	3.4%
Pathway Fund 2015	**5.4%**	**5.3%**	**3.6%**
Policy Benchmark[1]	5.5%	5.2%	3.5%
Pathway Fund 2020	**6.2%**	**6.8%**	**4.6%**
Policy Benchmark[1]	6.1%	6.7%	4.5%
Pathway Fund 2025	**6.4%**	**7.6%**	**4.9%**
Policy Benchmark[1]	6.4%	7.6%	4.8%
Pathway Fund 2030	**6.3%**	**8.3%**	**5.2%**
Policy Benchmark[1]	6.3%	8.4%	5.2%
Pathway Fund 2035	**6.1%**	**9.0%**	**5.5%**
Policy Benchmark[1]	6.0%	9.1%	5.4%
Pathway Fund 2040	**5.7%**	**9.6%**	**5.7%**
Policy Benchmark[1]	5.7%	9.7%	5.7%
Pathway Fund 2045	**5.4%**	**10.3%**	**5.9%**
Policy Benchmark[1]	5.4%	10.4%	5.9%
Pathway Fund 2050	**5.3%**	**10.9%**	**6.2%**
Policy Benchmark[1]	5.3%	11.1%	6.2%
Pathway Fund 2055	**5.3%**	**11.1%**	**6.3%**
Policy Benchmark[1]	5.3%	11.3%	6.3%
Pathway Fund 2060	**5.3%**	**11.1%**	**6.3%**
Policy Benchmark[1]	5.3%	11.3%	6.3%
U.S. LARGE EQUITY			
UC Domestic Equity Index Fund	**9.4%**	**14.5%**	**10.4%**
Russell 3000 TF Index	9.1%	14.2%	10.2%
UC Social Equity Index Fund	**11.4%**	**16.1%**	**11.6%**
Spliced Social Index	11.4%	16.1%	11.6%

(shown as percentage)

	1-YEAR	3-YEAR	5-YEAR
U.S. SMALL/MID CAP EQUITY			
UC Domestic Small Cap Index Fund	**(2.0%)**	**10.8%**	**6.8%**
CRSP Small Cap Index	(2.2%)	10.7%	6.7%
GLOBAL/WORLD EX-US EQUITY			
UC International Equity Index Fund	**1.0%**	**9.5%**	**2.3%**
Policy Benchmark[1]	0.4%	9.1%	2.0%
CAPITAL PRESERVATION			
Savings Fund	**1.7%**	**1.5%**	**1.4%**
2-Year U.S. Treasury Notes Inc Ret Index	2.6%	1.8%	1.3%
INFLATION SENSITIVE			
UC Short Term TIPS Fund	**2.7%**	**1.7%**	**1.0%**
Barclays 1-3-Year U.S. TIPS Index	2.8%	1.5%	0.7%
UC TIPS Fund	**4.9%**	**2.4%**	**2.0%**
Barclays U.S. TIPS Index	4.8%	2.1%	1.8%
DIVERSIFIED FIXED INCOME			
UC Bond Fund	**8.2%**	**2.7%**	**3.2%**
Barclays Aggregate Fixed Income Index	7.9%	2.3%	3.0%
NEW LARGE EQUITY			
UC Growth Company Fund	**5.4%**	**21.6%**	**14.7%**
Russell 3000 Growth Index	10.6%	17.8%	13.0%
WORLD EX-U.S. EQUITY			
UC Diversified Intl. Fund	**2.4%**	**8.8%**	**3.5%**
MSCI EAFE Index	1.1%	9.6%	2.3%
UC Emerging Markets Fund	**1.8%**	**9.6%**	**2.3%**
MSCI Emerging Markets Index	1.2%	10.7%	2.4%
REAL ESTATE			
UC Real Estate Fund	**10.7%**	**3.6%**	**7.4%**
REIT Spliced Index	9.4%	3.2%	7.3%

POLICY BENCHMARKS

[1] *Blend of the benchmarks of the individual underlying Core Funds based on holdings according to the Fund asset allocation mix.*

NET POSITION BY PLAN

The following tables show the assets, liabilities, net position and number of participant accounts in each of the Plans as of June 30, 2019. The participant counts reflect the fact that participants may have an account in more than one Plan and may also have more than one account in one or more of the Plans.

(in thousands of dollars)

June 30, 2019	403(B) PLAN	DC PLANS	457(B) PLAN	TOTAL PLANS
ASSETS				
UC Fund investments	$16,555,687	$4,723,565	$2,978,679	$24,257,931
Investment of securities lending collateral	1,307,458	767,582	116,153	2,191,193
Participants' interests in mutual funds	1,215,265	176,995	299,513	1,691,773
Participant 403(b) Plan loans	193,766			193,766
Other assets	35,943	7,561	1,593	45,097
Total Assets	**19,308,119**	**5,675,703**	**3,395,938**	**28,379,760**
LIABILITIES				
Other liabilities	344,803	54,430	10,876	410,109
Collateral held for securities lending	1,102,344	902,535	185,715	2,190,594
Total Liabilities	**1,447,147**	**956,965**	**196,591**	**2,600,703**
Net Position	**$17,860,972**	**$4,718,738**	**$3,199,347**	**$25,779,057**

TAX-DEFERRED 403(b) PLAN LOAN PROGRAM

As permitted by IRC §72(p), active participants with a 403(b) Plan balance of at least $1,000 may generally borrow from their total 403(b) Plan account balance without incurring taxes or penalties. Certain limitations apply to the available borrowing amount depending on account balance, previous loan activity and highest outstanding loan balance within the past 12 months.

The 403(b) Plan Loan Program offers short-term general-purpose loans with repayment terms of five years or less, and long-term principal-residence loans with repayment terms of up to fifteen years. A participant may have one general-purpose loan and one principal-residence loan outstanding at one time but may not take out more than one loan within a 12-month period. Monthly repayments of principal and interest are credited proportionately to the investment fund(s) according to the current 403(b) Plan contribution investment mix established by the participant. A nonrefundable loan initiation fee of $35 is deducted from the 403(b) Plan account balance at the end of the calendar quarter in which the loan is taken. An annual maintenance fee of $15 is deducted ($3.75 per calendar quarter) from the participant's 403(b) Plan account balance.

The interest rate is fixed at the time the loan is granted and equals the prevailing bank Prime Rate as published by The Wall Street Journal plus 1.0 percent. During fiscal year 2018-19, the Loan Program interest rate for new loans increased from 6.0 percent to 6.5 percent. As of June 30, 2019, the loan rate remained at 6.5 percent.

At June 30, 2019, the aggregate outstanding loan balance of 19,802 active loans was $193.8 million compared to 19,453 active loans with an aggregate outstanding balance of $184.4 million at June 30, 2018.

The following table reflects participant loans funded for the 10 years ended June 30:

YEAR ENDED JUNE 30	NUMBER OF LOANS FUNDED	$ IN THOUSANDS
2019	6,131	$81,736
2018	6,148	77,281
2017	6,116	74,081
2016	5,839	71,857
2015	5,876	73,465
2014	6,003	75,361
2013	5,938	72,417
2012	5,161	62,807
2011	5,150	62,460
2010	5,560	64,253


UCMERCED

Management's Discussion and Analysis *(Unaudited)*

The University of California Retirement System (UCRS) comprises two defined benefit pension plans and four defined contribution plans. The objective of Management's Discussion and Analysis is to help readers of UCRS' financial statements better understand the financial position and operating activities for the fiscal year ended June 30, 2019, with selected comparative information for the years ended June 30, 2018 and 2017. This discussion should be read in conjunction with the financial statements and the notes to the financial statements. Unless otherwise indicated, years (2017, 2018, 2019, etc.) in this discussion refer to the fiscal years ended June 30.

This discussion and analysis is intended to serve as an introduction to UCRS' financial statements, which comprise the following:

- Statements of Fiduciary Net Position
- Statements of Changes in Fiduciary Net Position
- Notes to Financial Statements
- Required Supplementary Information
- Note to Required Supplementary Information

The Statements of Fiduciary Net Position present information on UCRS' assets and liabilities and the resulting net position for pension benefits. These statements reflect UCRS' investments at fair value, along with cash and short-term investments, receivables and other assets and liabilities.

The Statements of Changes in Fiduciary Net Position present information showing how UCRS' net position for pension benefits changed during the years ended June 30, 2019 and 2018. It reflects contributions along with investment income (or losses) during the period from investing and securities lending activities. Deductions for retirement benefits, withdrawals, cost-of-living adjustments, survivor, disability and death benefits and administrative expenses are also presented.

The Notes to Financial Statements provide additional information that is essential to a full understanding of the data provided in the financial statements. The Required Supplementary Information (RSI) contains schedules with actuarial information, the net pension liability and contributions for the University of California Retirement Plan (UCRP) and the Voluntary Early Retirement Incentive Program (UC-VERIP). The Notes to the RSI provide additional descriptions.

The Vice President — Human Resources has primary fiduciary responsibility for UCRP administrative functions and the Chief Investment Officer (CIO) has primary fiduciary responsibility for implementing UCRP investment policy. The Regents determines investment policy and retains broad oversight fiduciary responsibility for investment and administrative functions for the UCRS Plans.

Financial Highlights, Results and Analysis

The Plans provide retirement benefits to University employees. Plan benefits are funded by member, participant and University contributions and by investment income. Below are statements of net position and changes in net position for the UCRS Plans:

(in thousands of dollars)

	DEFINED BENEFIT PLANS			UCRSP		
JUNE 30	**2019**	**2018**	**2017**	**2019**	**2018**	**2017**
ASSETS						
Investments (including Short Term Investment Pool)	$71,198,772	$67,938,358	$63,070,754	$24,257,931	$22,934,360	$19,503,265
Investment of securities lending collateral	3,937,333	3,867,523	3,824,412	2,191,193	2,290,767	3,017,118
Participants' interests in mutual funds				1,691,773	1,585,098	3,351,454
Participant 403(b) Plan loans				193,766	184,388	180,511
Receivables	1,250,356	156,970	937,399	45,097	123,312	85,403
Total Assets	**76,386,461**	**71,962,851**	**67,832,565**	**28,379,760**	**27,117,925**	**26,137,751**
LIABILITIES						
Payable for securities purchased, member withdrawals, refunds and other payables	2,106,465	1,257,218	1,830,657	410,109	441,485	639,375
Collateral held for securities lending	3,936,255	3,866,795	3,822,672	2,190,594	2,290,336	3,015,744
Total Liabilities	**6,042,720**	**5,124,013**	**5,653,329**	**2,600,703**	**2,731,821**	**3,655,119**
Net Position	**$70,343,741**	**$66,838,838**	**$62,179,236**	**$25,779,057**	**$24,386,104**	**$22,482,632**

(in thousands of dollars)

	DEFINED BENEFIT PLANS			UCRSP		
YEAR ENDED JUNE 30	**2019**	**2018**	**2017**	**2019**	**2018**	**2017**
ADDITIONS						
University and state contributions	$2,408,650	$2,504,874	$2,556,576	$56,528	$38,478	$16,433
Member and participant contributions	956,543	941,144	891,987	1,393,336	1,275,244	1,314,468
Investment income	4,021,547	4,841,289	7,873,475	1,403,652	1,812,511	2,178,224
Other income	796	1,148	1,472			
Total Additions	**7,387,536**	**8,288,455**	**11,323,510**	**2,853,516**	**3,126,233**	**3,509,125**
DEDUCTIONS						
Retirement, cost-of-living adjustments, lump sum cashouts, survivor, disability and death payments	3,676,263	3,438,840	3,185,062			
Member withdrawals	144,384	153,324	140,666			
UCRSP benefit payments and participant withdrawals				1,454,549	1,220,081	1,374,324
Administrative and other expenses	61,986	36,689	44,134	6,014	2,680	8,816
Total Deductions	**3,882,633**	**3,628,853**	**3,369,862**	**1,460,563**	**1,222,761**	**1,383,140**
Increase in net position for pension benefits	**3,504,903**	**4,659,602**	**7,953,648**	**1,392,953**	**1,903,472**	**2,125,985**
Net Position						
Beginning of Year	66,838,838	62,179,236	54,225,588	24,386,104	22,482,632	20,356,647
End of Year	**$70,343,741**	**$66,838,838**	**$62,179,236**	**$25,779,057**	**$24,386,104**	**$22,482,632**

Defined Benefit Plans

The defined benefit plans' net position at June 30, 2019 was $70.3 billion compared to $66.8 billion at June 30, 2018 and $62.2 billion at June 30, 2017. The net position is available to meet the defined benefit plans ongoing obligations to plan members, retirees and their beneficiaries. The net position of defined benefit plans increased by $3.5 billion, or 5.2 percent, in 2019 compared to an increase of $4.7 billion, or 7.5 percent, in 2018 and an increase of $8.0 billion, or 14.7 percent, in 2017.

The net pension liability is measured as the total pension liability, less the Plans' fiduciary net position. The total pension liability is determined based upon discounting projected benefit payments based on the benefit terms and legal agreements existing at the Plans' fiscal year end. Projected benefit payments are discounted using a single rate that reflects the expected rate of return on investments, to the extent that plan assets are available to pay benefits, and a tax-exempt, high-quality municipal bond rate when plan assets are not available.

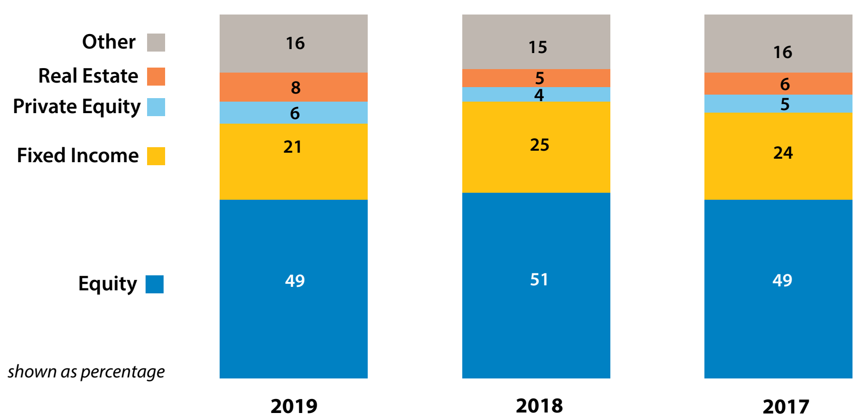
The net pension liability for the defined benefit plans was $18.1 billion in 2019, $9.8 billion in 2018 and $10.7 billion in 2017. The increase in net pension liability for 2019 of $8.3 billion was primarily driven by changes in assumptions as a result of the most recent experience study, with the reduction in the discount rate and the changes in the mortality tables causing the largest increases. The decrease in net pension liability for 2018 of $939.7 million was primarily due to the 7.8 percent return on market value of assets during 2018, which was more than the assumed return of 7.25 percent. The ratio of plan net position to total pension liability was 79.5 percent in 2019, 87.2 percent in 2018 and 85.3 percent in 2017. For June 30, 2019, this indicates that, for every dollar of total pension liability, plan assets of $0.79 are available to cover such obligations as compared to $0.87 at July 1, 2018 and $0.85 at July 1, 2017.

An analysis of the funding progress and University contributions and a discussion of actuarial assumptions and methods is set forth in the required supplementary information section of the financial statements. While all of the defined benefit plans' assets are available to pay any member's benefits, assets and liabilities for the campus and medical center segment of the defined benefit plans are tracked internally and separately from the Department of Energy (DOE) national laboratory segment of defined benefit plans and the DOE has a continuing obligation to fund defined benefit plans benefits for the retirees of the laboratory segment.

Investments

The defined benefit plans' total investment rate of return (net of fees) was 6.0 percent in 2019, 7.8 percent in 2018 and 14.5 percent in 2017, compared to the defined benefit plans' total fund policy benchmark returns of 5.9 percent, 8.4 percent and 12.7 percent, respectively.

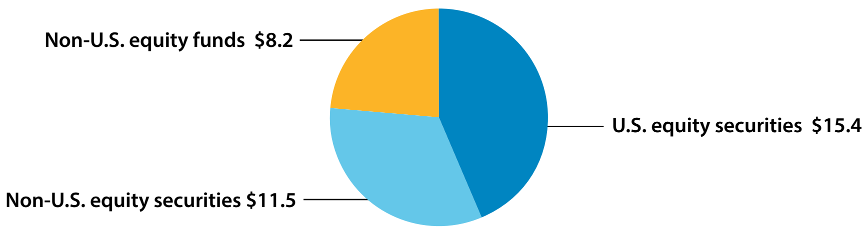
The asset allocation for the defined benefit plans' investment portfolio as of June 30, 2019, 2018 and 2017 is as follows:



The defined benefit plans' investment portfolio has a standalone volatility risk measure of 8.3 percent. Approximately 89 percent of the risk measure is explained by global macroeconomic growth risk factors represented by broad, developed market equity index returns. Other risk factors include real interest rates, inflation, long-term and short-term fixed-income returns, commodities, and emerging markets represented by benchmark indexes relative to the underlying fixed income and other asset classes. The defined benefit plans' investment performance is attributed to these average weighted asset class percentages: 52.9 percent for public equities, 21.8 percent for fixed income, 20.4 percent for alternative and other investments, and 4.9 percent for cash.

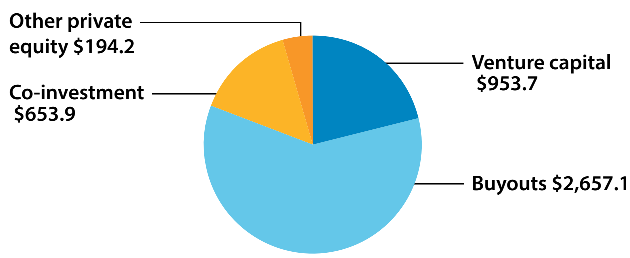
Equity Portfolio

The $35.1 billion public equity portfolio (including commingled equity funds) is diversified across multiple strategic global economic and industry sectors within actively managed accounts of equity securities and passively managed index funds. Of the equity portfolio, $26.9 billion, or 76.6 percent, was invested in U.S. and non-U.S. equity securities and $8.2 billion, or 23.4 percent, was invested in non-U.S. equity commingled funds. U.S. equity securities totaled $15.4 billion, or 43.9 percent, and foreign equity securities and non-U.S. equity commingled funds totaled $19.7 billion, or 56.1 percent.



Private Equity Portfolio

The $4.5 billion private equity segment is invested in venture capital partnerships, buyout funds and international private equity. The private equity segment includes $953.7 million in venture capital, $2.7 billion in buyout funds, $653.9 million in co-investment and $194.2 million in other private equity investments. The private equity portfolio return was 13.7 percent in 2019, 19.1 percent in 2018 and 14.0 percent in 2017.



Fixed Income Portfolio

The fixed income portfolio of $15.0 billion is invested primarily in high-quality, call-protected, global bonds. The fixed income portfolio is comprised of U.S. government-guaranteed, fixed-income securities of $3.6 billion, or 24.1 percent, other U.S. dollar-denominated fixed-income securities of $7.6 billion, or 50.9 percent, foreign currency-denominated, corporate fixed-income securities of $2.6 billion, or 17.5 percent, and U.S. and non-U.S. bond funds of $1.2 billion, or 7.5 percent.

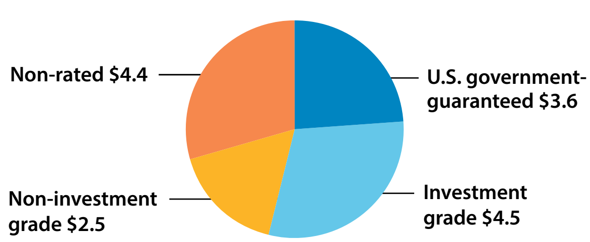
At June 30, 2019, UCRP held $11.8 billion in U.S. government securities (excluding the TIPS portfolio), and other U.S. dollar-denominated and non-U.S. fixed-income securities, compared to $13.7 billion at June 30, 2018 and $12.1 billion at June 30, 2017. The U.S. Core Fixed Income portfolio (excluding TIPS portfolio) earned a total return of 7.4 percent in 2019, (0.1) percent in 2018 and 1.3 percent in 2017, compared to UCRPs' fixed-income policy benchmark returns of 7.87 percent, (0.4) percent and (0.3) percent, respectively.

At June 30, 2019, UCRP held $2.1 billion in the TIPS portfolio, compared to $1.7 billion at June 30, 2018 and $1.8 billion at June 30, 2017. The TIPS portfolio earned a total return of 5.1 percent in 2019, 2.3 percent in 2018 and (0.1) percent in 2017, compared to UCRP's TIPS policy benchmark returns of 4.8 percent, 2.1 percent and (0.3) percent, respectively.

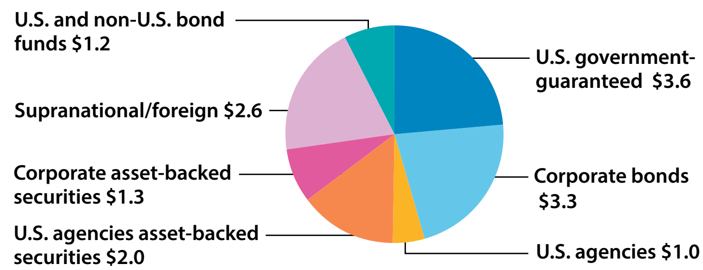
Approximately 24.1 percent of the $15.0 billion fixed income portfolio consists of U.S. government-guaranteed securities, and 75.9 percent of the portfolio consists of high-quality corporate issues rated investment-grade or better and government agency and asset-backed securities. The balance of the fixed income portfolio is composed of U.S. and non-U.S. bond funds and other lower quality fixed-income securities.

The quality and diversification of fixed income portfolio investments are allocated among the sectors illustrated below.

QUALITY*



DIVERSIFICATION



2019 *in billions of dollars*

**Credit Ratings for U.S. Treasury Obligations: Guaranteed by the full faith and credit of the United States and rated AAA by Moody's and AA+ by Standard & Poor's.*

Standard & Poor's (S&P):

- *Investment grade: AAA through BBB rated considered extremely strong capacity to adequate capacity to meet financial commitments.*
- *Non-investment grade: BB through CCC or below. Less vulnerable in the near-term to currently highly vulnerable.*

Alternative Investments

At June 30, 2019, the defined benefit plans held $5.5 billion in institutional real estate investments compared to $4.1 billion in 2018 and $3.5 billion in 2017. The private real estate portfolio earned a total return of 6.5 percent in 2019, 8.8 percent in 2018 and 7.7 percent in 2017, compared to policy benchmark returns of 6.5 percent, 7.1 percent and 7.4 percent, respectively.

At June 30, 2019, the defined benefit plans also held $4.7 billion in absolute return diversified investments compared to $4.5 billion in 2018 and $5.0 billion in 2017. The absolute return diversified segment earned a total return of 6.9 percent in 2019, 6.4 percent in 2018 and 4.8 percent in 2017 compared to policy benchmark returns of 1.1 percent, 5.5 percent,and 6.4 percent, respectively.

Separately, at June 30, 2019, the defined benefit plans held $1.5 billion in real asset investments compared to $1.1 billion in 2018 and $0.9 billion in 2017. The real asset segment earned a total return of 3.8 percent in 2019 compared to 9.2 percent in 2018 and 8.6 percent in 2017.

For liquidity purposes, the defined benefit plans held $4.9 billion in money market funds and the UC Short Term Investment Pool (STIP) in 2019 and 2018 and $4.2 billion in 2017.

UCRSP PLANS

UCRSP Plans provide savings incentives and the opportunity for additional retirement security for all eligible University of California employees. The University makes contributions to UCRSP for Savings Choice participants. Participants' interests in the Plans from contributions and investment income are fully and immediately vested. University contributions for Savings Choice participants vest after one year of service.

UCRSP Plans' net position as of June 30, 2019 amounted to $25.8 billion compared to $24.4 billion at June 30, 2018 and $22.5 billion at June 30, 2017. Additions to UCRSP Plans' net position include contributions, rollovers and investment income. Participant and University contributions, and rollovers amounted to $1.4 billion in 2019, and $1.3 billion in 2018 and 2017.

UCRSP Plans recognized net investment income of $1.4 billion in 2019 compared to net investment income of $1.8 billion in 2018 and net investment income of $2.2 billion in 2017. UCRSP Plan participants' investment selections influence the net investment income earned by the investment funds in the UCRSP Plans.

Deductions from UCRSP Plans' net position include benefit payments to participants, participant withdrawals and administrative expenses. For 2019, deductions were $1.5 billion compared to $1.2 billion in 2018 and $1.4 billion in 2017. The deductions fluctuate based upon withdrawals due to retirements and other factors including minimum required distributions and rollovers out of the UCRSP Plans.

The investments of UCRSP, overseen by the OCIO, are available to the securities lending program as a means to augment income. Cash collateral fluctuates in response to changes in demand from borrowers and the availability of securities. UCRSP Plans' investment of cash collateral received for securities lending totaled $2.2 billion at June 30, 2019, compared to $2.3 billion at June 30, 2018 and $3.0 billion at June 30, 2017. Securities lending activity contributed $15.8 million in net investment income, after fees and rebates, in 2019, compared to $17.1 million in 2018 and $19.3 million in 2017.

Cautionary Note Regarding Forward-Looking Statements

Certain information provided by the University, including written information as outlined above or oral statements made by its representatives, may contain forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical facts, that address activities, events or developments that the University expects or anticipates will or may occur in the future contain forward-looking information.

Report of Independent Auditors

TO THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

We have audited the accompanying individual financial statements of the University of California Defined Benefit Plans (comprised of the University of California Retirement Plan and the University of California Voluntary Early Retirement Incentive Program) and the University of California Retirement Savings Program (comprised of the Defined Contribution Plan, the Supplemental Defined Contribution Plan, the UC Tax-Deferred 403(b) Plan and the 457(b) Deferred Compensation Plan), collectively referred to herein as the "Plans", which comprise the individual statements of fiduciary net position as of June 30, 2019 and June 30, 2018, and the related individual statements of changes in fiduciary net position for the years ended June 30, 2019 and June 30, 2018, and the related notes to the individual financial statements.

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

Auditors' Responsibility
Our responsibility is to express opinions on the individual financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

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

Opinions

In our opinion, the individual financial statements referred to above present fairly, in all material respects, the individual financial positions of the University of California Defined Benefit Plans and the University of California Retirement Savings Program as of June 30, 2019 and June 30, 2018, and the changes in their individual fiduciary net position for the years ended June 30, 2019 and June 30, 2018 in accordance with accounting principles generally accepted in the United States of America.

Emphasis of Matter

As discussed in Note 1 to the financial statements, the individual financial statements of the Plans are intended to present the fiduciary net position and the changes in fiduciary net position of only that portion of activities that are attributable to the Plans. They do not purport to, and do not, present fairly the financial position of the University of California as of June 30, 2019 and June 30, 2018, and the changes in its financial position and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America. Our opinions are not modified with respect to this matter.

Other Matter

The management's discussion and analysis on pages 17 through 22 and the Required Supplementary Information included on pages 53 to 57 are required by accounting principles generally accepted in the United States of America to supplement the Plans' individual financial statements. Such information, although not a part of the individual financial statements of the Plans, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the individual financial statements of the Plans in the appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the individual financial statements, and other knowledge we obtained during our audit of the individual financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP
San Francisco, California
October 8, 2019

UNIVERSITY OF CALIFORNIA RETIREMENT SYSTEM

STATEMENTS OF FIDUCIARY NET POSITION

For the years ended June 30, 2019 and 2018 (in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
ASSETS				
Investments, at fair value:				
Equity securities:				
Domestic	$15,376,000	$11,980,980	$9,461,610	$7,870,821
Foreign	11,496,634	11,091,453	3,274,151	2,381,658
Fixed-income securities:				
U.S. government	3,617,009	3,131,654	3,037,017	2,749,616
Other U.S. dollar-denominated	10,270,573	12,286,870	5,707,199	5,824,124
Foreign	536	576		
Commingled funds	27,424,078	26,871,558	1,868,787	3,325,674
Real estate	1,823,802	1,665,191		
Publicly traded real estate investment trusts	1,186,440	926,112	906,382	785,573
Investment derivatives	3,700	(16,036)	2,785	(3,106)
Total investments	**71,198,772**	**67,938,358**	**24,257,931**	**22,934,360**
Investment of cash collateral	3,937,333	3,867,523	2,191,193	2,290,767
Participants' interests in mutual funds			1,691,773	1,585,098
Participant 403(b) Plan loans			193,766	184,388
Receivables:				
Contributions	168,198	58,423	10	54,930
Interest and dividends	55,445	57,814	28,482	32,500
Securities sales and other	1,026,713	40,733	16,605	35,882
Total receivables	**1,250,356**	**156,970**	**45,097**	**123,312**
Total assets	**76,386,461**	**71,962,851**	**28,379,760**	**27,117,925**
LIABILITIES				
Payable for securities purchased	1,728,224	1,174,984	404,755	437,055
Member withdrawals, refunds and other payables	378,241	82,234	5,354	4,430
Collateral held for securities lending	3,936,255	3,866,795	2,190,594	2,290,336
Total liabilities	**6,042,720**	**5,124,013**	**2,600,703**	**2,731,821**
Net position	**$70,343,741**	**$66,838,838**	**$25,779,057**	**$24,386,104**

See accompanying Notes to Financial Statements.

UNIVERSITY OF CALIFORNIA RETIREMENT SYSTEM

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the years ended June 30, 2019 and 2018 (in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
ADDITIONS				
Contributions:				
University	$2,408,650	$2,335,874	$56,528	$38,478
State of California		169,000		
Members	956,543	941,144		
Participants			1,393,336	1,275,244
Total contributions	**3,365,193**	**3,446,018**	**1,449,864**	**1,313,722**
Investment income:				
Net appreciation in fair value of investments	2,783,347	3,747,460	918,238	1,351,080
Interest, dividends, and other investment income	1,201,619	1,063,844	469,584	444,342
Securities lending income	143,168	88,361	69,428	47,738
Less securities lending fees and rebates	(106,587)	(58,376)	(53,598)	(30,649)
Total investment income	**4,021,547**	**4,841,289**	**1,403,652**	**1,812,511**
Interest income from contributions receivable	796	1,148		
Total additions	**7,387,536**	**8,288,455**	**2,853,516**	**3,126,233**
DEDUCTIONS				
Benefit payments and withdrawals:				
Retirement payments	2,664,031	2,495,200		
Member withdrawals	144,384	153,324		
Cost-of-living adjustments	560,546	517,646		
Lump sum cashouts	362,545	336,966		
Preretirement survivor payments	51,011	49,329		
Disability payments	30,102	30,259		
Death payments	8,028	9,440		
UCRSP benefit payments and participant withdrawals			1,454,549	1,220,081
Total benefit payments and withdrawals	**3,820,647**	**3,592,164**	**1,454,549**	**1,220,081**
Expenses:				
Plan administration	48,819	27,301	6,014	2,680
Other	13,167	9,388		
Total expenses	**61,986**	**36,689**	**6,014**	**2,680**
Total deductions	**3,882,633**	**3,628,853**	**1,460,563**	**1,222,761**
Increase in net position	**3,504,903**	**4,659,602**	**1,392,953**	**1,903,472**
NET POSITION				
Beginning of year	66,838,838	62,179,236	24,386,104	22,482,632
End of year	**$70,343,741**	**$66,838,838**	**$25,779,057**	**$24,386,104**

See accompanying Notes to Financial Statements.

UNIVERSITY OF CALIFORNIA RETIREMENT SYSTEM

Notes to Financial Statements

Years ended June 30, 2019 and 2018

NOTE 1. DESCRIPTION OF THE PLANS AND SIGNIFICANT ACCOUNTING POLICIES

General Introduction

The University of California Retirement System (UCRS) is a valuable component of the comprehensive benefits package offered to employees of the University. UCRS consists of the two defined benefit plans and four defined contribution plans. The defined benefit plans (DB Plans) include the University of California Retirement Plan (UCRP) for members and the Voluntary Early Retirement Incentive Plan (UC-VERIP) for certain University employees that were members of the California Public Employees' Retirement System (CalPERS) who elected early retirement. The University of California Retirement Savings Program (UCRSP) includes four defined contribution plans, collectively referred to as the UCRSP Plans, the Defined Contribution Plan (DC Plan), Supplemental Defined Contribution Plan (SDC Plan), Tax-Deferred 403(b) Plan (403(b) Plan) and 457(b) Deferred Compensation Plan (457(b) Plan). The Regents of the University of California (The Regents) acts as the trustee associated with each of the UCRS Plans other than the UCRSP Plans for which the Office of the Chief Investment Officer of The Regents (OCIO) acts as custodian. Administrative authority with respect to the UCRS Plans is vested in the President of the University (the President) as plan administrator, and the President has delegated that authority within UCRS, under University policies and procedures, to the Vice President — Human Resources.

Defined Benefit Plans

University of California Retirement Plan

UCRP is a single-employer defined benefit pension plan providing lifetime retirement income, disability protection, death benefits and post-retirement and preretirement survivor benefits to certain eligible employees of the University and its affiliate, Hastings College of the Law, and their survivors and beneficiaries.

UCRP was established in 1961 and, prior to July 1, 2016, membership was required for all employees appointed to work at least 50 percent time for one year or more, or for an indefinite period, and certain academic employees are eligible for UCRP membership (or the Retirement Choice Program effective July 1, 2016) after working 1,000 hours (750 hours for the Non-Senate Instructional Unit) in a continuous 12-month period.

Generally, an employee is required to work for five years in order to become entitled to UCRP benefits. The amount of the monthly pension benefit is determined under the basic formula of covered compensation times age factor times years of service credit. The maximum monthly benefit cannot exceed 100 percent of the employee's eligible highest average plan compensation over a 36-month period. The annual benefit is also subject to limitations established by Internal Revenue Code section (IRC §)415. Annual cost-of-living adjustments (COLAs) are made to monthly retirement benefits according to a specified formula based on the Consumer Price Index (CPI). Ad hoc COLAs may be granted subject to funding availability. Service accrued by a member with coordinated or noncoordinated benefits before July 1, 2013, is deemed to have been accrued in the 1976 Tier. If the member continues as an eligible employee after June 30, 2013, the member continues to accrue in the 1976 Tier until they incur a break of service.

For the period from July 1, 1987 to July 1, 1990, qualifying UCRP members could elect to participate in a noncontributory UCRP membership known as Tier Two. Tier Two provides a lower level of retirement income, disability protection and survivor benefits, calculated using specific Tier Two formulas based on the member's covered compensation times age factor times years of service credit.

Effective July 1, 2013, UCRP was amended to provide a new tier of pension benefits applicable to employees hired, or who returned to work after a tier break in service, on or after July 1, 2013 (2013 Tier). In the 2013 Tier, the earliest retirement age was increased from 50 to 55 and the age for the maximum age factor was increased to 65. There are no lump sum cashouts, inactive member COLAs or subsidized survivor annuities for spouses and domestic partners for 2013 Tier members.

Effective July 1, 2016, UCRP was amended to provide a new tier of pension benefits under the Retirement Choice Program. The new program tier provides eligible University employees hired (or becoming eligible) on or after July 1, 2016 (and certain eligible rehires who return to work after a tier break in service) a choice between two primary retirement benefits options: (1) Pension Choice, which is the UCRP pension benefit with covered compensation for new hires capped at the California Public Employees' Pension Reform Act (PEPRA) salary pensionable compensation limit (PEPRA maximum), $124,180 for 2019 ($149,016 for members not coordinated with Social Security), plus for new hires subject to the PEPRA maximum, a supplemental benefit to the DC Plan on eligible pay up to the IRC §401(a)(17) compensation limit (IRC compensation limit),$280,000 for calendar year 2019 and $275,000 for calendar year 2018; or (2) Savings Choice, which is a defined contribution plan-only option on eligible pay up to the IRC compensation limit.

On behalf of employees who participate in Savings Choice, the University also contributes 6.0 percent on eligible pay up to the IRC compensation limit into UCRP toward the unfunded liability.

Members' contributions are recorded separately and accrue interest at a rate determined by The Regents. Currently, member contributions accrue interest at an annual compounded rate of 6.0 percent, credited monthly. Upon termination, members may elect a refund of their contributions plus accumulated interest (and their Capital Accumulation Payment (CAP) balance if any); Vested terminated members who are eligible to retire may also elect a lump sum payment (excluding 2013 Tier and 2016 Tier) equal to the actuarially equivalent present value of their accrued benefits. Both actions forfeit the member's right to monthly benefits based on the same service credit.

From July 1, 1966, to June 30, 1971, UCRP contributions were required only from members who had reached age 30 and had at least one year of service. Member plan accounts designated Plan 02 were established to keep track of contributions that would have been made had a member been contributing during this period. Future retirement benefits for members with Plan 02 accounts are reduced to account for the contributions that were not made, unless the member repays the Plan 02 balance or attains a benefit percentage equal to 100 percent, based on service credit excluding the noncontributory period.

Certain UCRP members may also have a balance in UCRP consisting of CAP allocations, which were credited on behalf of eligible members on various dates in 1992, 1993, 1994, 2002 and 2003. Provided to supplement basic UCRP benefits, the allocations were equal to a percentage of the eligible member's covered compensation paid during the specified period. The CAP balance is generally payable in a lump sum at retirement or separation from service and includes interest credited monthly equal to an annual percentage yield (APY) of 8.5 percent for allocations made in 1992, 1993 and 1994. For allocations made in 2002 and 2003, the interest credited monthly is equal to the discount rate component of the actuarial equivalence basis under UCRP, which currently equates to an APY of 7.25 percent for the fiscal year ended June 30, 2019. The APY applied to the 2002 and 2003 allocation will vary according to changes in the discount rate.

At June 30, 2019 and 2018, the Plan membership included:

	UCRP RETIREES AND MEMBERS	
	2019	**2018**
Retirees and beneficiaries receiving benefits	79,084	75,924
Inactive plan members entitled to, but not yet receiving benefits	100,864	92,617
Active plan members:		
Vested	74,403	76,933
Nonvested	53,524	52,946
Total active plan members	127,927	129,879
Total membership	**307,875**	**298,420**

Employer contributions are made to UCRP on behalf of all members. The annual rate of University contributions is established pursuant to The Regents' funding policy.

University of California Voluntary Early Retirement Incentive Program

Some University employees became members of the California Public Employees' Retirement System (CalPERS) before UCRP was established and continued to participate in CalPERS during their University employment after UCRP was established. The University of California contributed to CalPERS on behalf of these UC-affiliated CalPERS members. The UC-VERIP is a single-employer defined benefit pension plan established by the University that provides lifetime supplemental retirement income and survivor benefits to UC-VERIP members who elected early retirement under CalPERS.

Generally, to participate in the UC-VERIP, an eligible employee was required to elect concurrent retirement under CalPERS and the UC-VERIP effective October 1, 1991, and must have had a combined age plus service credit equal to 80 years as of September 30, 1991, if classified as a Qualified Academic Senate Faculty Member, or equal to 75 years if not classified as a Qualified Academic Senate Faculty Member. Of 1,579 eligible employees, 879 elected to retire under the UC-VERIP. As of June 30, 2019 and 2018, there were 450 and 492 retirees and beneficiaries, respectively, receiving benefits under the UC-VERIP. After eligible employees elected to participate, the UC-VERIP was closed to future participation.

The cost of contributions made to the UC-VERIP is borne entirely by the University. No additional contributions are required as long as the UC-VERIP remains fully funded under the actuarial assumptions used in the actuarial valuation.

Effective July 1, 2011, the UC-VERIP was amended, subject to funding availability, to provide annual cost-of-living adjustments (COLAs) to monthly benefits according to the formula based on the Consumer Price Index that is used for UCRP. Ad hoc COLAs may also be granted subject to funding availability.

University of California Retirement Savings Program

The OCIO oversees the investment choices of the UCRSP. The fund choices are segmented into tiers I, II, and III. Participants may direct investment of their contributions and transfer UCRSP plan accumulations to any of these funds. Participants' interests in UCRSP plans are fully and immediately vested and are distributable at death, retirement or termination of employment. University contributions for Savings Choice participants vest after one year of service. Participants may elect to defer distribution until age 70 ½ or separation from service, whichever is later, in accordance with IRC §401(a)(9) minimum distribution requirements. In-service withdrawals are permitted in conformance with the IRC regulations applicable to each plan.

TIER I — Target Date Funds

UC Pathway Funds:

· Income, 2015, 2020, 2025, 2030, 2035, 2040, 2045, 2050, 2055 and 2060

TIER II — Main Fund Menu - Bond and Stock Investments

Bond Investments:

· UC Savings Fund
· UC Bond Fund
· UC Short Term TIPS Fund
· UC TIPS Fund

Domestic Stock Investments:

· UC Domestic Equity Index Fund
· UC Growth Company Fund
· UC Domestic Small Cap Index Fund

Foreign Stock Investments:

· UC International Equity Index Fund
· UC Diversified International Fund
· UC Emerging Markets Equity Fund

Specialty Stock Funds

· UC Real Estate Fund
· UC Social Equity Fund

TIER III — BrokerageLink®

Fidelity BrokerageLink combines the convenience of a workplace retirement plan with the additional flexibility of a brokerage account, and expanded investment choices to manage retirement contributions. The plan fiduciary neither evaluates nor monitors the investments available through BrokerageLink. It is the participants' responsibility to ensure that the investments selected are suitable for participants' situation(s), including goals, time horizon and risk tolerance.

Defined Contribution Plan

Under the Retirement Choice Program, for employees who elect Savings Choice, which works much like a 401(k) plan, both the University and the participants make mandatory DC Plan retirement contributions, on a pretax basis, on eligible pay up to the IRC compensation limit. The participant contributes 7.0 percent, and the University contributes 8.0 percent. University contributions under Savings Choice are fully vested after one year of service credit. For employees who elect Pension Choice and who are subject to the PEPRA maximum, both the University and the participants make mandatory DC Plan retirement contributions on a pretax basis. University contributions under Pension Choice are fully vested after five years of service credit. For designated faculty, the University contributes 5.0 percent on all eligible pay up to the IRC compensation limit. For staff, the University contributes 3.0 percent on eligible pay above the PEPRA maximum up to the IRC compensation limit. Both designated faculty and staff contribute 7.0 percent on eligible pay above the PEPRA maximum up to the IRC compensation limit. The University may also contribute on behalf of eligible senior managers.

The DC Plan Pretax Account also includes mandatory contributions from part-time, seasonal and temporary employees at the University who are not currently participating in UCRP or another defined benefit plan to which the University contributes (Pretax Account participants). Pretax participation includes certain University student employees and resident aliens with F-1 and J-1 visa status. Pretax participants contribute 7.5 percent of their gross salary (up to the Social Security wage base) to the Plan in lieu of deductions for Social Security taxes.

All University employees, except students who normally work fewer than 20 hours per week, are eligible to make voluntary contributions to the DC Plan After-Tax Account and defer taxation on their earnings until the accumulations are withdrawn. The maximum amount that participants may contribute annually to the After-Tax Account is determined by the IRC §415(c) limit. The University may also make DC Plan contributions on behalf of eligible senior managers.

Tax-Deferred 403(b) Plan

The University makes 403(b) Plan retirement contributions on the summer salaries of eligible academic appointees who teach, conduct research or provide administrative service during the summer session or an equivalent term. To be eligible, the academic appointee must hold an academic year appointment and be an active member of UCRP or another defined benefit plan to which the University contributes, be a Savings Choice participant, or be eligible for a primary retirement benefit option under the Retirement Choice Program even if not yet participating. The contribution rate, effective November 1, 2016, is 7.0 percent of eligible summer salary, of which 3.5 percent is University-paid and 3.5 percent is employee-paid, both on a pretax basis.

The 403(b) Plan is available to all University employees except students who normally work fewer than 20 hours per week. Employees who want to participate in the 403(b) Plan designate a portion of their gross salary within the IRC limits to be contributed on a pretax basis, thus reducing their taxable income. Income taxes on contributions and any earnings are deferred (that is, postponed) until the participant withdraws the money. The University also makes 403(b) Plan contributions on behalf of eligible senior managers.

Annual salary deferral contribution limits for the 403(b) Plan during fiscal year 2018–2019 were as follows: the maximum annual contribution limit for participants under age 50 for the calendar year 2018 was $18,500 and for calendar year 2019 was $19,000 (or 100 percent of adjusted gross salary, if less). For participants age 50 or older, the total annual contribution limit for calendar year 2018 was $24,500, and for calendar year 2019 was $25,000, (or 100 percent of adjusted gross salary, if less). Participants with 15 or more years of service may be able to increase their limit under additional catch-up provisions.

457(b) Deferred Compensation Plan

The 457(b) Plan is available to all University employees except students who normally work fewer than 20 hours per week. Taxes on contributions (deferred compensation) and earnings thereon are deferred until the accumulations are withdrawn. The University may also make 457(b) Plan contributions on behalf of eligible senior managers. The deferred compensation limits for the 457(b) Plan were the same as the 403(b) Plan limits (described in the previous paragraph) during fiscal year 2018-2019.

Basis of Accounting

The financial statements have been prepared in accordance with U.S. generally accepted accounting principles using the economic resources measurement focus and the accrual basis of accounting. The Plans follow accounting principles issued by the Governmental Accounting Standards Board (GASB).

Valuation of Investments

Investments are measured and reported at fair value. Securities are generally valued at the last sale price on the last business day of the fiscal year, as quoted on a recognized exchange or by utilizing an industry standard pricing service, when available. Securities for which no sale was reported as of the close of the last business day of the fiscal year are valued at the quoted bid price of an exchange or a dealer who regularly trades in the security being valued. Investment in non-exchange traded debt and equity investments are valued using inputs provided by independent pricing services or by broker/dealers who actively trade in these markets. Certain securities may be valued on a basis of a price provided by a single source.

Investments also include private equities, absolute return funds, real estate, real asset and certain corporate asset-backed securities. Private equities include venture capital partnerships, buyout and international funds. Fair values for interests in private equity, absolute return partnerships, real assets and real estate partnerships are based on valuations provided by the general partners of the respective partnerships. The valuations are primarily based on the Net Asset Value (NAV) of the underlying investments. The NAV is reported by the external investment managers, including general partners, in accordance with their policies as described in their respective financial statements and offering memoranda. The most recent NAV is adjusted for capital calls, distributions and significant known valuation changes, if any, of its related portfolio through June 30, 2019 and 2018, respectively.

Interests in certain direct investments in real estate are estimated based upon independent appraisals. Because the private equity, real estate and absolute return partnerships, along with direct investments in real estate, are not readily marketable, their estimated value is subject to uncertainty and, therefore, may differ significantly from the value that would be used had a ready market for such investments existed. These investments are generally less liquid than other investments, and the value reported may differ from the values that would have been reported had a ready market for these investments existed.

For other investments, the Plans consider various factors to estimate fair value, such as the timing of the transaction, the market in which the company operates, comparable transactions, company performance and projections as well as discounted cash flow analysis. The selection of an appropriate technique may be affected by the availability and general reliability of relevant inputs. In some cases, one valuation technique may provide the best indication of fair value while in other circumstances, multiple valuation techniques may be appropriate. Furthermore, the Plans may review the investment's underlying portfolio as well as engage external appraisers, depending on the nature of the investment.

The Plans exercise due diligence in assessing the external managers' use of and adherence to fair value principles. In conjunction with these procedures, estimated fair value is determined by consideration of a wide range of factors, including market conditions, redemption terms and restrictions and risks inherent in the inputs of the external investment managers' valuation. In situations where the information provided by the external manager is deemed to not be representative of the fair value as of the measurement date, management evaluates specific features of the investment and utilizes supplemental fair value information provided by the external manager along with any relevant market data to measure the investment's fair value.

Investments in registered investment companies are valued based upon the reported net asset value of those companies. Mortgage loans, held as investments, are valued on the basis of their future principal and interest payments, and are discounted at prevailing interest rates for similar instruments. Insurance contracts are valued at contract value, plus reinvested interest, which approximates fair value.

Investments denominated in foreign currencies are translated into U.S. dollar equivalents using year-end spot foreign currency exchange rates. Purchases and sales of investments and their related income are translated at the rate of exchange on the respective transaction dates. Realized and unrealized gains and losses resulting from foreign currency changes are included in the Plans' statement of changes in fiduciary net position.

Investment transactions are recorded on the date the securities are purchased or sold (trade date). Realized gains or losses are recorded as the difference between the proceeds from the sale and the average cost of the investment sold. Dividend income is recorded on the ex-dividend date, and interest income is accrued as earned. Gifts of securities are recorded based on fair value at the date of donation.

Derivative Financial Instruments

Derivative instruments are recorded at fair value. Futures contracts, foreign currency exchange contracts, stock rights and warrants, options and swaptions are valued at the settlement price on the last day of the fiscal year, as quoted on a recognized exchange or by utilizing an industry standard pricing service, when available. Financial institutions or independent advisors have estimated the fair value of the interest rate swaps and total return swaps using quoted market prices when available or discounted expected future net cash flows.

Administrative Expenses

Administrative expenses are incurred in connection with the operation of UCRS for costs such as staff salaries and benefits, OCIO operations, information systems, leased space, supplies and equipment, and professional services rendered by the benefits consultants, legal counsel and independent auditor, which are paid from UCRS' assets.

For the UCRSP Plans, investment management, trading, trust and custody expenses are deducted from investment income. The UCRSP Plans charge a per-participant administrative fee to cover costs of plan administrative services. The single quarterly fee applies regardless of how many plan accounts a participant holds. Administrative fees are used to pay for investor education, accounting, audit, legal and recordkeeping services.

Administrative expenses are assessed to the UC-VERIP through an annual account servicing charge of $10 per retiree.

Status Under the IRC

UCRP is intended to qualify under IRC §401(a) and the regulations thereunder and the UCRP trust is intended to be exempt from taxation under IRC §501(a). In a letter to the University dated November 8, 2007, the Internal Revenue Service (IRS) confirmed its determination that the plan provisions of UCRP, as amended through December 11, 2002 (other than amendments authorized by the Economic Growth and Tax Relief Reconciliation Act of 2001), met the requirements for qualification under IRC §401(a). Since then, UCRP has been amended to comply with subsequent tax acts and state laws and to make certain design changes recommended by the President and approved by The Regents. A request for a determination on UCRP, as amended, was submitted to the IRS on January 29, 2016, within Cycle E for governmental plans. The University received a favorable determination letter dated April 5, 2017.

The UC-VERIP is intended to satisfy the qualification requirements under IRC §401(a) and its trust is intended to be exempt from taxation under IRC §501(a).

On August 12, 2013, the IRS confirmed its determination that the form of the DC Plan met the requirements for qualification under IRC §401(a). Since then, the DC Plan has been amended to comply with subsequent tax acts and state laws and to make certain design changes recommended by the President and approved by The Regents. The University has requested that the IRS issue an updated determination letter on the DC Plan, as amended. A request for an updated determination letter was submitted to the IRS on January 29, 2016. The University received a favorable determination letter dated April 5, 2017.

Separately, the University has requested that the IRS issue a favorable determination letter on the SDC Plan. The SDC Plan is intended to satisfy the qualification requirements of IRC §401(a) and its trust is intended to be exempt from taxation under IRC §501(a). The SDC Plan was intended to be used in conjunction with a defined contribution plan described in IRC §415(m). However, the IRS declined to rule on the 415(m) portion, so the University opted to withdraw its request for a determination on the SDC Plan.

The 403(b) Plan is intended to satisfy the requirements of IRC §403(b). The 457(b) Plan is intended to satisfy the requirements of IRC §457(b).

To the best of tax counsel's knowledge, the UCRS Plans have been administered in accordance with their terms and the applicable provisions of the IRC and the regulations thereunder, in all material respects.

Use of Estimates in the Preparation of Financial Statements

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenditures during the reporting period. Although management believes the estimates and assumptions are reasonable, they are based upon information available at the time the estimate or judgment is made, and actual amounts could differ from those estimates.

NOTE 2. INVESTMENTS

The Regents, as the governing board and as trustee, is responsible for the oversight of the Plans' investments and establishes investment policies for the defined benefit plans and UCRSP, which are carried out by the Office of the Chief Investment Officer (OCIO). The OCIO has primary fiduciary responsibility for investing UCRS' assets consistent with the policies established by The Regents.

Participation in the UC Short Term Investment Pool (STIP) maximizes the returns on short-term cash balances in the UCRS Plans by taking advantage of the economies of scale of investing in a large pool with a broad range of maturities. STIP is managed to maximize current earned income. The available cash in UCRS Plans awaiting investment or for administrative expenses is also invested in STIP. Investments authorized by The Regents for STIP include fixed-income securities with a maximum maturity of 5.5 years. In addition, for STIP, The Regents has also authorized loans, primarily to faculty members residing in California, under the University's Mortgage Origination Program with terms of up to 40 years.

Investments authorized by The Regents for the UCRS Plans' investment pools and separate investments include equity securities, fixed-income securities and certain other asset classes. The equity portion of the investment portfolios may include both domestic and foreign common and preferred stocks, and actively managed and passive strategies, along with exposure to private equities. Private equities include venture capital partnerships, buyouts and international funds. Investment portfolios may include certain foreign currency-denominated equity securities.

The fixed-income portion of the investment portfolios may include both domestic and foreign securities, along with certain securitized investments, including mortgage-backed and asset-backed securities. Fixed-income investment guidelines permit the use of futures and options on fixed-income instruments in the ongoing management of the portfolios. Real estate investments and real assets are authorized for the UCRS Plans. Absolute return strategies, which may incorporate short sales, plus derivative positions to implement or hedge an investment position, are also authorized for the UCRS Plans.

The following is The Regents' adopted target asset allocation policy for the defined benefit plans investment pool as of June 30, 2019:

	TARGET ALLOCATION
Asset class	
U.S. Equity	27.6%
Developed International Equity	16.8
Emerging Market Equity	5.6
Core Fixed Income	13.0
High Yield Bonds	2.5
Emerging Market Debt	2.5
Treasury Inflation- Protected Securities	2.0
Real Estate	7.0
Private Equity	10.0
Absolute Return	10.0
Real Assets	3.0
Total	**100.0%**

Annual Money-Weighted Rates of Return

A money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. The annual money-weighted rates of return, net of investment expenses, adjusted for changing amounts actually invested were 6.0 percent and 7.7 percent for the years ended June 30, 2019 and 2018, respectively.

The composition of investments and derivative instruments, by investment type, at June 30, 2019 and 2018, is as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Equity securities:				
Domestic	$15,376,000	$11,980,980	$9,461,610	$7,870,821
Foreign	11,496,634	11,091,453	3,274,151	2,381,658
Equity Securities	**26,872,634**	**23,072,433**	**12,735,761**	**10,252,479**
Fixed-income securities:				
U.S. government-guaranteed:				
U.S. Treasury bills, notes and bonds	282,167	434,326	1,249,565	1,462,514
U.S. Treasury strips	1,250,783	947,838	722,813	516,817
U.S. TIPS	2,079,819	1,744,084	1,062,952	768,477
U.S. government-backed mortgage-backed securities	4,240	5,406	1,687	1,808
Fixed-Income Securities	**3,617,009**	**3,131,654**	**3,037,017**	**2,749,616**
Other U.S. dollar-denominated:				
Corporate bonds	3,332,609	3,613,313	983,672	876,960
Commercial paper	6,730	2,012,845	414,905	
U.S. agencies	962,429	788,443	3,043,749	3,246,677
U.S. agencies asset-backed securities	2,012,811	1,992,332	784,009	960,920
Corporate asset-backed securities	1,309,448	1,277,530	273,964	362,437
Supranational/foreign	2,625,254	2,582,883	199,439	221,375
Other	21,292	19,524	7,461	155,755
Other U.S. Dollar-Denominated	**10,270,573**	**12,286,870**	**5,707,199**	**5,824,124**
Foreign currency-denominated:				
Corporate	536	576		
Foreign Currency-Denominated	**536**	**576**		
Commingled funds:				
Absolute return	4,716,290	4,475,682		
U.S. equity funds	20,070	2,620,404	1,117,500	1,449,249
Non-U.S. equity funds	8,198,932	7,992,764		965,334
U.S. bond funds	1,131,443	1,076,196		
Non-U.S. bond funds	14	14		
Private equity	4,458,873	3,178,252		
Real assets	1,530,725	1,146,296		
Real estate investment trusts	2,454,783	1,475,420		
Money market funds*	4,912,948	4,906,530	751,287	911,091
Commingled Funds	**27,424,078**	**26,871,558**	**1,868,787**	**3,325,674**
Real estate	1,823,802	1,665,191		
Publicly traded real estate investment trusts	1,186,440	926,112	906,382	785,573
Investment derivatives	3,700	(16,036)	2,785	(3,106)
Total Investments	**$71,198,772**	**$67,938,358**	**$24,257,931**	**$22,934,360**

**Includes investment of $2,364,606 by DB Plans, and $322,917 by UCRSP in the Short Term Investment Pool as of June 30, 2019.*

Investment Risk Factors

There are many factors that can affect the value of investments. Some, such as custodial credit risk, concentration of credit risk and foreign currency risk, may affect both equity and fixed-income securities. Equity securities respond to such factors as economic conditions, individual company earnings performance and market liquidity, while fixed-income securities are particularly sensitive to credit risks and changes in interest rates. Alternative investment strategies and their underlying assets and rights are also subject to an array of economic and market vagaries that can limit or erode value.

Credit Risk

Fixed-income securities are subject to credit risk, which is the chance that a bond issuer will fail to pay interest on principal in a timely manner, or that negative perceptions of the issuer's ability to make these payments will cause security prices to decline. These circumstances may arise due to a variety of factors, such as financial weakness, bankruptcy, litigation and/or adverse political developments.

A bond's credit quality is an assessment of the issuer's ability to pay interest on the bond, and ultimately to pay the principal. Credit quality is evaluated by one of the independent bond-rating agencies, for example, Moody's Investors Service (Moody's) or Standard and Poor's (S&P). The lower the rating, the greater the chance, in the rating agency's opinion, that the bond issuer will default, or fail to meet its payment obligations. Generally, the lower a bond's credit rating, the higher its yield should be to compensate for the additional risk.

Certain fixed-income securities, including obligations of the U.S. government or those explicitly guaranteed by the U.S. government, are not considered to have credit risk.

Asset-backed securities are debt obligations that represent claims to the cash flows from pools of commercial, mortgage, credit card or student loans. Mortgage-backed securities issued by Ginnie Mae are backed by the full faith and credit of the U.S. government.

The investment guidelines for STIP recognize that a limited amount of credit risk, properly managed and monitored, is prudent and provides incremental risk-adjusted return over its benchmark. (The combined benchmark for STIP, the two-year Treasury Income Note and Citigroup Three-Month Treasury Bill, does not contain credit risk.)

The Regents recognizes that credit risk is appropriate in balanced investment pools such as UCRS Plans by virtue of the benchmark chosen for the fixed-income portion of the pool.

The Barclays Capital U.S. Aggregate Bond Index is the fixed-income benchmark for the UCRS Plans, and is composed of approximately 25.1 percent corporate bonds and 29.7 percent mortgage/asset-backed securities, all of which carry some degree of credit risk. The remaining 45.1 percent is composed of government-issued bonds.

In addition, the investment policies for UCRS Plans allow for dedicated allocations to non-investment-grade and emerging market bonds, investment that entails credit, default and/or sovereign risk.

The credit risk profile for fixed- or variable-income securities at June 30, 2019 and 2018, is as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
U.S. government-guaranteed	$3,617,009	$3,131,654	$3,037,017	$2,749,616
Other U.S. dollar-denominated:				
AAA	1,384,785	1,375,744	297,569	422,356
AA	272,180	262,363	2,708,788	2,853,315
A	1,020,200	1,130,810	244,926	341,942
BBB	1,775,006	1,966,200	495,631	621,535
BB	1,162,299	1,158,812	193,848	17,273
B	1,161,098	1,068,202	121,758	1,129
CCC or below	170,834	200,111	25,821	
Not rated	3,324,171	5,124,628	1,618,858	1,566,574
Foreign currency-denominated:				
B	536	576		
Commingled funds:				
U.S. bond funds: Not rated	1,131,443	1,076,196		
Non-U.S. bond funds: Not rated	14	14		
Money market funds: Not rated	4,912,948	4,906,530	751,287	911,091

Custodial Credit Risk

Custodial credit risk is the risk that, in the event of the failure of the custodian, the investments may not be returned. Substantially all of the UCRS Plans' securities are registered in the name of The Regents by the custodial bank. Other types of investments represent ownership interests that do not exist in physical or book-entry form. As a result, custodial credit risk for such investments is remote.

Concentration of Credit Risk

Concentration of credit risk is the risk associated with a lack of diversification, such as having substantial investments in a few individual issuers, thereby exposing UCRS Plans to greater risks resulting from adverse economic, political, regulatory, geographic or credit developments.

The U.S. and non-U.S. equity portions of UCRS may be managed either passively or actively. For the portion managed passively, the concentration of individual securities is similar to their concentration in the benchmark. While some securities have a larger representation in the benchmark than others, The Regents considers that passive management results in an absence of concentration of credit risk. For the portion managed actively, asset class guidelines do not specifically address concentration risk, but do state that the equity asset class in the aggregate will be appropriately diversified to control overall risk and will exhibit portfolio characteristics similar to the asset class benchmark (including concentration of credit risk). Concentration risk for individual portfolios is monitored relative to their individual benchmarks and agreed-upon risk parameters in their guidelines.

At June 30, 2019 and 2018, no single issuer comprised more than five percent or more of investments held by the UCRS Plans.

Interest Rate Risk

Interest rate risk is the risk that the value of fixed-income securities will decline because of changing interest rates. The prices of fixed-income securities with a longer time to maturity, measured by effective duration, tend to be more sensitive to changes in interest rates and, therefore, more volatile than those with shorter durations. Effective duration is the approximate change in the price of a security resulting from a 100-basis-point (1-percentage-point) change in the level of interest rates. It is not a measure of time.

Interest rate risk for the STIP is managed by constraining the maturity of all individual securities to be less than five and one-half years. There is no restriction on the weighted average maturity of the portfolio as it is managed relative to the liquidity demands of the investors. The nature and maturity of individual securities in the STIP allow for the use of weighted average maturity as an effective risk management tool, rather than the more complex measure, effective duration.

Portfolio guidelines for the core fixed-income portion of the UCRS Plans' investment portfolio limit the weighted average effective duration of the portfolio to the effective duration of the Barclays Capital Aggregate Bond Index benchmark, plus or minus 20 percent. These portfolio guidelines constrain the potential price movement due to interest rate changes of the portfolio being similar to that of the benchmark. There are similar restrictions for the high-yield and emerging market debt portfolios relative to their benchmarks.

The effective duration for fixed-income securities at June 30, 2019 and 2018, is as follows:

(in years)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Fixed-income securities:				
U.S. government-guaranteed:				
U.S. Treasury bills, notes and bonds	5.2	3.8	2.4	2.4
U.S. Treasury strips	8.3	8.7	15.7	13.1
U.S. TIPS	6.5	6.5	5.4	5.2
U.S. government-backed mortgage-backed securities	1.8	2.5	3.3	4.1
Other U.S. dollar-denominated:				
Corporate bonds	5.0	5.4	6.2	7.2
U.S. agencies	3.5	3.6	1.0	1.6
U.S. agencies asset-backed securities	2.6	3.9	2.0	4.0
Corporate asset-backed securities	2.5	2.5	2.8	2.7
Supranational/foreign	5.7	5.3	4.6	4.6
Other	15.8	15.5	16.2	15.9
Foreign currency-denominated:				
Corporate	2.6	0.6		
Commingled funds:				
U.S. bond funds	2.9			
Non-U.S. bond funds	7.6			
Money market funds	1.2		1.2	

The money market funds consist of underlying securities that are of a short-term, liquid nature.

Investments may also include various mortgage-backed securities, collateralized mortgage obligations, structured notes, variable-rate securities and callable bonds that may be considered to be highly sensitive to changes in interest rates due to the existence of prepayment or conversion features. Although the effective durations of the securities may be low, they are considered to be highly sensitive to changes in interest rates.

At June 30, 2019 and 2018, the fair values of such investments are as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Mortgage-backed securities	$1,942,203	$1,878,516	$749,369	$916,912
Collateralized mortgage obligations	746,293	642,148	176,041	188,208
Other asset-backed securities	469,533	1,008,170	38,561	257,952
Variable-rate securities	1,879,703	1,999,011	280,966	414,014
Structured notes	1,818		893	
Callable bonds	4,553,716	4,497,414	3,898,543	3,969,370
Convertible bonds	148,385	4,618	56,837	
Total	**$9,741,651**	**$10,029,877**	**$5,201,210**	**$5,746,456**

Mortgage-Backed Securities. These securities are issued by Fannie Mae, Ginnie Mae and Freddie Mac, and various commercial entities and may include short embedded prepayment options. Unanticipated prepayments by the obligees of the underlying asset reduce the total expected rate of return.

Collateralized Mortgage Obligations. Collateralized mortgage obligations (CMOs) generate a return based upon the payment of either interest or principal on mortgages in an underlying pool. The relationship between interest rates and prepayments makes the fair value highly sensitive to changes in interest rates. In falling interest rate environments, the underlying mortgages are subject to a higher propensity of prepayments. In rising interest rate environments, the opposite is true.

Other Asset-Backed Securities. Other asset-backed securities also generate a return based upon the payment of either interest or principal on obligations in an underlying pool, generally associated with auto loans or credit cards. As with CMOs, the relationship between interest rates and prepayments makes the fair value highly sensitive to changes in interest rates.

Variable-Rate Securities. These securities are investments with terms that provide for the adjustment of their interest rates on set dates and are expected to have fair values that will be relatively unaffected by interest rate changes. Variable-rate securities may have limits on how high or low the interest rate may go. These constraints may affect the market value of the security.

Callable Bonds. Although bonds are issued with clearly defined maturities, an issuer may be able to redeem, or call, a bond earlier than its maturity date. The called bond must then be replaced with a bond that may have a lower yield than the original. The call feature causes the fair value to be highly sensitive to changes in interest rates.

At June 30, 2019 and 2018, the effective durations for these securities are as follows:

(in years)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Mortgage-backed securities	2.7	4.1	2.0	4.1
Collateralized mortgage obligations	3.5	4.0	4.4	4.5
Other asset-backed securities	0.7	0.8	0.7	0.7
Variable-rate securities	1.7	1.6	2.1	1.8
Structured notes	1.0		1.3	
Callable bonds	4.4	5.0	2.0	2.5
Convertible bonds	0.9	1.7	1.0	

Foreign Currency Risk

The Regents' strategic asset allocation policies include allocations to non-U.S. equities and non-dollar-denominated bonds. The benchmarks for these investments are not hedged; therefore, the investment strategies include foreign currency risk. Portfolio guidelines for U.S. investment-grade, fixed-income securities also allow exposure to non-U.S. dollar-denominated bonds up to 10 percent of the total portfolio market value. Exposure to foreign currency risk from these securities is permitted, and it may be fully or partially hedged using forward foreign currency exchange contracts. Under The Regents' investment policies, such instruments are not permitted for speculative use or to create leverage. Similar limits on foreign exchange exposure apply to the high-yield debt and emerging market debt portfolios.

At June 30, 2019 and 2018, the foreign currency risk expressed in U.S. dollars, organized by currency denomination and investment type, are as follows:

(in thousands of dollars)	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Equity securities:				
Euro	$2,849,673	$3,193,315	$746,770	$702,089
British Pound	1,285,973	1,607,008	383,515	381,746
Japanese Yen	1,819,639	2,007,814	575,888	554,399
Swiss Franc	790,576	678,777	209,332	160,500
South Korean Won	493,921	482,103	118,933	
Canadian Dollar	676,949	520,961	229,704	201,758
New Taiwan Dollar	297,817	234,014	101,187	
Indian Rupee	369,322	275,785	101,887	
Australian Dollar	481,842	365,801	163,497	145,725
Hong Kong Dollar	941,716	608,719	189,897	68,103
Swedish Krona	270,102	222,924	74,769	66,100
South African Rand	146,640	153,225	58,521	
Thailand Baht	144,027	106,332	26,812	
Danish Krone	135,548	129,233	43,064	38,701
Singapore Dollar	85,111	82,058	27,572	24,036
Norwegian Krone	90,698	77,103	21,840	21,069
Brazilian Real	207,258	74,405	64,041	
Mexican Peso	64,475	54,541	26,640	
Chinese Yuan	33,719			
Other	311,628	217,337	110,282	17,432
Subtotal	**11,496,634**	**11,091,455**	**3,274,151**	**2,381,658**
Fixed-income securities:				
Euro	536	576		
Subtotal	**536**	**576**		
Commingled funds				
Various currency denominations:				
Non-U.S. equity funds	8,198,932	7,992,764		965,334
Real assets	191,288	149,441		
Private equity	108,682	98,116		
Non-U.S. bond funds	14	14		
Subtotal	**8,498,916**	**8,240,335**		**965,334**
Investment derivatives:				
Hong Kong Dollar		1	8	(1)
Australian Dollar	1	4	50	54
Canadian Dollar	33	17	31	42
British Pound		150	135	27
Japanese Yen		(171)	94	(495)
Euro	550	583	622	(214)
Other	92	37	66	(10)
Subtotal	**676**	**621**	**1,006**	**(597)**
Real estate:				
Publicly traded real estate investment trusts				
Euro	55,449	76,509	10,473	10,674
Australian Dollar	60,103	52,746	13,483	11,493
British Pound	68,862	77,676	9,336	8,972
Japanese Yen	86,263	39,385	17,575	13,250
Singapore Dollar	30,847	16,485	6,781	4,663
South African Rand	6,685	7,704		
Canadian Dollar	25,438	6,577	3,533	2,783
Mexican Peso	3,194	2,944		
Other	17,049	7,425	5,520	3,807
Subtotal	**353,890**	**287,451**	**66,701**	**55,642**
Total exposure to foreign currency risk	**$20,350,652**	**$19,620,438**	**$3,341,858**	**$3,402,037**

NOTE 3. SECURITIES LENDING

UCRS Plans participate in a securities lending program as a means to augment income. Securities invested by the OCIO are lent to selected brokerage firms for which collateral received equals or exceeds the fair value of such investments during the period of the loan. Securities loans immediately terminate upon notice by either the UCRS Plans or the borrower. Collateral may be cash or securities issued by the U.S. government or its agencies, or the sovereign or provincial debt of foreign countries. Collateral securities cannot be pledged or sold by the UCRS Plans unless the borrower defaults.

Loans of domestic equities and all fixed-income securities are initially collateralized at 102 percent of the fair value of securities lent. Loans of foreign equities are initially collateralized at 105 percent. All borrowers are required to provide additional collateral by the next business day if the value of the collateral falls to less than 100 percent of the fair value of securities lent.

Cash collateral received from the borrower is invested by lending agents, as agents for the UCRS Plans, in investment pools in the name of the UCRS Plans, with guidelines approved by the Plans. These investments are shown as investment of cash collateral in the statements of net position. At June 30, 2019 and 2018, the securities in these pools had a weighted average maturity of 20 and 15 days, respectively. UCRS Plans record a liability for the return of the cash collateral shown as collateral held for securities lending in the statements of net position. Securities collateral received from the borrower is held in an investment pool by the UCRS Plans' custodial bank.

At June 30, 2019 and 2018, the UCRS Plans had little exposure to borrowers because the amounts the UCRS Plans owed the borrowers were substantially the same as the amounts the borrowers owed the UCRS Plans. UCRS Plans are fully indemnified by their lending agents against any losses incurred as a result of borrower default.

Securities lending transactions at June 30, 2019 and 2018, are as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
SECURITIES LENT				
For cash collateral:				
Equity securities:				
Domestic	$1,684,547	$2,127,617	$1,248,104	$1,059,051
Foreign	274,397		74,921	
Fixed-income securities:				
U.S. government	413,891	741,893	463,378	1,002,486
Other U.S. dollar-denominated	1,451,931	958,883	367,919	179,784
Foreign currency-denominated	38,235			
Lent for cash collateral	**3,863,001**	**3,828,393**	**2,154,322**	**2,241,321**
For securities collateral:				
Equity securities:				
Domestic	1,822,012	1,745,544	1,418,091	1,312,081
Foreign	888,595	891,284	308,906	350,911
Fixed-income securities:				
U.S. government	1,226,417	1,503,985	1,478,657	1,671,003
Other U.S. dollar-denominated	295,013	476,899	176,680	233,754
Foreign currency-denominated	3,221			
Lent for securities collateral	**4,235,258**	**4,617,712**	**3,382,334**	**3,567,749**
Total securities lent	**$8,098,259**	**$8,446,105**	**$5,536,656**	**$5,809,070**
COLLATERAL RECEIVED				
Cash	$3,936,255	$3,866,795	$2,190,594	$2,290,336
Securities	4,597,881	5,029,107	3,671,930	3,885,602
Total collateral received	**$8,534,136**	**$8,895,902**	**$5,862,524**	**$6,175,938**
INVESTMENT OF CASH RECEIVED				
Fixed- or variable-income securities:				
Other U.S. dollar-denominated:				
Corporate bonds	$203,247	$105,026	$113,110	$62,208
Commercial paper	477,950	467,349	265,988	276,815
Repurchase agreements	1,098,273	1,776,220	611,208	1,052,071
Corporate asset-backed securities	104,334	18,548	58,063	10,986
Certificates of deposit/time deposits	1,754,515	1,219,101	976,418	722,083
Supranational/foreign	302,331	282,083	168,252	167,080
Assets (liabilities), net*	(3,317)	(804)	(1,846)	(476)
Total investment of cash collateral	**$3,937,333**	**$3,867,523**	**$2,191,193**	**$2,290,767**

**Other assets (liabilities), net is composed of pending settlements of cash collateral investments.*

UCRS Plans earn interest and dividends on the collateral held during the loan period, as well as a fee from the brokerage firm, and are obligated to pay a fee and rebate to the borrower. UCRS receives the net investment income. The securities lending income and fees and rebates for the years ended June 30, 2019 and 2018, are as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Securities lending income	$143,168	$88,361	$69,428	$47,738
Securities lending fees and rebates	(106,587)	(58,376)	(53,598)	(30,649)
Securities lending income, net	**$36,581**	**$29,985**	**$15,830**	**$17,089**

Investment Risk Factors

There are a variety of potential risk factors involved in a securities lending program. Risks associated with the investment of cash collateral may include the credit risk from fixed-income securities, concentration of credit risk, interest rate risk and foreign currency risk. In addition, there may be custodial credit risk associated with both cash and securities received as collateral for securities lent.

The UCRS Plans' investment policies and other information related to each of these risks are summarized below.

Credit Risk

The UCRS Plans' investment policies for the investment of cash collateral maintained in separately managed collateral pools restrict the credit rating of issuers to no less than A-1, P-1 or F-1 for short-term securities and no less than A2/A for long-term securities. Asset-backed securities must have a rating of AAA at the time of purchase.

The credit risk profile for fixed- or variable-income securities and commingled funds associated with the investment of cash collateral at June 30, 2019 and 2018, is as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Other U.S. dollar-denominated:				
AAA	$192,859	$300,629	$107,329	$178,066
AA-	339,097	377,990	188,714	223,885
A+	1,196,073	32,553	665,636	19,281
A	169,547	776,847	94,356	460,134
A1/P1/F1	730,994	604,084	406,811	357,804
Not rated	213,805		118,987	
Other asset/liability	(3,317)	(804)	(1,846)	(476)

Custodial Credit Risk

Cash collateral received for securities lent is invested in pools by the UCRS Plans' lending agents. The UCRS Plans' securities related to the investment of cash collateral are registered in the UCRS Plans' name by the lending agent. Securities collateral received for securities lent are held in investment pools by the UCRS Plans' lending agent. As a result, custodial credit risk is remote.

Concentration of Credit Risk

The UCRS Plans' investment guidelines, with respect to the concentration of credit risk associated with the investment of cash collateral in the separately managed collateral pools, restricts investments in any single issuer of corporate debt securities, time deposits, certificates of deposit, banker's acceptances and in money market funds generally limited to no more than five percent of the portfolio value at the time of purchase.

Investments in issuers other than U.S. government-guaranteed securities that represent five percent or more of the total investment of cash collateral held at June 30, 2019 and 2018, are as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Morgan Stanley & Co LLC	$276,504	$314,933	$153,879	$186,538
Skandinaviska Enskilda Banken AB	211,832		117,889	
UBS AG	204,685		113,911	
RCap Securities Inc.		327,005		193,688
Goldman Sachs & Company		236,199		139,903
Nomura Securities International Inc.		203,656		120,628

Interest Rate Risk

The nature of individual securities in the collateral pools allows for the use of weighted average maturity as an effective risk management measure. The UCRS Plans' investment guidelines with respect to the interest rate risk associated with the investment of cash collateral in the separately managed collateral pools requires the weighted average maturity of the entire collateral pool to be less than 120 days. The maturity of securities issued by the U.S. government and asset-backed securities must be less than five years, corporate debt obligations must be less than two years and time deposits must be less than 190 days.

The weighted average maturity expressed in days outstanding for fixed- or variable-income securities associated with the investment of cash collateral at June 30, 2019 and 2018, is as follows:

(in days)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Other U.S. dollar-denominated:				
Corporate bonds	19	26	19	26
Commercial paper	26	22	26	22
Repurchase agreements	11	6	11	6
Corporate asset-backed securities	29	20	29	20
Certificates of deposit/time deposits	23	24	23	24
Supranational/foreign	18	16	18	16

Investment of cash collateral may include various asset-backed securities, structured notes and variable-rate securities that may be considered highly sensitive to changes in interest rates due to the existence of prepayment or conversion features, although the weighted average maturity may be short.

At June 30, 2019 and 2018, the fair value of investments that are considered to be highly sensitive to changes in interest rates is as follows:

(in thousands of dollars)

	DEFINED BENEFIT PLANS		UCRSP	
	2019	**2018**	**2019**	**2018**
Other asset-backed securities	$377,561	$300,629	$210,119	$178,066
Variable-rate investments	3,167,068	2,765,602	1,762,529	1,638,090

At June 30, 2019 and 2018, the weighted average maturity expressed in days for asset-backed securities was 23 days and 16 days, respectively and for variable-rate investments was 153 days and 136 days, respectively.

Foreign Currency Risk

The UCRS Plans' investment guidelines with respect to the foreign currency risk associated with the investment of cash collateral maintained in separate collateral pools restricts investments to U.S. dollar-denominated securities. Therefore, there is no foreign currency risk.

NOTE 4. FINANCIAL DERIVATIVE INSTRUMENTS

The UCRS Plans' investments, overseen by the OCIO, may use derivatives including futures, foreign currency exchange contracts, options, forward contracts, stock rights and warrants as a substitute for investment in equity and fixed-income securities or to reduce the effect of fluctuating foreign currencies on foreign currency-denominated investments or to limit the exposure of variable-rate bonds to changes in market interest rates.

UCRS Plans enter into futures contracts for the purpose of acting as a substitute for investment in equity and fixed-income securities. A futures contract is an agreement between two parties to buy and sell a security or financial index, interest rate or foreign currency at a set price on a future date. They are standardized contracts that can be easily bought and sold and are exchange-traded. Upon entering into such a contract, UCRS Plans are required to pledge to the broker an amount of cash or securities equal to the minimum initial margin requirements of the exchange on which the contract is traded. Pursuant to the contract, UCRS Plans agree to receive from, or pay to, the counterparty an amount of cash equal to the daily fluctuation in the value of the contract. These contracts are settled on a daily basis, with the resulting realized gain or loss included in the statement of changes in fiduciary net position. The settlement amount at the end of each day for each of the contracts, or variation margin, is included in investments and represents the fair value of the contracts.

Forward contracts are similar to futures contracts, although they are not exchange-traded. Foreign currency exchange contracts are forward contracts used to hedge against foreign currency exchange rate risks on non-U.S. dollar-denominated investment securities and to increase or decrease exposure to various foreign currencies.

An option contract gives the UCRS Plans the right, but not the obligation, to buy or sell a specified security or index at a fixed price during a specified period for a nonrefundable fee. The maximum loss to the UCRS Plans is limited to the premium originally paid for covered options. The UCRS Plans record premiums paid for the purchase of these options in the statements of fiduciary net position as an investment that is subsequently adjusted to reflect the fair value of the options, with unrealized gains and losses included in the statements of changes in fiduciary net position. UCRS held no option contracts at June 30, 2019 and 2018.

A swap is a contractual agreement entered into between the Plans and a counterparty under which each agrees to exchange periodic fixed or variable payments for an agreed period of time based upon a notional amount of principal or value of the underlying contract. The payments correspond to an equity index, interest rate or currency. The Plans consider their futures, forward contracts, options, rights, warrants and interest rate swaps to be investment derivatives.

The fair value balances and notional amounts of derivative instruments outstanding at June 30, 2019 and 2018, categorized by type, and the changes in fair value of such derivatives for the years then ended are as follows:

DEFINED BENEFIT PLANS *(in thousands of dollars)*

	NOTIONAL AMOUNT		FAIR VALUE–POSITIVE (NEGATIVE)			CHANGES IN FAIR VALUE		
CATEGORY	**2019**	**2018**	**CLASSIFICATION**	**2019**	**2018**	**CLASSIFICATION**	**2019**	**2018**
INVESTMENT DERIVATIVES								
Futures contracts:								
Domestic equity futures:								
Long positions	$305,635	$809,142	Investments	$3,525	($17,649)	Net (depreciation)	($41,191)	($17,530)
Short positions		(16,189)	Investments		665	Net appreciation	1,836	947
Foreign equity futures:								
Long positions	3,741	13,170	Investments	12	(230)	Net appreciation	290	47,410
Short positions		(11,875)	Investments		77	Net appreciation (depreciation)	809	(1,077)
Futures contracts, net				**3,537**	**(17,137)**		**(38,256)**	**29,750**
Foreign currency exchange contracts, net:								
Long positions		22,533	Investments		(202)	Net appreciation (depreciation)	(2,718)	7,366
Short positions	206,476		Investments	(870)		Net appreciation (depreciation)	5,483	(10,654)
Foreign currency exchange contracts, net				**(870)**	**(202)**		**2,765**	**(3,288)**
Other, net:								
Stock rights/warrants		2	Investments	1,033	1,303	Net appreciation	54	282
Other, net				**1,033**	**1,303**		**54**	**282**
Total investment derivatives				**$3,700**	**($16,036)**		**($35,437)**	**$26,744**

UCRSP *(in thousands of dollars)*

	NOTIONAL AMOUNT		FAIR VALUE–POSITIVE (NEGATIVE)			CHANGES IN FAIR VALUE		
CATEGORY	**2019**	**2018**	**CLASSIFICATION**	**2019**	**2018**	**CLASSIFICATION**	**2019**	**2018**
Futures contracts:								
Domestic equity futures:								
Long positions	$95,573	$117,334	Investments	$1,703	($2,507)	Net appreciation (depreciation)	$1,987	($2,167)
Foreign equity futures:								
Long positions	62,459	45,049	Investments	720	(694)	Net appreciation	248	14,121
Futures contracts, net				**2,423**	**(3,201)**		**2,235**	**11,954**
Foreign currency exchange contracts, net:								
Long positions	12,830	12,749	Investments	65	(118)	Net (depreciation)	(197)	(34)
Short positions			Investments			Net (depreciation)	(14)	(41)
Foreign currency exchange contracts, net				**65**	**(118)**		**(211)**	**(75)**
Other, net:								
Stock rights/warrants			Investments	297	213	Net appreciation	81	50
Other, net				**297**	**213**		**81**	**50**
Total investment derivatives				**$2,785**	**($3,106)**		**$2,105**	**$11,929**

NOTE 5. FAIR VALUE

Fair value is defined in the accounting standards as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities reported at fair value are organized into a hierarchy based on the levels of inputs observable in the marketplace that are used to measure fair value. Inputs are used in applying the various valuation techniques and take into account the assumptions that market participants use to make valuation decisions. Inputs may include price information, credit data, liquidity statistics and other factors specific to the financial instrument. Observable inputs reflect market data obtained from independent sources. In contrast, unobservable inputs reflect the entity's assumptions about how market participants would value the financial instrument.

A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. The following describes the hierarchy of inputs used to measure fair value and the primary valuation methodologies used for financial instruments measured at fair value on a recurring basis:

Level 1 — Prices based on unadjusted quoted prices in active markets that are accessible for identical assets or liabilities are classified as Level 1. Level 1 investments include equity securities, commingled funds (exchange traded funds and mutual funds), certain exchange traded derivatives (warrants, rights, options, futures) and other publicly traded securities.

Level 2 — Quoted prices in markets that are not considered to be active, dealer quotations or alternative pricing sources for similar assets or liabilities for which all significant inputs are observable, either directly or indirectly, are classified as Level 2. Level 2 investments include fixed- or variable-income securities, commingled funds (institutional funds not listed in active markets), certain non-exchange traded derivatives (warrants, rights, options, futures, repurchase agreements, swaptions and swaps) and other assets that are valued using market information.

Level 3 — Investments classified as Level 3 have significant unobservable inputs, as they trade infrequently or not at all. The inputs into the determination of fair value of these investments are based upon the best information in the circumstance and may require significant management judgment. Level 3 investments include private equity investments, real assets and real estate.

Net Asset Value (NAV) — Investments whose fair value is measured at NAV are excluded from the fair value hierarchy. Investments in non-governmental entities that do not have a readily determinable fair value may be valued at NAV. Investments measured at NAV include hedge funds, private equity investments and commingled funds.

Not Leveled — Cash and cash equivalents are not measured at fair value and, thus, are not subject to the fair value disclosure requirements.

The following tables summarize the investments and other assets reported at fair value within the fair value hierarchy as of June 30, 2019 and 2018:

DEFINED BENEFIT PLANS 2019 *(in thousands of dollars)*

	TOTAL	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	OTHER OBSERVABLE INPUTS (LEVEL 2)	UNOBSERVABLE INPUTS (LEVEL 3)	NET ASSET VALUE (NAV)	NOT LEVELED
Equity securities	$26,872,634	$26,872,589		$45		
Fixed- or variable-income securities:						
U.S. government-guaranteed	3,617,009		$3,617,009			
Other U.S. dollar-denominated	10,270,573		10,270,573			
Foreign currency-denominated	536		536			
Commingled funds	27,424,078	1,934,154		280,282	$24,595,420	$614,222
Investment derivatives	3,700	714	2,986			
Publicly traded real estate investment trusts	1,186,440	1,186,440				
Real estate	1,823,802				1,823,802	
Total investments	**$71,198,772**	**$29,993,897**	**$13,891,104**	**$280,327**	**$26,419,222**	**$614,222**
Securities lending investments of cash collateral	**$3,937,333**		**$3,940,650**			**($3,317)**

DEFINED BENEFIT PLANS 2018 *(in thousands of dollars)*

	TOTAL	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	OTHER OBSERVABLE INPUTS (LEVEL 2)	UNOBSERVABLE INPUTS (LEVEL 3)	NET ASSET VALUE (NAV)	NOT LEVELED
Equity securities	$23,072,433	$22,638,353		$1,197	$432,883	
Fixed- or variable-income securities:						
U.S. government-guaranteed	3,131,654		$3,131,654			
Other U.S. dollar-denominated	12,286,870	365,653	11,921,170	47		
Foreign currency-denominated	576		576			
Commingled funds	26,871,558	3,717,324	2,115		23,499,272	($347,153)
Investment derivatives	(16,036)	1,303	(17,339)			
Publicly traded real estate investment trusts	926,112	926,112				
Real estate	1,665,191				1,665,191	
Total investments	**$67,938,358**	**$27,648,745**	**$15,038,176**	**$1,244**	**$25,597,346**	**($347,153)**
Securities lending investments of cash collateral	**$3,867,523**		**$3,868,327**			**($804)**

UCRSP 2019 *(in thousands of dollars)*

	TOTAL	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	OTHER OBSERV-ABLE INPUTS (LEVEL 2)	UNOBSERVABLE INPUTS (LEVEL 3)	NET ASSET VALUE (NAV)	NOT LEVELED
Equity securities	$12,735,761	$12,735,761				
Fixed- or variable-income securities:						
U.S. government-guaranteed	3,037,017		$3,037,017			
Other U.S. dollar-denominated	5,707,199		5,707,199			
Commingled funds	1,868,787	1,504,855			$322,917	$41,015
Investment derivatives	2,785	297	2,488			
Publicly traded real estate investment trusts	906,382	906,382				
Total investments	**$24,257,931**	**$15,147,295**	**$8,746,704**		**$322,917**	**$41,015**
Securities lending investments of cash collateral	**$2,191,193**		**$2,193,039**			**($1,846)**

UCRSP 2018 *(in thousands of dollars)*

	TOTAL	QUOTED PRICES IN ACTIVE MARKETS (LEVEL 1)	OTHER OBSERV-ABLE INPUTS (LEVEL 2)	UNOBSERVABLE INPUTS (LEVEL 3)	NET ASSET VALUE (NAV)	NOT LEVELED
Equity securities	$10,252,479	$10,126,358		$85	$126,036	
Fixed- or variable-income securities:						
U.S. government-guaranteed	2,749,616		$2,749,616			
Other U.S. dollar-denominated	5,824,124		5,824,124			
Commingled funds	3,325,674	1,347,641			1,962,276	$15,757
Investment derivatives	(3,106)	213	(3,319)			
Publicly traded real estate investment trusts	785,573	785,573				
Total investments	**$22,934,360**	**$12,259,785**	**$8,570,421**	**$85**	**$2,088,312**	**$15,757**
Securities lending investments of cash collateral	**$2,290,767**		**$2,291,243**			**($476)**

The following table presents significant terms of certain investments at June 30, 2019:

DEFINED BENEFIT PLANS *(in thousands of dollars)*

INVESTMENT TYPE	FAIR VALUE	UNFUNDED COMMITMENTS	REMAINING LIFE (YEARS)	REDEMPTION TERMS AND RESTRICTIONS
Absolute return	$4,716,290	$289,483	0 to 5	Not eligible for redemption and lock-up provisions ranging from 0 to 3 years. For securities not eligible for redemptions the underlying assets are estimated to be liquidated within 3 to 5 years. For securities eligible for redemptions, after initial lock-up expires, redemptions are available on a rolling basis and require 30 to 365 days' prior notification.
Private equity	4,458,873	3,742,167	0 to 15	Not eligible for redemption.
Real assets	1,530,725	923,447	0 to 15	Not eligible for redemption.
U.S. equity funds	20,070			Redemptions generally require at least 0-90 days written notice of intention to terminate as of a date specified in the notice. Payments of withdrawal requests are generally made within 0-120 days.
Real estate and real estate investment trusts	4,278,585	1,034,982	0 to 10	Closed end funds are not eligible for redemption. For open end funds, redemptions are generally on a quarterly basis where the redemption date is the last day of each quarter. Payments of withdrawal requests are generally made within 45 days.

UCRSP *(in thousands of dollars)*

INVESTMENT TYPE	FAIR VALUE	UNFUNDED COMMITMENTS	REMAINING LIFE (YEARS)	REDEMPTION TERMS AND RESTRICTIONS
U.S. equity funds	$1,117,500			Redemptions generally require at least 0-90 days written notice of intention to terminate as of a date specified in the notice. Payments of withdrawal requests are generally made within 0-120 days.

NOTE 6. CONTRIBUTIONS

Contributions to UCRP are based upon rates determined by The Regents. The Regents' funding policy provides for contributions at rates which are reasonably expected to maintain UCRP on an actuarially sound basis. While the University's independent actuary annually determines the total funding policy contributions, the University is not required to contribute an amount equal to the total funding contribution. The actual contributions and the contribution rates of the University and employees are based on numerous factors, including the availability of funds to the University, the impact of employee contributions on the competitiveness of the University's total remuneration package and collective bargaining agreements.

The Regents determines the portion of the total contribution to be made by the employer (University) and by the employees (members). Effective July 1, 2014, the University paid a uniform contribution rate of 14.0 percent of covered payroll on behalf of all UCRP members. The University contribution rate will be increased starting July 1, 2020 by 0.5 percent per year, on July 1st, for six years to 17.0 percent. For members who elect Savings Choice, the University maintains a 6.0 percent contribution rate on pensionable salary up to the IRC compensation limit toward paying down the unfunded liability of UCRP. Effective July 1, 2020, this rate will be increased to 9.0 percent, phased in by increasing contributions 0.5 percent each year, on July 1st, over six years.

Mandatory employee contributions, made as a condition of employment, are based upon covered University wages less a specified monthly reduction, determined periodically by The Regents, as shown below:

EFFECTIVE	1976 TIER*	2013 TIER/2016 TIER (Eff. 7/1/2016)	SAFETY*
7/1/2014	8.0%	7.0%	9.0%
7/1/2013	6.5%	7.0%	7.5%

** Contributions offset by $19 per month.*

Under current collective bargaining agreements, employees represented by several unions participate in a modified version of the 2013 Tier (Modified 2013 Tier), where the retirement ages and age factors are not increased and lump sum cashouts are available. In exchange for these modifications, all employees represented by these unions (including those who are 1976 Tier members) pay 9.0 percent of their retirement covered gross salary effective July 1, 2014.

Member contributions to UCRP are accounted for separately and currently accrue interest at 6.0 percent annually. Upon termination, members may elect a refund of their contributions plus accumulated interest. Vested terminated members who are eligible to retire may also elect monthly retirement income or, if entitled, a lump sum equal to the present value of their accrued benefits.

The Lawrence Berkeley National Laboratory (LBNL), as a separate segment of UCRP, is required to make employer and employee contributions in conformity with The Regents' contract with the Department of Energy (DOE). In addition, under certain circumstances the University contributes to UCRP based upon a contractual arrangement with the DOE designed to achieve 100-percent-funding within seven years for each of the Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) retained segments within UCRP, with these contributions reimbursed by the DOE.

NOTE 7. CONTRIBUTIONS RECEIVABLE FROM THE STATE OF CALIFORNIA

Contributions receivable includes $4.9 million and $9.4 million at June 30, 2019 and 2018, respectively, related to agreements between the state of California and the University on behalf of UCRP. In 1990, the state agreed to pay the University for contributions due to UCRP of $57.2 million in 30 annual installments of approximately $5.3 million, including interest at 8.46 percent, based on the discount rate used in the 1990 actuarial valuation.

NOTE 8. NET PENSION LIABILITY

The components of the net pension liability of UCRP and the UC-VERIP at June 30, 2019 and 2018, are as follows:

(in thousands of dollars)

	UCRP		UC-VERIP*	
	2019	**2018**	**2019**	**2018**
Total pension liability	$88,404,608	$76,546,448	$27,945	$29,540
Plan net position	70,278,963	66,773,590	64,778	65,248
Net pension liability (surplus)	**$18,125,645**	**$9,772,858**	**($36,833)**	**($35,708)**
Ratio of plan net position to total pension liability	79%	87%	232%	221%
Covered-employee payroll	$12,168,209	$11,923,489		
Net pension liability as a percentage of covered-employee payroll	149%	82%		

**There is no covered payroll for the UC-VERIP.*

Actuarial Assumptions

The net pension liability was measured as of June 30, 2019 and June 30, 2018. Plan net position was valued as of the measurement date (June 30), while the total pension liability was determined based upon rolling forward the total pension liability from the July 1, 2018 and 2017, actuarial valuations. The actuarial assumptions used as of June 30, 2019, were based on the results of an experience study for the period of July 1, 2014 through June 30, 2018. The actuarial assumptions used as of June 30, 2018, were based on the results of an experience study for the period of July 1, 2010 through June 30, 2014. The following assumptions are used:

(shown as percentage)	**2019**	**2018**
Inflation	2.50%	3.00%
Investment rate of return	6.75	7.25
Projected salary increases	3.65 - 5.95	3.75 - 6.15
Cost-of-living adjustments	2.00	2.00

In 2019, for preretirement mortality rates, the Pub-2010 Teacher Employee Amount-Weighted Above-Median Mortality Table was used. For post-retirement, healthy mortality rates were based on the Pub-2010 Healthy Teacher Amount-Weighted Above-Median Mortality Table multiplied by 90 percent for male Faculty members, 95 percent for female Faculty members, 100 percent for other male members and 110 percent for other female members. For beneficiaries of retired members, rates were based on the Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table multiplied by 100 percent for males and 90 percent for females. For disabled members, rates were based on the Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table. All mortality tables above were projected generationally with the two-dimensional mortality improvement scale MP-2018.

In 2018, for preretirement mortality rates, the RP-2014 White Collar Employee Mortality Tables (separate table for males and females) projected with the two-dimensional MP-2014 projection scale to 2029 were used. For post-retirement, healthy mortality rates were based on the RP-2014 White Collar Healthy Annuitant Mortality Table projected with the two-dimensional MP-2014 projection scale to 2029, and with ages then set forward one year. For disabled members, rates were based on the RP-2014 Disabled Retiree Mortality Table projected with the two-dimensional MP-2014 projection scale to 2029, and with ages then set back one year for males and set forward five years for females.

The long-term expected investment rate of return assumption for UCRP was determined in 2019 using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adding expected inflation and subtracting expected expenses and a risk margin. The projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

(shown as percentage)

	PROJECTED REAL RATE OF RETURN
Asset class:	
U.S. equity	5.6%
Developed international equity	6.5
Emerging market equity	8.6
Core bonds	1.5
High yield bonds	3.7
Treasury Inflation-Protected Securities	1.2
Emerging market debt	3.9
Private equity	9.2
Real estate	6.6
Absolute return	3.3
Real assets	5.6
Weighted average	**5.4%**

Discount Rate

The discount rate used to estimate the net pension liability as of June 30, 2019 and 2018, was 6.75 percent and 7.25 percent, respectively. To calculate the discount rate, cash flows into and out of the Plans were projected in order to determine whether the Plan has sufficient cash in future periods for projected benefit payments for current members. For this purpose, University, state and member contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected University, state and member contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions of future plan members, are not included. The Plan was projected to have assets sufficient to make projected benefit payments for current members for all future years.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the current-period net pension liability (surplus) of UCRP and the UC-VERIP calculated using the current-period discount rate assumption of 6.75 percent, as well as what the net pension liability (surplus) would be if it were calculated using a discount rate different than the current assumption:

(in thousands of dollars)

	1% DECREASE (5.75%)	CURRENT ASSUMPTION (6.75%)	1% INCREASE (7.75%)
UCRP	$30,096,724	$18,125,645	$8,250,405
UC-VERIP	(35,386)	(36,833)	(38,139)

NOTE 9. PLAN TERMINATION

The Regents expects to continue the UCRS Plans indefinitely but reserves the right to amend or discontinue the UCRS Plans at any time provided that any such action shall not lessen accrued benefits of any members. In the event that either defined benefit plan is terminated, UCRS Plan assets shall be applied solely for the benefit of retired, vested or active participants and beneficiaries, until all liabilities of the UCRS Plans have been satisfied. Once all liabilities have been satisfied, any excess assets of UCRP Plans shall revert to The Regents.

The benefits of UCRS noted above are not insured by the Pension Benefit Guaranty Corporation, a federal insurance agency established under Title IV of the Employee Retirement Income Security Act of 1974.

Required Supplementary Information *(Unaudited)*

UCRP

Actuarial Information

The schedule of changes in net pension liability includes multiyear trend information about whether the pension assets are increasing or decreasing over time relative to the pension liabilities. The schedule of changes in the net pension liability for the Plan as of June 30 is:

(in thousands of dollars)

	2019	2018	2017	2016
TOTAL PENSION LIABILITY				
Service cost	$1,946,612	$1,873,004	$1,807,143	$1,710,241
Interest on the total pension liability	5,576,660	5,295,733	5,035,267	4,784,904
Difference between expected and actual experience	334,605	138,419	74,664	136,167
Changes of assumptions or other inputs	7,816,717			
Benefits paid, including refunds of employee contributions	(3,816,434)	(3,587,554)	(3,320,990)	(3,105,641)
Net change in total pension liability	**11,858,160**	**3,719,602**	**3,596,084**	**3,525,671**
Total pension liability - beginning of year	76,546,448	72,826,846	69,230,762	65,705,091
Total pension liability - end of year	**88,404,608**	**76,546,448**	**72,826,846**	**69,230,762**
PLAN NET POSITION				
Contributions - employer	2,408,650	2,335,874	2,385,576	2,426,683
Contributions - member	956,543	941,144	891,987	845,036
Contributions - state		169,000	171,000	96,000
Net investment income (loss)	4,018,595	4,837,552	7,866,281	(1,104,655)
Benefits paid, including refunds of employee contributions	(3,816,434)	(3,587,554)	(3,320,990)	(3,105,642)
Administrative expense	(61,981)	(36,684)	(44,128)	(48,340)
Net change in plan net position	**3,505,373**	**4,659,332**	**7,949,726**	**(890,918)**
Plan net position - beginning of year	66,773,590	62,114,258	54,164,532	55,055,450
Plan net position - end of year	**70,278,963**	**66,773,590**	**62,114,258**	**54,164,532**
Net pension liability - end of year	**$18,125,645**	**$9,772,858**	**$10,712,588**	**$15,066,230**

(in thousands of dollars)

	2015	2014	2013	2012
TOTAL PENSION LIABILITY				
Service cost	$1,589,267	$1,519,183	$1,456,761	$1,531,094
Interest on the total pension liability	4,538,846	4,316,728	4,112,461	3,871,146
Difference between expected and actual experience	(112,155)	(320,624)	(183,253)	(212,758)
Changes of assumptions or other inputs	2,136,793		(3,312,815)	4,923,778
Benefits paid, including refunds of employee contributions	(2,976,992)	(2,687,540)	(2,487,369)	(2,273,071)
Net change in total pension liability	**5,175,759**	**2,827,747**	**(414,215)**	**7,840,189**
Total pension liability - beginning of year	60,529,332	57,701,585	58,115,800	50,275,611
Total pension liability - end of year	**65,705,091**	**60,529,332**	**57,701,585**	**58,115,800**
PLAN NET POSITION				
Contributions - employer	2,510,046	1,580,876	810,056	1,851,460
Contributions - member	793,012	577,466	415,641	272,420
Net investment income	1,993,801	8,009,980	4,833,339	115,863
Benefits paid, including refunds of employee contributions	(2,976,993)	(2,687,540)	(2,487,369)	(2,273,071)
Administrative expense	(48,283)	(37,641)	(37,426)	(32,839)
Net change in plan net position	**2,271,583**	**7,443,141**	**3,534,241**	**(66,167)**
Plan net position - beginning of year	52,783,867	45,340,726	41,806,485	41,872,652
Plan net position - end of year	**55,055,450**	**52,783,867**	**45,340,726**	**41,806,485**
Net pension liability - end of year	**$10,649,641**	**$7,745,465**	**$12,360,859**	**$16,309,315**

Net Pension Liability

All plan assets are available to pay any member's benefit. The Plan's net pension liability is measured as of June 30. Plan fiduciary net position (plan assets) is valued as of the measurement date, while the total pension liability is determined based upon rolling forward the total pension liability from the July 1 actuarial valuations.

(in thousands of dollars)

	2019	2018	2017	2016
Total pension liability	$88,404,608	$76,546,448	$72,826,846	$69,230,762
Plan net position	70,278,963	66,773,590	62,114,258	54,164,532
Net pension liability	**$18,125,645**	**$9,772,858**	**$10,712,588**	**$15,066,230**
Ratio of plan net position to total pension liability	79%	87%	85%	78%
Covered-employee payroll	$12,168,209	$11,923,489	$11,301,506	$10,689,424
Net pension liability as a percentage of covered-employee payroll	149%	82%	95%	141%

(in thousands of dollars)

	2015	2014	2013	2012
Total pension liability	$65,705,091	$60,529,332	$57,701,585	$58,115,800
Plan net position	55,055,450	52,783,867	45,340,726	41,806,485
Net pension liability	**$10,649,641**	**$7,745,465**	**$12,360,859**	**$16,309,315**
Ratio of plan net position to total pension liability	84%	87%	79%	72%
Covered-employee payroll	$10,047,570	$9,372,583	$8,921,077	$8,594,147
Net pension liability as a percentage of covered-employee payroll	106%	83%	139%	190%

Required Schedule of Employer and Employee Contributions

The Regents' funding policy provides for actuarially determined contributions at rates reasonably expected to maintain the Plan on an actuarially sound basis.

The total funding policy contribution is determined based on various amortization periods (up to 30 years) for different components of the Unfunded Actuarial Accrued Liability (UAAL). Employee contributions by represented employees are subject to collective bargaining agreements. During the year ended June 30, 2010, University and employee contributions were reinstated. Effective March 2011, The Regents delegated to the President discretion to fully fund the modified annual required contribution (ARC) for the Plan. The modified ARC is the Normal Cost, or the cost for future UCRP benefits allocated to each year of service for active members, plus interest on the UAAL.

LBNL is required to make employer and employee contributions in conformity with The Regents' contract with the DOE. In addition, under certain circumstances the University contributes to the Plan based upon a contractual arrangement with the DOE designed to achieve 100-percent- funding within seven years for each of the LANL and LLNL retained segments within UCRP and is reimbursed by the DOE.

The annual contribution deficiency (excess) as June 30 is:

(in thousands of dollars)

YEAR ENDED JUNE 30	ACTUARIALLY DETERMINED CONTRIBUTIONS	CONTRIBUTIONS IN RELATION TO ACTUARIAL CONTRIBUTIONS	CONTRIBUTION DEFICIENCY (EXCESS)	COVERED-EMPLOYEE PAYROLL	CONTRIBUTIONS AS A PERCENTAGE OF COVERED-EMPLOYEE PAYROLL
2019	$2,742,671	$2,408,650	$334,021	$12,168,209	20%
2018	2,669,169	2,504,874	164,295	11,923,489	21
2017	2,654,710	2,556,576	98,134	11,301,506	23
2016	2,610,953	2,522,683	88,270	10,689,424	24
2015	2,664,384	2,510,046	154,338	10,047,570	25
2014	2,472,697	1,580,876	891,821	9,372,583	17
2013	2,062,022	810,056	1,251,966	8,921,077	9
2012	1,806,205	1,851,459	(45,254)	8,594,147	22
2011	1,695,137	1,677,921	17,216	8,140,629	21
2010	454	148,445	(147,991)	7,973,921	2

NOTES TO SCHEDULE

Methods and assumptions used to determine contribution rates:

Valuation date	Actuarially determined contribution rates are calculated as of July 1, two years prior to the end of the fiscal year in which contributions are reported.	
Actuarial cost method	Entry age actuarial cost method.	
Amortization method	Level dollar, closed periods.	
Remaining amortization period	18.83 years as of July 1, 2018. The July 1, 2010 amortization bases were combined into a single amortization base and amortized over 30 years. Any changes in Unfunded Actuarial Accrued Liability (UAAL) due to actuarial experience gains or losses after July 1, 2010, are separately amortized over a fixed (closed) 30-year period effective with that valuation. Any changes in UAAL due to a change in actuarial assumptions or plan provisions are separately amortized over a fixed (closed)15-year period. Any changes in UAAL due to actuarial experience gains or losses or a change in actuarial assumptions after July 1, 2014, are separately amortized over a fixed (closed) 20-year period.	
Asset valuation method	The market value of assets less unrecognized returns in each of the last five years. An unrecognized return is equal to the difference between the actual and the expected return on a market value basis and is recognized over a five-year period.	
	June 30, 2019 measurement date	**June 30, 2018 measurement date**
Inflation	2.50%.	3.00%.
Investment rate of return	6.75%, net of pension plan investment expenses, including inflation.	7.25%, net of pension plan investment expenses, including inflation.
Projected salary increases	3.65 - 5.95%, varying by service, including inflation.	3.75 - 6.15%, varying by service, including inflation.
Cost-of-living adjustments	2.00%.	2.00%.
Mortality	Active and inactive: Pub-2010 Teacher Employee Amount-Weighted Above-Median Mortality Table. Healthy: Pub-2010 Healthy Teacher Amount-Weighted Above-Median Mortality Table, multiplied by 90 percent for male Faculty members, 95 percent for female Faculty members, 100 percent for other male members and 110 percent for other female members. Beneficiaries of retired members: Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table multiplied by 100 percent for males and 90 percent for females. Disabled: Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table. All mortality tables listed above are projected generationally with the two-dimensional mortality improvement scale MP-2018.	Active and inactive: RP-2014 White Collar Employee Mortality Table, projected with the two-dimensional MP-2014 projection scale to 2029. Healthy: RP-2014 White Collar Healthy Annuitant Mortality Table, projected with the two-dimensional MP-2014 projection scale to 2029 with ages set forward one year. Disabled: RP-2014 Disabled Retiree Mortality Table, projected with the two-dimensional MP-2014 projection scale to 2029 and with ages then set back one year for males and set forward five years for females.

A money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. The annual money-weighted rates of return, net of investment expense adjusted for changing amounts actually invested for the years ended June 30 are as follows:

(shown as percentage)

LAST 10 FISCAL YEARS	ANNUAL MONEY-WEIGHTED RATE OF RETURN, NET OF INVESTMENT EXPENSE
2019	6.0%
2018	7.7
2017	14.5
2016	(2.0)
2015	3.4
2014	17.3
2013	11.2
2012	0.9
2011	22.3
2010	13.2

UC-VERIP

Actuarial Information

The schedule of changes in net pension liability includes multiyear trend information about whether the pension assets are increasing or decreasing over time relative to the pension liabilities. The schedule of changes in the net pension liability for the UC-VERIP as of June 30 is:

(in thousands of dollars)

	2019	2018	2017	2016
TOTAL PENSION LIABILITY				
Interest on the total pension liability	$1,983	$2,042	$2,463	$2,533
Difference between expected and actual experience	(79)	(436)	(189)	(650)
Changes of assumptions or other inputs	714			
Benefits paid, including refunds of employee contributions	(4,213)	(4,610)	(4,738)	(4,937)
Net change in total pension liability (surplus)	**(1,595)**	**(3,004)**	**(2,464)**	**(3,054)**
Total pension liability - beginning of year	29,540	32,544	35,008	38,062
Total pension liability - end of year	**27,945**	**29,540**	**32,544**	**35,008**
PLAN NET POSITION				
Net investment income (loss)	3,748	4,885	8,666	(1,425)
Benefits paid, including refunds of employee contributions	(4,213)	(4,610)	(4,738)	(4,937)
Administrative expense	(5)	(5)	(6)	(7)
Net change in plan net position	**(470)**	**270**	**3,922**	**(6,369)**
Plan net position - beginning of year	65,248	64,978	61,056	67,425
Plan net position - end of year	**64,778**	**65,248**	**64,978**	**61,056**
Net pension surplus - end of year	**($36,833)**	**($35,708)**	**($32,434)**	**($26,048)**

(in thousands of dollars)

	2015	2014	2013	2012
TOTAL PENSION LIABILITY				
Interest on the total pension liability	$2,704	$2,857	$3,052	$3,227
Changes of benefit terms				11,186
Difference between expected and actual experience	242	(436)	(241)	172
Changes of assumptions or other inputs	1,837			1,268
Benefits paid, including refunds of employee contributions	(5,081)	(5,169)	(5,278)	(5,369)
Net change in total pension liability (surplus)	**(298)**	**(2,748)**	**(2,467)**	**10,484**
Total pension liability - beginning of year	38,360	41,108	43,575	33,091
Total pension liability - end of year	**38,062**	**38,360**	**41,108**	**43,575**
PLAN NET POSITION				
Net investment income	2,550	11,035	7,144	90
Benefits paid, including refunds of employee contributions	(5,081)	(5,169)	(5,278)	(5,369)
Administrative expense	(6)	(6)	(7)	(7)
Net change in plan net position	**(2,537)**	**5,860**	**1,859**	**(5,286)**
Plan net position - beginning of year	69,962	64,102	62,243	67,529
Plan net position - end of year	**67,425**	**69,962**	**64,102**	**62,243**
Net pension surplus - end of year	**($29,363)**	**($31,602)**	**($22,994)**	**($18,668)**

Actuarial valuations represent a long-term perspective and involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future. Actuarially determined amounts are subject to periodic revisions as actual results are compared with past expectations and new estimates are made about the future. The schedule of funding progress presents multiyear trend information about whether the actuarial value of assets is increasing or decreasing over time relative to the actuarial accrued liability for benefits.

Net Pension Liability

There is no covered payroll for the UC-VERIP. The schedule of net pension liability for the UC-VERIP as of June 30 is:

(in thousands of dollars)

	2019	2018	2017	2016
Total pension liability	$27,945	$29,540	$32,544	$35,008
Plan net position	64,778	65,248	64,978	61,056
Net pension surplus	**($36,833)**	**($35,708)**	**($32,434)**	**($26,048)**
Ratio of plan net position to total pension liability	232%	221%	200%	174%

(in thousands of dollars)

	2015	2014	2013	2012
Total pension liability	$38,062	$38,360	$41,108	$43,575
Plan net position	67,425	69,962	64,102	62,243
Net pension surplus	**($29,363)**	**($31,602)**	**($22,994)**	**($18,668)**
Ratio of plan net position to total pension liability	177%	182%	156%	143%

Required Schedule of University Contributions

Since 1996, the University has not been required to contribute to the UC-VERIP due to its fully funded status.

Note to Required Supplementary Information

The actuarial assumptions are based on the presumption that the UC-VERIP will continue in operation. Were the Plan to terminate, different actuarial assumptions and other factors might be applicable in determining the actuarial present value of accumulated plan benefits.

UNIVERSITY OF CALIFORNIA

Plan Oversight —The Board of Regents

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Requests for Information: *This financial report is designed to provide The Regents, the Plans' retirees and others with a general overview of the Plans' financial positions and results. Questions concerning this report should be addressed to:*

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