![CCCERA - Contra Costa County Employees' Retirement Association]

AGENDA

RETIREMENT BOARD MEETING

REGULAR MEETING
September 23, 2020, 9:00 a.m.

The Board of Retirement meeting will be accessible telephonically at +1 (224) 501-3412, access code 303-229-293 due to the Contra Costa County and State of California Coronavirus (COVID-19) Shelter In Place Orders, and as permitted by Executive Order N-29-20 issued on March 17, 2020.

Persons who wish to make public comment may submit their comment to publiccomment@cccera.org on the day of the meeting, either before or during the meeting. Public comments are limited to any item of interest to the public that is within the subject matter jurisdiction of the Board of Retirement. (Gov't Code Section 54954.3(a).) All comments submitted will be included in the record of the meeting. The comments will be read into the record at the meeting, subject to a three-minute time limit per comment.

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.

2. Roll Call.

3. Accept comments from the public.

4. Approve minutes from the August 26, 2020 meeting.

5. Review of private credit.
   a. Presentation from staff
   b. Presentation from StepStone

6. Review of report on Risk Diversifying Sub-portfolio.

7. Risk tolerance report.

8. Consider and take possible action to authorize the CEO to execute a contract with ICON Integration and Design, Inc. for data cleansing services.

9.   Appointment of ad hoc advisory committee to review the Chief Executive Officer compensation package.

10.   Consider authorizing the attendance of Board:
        a. NCPERS Fall Conference, September 29-30, 2020, Virtual.
        b. CALAPRS Trustees Round Table, October 23, 2020, Virtual.
        c. Portfolio Risk in a Post-COVID World, GlobalARC Interactive, October 26-28, 2020, Virtual.

11.   Miscellaneous
        a. Staff Report
        b. Outside Professionals' Report
        c. Trustees' comments

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
August 26, 2020
9:00 a.m.

The Board of Retirement meeting will be accessible telephonically at (408) 650-3123, access code 508-462-629 due to the Contra Costa County and State of California Coronavirus (COVID-19) Shelter In Place Orders, and as permitted by Executive Order N-29-20 issued on March 17, 2020.

1. **Pledge of Allegiance**

   The Board and staff joined in the *Pledge of Allegiance.*

2. **Roll Call**

   Present: Candace Andersen, Donald Finley, Scott Gordon, Jerry Holcombe, Louie Kroll, Jay Kwon, David MacDonald, John Phillips, William Pigeon, Mike Sloan, Todd Smithey and Russell Watts

   Absent: None

   Staff: Gail Strohl, Chief Executive Officer; Christina Dunn, Deputy Chief Executive Officer; Timothy Price, Chief Investment Officer; Karen Levy, General Counsel; Wrally Dutkiewicz, Compliance Officer; Anne Sommers, Administrative/HR Manager; Henry Gudino, Accounting Manager; Tim Hoppe, Retirement Services Manager; and Jasmine Lee, Member Services Manager

   Outside Professional Support: Representing:

Harvey Leiderman	Reed Smith LLC
Andy Yeung	Segal Company
Scott Whalen	Verus Investments
Stuart Odell	Verus Investments

3. **Accept comments from the public**

   No member of the public offered comment.

4. **Approval of Minutes**

It was **M/S/C** to approve the minutes from the July 22, 2020 meeting. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Smithey and Watts)

It was the consensus of the Board to move to Item 6.

6. **Consider and take possible action regarding East Contra Costa Fire Protection District's request to depool cost group #8**

   a. Presentation from Segal – Andy Yeung

      Yeung provided a summary of the August 12, 2020 Board meeting presentation on ECCFPD's request to depool cost group #8 effective with the December 31, 2019 actuarial valuation.

   b. Comments from East Contra Costa Fire Protection District

      Chief Helmick provided comments and addressed concerns raised by the CCCERA Board.

   c. Comments from Contra Costa County Fire Protection District

      Chief Broschard provided comments and addressed concerns raised by the CCCERA Board.

   d. Board consideration and possible action regarding the East Contra Costa Fire Protection District's request to depool cost group #8

      Joe Young, ECCFPD Board member, commented on their plans to increase the size of their district and spoke in favor of depooling cost group #8, based on liabilities, starting with the December 31, 2019 actuarial valuation.

      After a discussion, it was **M/S/C** to approve the request from the East Contra Costa Fire Protection District to depool from cost group #8 based on the actuarial accrued liability method effective with the December 31, 2019 valuation. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Phillips, Smithey and Watts)

CLOSED SESSION

5.   The Board moved into closed session pursuant to Govt. Code Section 54956.9(d)(1).

Trustee MacDonald recused himself from this item and was no longer present for subsequent discussion and voting.

There was no reportable action related to Govt. Code Section 54956.9(d)(1), *Contra Costa County Deputy Sheriffs Association, et al., v. Board of Retirement of CCCERA, et al.,* Supreme Court of the State of California, Case No. S247095.

The Board moved into open session.

7. **Review of total portfolio performance for period ending June 30, 2020**

   a. Presentation from Verus

      Whalen reviewed CCCERA's investment fund performance for the period ending June 30, 2020.

   Andersen was no longer present for subsequent discussion and voting.

   b. Presentation from staff

      Price reviewed CCCERA's sub-portfolios noting CCCERA's Total Fund is performing as expected, exhibiting returns above expectations for the amount of risk taken.

8. **Review of portfolio rebalancing report**

   Price reviewed the portfolio rebalancing report.

9. **Miscellaneous**

   (a) Staff Report –

      Strohl reported the annual member benefit statements were mailed out last week.

      Price reported that the StepStone Group has filed an S-1 Form with the SEC to go public. He reported they will be present at the Board meeting in September to speak about the private credit program and again in November to review the pacing analysis for private equity. He noted they will be available at both meetings to answer any questions the Board may have regarding them going public.

   (b) Outside Professionals' Report -

      None

   (c) Trustees' comments –

      Sloan reported on the SACRS Public Pension Investment Management Program through the UC Berkeley Haas School of Business that he attended virtually and felt it was very informative.

      MacDonald reported he also participated in the SACRS Public Pension Investment Management Program and felt it was better than he expected. He also virtually attended his first SACRS Board meeting on August 25, 2020.

      Smithey reported there is an Audit Committee meeting following this meeting.

It was **M/S/C** to adjourn the meeting. (Yes: Finley, Gordon, Holcombe, Kroll, Kwon, MacDonald, Phillips, Smithey and Watts)

_____   _____
Todd Smithey, Chairman   David MacDonald, Secretary

CCCERA

Contra Costa County Employees'
Retirement Association

Rishi Garbharran

Investment Officer

Private Credit Overview

September 23, 2020

Overview

- CCCERA Private Credit Program

- Defining Private Credit

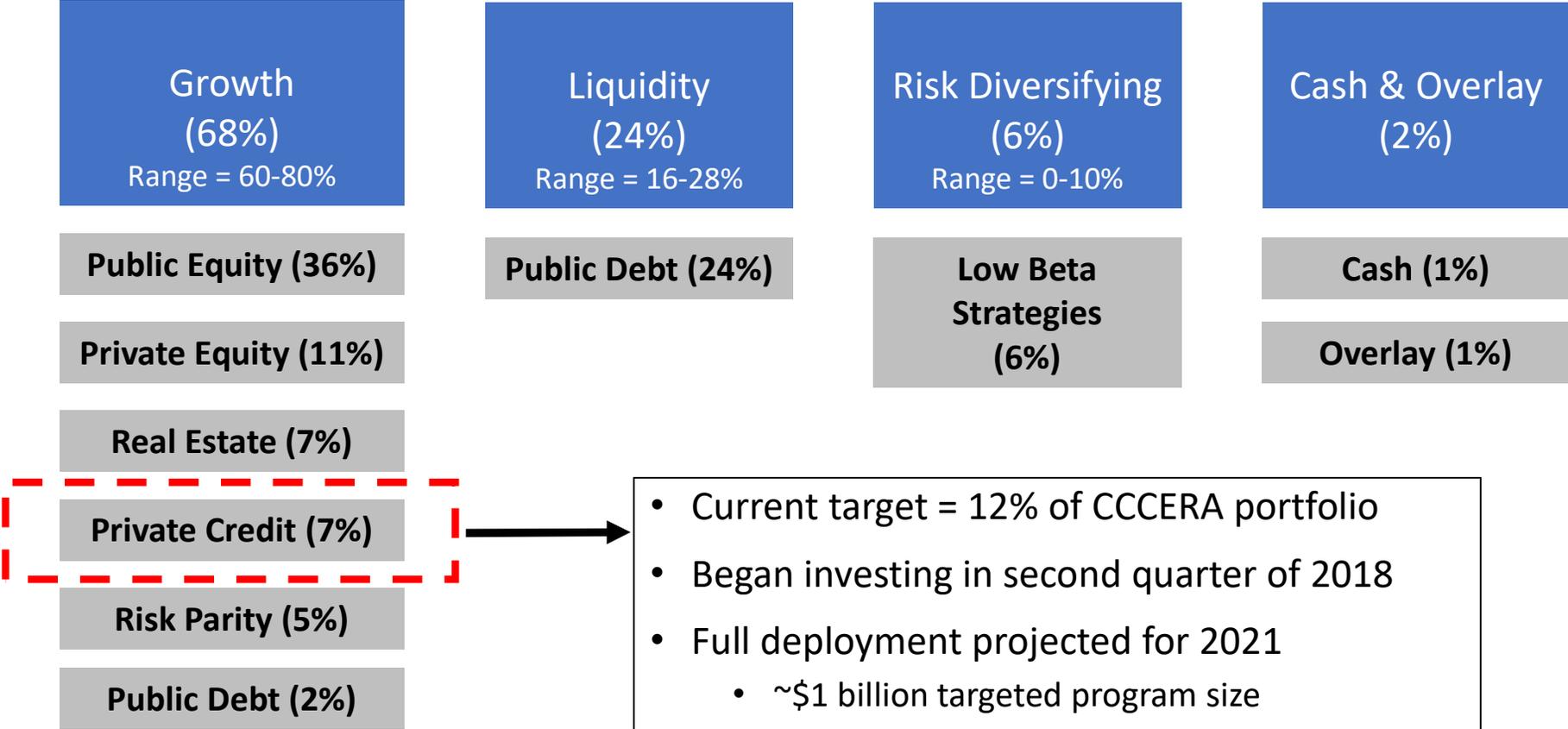- History & Evolution of the Private Credit Market

- Direct Lending Overview

CCCERA Private Credit Program

Role of Private Credit in CCCERA Portfolio

CCCERA Total Portfolio (100%)			
Growth (68%) Range = 60-80%	**Liquidity (24%)** Range = 16-28%	**Risk Diversifying (6%)** Range = 0-10%	**Cash & Overlay (2%)**
Public Equity (36%)	Public Debt (24%)	Low Beta Strategies (6%)	Cash (1%)
Private Equity (11%)			Overlay (1%)
Real Estate (7%)			
Private Credit (7%)			
Risk Parity (5%)			
Public Debt (2%)			

- Current target = 12% of CCCERA portfolio
- Began investing in second quarter of 2018
- Full deployment projected for 2021
  - ~$1 billion targeted program size
- Long-term return target = 10% net IRR
- Lower historical volatility than equity

4

CCCERA Private Credit Program – Key Participants

CCCERA	**Provides advice to Stepstone related to portfolio construction and strategy analysis**
Stepstone	**Manages CCCERA's Private Credit Program – including portfolio management/monitoring, top-down strategy identification/selection, and bottom-up investment manager evaluation**
Investment Managers	**Source, evaluate, execute, and monitor private credit investments primarily within separately managed accounts or commingled (private equity style) drawdown funds**

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Defining Private Credit

Defining Private Credit

> ...private credit means a lot of different things to different people...it's held by locked up vehicles. It's not liquid. You can't trade it. You buy it, you own it...

> ...is really lending with some degree of control...it includes an element on the origination side rather than participating in a widely distributed transaction...

> ...a lot of what defines private credit is simply terminology...for us private credit is...not liquid, not traded, not quoted, not rated...

> ...the asset class is very wide... ranges from primary lending to more alternative strategies like the more junior or mezzanine-type of products...

> ...typically debt investments that are not provided by banks...and are not issued or traded on an open market...

> ...privately originated, privately negotiated and with a view that we are going to own these assets or own the loans until maturity...

> ...anything that is directly negotiated with the borrower and is probably unrated...

> ...the definition of private credit I think is probably anything that is non-bank lending (in the widest form)...
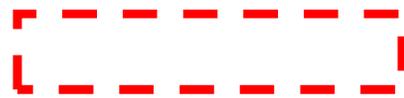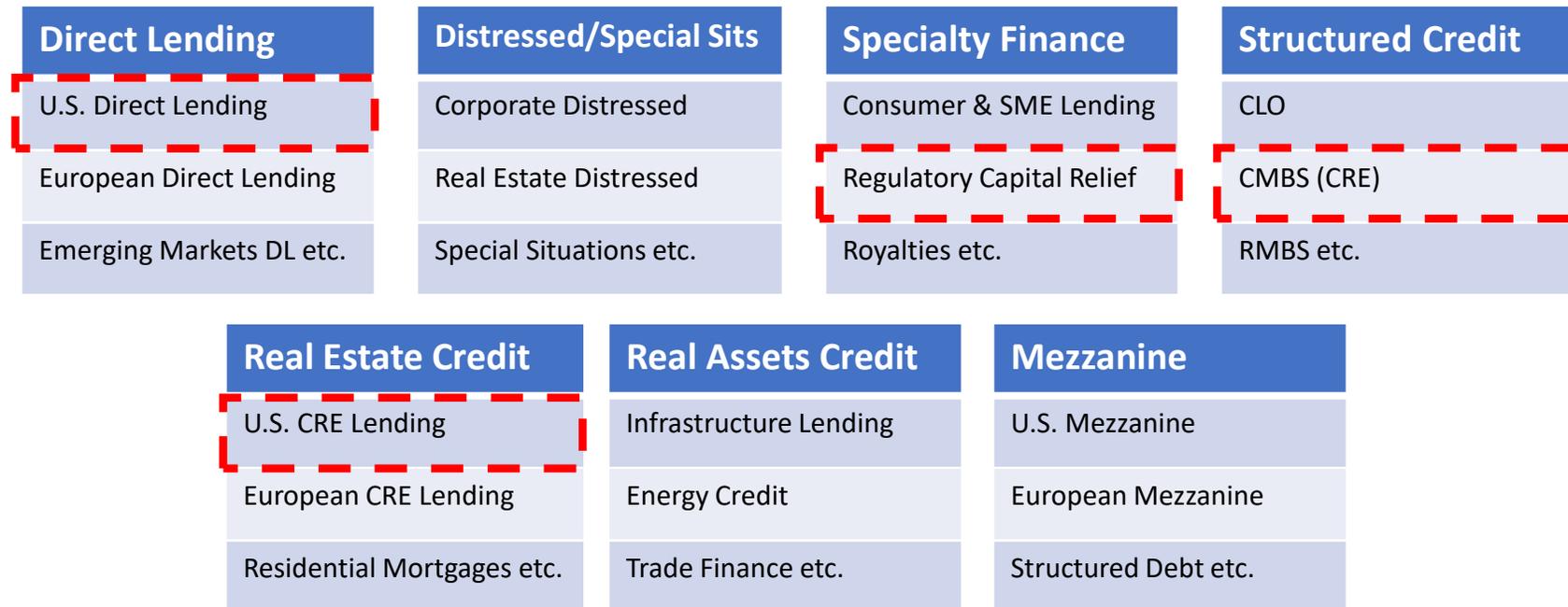
> ...they are transactions which aren't traded on listed markets and which enable you to have far more control over structuring and over terms...

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Defining Private Credit

Non-bank lending that includes directly negotiated transactions of illiquid, unrated debt. Wide range of strategies and risk/return profiles. Returns can range from mid-single digits to 20%+
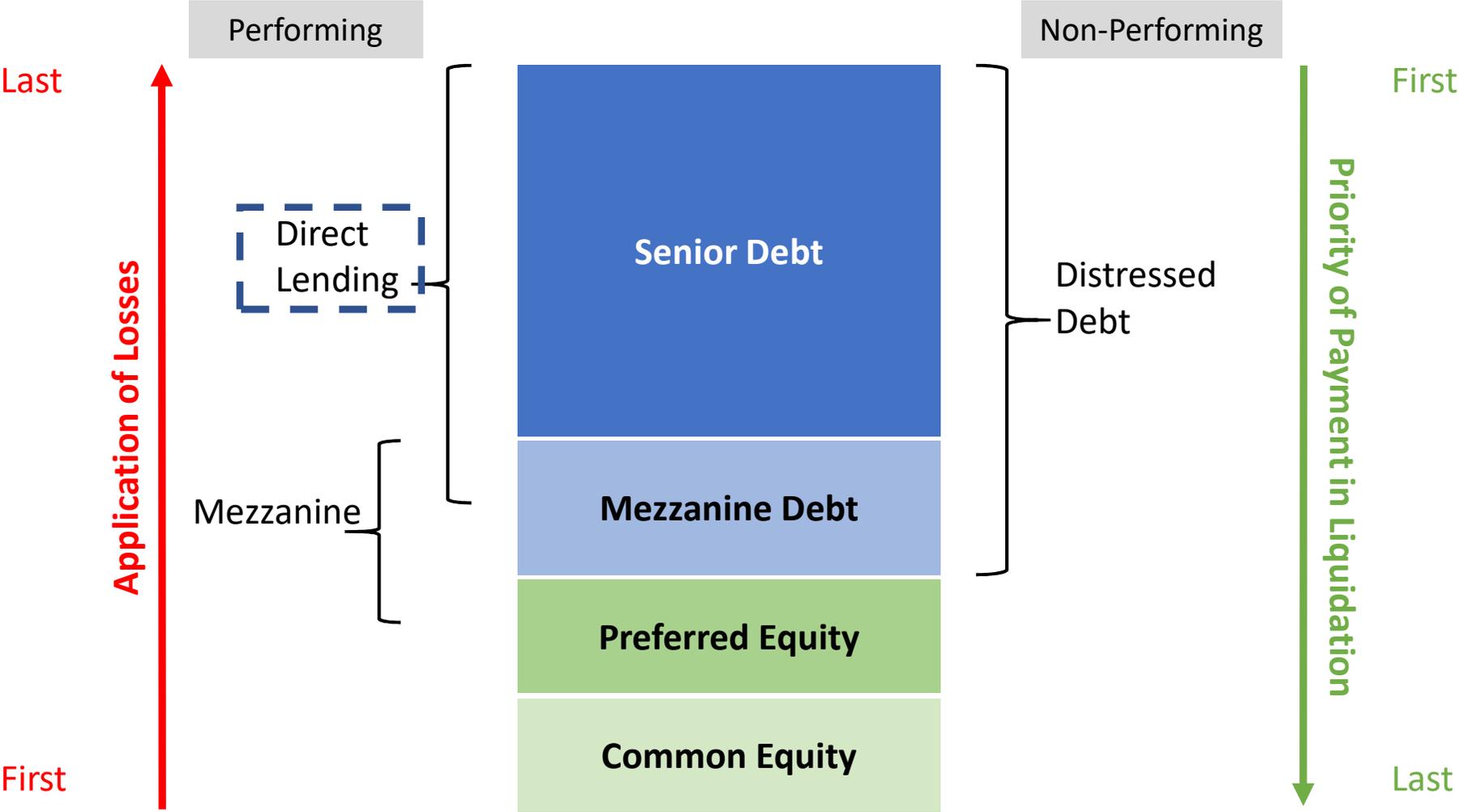
Direct Lending	Distressed/Special Sits	Specialty Finance	Structured Credit
U.S. Direct Lending	Corporate Distressed	Consumer & SME Lending	CLO
European Direct Lending	Real Estate Distressed	Regulatory Capital Relief	CMBS (CRE)
Emerging Markets DL etc.	Special Situations etc.	Royalties etc.	RMBS etc.

Real Estate Credit	Real Assets Credit	Mezzanine
U.S. CRE Lending	Infrastructure Lending	U.S. Mezzanine
European CRE Lending	Energy Credit	European Mezzanine
Residential Mortgages etc.	Trade Finance etc.	Structured Debt etc.

Represents current strategies included in CCCERA's Private Credit Program

Private Credit - Corporate Lending

Private Credit Corporate Lending Strategies vs. the broader Corporate Lending Landscape

Inv. Grade

Unrated / Non-Investment Grade

<$100MM --- EBITDA --- >$100MM

Seniority (vertical axis: Senior → Junior)

Size (horizontal axis: Small → Large)

Small + Senior = Middle Market Direct Lending

Large + Senior = Broadly Syndicated Loans

Small + Junior = Mezzanine + Second Lien

Large + Junior = High Yield Bonds
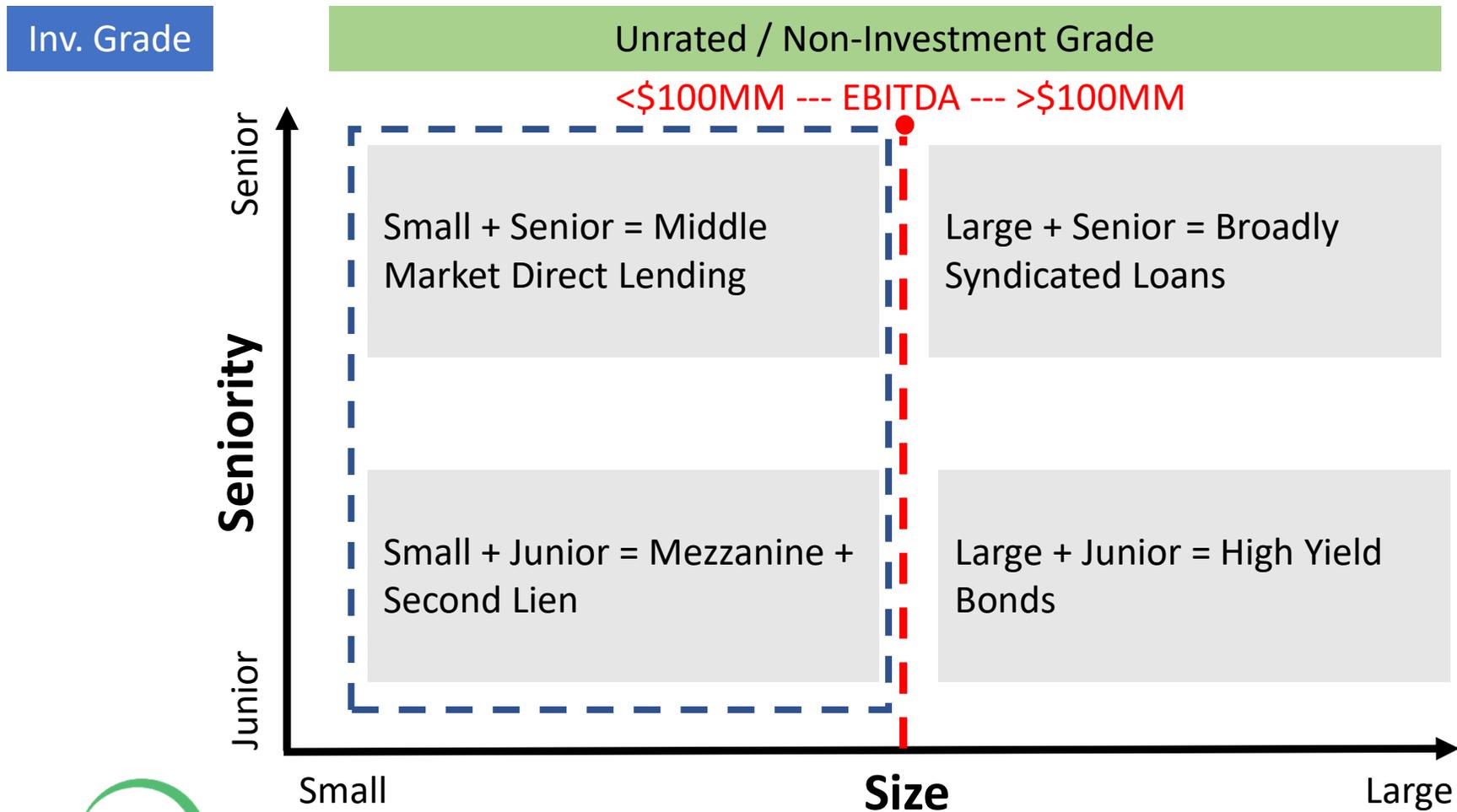
Source: Nuveen.

Represents investment focus of Private Credit Corporate Lending strategies

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10

Comparing Private Credit Strategies – Evaluating Risk & Return

Targeted Gross Returns by Private Credit Strategy (Gross IRR)
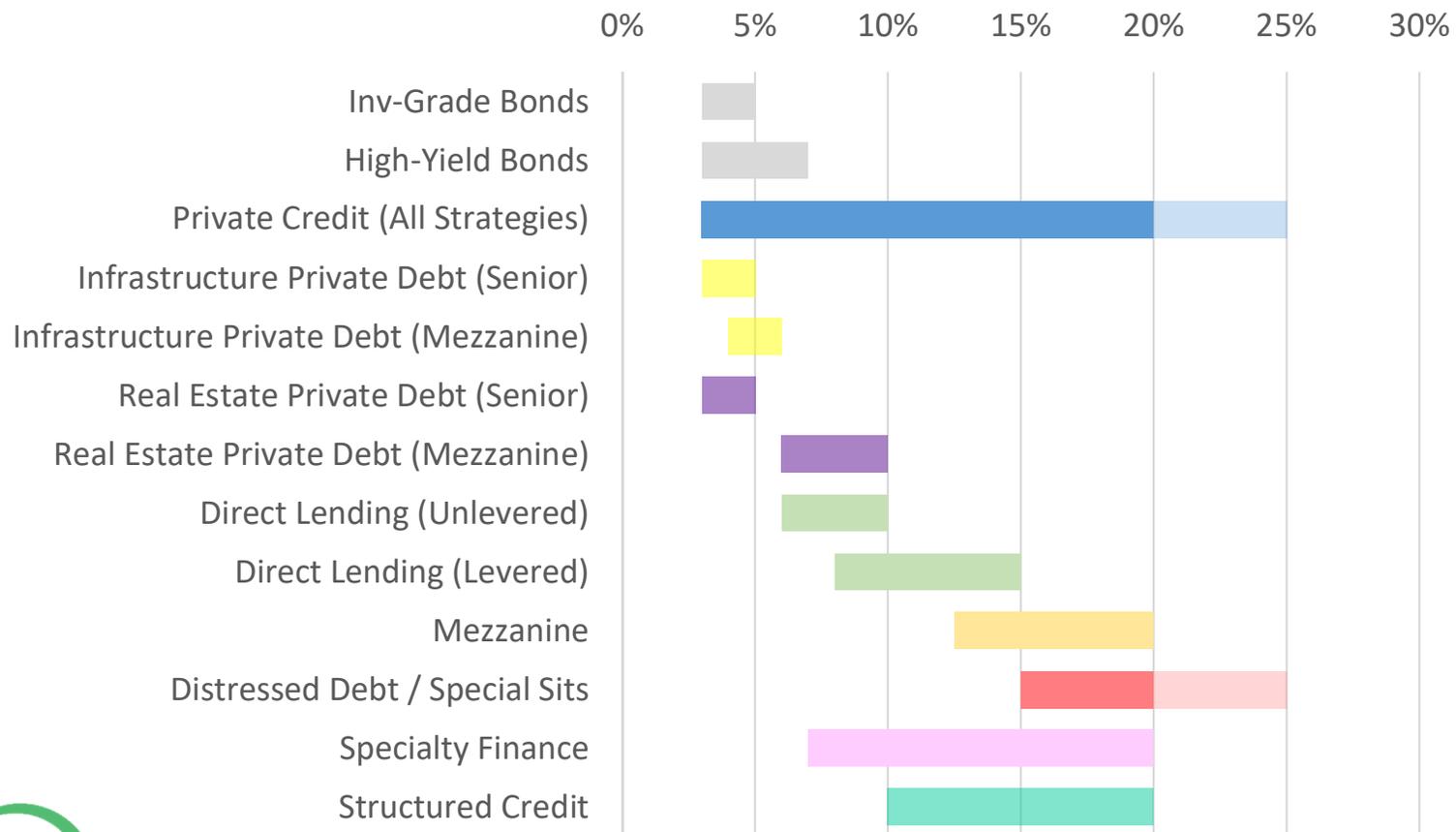
History & Evolution of the Private Credit Market
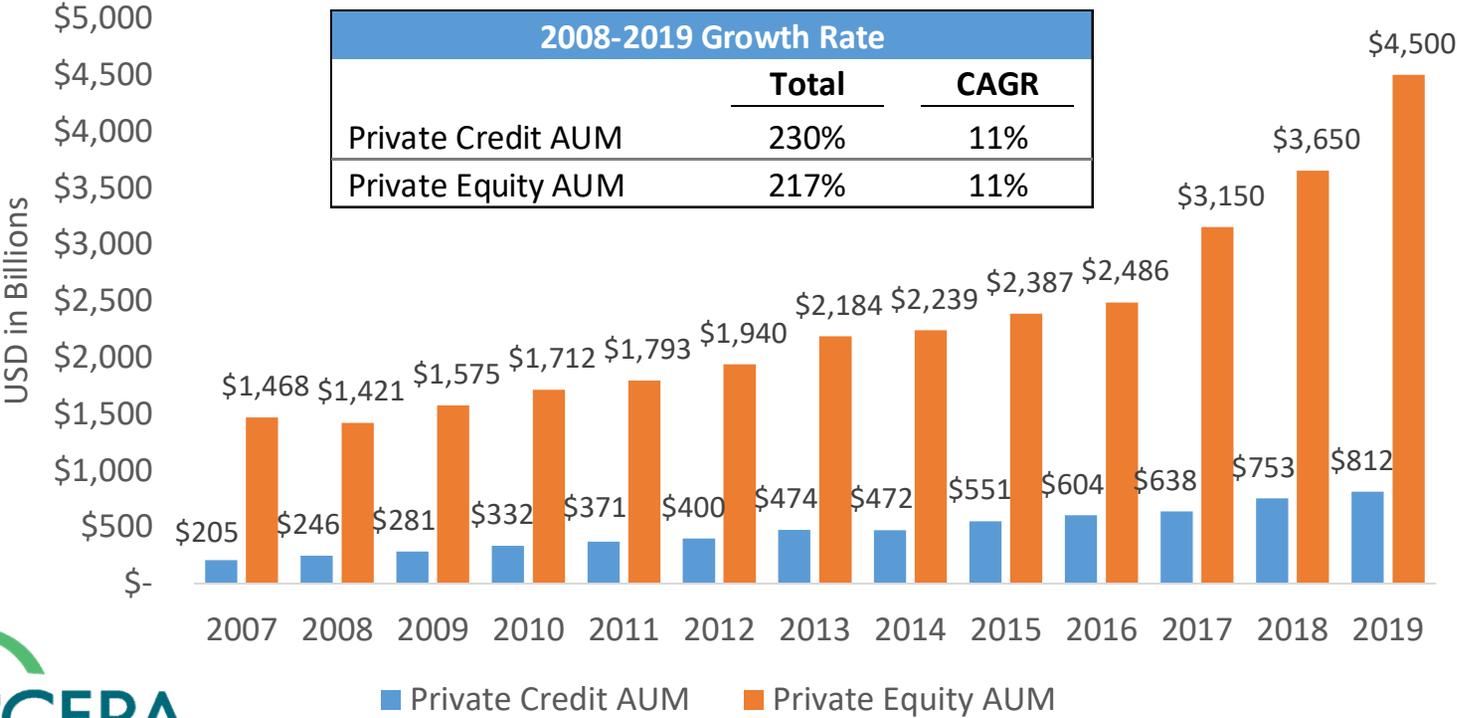
History and Evolution of the Private Credit Market
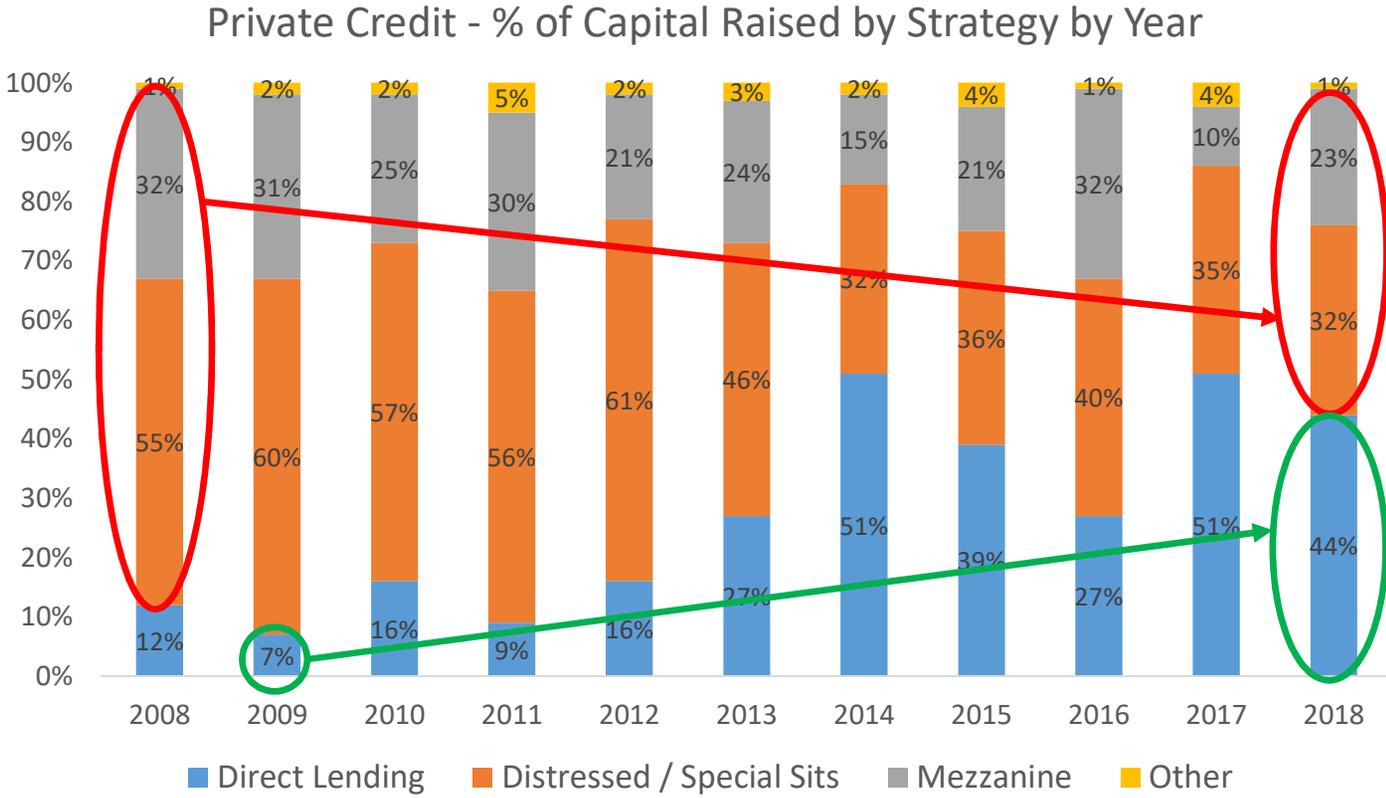
Private Credit - % of Capital Raised by Strategy by Year

Legend: Direct Lending | Distressed / Special Sits | Mezzanine | Other

Year	Direct Lending	Distressed / Special Sits	Mezzanine	Other
2008	12%	55%	32%	1%
2009	7%	60%	31%	2%
2010	16%	57%	25%	2%
2011	9%	56%	30%	5%
2012	16%	61%	21%	2%
2013	27%	46%	24%	3%
2014	51%	32%	15%	2%
2015	39%	36%	21%	4%
2016	27%	40%	32%	1%
2017	51%	35%	10%	4%
2018	44%	32%	23%	1%

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13

Catalysts for Transformation of the Private Credit Market

Three primary forces have driven growth and evolution in Private Credit since 2008:

1. Regulatory pressure on banks
2. Growth in Private Equity
3. Institutional investors searching for yield

Private Equity and Private Credit Assets Under Management (AUM)

2008-2019 Growth Rate		
	Total	**CAGR**
Private Credit AUM	230%	11%
Private Equity AUM	217%	11%

Private Credit AUM by year:
- 2007: $205
- 2008: $246
- 2009: $281
- 2010: $332
- 2011: $371
- 2012: $400
- 2013: $474
- 2014: $472
- 2015: $551
- 2016: $604
- 2017: $638
- 2018: $753
- 2019: $812

Private Equity AUM by year:
- 2007: $1,468
- 2008: $1,421
- 2009: $1,575
- 2010: $1,712
- 2011: $1,793
- 2012: $1,940
- 2013: $2,184
- 2014: $2,239
- 2015: $2,387
- 2016: $2,486
- 2017: $3,150
- 2018: $3,650
- 2019: $4,500

USD in Billions

■ Private Credit AUM ■ Private Equity AUM

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Source: Preqin.

Direct Lending Overview

Levered Direct Lending – Evaluating Risk & Return

Targeted Gross Returns by Private Credit Strategy (Gross IRR)
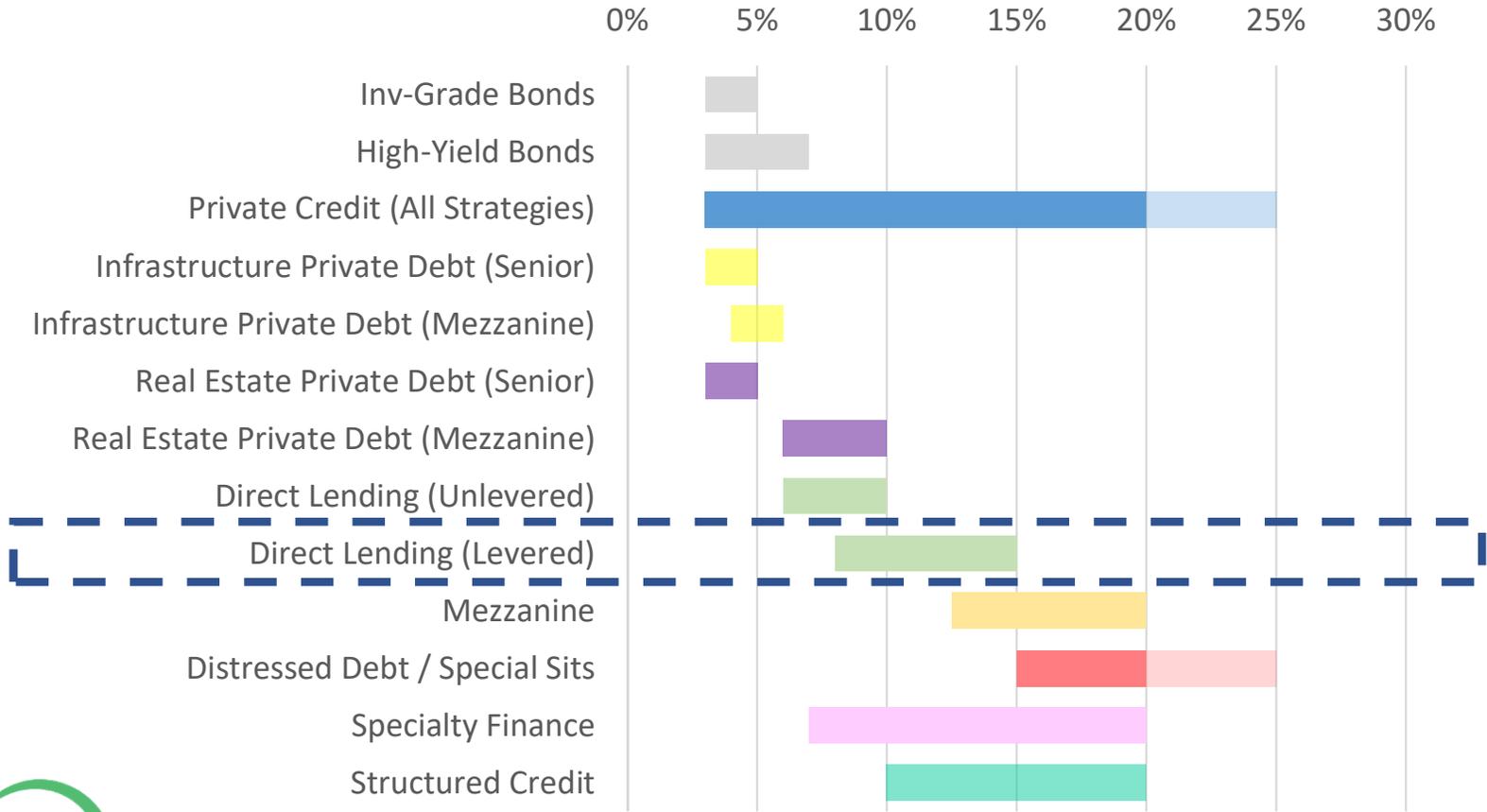
Source: Cambridge Associates and Stepstone.

Represents primary exposure in CCCERA's Private Credit Program

Levered Direct Lending SMA

Example of SMA structure used to invest in Direct Lending Strategy	**Separately Managed Account 1**
	SMA Level Leverage Provided by Third Party Lender = 50%
	Capital Provided by SMA Investor = 50%

	Company 1	Company 2	Company 3	Company N
Direct Lending Strategy	**50% Debt**	**50% Debt**	**50% Debt**	**50% Debt**
Capital Subordinated to Direct Lending Strategy	**50% Equity**	**50% Equity**	**50% Equity**	**50% Equity**

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Direct Lending Illustrative Example

Sources of Cash	Company A	Uses of Cash	
Direct Lending SMA	$100 New Senior Debt	Equity Purchase Price	Add-on Acquisitions
Private Equity Sponsor	$100 New Equity	Refinance Old Debt	Working Capital
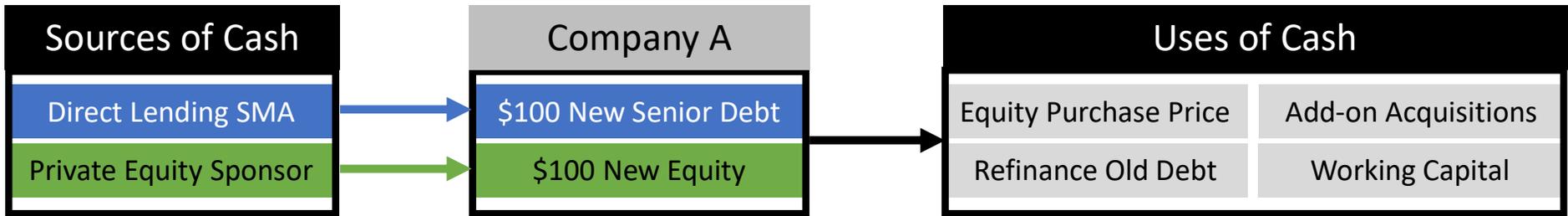
Year	LIBOR Floor	LIBOR	LIBOR Spread	Interest Rate
1	1%	0.5%	8.5%	9.5%
2	1%	0.5%	8.5%	9.5%
3	1%	1%	8.5%	9.5%
4	1%	2%	8.5%	10.5%
5	1%	2%	8.5%	10.5%

Company A → $100.00 ← Direct Lending SMA

Interest	$9.50
Interest	$9.50
Interest	$9.50
Interest	$10.50
Interest + Principal	$110.50

Total Interest + Principal	$149.50
Unlevered Gross MOIC / IRR	1.5x / 10%

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18

Levered Direct Lending: Illustrative Gross to Net Return Calculation

Gross to Net Return Calculation (Levered & Unlevered)			
		Leverage	
	Unlevered	Multiplier	Levered
Gross Yield	**10.00%**	**2.00x**	**20.00%**
Less: Cost of Leverage	0.00%	---	3.50%
Less: Estimated Losses	1.00%	2.00x	2.00%
Less: Management Fee	0.95%	2.00x	1.90%
Less: Other Expenses	0.25%	1.00x	0.25%
Return before Performance Fee	**7.80%**	**1.58x**	**12.35%**
Less: Performance Fee	1.17%	1.58x	1.85%
Net Return*	**6.63%**	**1.58x**	**10.50%**

Notes:

1. Assumes 1:1 leverage (debt:invested capital).

2. Performance fee shown assumes 15% performance fee with a 6% soft hurdle.

*Net Return is before fees paid to Stepstone.

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Levered Direct Lending: Illustrative Gross to Net Return Calculation

Bridge from Unlevered Gross Return to Levered Net Return
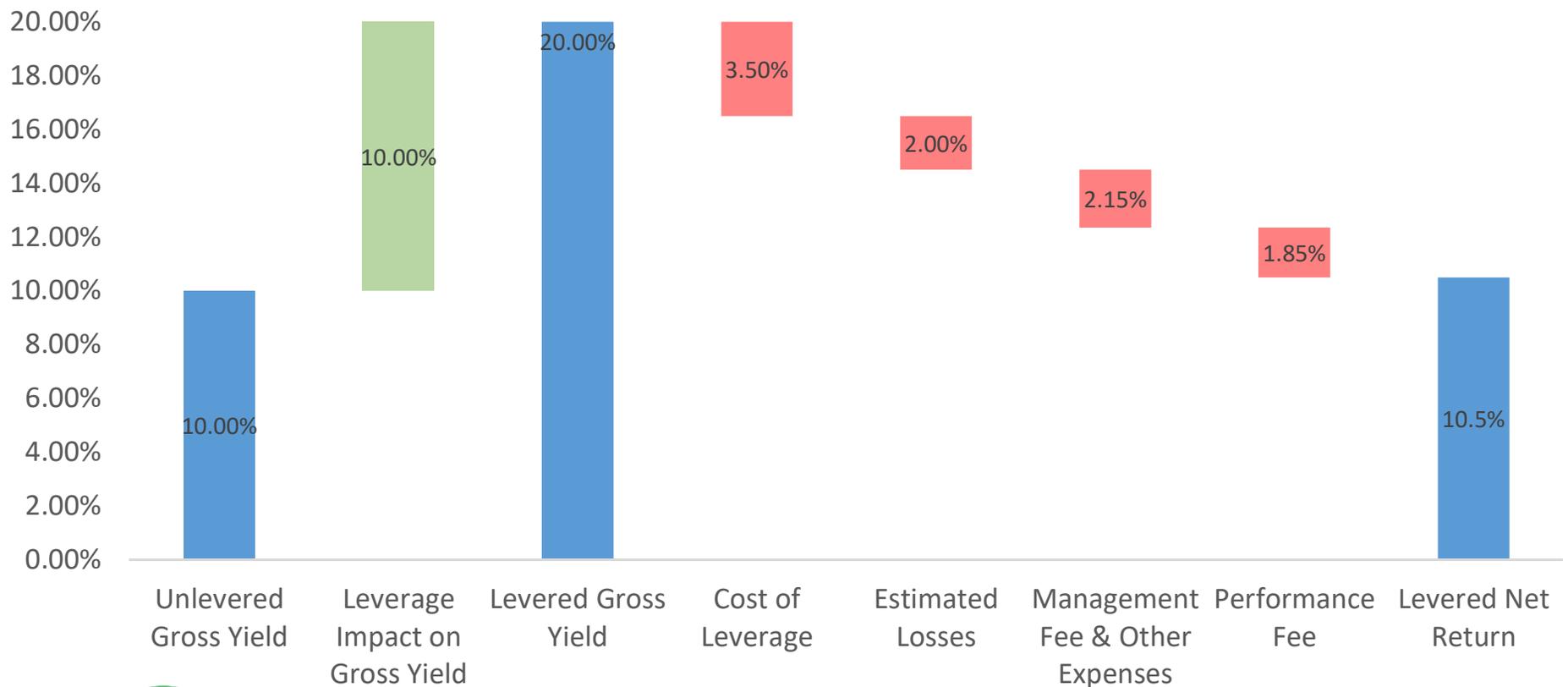
Note: Levered Net Return is before fees paid to Stepstone.

20

Conclusion

- Banks have pulled back from Direct Lending since the GFC, while demand for Direct Lending has remained robust

- Funding gap has been filled by Private Credit / Direct Lending Strategy
  - Fueled by institutional investors' desire for yield

- Competition for deals and low interest rate environment is putting downward pressure on <u>risk-adjusted</u> yields

- Relatively young asset class that is currently going through its first major dislocation

- Lower historical volatility in Private Credit vs. equity
  - In addition, Direct lending had lower losses and better risk-adjusted returns historically vs. comparable corporate lending strategies

STEPSTONE

inside private markets

CCCERA Board Presentation
Private Debt Update

September 2020

Disclosure

Agenda

I. StepStone Group Update

II. Private Debt Market Update

III. Review of Private Debt Program

IV. Private Debt Performance

I. STEPSTONE GROUP UPDATE

StepStone At-a-Glance

StepStone is a global private markets investment firm offering customized investment solutions and advisory and data services to our clients

$280B+
in private capital allocations[2]

$62B+
assets under management[2]

$45B+
annual commitments[3]

500+
professionals

STEPSTONE'S ADVANTAGE

RESEARCH FOCUSED
- 3,800+ manager meetings[1]
- 310+ investment committee approvals[1]

FUNDS
SECONDARIES
CO-INVESTMENTS

DIVERSIFIED PLATFORM
- Private Equity
- Private Debt
- Real Estate
- Infrastructure

SPI™ DATABASE
- 53K+ Companies
- 34K+ funds
- 13.5K+ GPs

GLOBAL TEAM
- 150+ investment professionals
- 19 offices
- 13 countries

SPECIALIZED RESEARCH	CUSTOMIZED SOLUTIONS	INFORMATION ADVANTAGE

As of February 2020. All dollars are USD.
1. Last twelve months through December 31, 2019.
2. $280 billion indicates total assets which includes over $62 billion in assets under management as of December 31, 2019. Reflects final data for the prior period (September 30, 2019), adjusted for net new client account activity through December 31, 2019. Does not include post-period investment valuation or cash activity.
3. StepStone approved over $45 billion in 2019. Represents StepStone-approved investment commitments on behalf of discretionary and non-discretionary advisory clients. Excludes clientele that receive research-only, non-advisory services. Ultimate client investment commitment figures may vary following completion of final GP acceptance/closing processes.

Global Presence with Sophisticated Client Base

StepStone has 19 offices in 13 countries, to serve our clients spanning all major regions and types of institutions including Corporate & Public Pensions, Sovereign Wealth Funds, Endowments, Family Offices and Foundations

AMERICAS

- 8 Offices
- 31 Partners
- 90+ Investment Professionals

TORONTO
SAN FRANCISCO
CLEVELAND
NEW YORK
LA JOLLA
CHARLOTTE
LIMA
SÃO PAULO

$177B+
AUM/AUA

EMEA

- 5 Offices
- 19 Partners
- 60+ Investment Professionals

LONDON
DUBLIN
LUXEMBOURG
ZURICH
ROME

$63B+
AUM/AUA

ASIA-PACIFIC

- 6 Offices
- 8 Partners
- 30 Investment Professionals

BEIJING
TOKYO
SEOUL
HONG KONG
PERTH
SYDNEY

$43B+
AUM/AUA

SWIB State of Wisconsin Investment Board
NYCERS NYC Employees' Retirement System
GATES CAPITAL PARTNERS
Villanova University Endowment
SDCERS San Diego City Employees' Retirement System

Julius Bär
PGB pensioendiensten
HSBC

Standard Chartered
TransGlobe 全球
國泰人壽 Cathay Life Insurance
HESTA An Industry SuperFund
AMP CAPITAL

Corporate Private Debt Team

StepStone *inside private markets*

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Zurich

Christian Frei
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+22 DEDICATED INVESTMENT AND RESEARCH PROFESSIONALS

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Orla Walsh Director, London	**Fabian Körzendörfer** Director, Zurich	**Mark Tsang** Director, London	**Sophie Aslan** Vice President, London
Jovan Samardzic Vice President, Zurich	**Bryan O'Dowd** Vice President, Dublin	**David Han** Vice President, New York	**Samar Abbas*** Sr. Associate, New York
Kenneth McLaughlin Sr. Associate, Dublin	**Edward Panarese*** Sr. Associate, La Jolla	**Jared Root** Sr. Associate, New York	**Gary Gipkhin** Associate, New York
Barry Trueick Sr. Associate, Dublin	**Brian Delpit*** Associate, La Jolla	**Kristjan De Lucca** Sr. Analyst, Zurich	**Andrew Tinger** Associate, London
Tamara Milosevic Analyst, Zurich	**Martin Progin** Analyst, Zurich		

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Selin Pinarci Vice President, Zurich	**Paula Hartnett** Vice President, Dublin
Deborah Eggler Vice President, Zurich	**Luca Hänni** Senior Associate, Zurich
Michael Wator Senior Associate, Zurich	

+9 INFRASTRUCTURE & REAL ASSETS   **+ 14 REAL ESTATE**   **+ 46 RESOURCES DEDICATED TO PRIVATE DEBT[1]**

GLOBAL INTEGRATED PLATFORM
OVER 160 PROFESSIONALS

MONITORING & REPORTING	COMPLIANCE, TAX & LEGAL	MARKETING & CLIENT SERVICES	FINANCE & ADMINISTRATION

*PE Distressed. Information as of February 2020

1 including Finance&Accounting, Controlling, Risk Management, IT, Admin

Global   US Manager Selection   EU Manager Selection

II. PRIVATE DEBT MARKET UPDATE

COVID-19 ANALYSIS AND SCENARIOS

StepStone Private Debt's Approach to Analyzing Impact

EVENT ❯ COVID-19 CORONAVIRUS DISEASE 2019

I. IMPACT OF 1ST ORDER
RECESSION

I. IMPACT OF 1ST ORDER:
DEBT SERVICING / LIQUIDITY ISSUES

SSG IMPACT ANALYSIS

TOP-DOWN ⌄
SCENARIOS

PORTFOLIO
NAV / Cash yields

GP VIABILITY
Team / business viability / deal pipeline

MARKET
Opportunities / Public vs Private

BOTTOM-UP ⌃
BORROWERS

🔀 **ONGOING MONITORING** 🔀
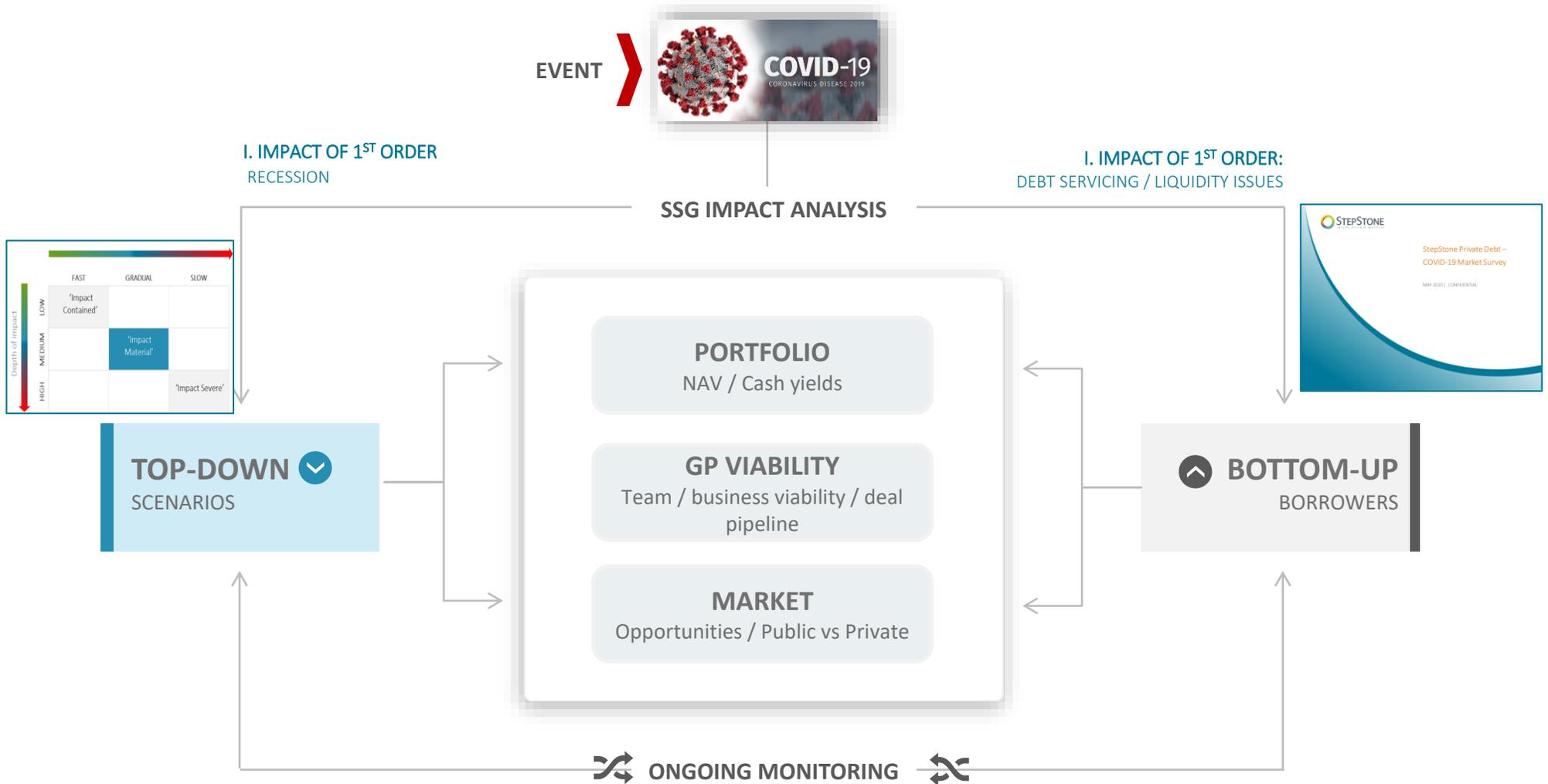
II. IMPACT OF 2nd ORDER: 'BEHAVIOURAL' changes of:

- Consumer (consumption ➜ impact on business models)

- Corporates (supply chain, working capital, other)

- Nations: 'reversal' of globalization

For illustrative purposes only

SYNDICATED LOANS: COVID-19 vs GVC

March 2020

Q2 2020

Legend:
- CS LLI - GFC
- CS LLI - COVID Crisis
- CS LLI - CCC and below
- Cliffwater - COVID Crisis
- Cliffwater - GFC

X-axis: Calendar weeks (1 to 55)
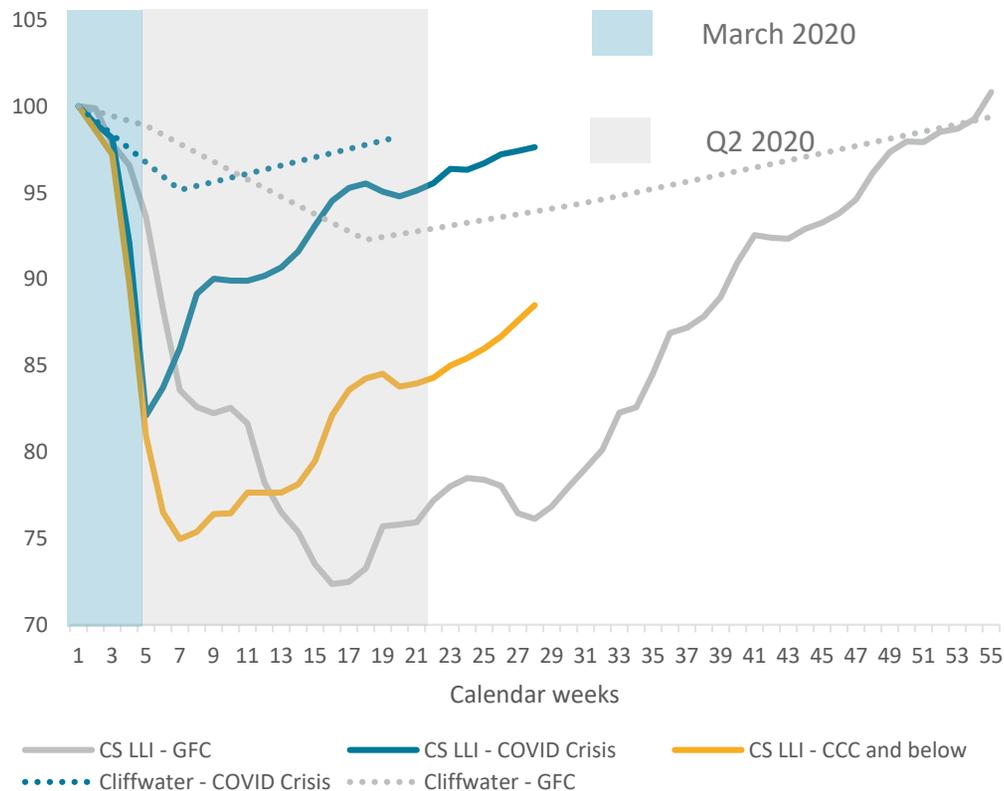
Chart: Total Return CS Leveraged Loan Index: Start date : February 20th, 2020 for COVID Crisis; September 4th, 2008 for GFC

COMMENTS

Credit Markets: Significant sell-off with V-shaped recovery

- Largest & fastest sell-off since GFC
- Market drawdown 2/3 of GFC
- Weak part of the credit market
- V-shaped recovery supported by unprecedented Central Bank intervention
- Fed to first time expand asset purchase program to Corporate Credit

Recovery: Faster than GFC

- The divergence in recoveries is largely attributable to massive intervention
- Expected default rates for COVID at the level of realized GFC default rates
- COVID market shock accelerated bifurcation of market: weaker credit valuations do not recover anymore

Key Events in Credit Markets (Continued)

DOWNGRADES
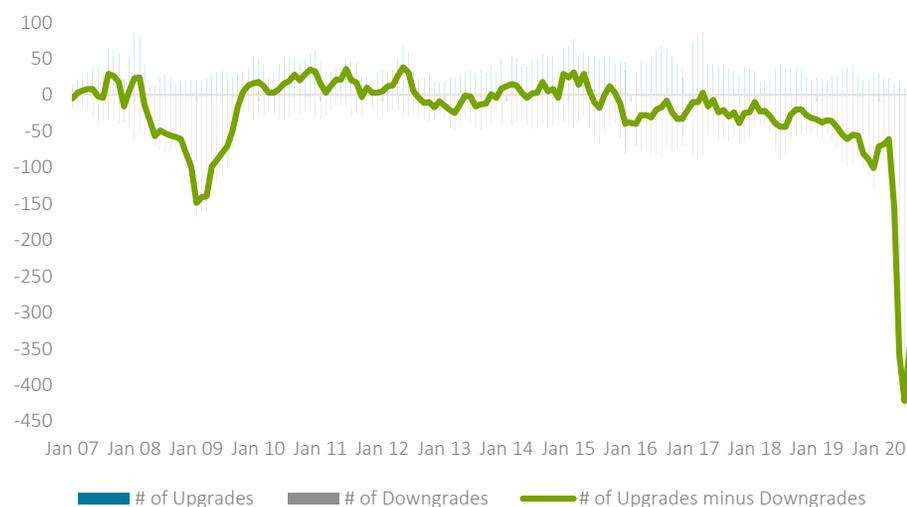
Data source: LCD. as of August 2020

COMMENTS

Credit Ratings: Downgrade cycle anticipates deterioration of fundamentals

- Pre-emptive and quick actions by rating agencies in anticipation of fundamental credit deteriorations
- Unprecedented speed and magnitude of downgrades
- This development contradicts with price action in traded credit markets

DEFAULTS

Data source: Bloomberg, JP Morgan, Moody's, S&P, as of August 2020

Default Rates moving up and above long-term average

- Default rates increased over the last few months
- Drivers at this stage have been mainly industries directly affected by COVID
- Credit rating agencies expect peak levels to be reached in Q1/Q2 2021 at GFC levels of 10 – 12%
- However, implied default rates are decreasing from recent peaks

Outlook & Investment Implications

V-SHAPED RECOVERIES - SO FAR ......

Global Purchasing Manager Index

Legend: Global, Eurozone, US, Japan
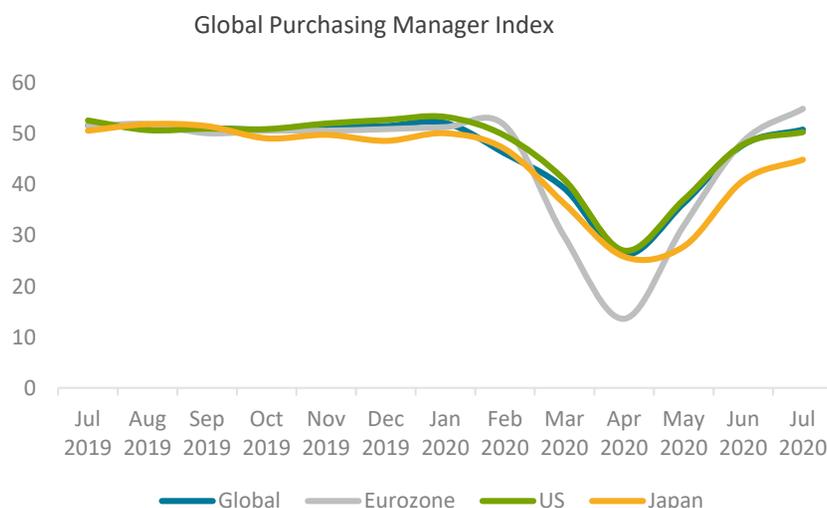
..... BUT TOO EARLY TO DECLARE VICTORY OVER COVID-19

Legend: Global, USA, Brazil, India, Asia, Europe

Source: Bloomberg / ICG. Data as of 17.7.2020, 7dma

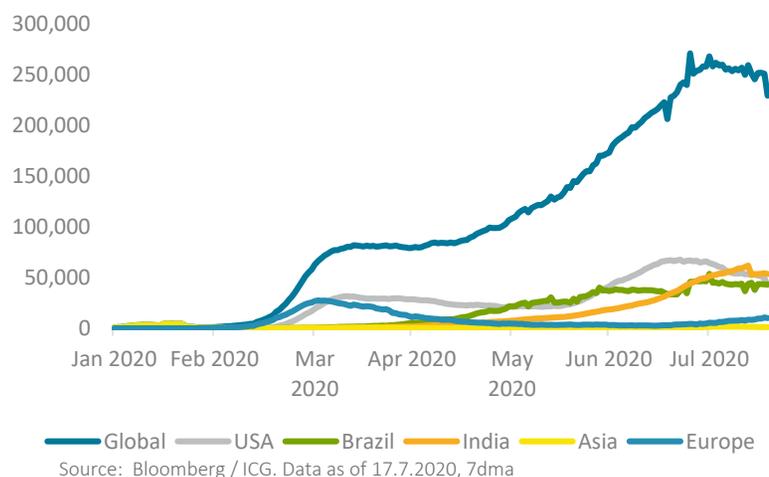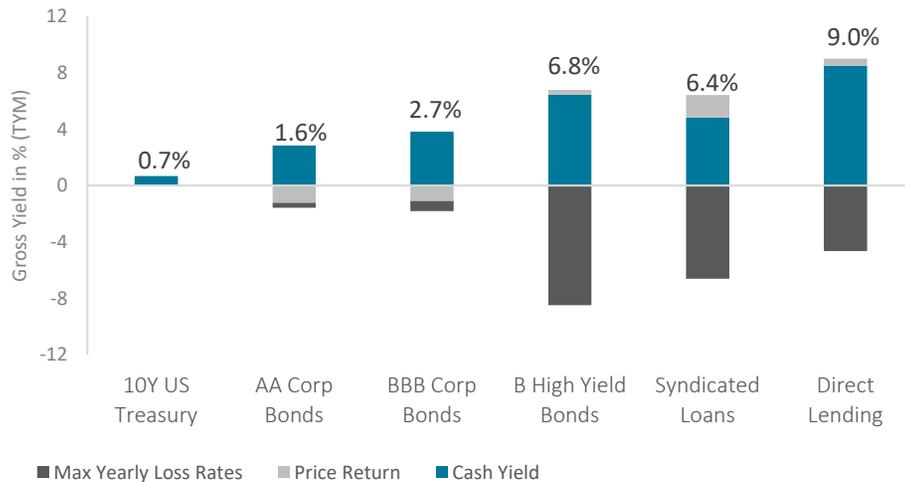|	
V-shaped recovery so far	• Termination of lock-down measurs had swift and positive effect • However, recoveries vary widely (country, sector, company)
Recovery to slow down or derail?	• Increase in COVID-19 cases across the world increase risk to derail recovery • Unprecedented monetary and fiscal policies will most likely help to avoid recovery to competely derail • However, growth moderation to be expected not only in the short but also medium-term due to future tax burdens
Global interest and inflation rate to remain low	• Central banks will maintain and if needed expand unprecedented measures • Ultra low interest rates across the globe will support asset price inflation • Investors will continue search for yield activity
Disconnect: the market is not the economy	• Traded asset prices to trade at valuations in stark contrast with continued deterioration of fundamentals
Investment Principles	• Maintain focus on quality for core investments • Enhance performance potential with opportunistic investments • Continued search for low / no correlated asset classes

ATTRACTIVENESS OF DIRECT LENDING & OUTLOOK

Relative Attractiveness of Private Debt

StepStone
inside private markets

STRONG CURRENT INCOME ELEMENT IN RETURNS FROM DIRECT LENDING

Gross Yield in % (TYM)

- 10Y US Treasury: 0.7%
- AA Corp Bonds: 1.6%
- BBB Corp Bonds: 2.7%
- B High Yield Bonds: 6.8%
- Syndicated Loans: 6.4%
- Direct Lending: 9.0%

■ Max Yearly Loss Rates ■ Price Return ■ Cash Yield

DIRECT LENDING HAS BENEFITED FROM REDUCED DRAWDOWNS VS OTHER ASSET CLASSES ACROSS CYCLES

Max. Drawdown

Equities | High Yield | Syndicated Loans | Direct Lending
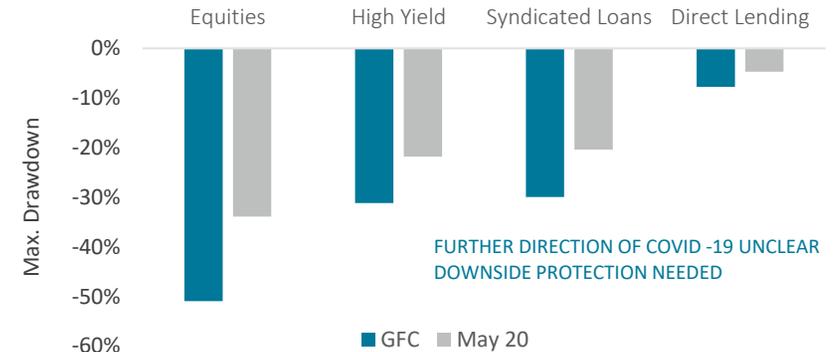
FURTHER DIRECTION OF COVID -19 UNCLEAR DOWNSIDE PROTECTION NEEDED

■ GFC ■ May 20

Source: S&P index, Federal Reserve Economic Data (FRED), Credit Suisse, Cliffwater Senior Direct Lending index, as of June 10, 2020.

FIXED INCOME CHALLENGES

IG
↕
SUB-IG

- Zero to low yield
- Rate volatility
- Downgrades across HY / IG
- Cash yield vs. capital appreciation

PRIVATE DEBT

DEFENSE

- First lien lending
- Net Cash yield potential 4-7%
- Libor floors

OFFENSE

- IRR target > 10%
- Cash yield & capital appreciation
- Senior to junior capital
- Use market dislocations over phases

(PUBLIC) EQUITY CHALLENGES

- Decreased global growth
- Increased volatility
- Lower dividend yields
- Decrease in share buy-backs

'Default Rates': Syndicated Loans

Default rates have increased beyond long term average and rating downgrades are at historic highs

12-MONTH DEFAULT RATE SYNDICATED LOANS[1]
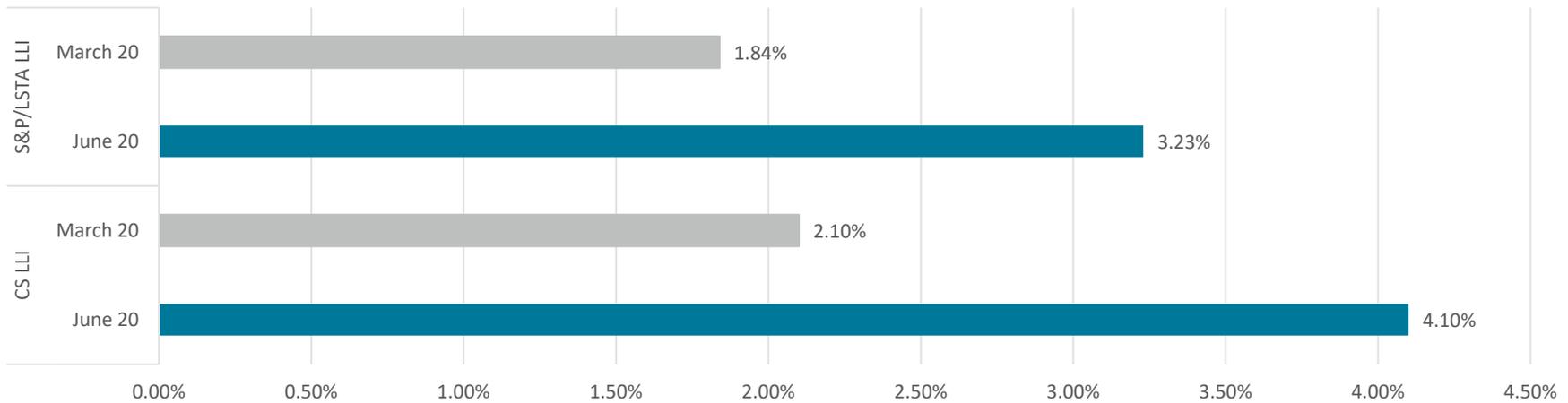
SL DEFAULT RATE & RATIO OF DOWNGRADES OVER UPGRADES (S&P/LSTA LLI)

Downgrades/ Upgrades (rhs)
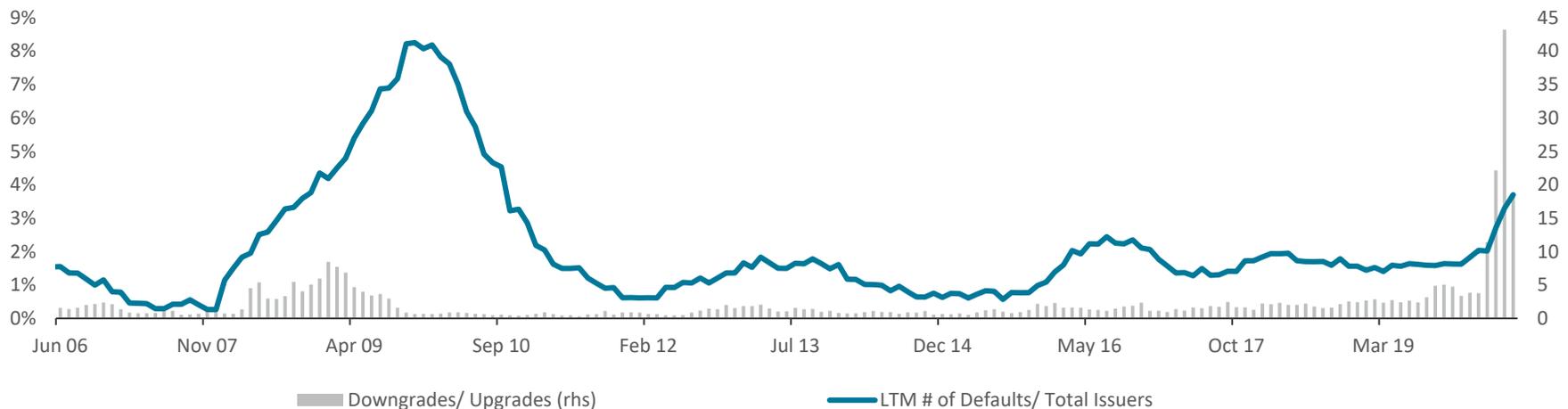
LTM # of Defaults/ Total Issuers

Mid-Term Market Environment

StepStone believes the pendulum has moved back from "borrower friendly" to "(more) lender friendly"

TRANSACTION VOLUMES

- **Newly originated** : Transaction volumes expected to be significantly reduced in 2020; volume dispersion of individual GPs expected to increase
- **Large Cap Transactions:** potential of large GPs to originate transactions that traditionally would tap the broadly syndicated loan market

PRICING

- **Newly originated transactions** increase of 100-250bps of gross asset yield depending on borrower characteristics
- **Performing secondaries** expected to be offered more frequently and potentially priced at a premium to primary markets

DOCUMENTATION/ UNDERWRITING STANDARDS

- **Newly originated transactions** based on more conservative forecasts (e.g. EBITDA adjustments) and credit metrics (e.g. level of leverage, covenants)
- **Amendments:** Borrowers that require amendments to existing documentation likely have to accept a tightening of terms and widening of pricing

EXPECTED DEFAULT AND LOSS RATES

- **Newly originated transactions**: default rates likely not below long-term average due to tighter structures (e.g. covenants, covenant headrooms)
- **Loss rates of post-COVID-vintage** expected to be below long-term average

Long-Term Development of Direct Lending Returns

- Risk-adjusted direct lending yields remained attractive through the cycle
- As a cycle matures, lending terms become more "borrower friendly," resulting in increased leverage and valuation levels (EV multiple). However, this trend reverses post a recession-inducing event (capping off a cycle) such as the GFC (2008-2010) or the current COVID-19 pandemic resulting in significantly lower leverage and valuation levels (EV multiple) and an overall "lender" friendly environment

Yield Earned - US First Lien Deals
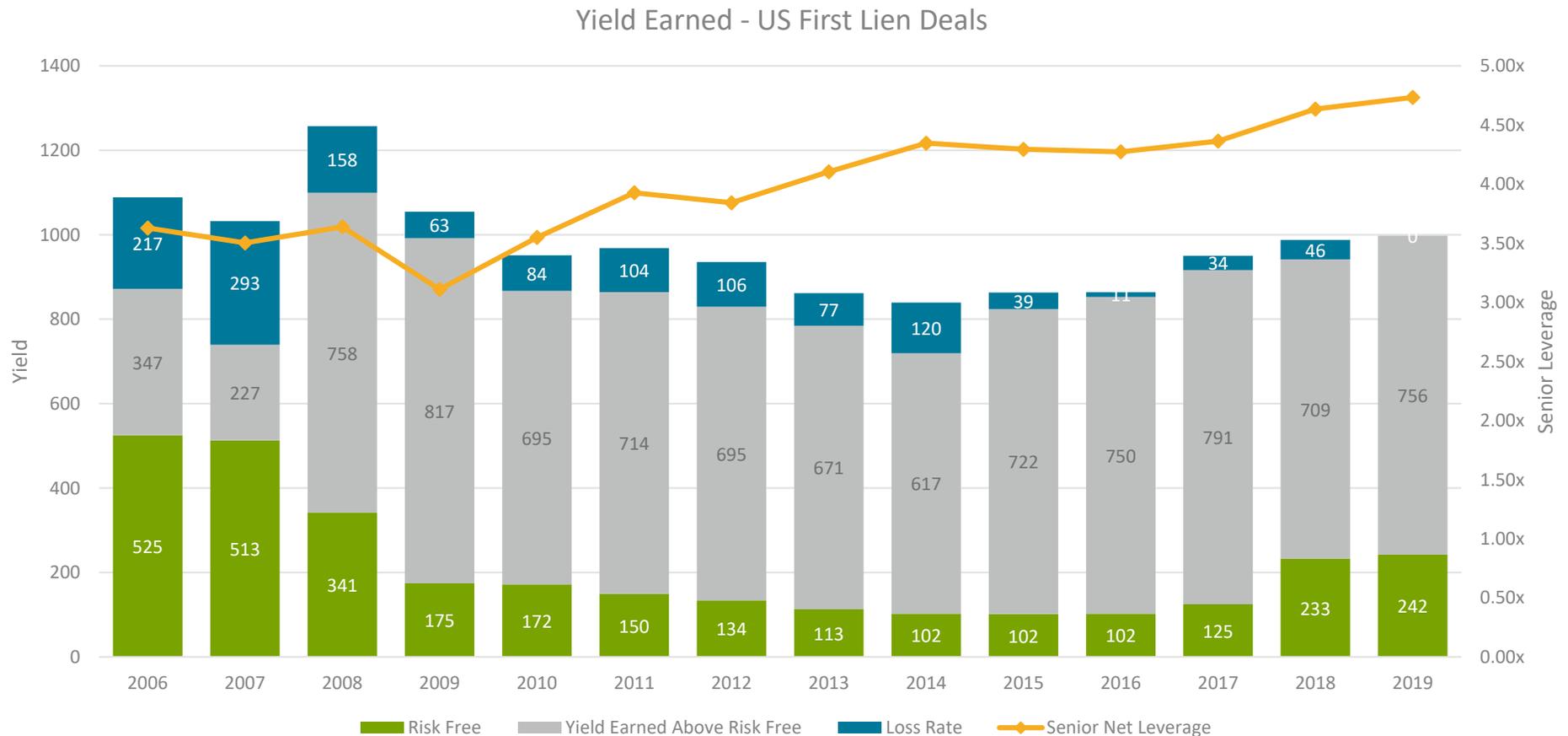
Source: StepStone Global, Internal Database, US First Lien Deals (more than 5,600 transactions and $200bn of invested capital). Risk free presents the weighted average of max(LIBOR, LIBOR Floor) of the deals originated within the respective vintages, where the 3-month LIBOR is used as reference rate. Yield include the cash coupon as well as OID and Arrangement Fees and assumes 3-year expected life. Loss Rates present the annualized vintage loss rates and takes into account any principal loss as well as any interest foregone. One large loss in 2018 was excluded from the analysis since it distorts the analysis.

OPPORTUNITIES

Playing Defense OR Offense? Better do Both…

Scenario to materialize will determine the mix and timing of a Portfolio (Deployment Speed & Entry Levels)

Direct Lending

Direct Lending is a function of demand and supply in the lending space. Alternative Lenders will continue profiting from:

- The continued bank disintermediation
- The retreat of 'public / traded' markets in the high yield space
- A consolidation across the industry

POST COVID-19 EVENT VINTAGE YEARS are attractive regarding:

- Increased spreads / OIDs
- Lower leverage / LTVs / tighter covenants
- Industry / Company selection

OFFENSE

DEFENSE
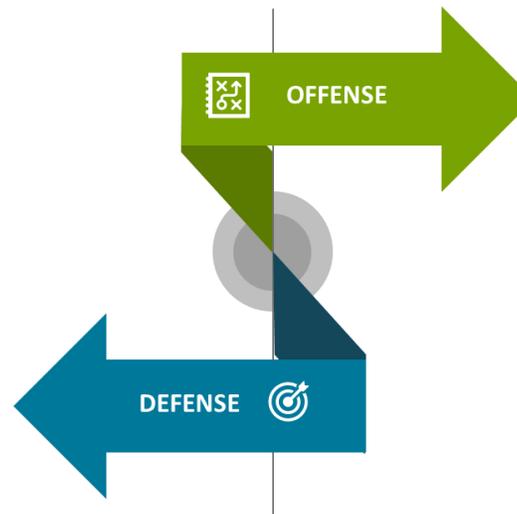
OPPORTUNISTIC

We currently observe a strong opportunity set and investment themes in the current market environment emerging in different phases:

SHORT-TERM OPPORTUNITIES

- Dependent on flows (investor 'stress') and government interventions (monetary policies).
- Investors' fears / expectation around expected scenarios obviously drive volatility.

MID TO LONG-TERM OPPORTUNITIES

- Primarily dependent on the fundamental development and accordingly the scenario.
- These will drive ultimate defaults and recoveries.
- Fiscal programs influence overall impact and especially recovery times (IRRs).

Investment Themes

PRESENT

MARKET DISLOCATION	RECESSION	RECOVERY

PHASE I

- **Syndicated Loan** dislocation
- **Other opportunistic credit**
- **Structured Credit**
  - CLOs
  - MBS

PHASE II

- **Opportunistic Credit**
  - Distressed non-control
  - Primary Opportunistic Credit (convexity)
- **Secondary Direct Lending**
  - Whole Loan Portfolios

PHASE III

- **Opportunistic Credit**
  - Distressed control
  - Turnaround restructuring

Overview of Investment Themes

TARGET GROSS RETURN

- **12-14%**
- **8-12%**
- **4-8%**

INVESTMENT HORIZON

- 1-3 years
- 4-6 years
- 7-9 years
- 9+ years

Bubbles:

- CLO Warehousing
- Litigation
- ILS: NAT CAT QS
- European NPL
- Royalties
- US Residential Mortage NPL
- Distresssed for Control
- CLO Equity
- Aviation Finance – Mid Life Aircraft
- ILS: WAQS
- Opportunistic Lending
- Shipping Debt
- Non-Control Distressed
- Capital Solutions / Lending to Lenders
- Direct Lending[1]
- RegCap (EU)
- CLO Mezz
- Life Settlement Claims
- Trade Finance
- Tightly Syndicated Loans
- Non QM Residential Loans
- Platforms / Supply Chain Finance
- Commercial Real Estate Debt
- Long/Short Credit
- Broadly Syndicated Loans
- Bank Lending
- EU Residential Mortgage
- Aviation Finance- New Aircraft
- Infrastructure Debt

Legend:

- ■ Invested by Discretionary Mandates
- ■ Currently worked on for Discretionary Mandates

[1] incl. Co-Investment

Note: Bubble size represents deployment capacity (small, mid, large). Target returns are hypothetical and are neither guarantees nor predictions or projections of future performance. Future performance indications and financial market scenarios are no guarantee of current or future performance. There can be no assurance that such target gross IRRs will be achieved or that the investment will be able to implement its investment strategy, achieve its investment objectives or avoid substantial losses. Further information regarding IRR calculation is available upon request. Gross IRR will ultimately be reduced by management fees, carried interest, taxes, and other fees and expenses. Data as of June 2018

III. REVIEW OF PRIVATE DEBT PROGRAM

Summary

WHAT HAS BEEN DONE SO FAR

- In **April 2017** the CCCERA Board **approved a Private Debt mandate** and selected **StepStone as implementation partner**

- StepStone and CCCERA management **worked closely to establish investment guidelines,** the **implementation** of the mandate **started in H2 2017** and the first separately managed account started investing in Q2 2018

- During bi-weekly calls and regular in-person meetings, investment opportunities are discussed and an exchange of observations and market information is facilitated

- As of June 30, 2020, the portfolio has been invested in line with the agreed upon investment guidelines: **US$700m has been committed to Core managers, US$145m has been committed to Satellite funds** and **US$77m cumulatively has been funded to co-investments including recycled capital.** Total funded investments are US$598m as of June 30, 2020

- StepStone regularly provides detailed insights and proposals to topics such as **regulatory capital, specialty finance, real estate credit, opportunistic and distressed debt** and other opportunities

OUTLOOK Q4 2020 - 2021

- We continue the implementation as defined in close coordination with the CIO and the investment team

- Potentially a 4th core SMA will be launched during H1 2021

- 3 additional primary fund commitments are planned through 2H 2020 and 2021

- StepStone will continue to recycle capital for co-investments as investments are repaid

Private Debt Investment Objectives

CCCERA INVESTMENT STRATEGY

Support CCCERA in building a top performing global private debt portfolio by leveraging StepStone's research-intensive approach to invest opportunistically in high quality managers with long-term view of earning a 10% yield on investments over a cycle

CONTRA COSTA COUNTY ERA'S (CCCERA) INVESTMENT OBJECTIVES	
TARGET ASSET ALLOCATION	Up to 12% of CCCERA's total AuM
ELIGIBLE ASSET CLASSES	Mainly corporate debt but other asset classes such as real estate debt are not excluded
SUB ASSET CLASSES	Non-first lien debt: Max US$300m Non-corporate debt: Max US$300m
RETURN OBJECTIVES	Target net IRR of approximately 10% over a cycle
CASH YIELD / DISTRIBUTION	Not primary focus, but welcomed
GEOGRAPHIC PREFERENCE	Global (weighted towards North America)
IMPLEMENTATION	SMAs, primaries, co-investment and secondaries
FLEXIBILITY	Retain flexibility to control and steer allocations over time, especially through or post down cycles

Target returns are hypothetical and are neither guarantees nor predictions or projections of future performance. Future performance indications and financial market scenarios are no guarantee of current or future performance. There can be no assurance that such target IRRs will be achieved or that the fund will be able to implement its investment strategy, achieve its investment objectives or avoid substantial losses. Further information regarding target net IRR calculation is available upon request.

CCCERA Pacing Analysis

- In conjunction with the CCCERA investment team, the ramp up of the portfolio was elongated to 3-4 years and pacing remains on target

Investment Pacing
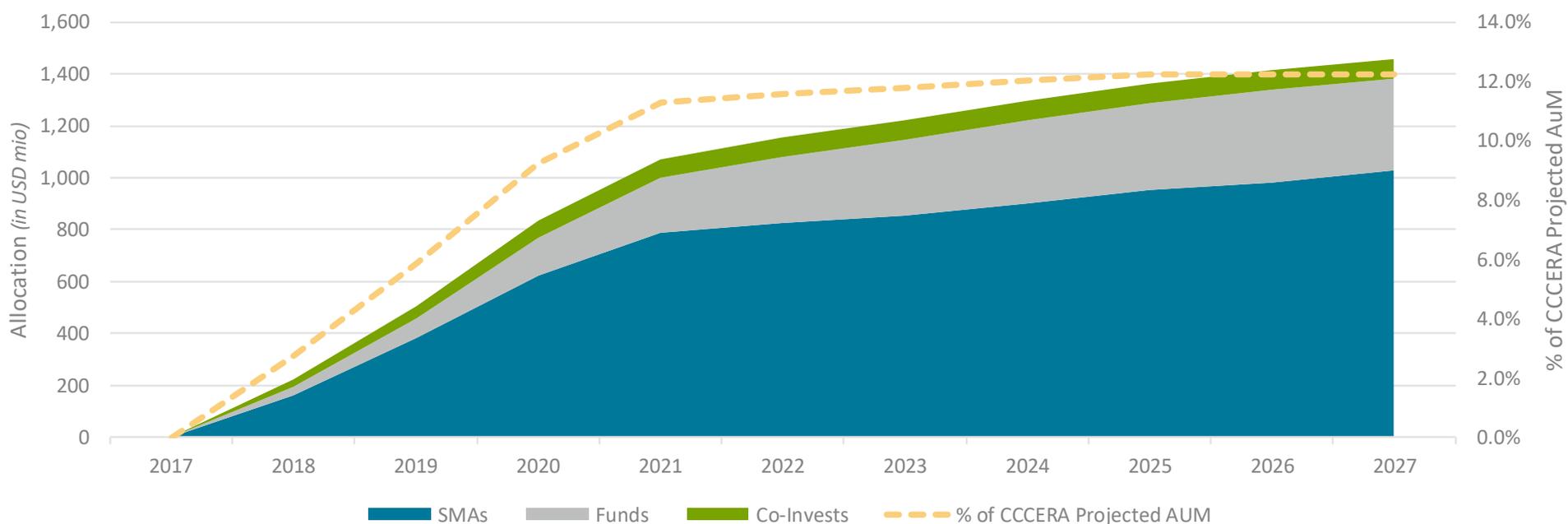
H2 2020 - 2021 Priorities

- Commit approximately US$150m to 1 new SMA
- Commit approximately US$120m to 3 new primary funds
- Continue to recycle co-investments

For illustrative purposes only.
Source: General Partners and StepStone.

Activity Report[1]

Close coordination has been achieved over the last twelve months through:
- 26 bi-weekly progress and coordination calls
- 1 in-person meeting at CCCERA offices discussing portfolio construction
- Various ad-hoc discussions on specific topics

Core	Satellite	Co-invest / Secondaries
• Arranged and co-hosted 3 DD visits to pre-selected GPs • Completed a $100m upsize with a Core Manager	• Reviewed 15 different opportunities in 4 different asset classes • Arranged and co-hosted various due diligence meetings for CCCERA team members • Currently discussing opportunities on the back of COVID-19	• Reviewed 111 single co-investment opportunities • Invested in 5 new co-investments as of August 14, 2020

1. All figures LTM as of August 14, 2020

IV. PRIVATE DEBT PORTFOLIO PERFORMANCE

Private Debt Performance Summary

- CCCERA's private debt portfolio includes US$827m in commitments to 24 investments as of March 31, 2020: 3 SMAs, 4 Primary Funds and 17 Co-Investments[1]

- As of December 31, 2019, the portfolio was on track and generated a net gain of US$37m year-over-year leading to a 1-year Gross IRR of 11.3% and Net IRR of 10.7%

- Due to markdowns in the first quarter of 2020 as a result of COVID-19, the portfolio generated a net gain of US$5m year-over-year, resulting in a temporary reduction in Gross IRR

- The temporary decline in Q1 2020 IRR was primarily driven by non-cash valuation adjustments. There was no material impact to cash yield generated by the portfolio in Q1 2020. Preliminary Q2 2020 valuations indicate a rebound in valuations and an improvement in gross IRR

US$ in millions	March 31, 2020	March 31, 2019	December 31, 2019
Performance Statistics			
Number of Managers	18	12	15
Number of Borrowers[2]	234	117	223
Committed Capital	$827	$641	$820
NAV	$519	$259	$503
Target Gross IRR	> 10.0%	> 10.0%	> 10.0%
Gross IRR[3]	4.1%	11.8%	11.1%
Portfolio Statistics			
Leverage[2]	4.6x	4.1x	4.5x
EBITDA[2]	$45.7	$38.9	$43.0
Traditional 1st Lien and Unitranche[2]	99.7%	99.8%	99.6%
% of closed deals w/ one or more Covenants[4]	97.2%	98.0%	98.2%

1. Four co-investments have been realized since the program's inception.
2. Data excludes investments in Real Estate Credit and Regulatory Capital. Co-investment portfolio data only includes current active investments.
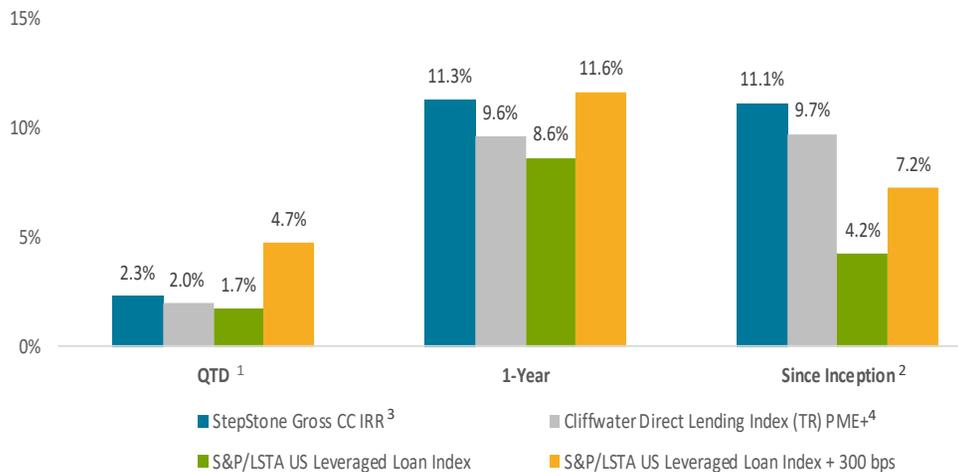3. Since inception (as of 2/12/2018) Net LP IRR as of December 31, 2019 was 9.8% and as of March 31, 2020 was 3.0%.
4. 229 out of 234 borrowers have at least one covenant for the March 31, 2020 period.
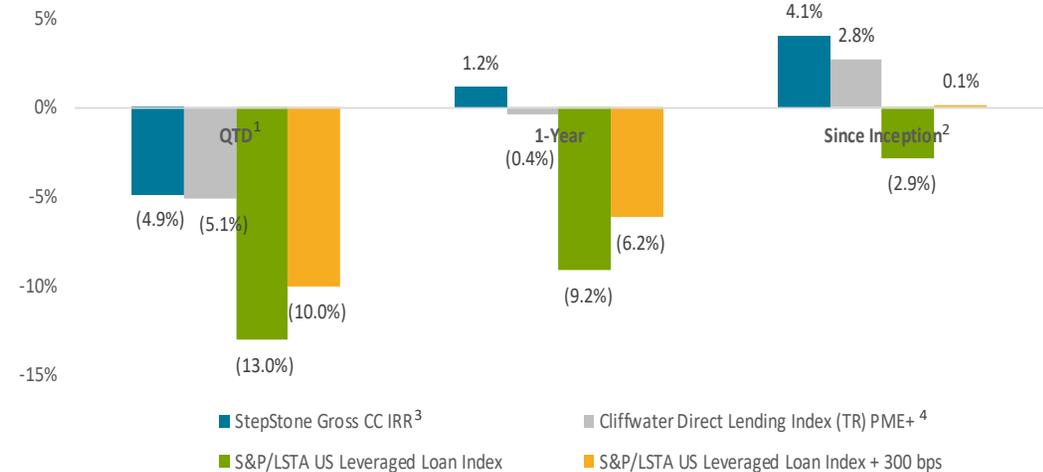
Performance versus Benchmarks

- StepStone CC portfolio has outperformed the benchmarks through March 31, 2020, despite the negative impact of COVID-19 during Q1 2020
- COVID-19's impact to Q1 2020 performance has dampened returns. However, the volatility was limited and, as expected, much less than liquid asset classes

Benchmark Comparison - As of December 31, 2019

Benchmark Comparison - As of March 31, 2020

Legend:
- StepStone Gross CC IRR [3]
- Cliffwater Direct Lending Index (TR) PME+ [4]
- S&P/LSTA US Leveraged Loan Index
- S&P/LSTA US Leveraged Loan Index + 300 bps

1. QTD IRR is not annualized.
2. Inception represents date of first capital call on 2/12/2018.
3. StepStone CC IRR is net of underlying fund and investment fees, but not net of StepStone Advisory fees.
4. Cliffwater Direct Lending Index Total Return (TR) PME+ starts with the Long Nickels calculations and represents the opportunity cost comparison of how funds would have performed had they been invested in the public index using a coefficient to scale the fund's distributions so that the public market theoretical valuation remains positive.
Notes: The indices is shown for general market comparison and is not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented. Returns under one year are unannualized.

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

Cash Flow Analysis – Fund Level

- Year-to-date as of June 30, 2020, the Fund deployed US$162.4m to underlying investments

- 39% of capital since inception has been deployed with Manager A

Quarterly Cash Flow Activity

DEPLOYMENT   DISTRIBUTIONS   QUARTERLY NET CASH FLOW
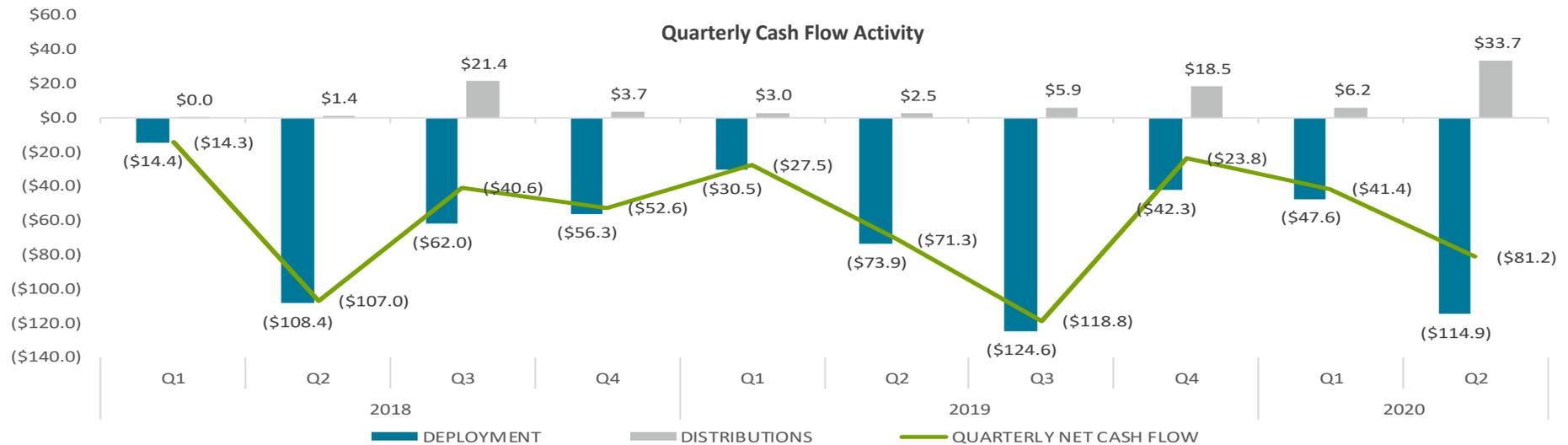
Since Inception[1]: Deployment by Manager

- Manager A — 39%
- Manager B — 23%
- Co-Investment — 11%
- Manager C — 8%
- Manager D — 7%
- Manager E — 5%
- Manager F — 4%
- Manager G — 2%
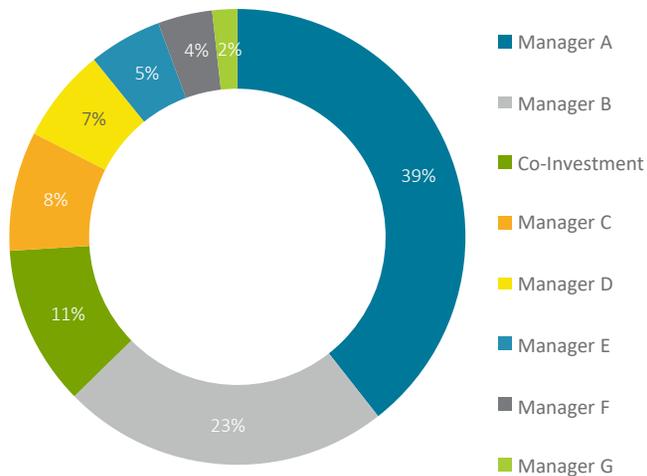
Since Inception[1]: Deployment by Investment Structure Type

- SMA — 72%
- Primary — 15%
- Co-Investment — 11%
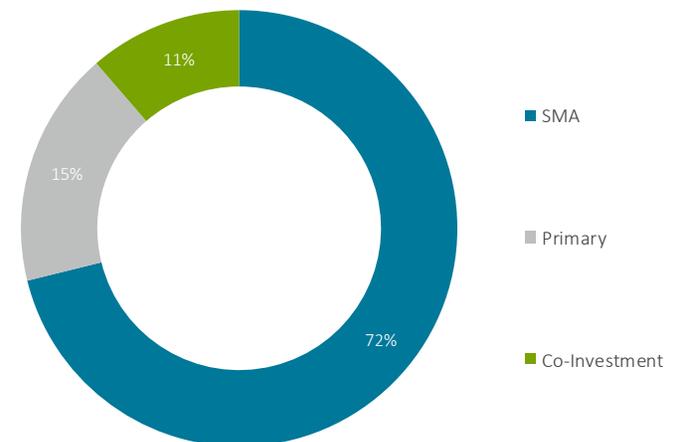
1. Inception represents date of first capital call on 2/12/2018 through June 30, 2020.

30

Portfolio Composition and Exposure[1]

StepStone · *inside private markets*

Fund Level Exposure

By Strategy

- Direct Lending — 92%
- Real Estate Credit — 5%
- Regulatory Capital — 3%

By Manager[2]

- Manager A — 34%
- Manager B — 23%
- Manager C — 18%
- Manager E — 6%
- Co-Investment — 6%
- Manager D — 5%
- Manager G — 4%
- Manager F — 3%
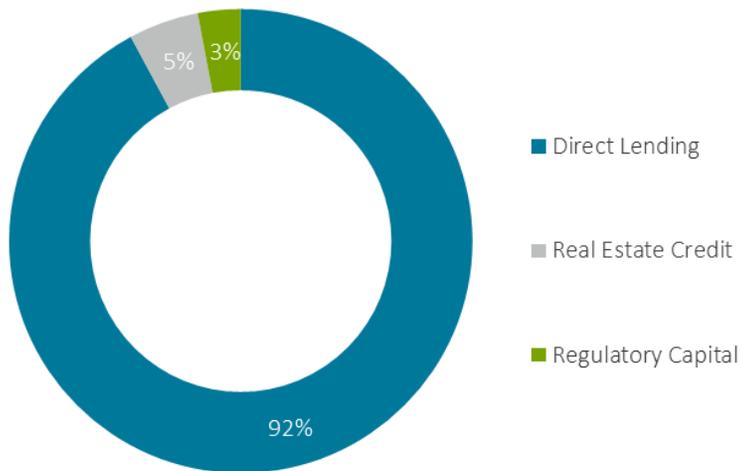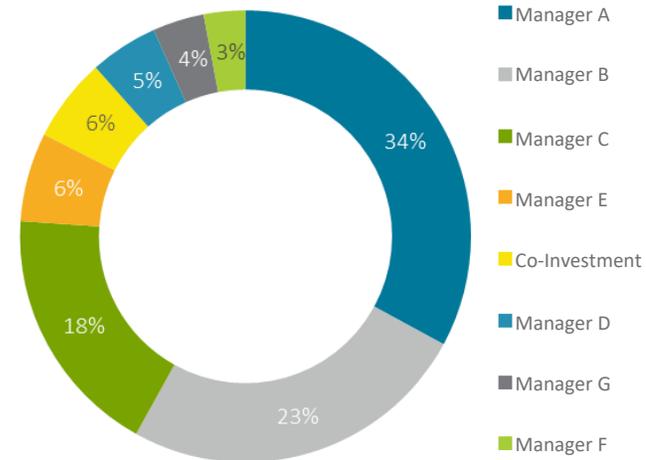
Underlying Look-Through Exposure[3]

By Sector
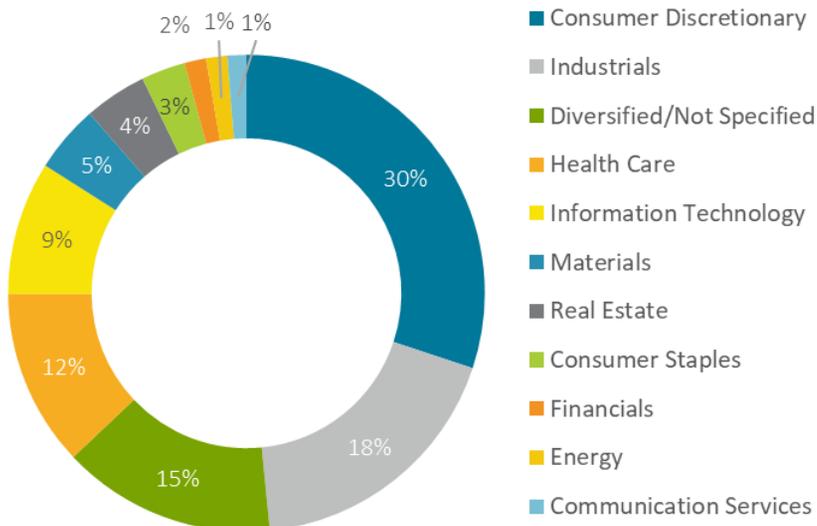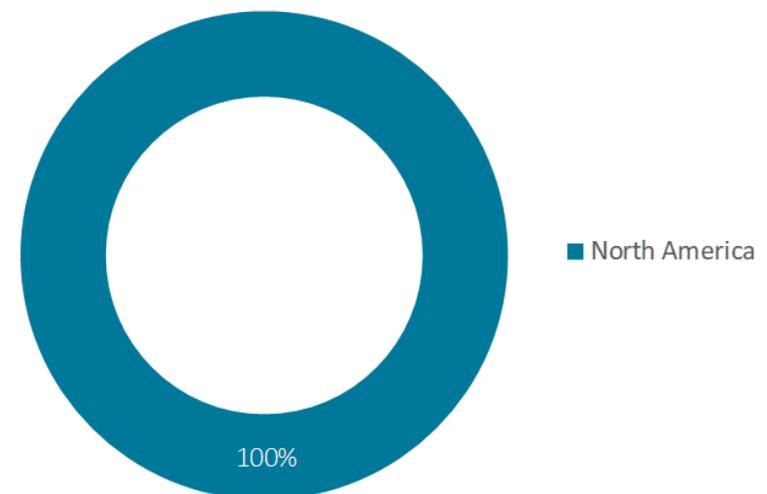
- Consumer Discretionary — 30%
- Industrials — 18%
- Diversified/Not Specified — 15%
- Health Care — 12%
- Information Technology — 9%
- Materials — 5%
- Real Estate — 4%
- Consumer Staples — 3%
- Financials — 2%
- Energy — 1%
- Communication Services — 1%

By Geography

- North America — 100%

Risks Associated with Investments. Identifying attractive investment opportunities and the right underlying fund managers is difficult and involves a high degree of uncertainty. There is no assurance that the investments will be profitable and there is a substantial risk that losses and expenses will exceed income and gains.

Restrictions on Transfer and Withdrawal; Illiquidity of Interests; Interests Not Registered. The investment is highly illiquid and subject to transfer restrictions and should only be acquired by an investor able to commit its funds for a significant period of time and to bear the risk inherent in such investment, with no certainty of return. Interests in the investment have not been and will not be registered under the laws of any jurisdiction. Investment has not been recommended by any securities commission or regulatory authority. Furthermore, the aforementioned authorities have not confirmed the accuracy or determined the adequacy of this document.

Limited Diversification of Investments. The investment opportunity does not have fixed guidelines for diversification and may make a limited number of investments.

Reliance on Third Parties. StepStone will require, and rely upon, the services of a variety of third parties, including but not limited to attorneys, accountants, brokers, custodians, consultants and other agents and failure by any of these third parties to perform their duties could have a material adverse effect on the investment.

Reliance on Managers. The investment will be highly dependent on the capabilities of the managers.

Risk Associated with Portfolio Companies. The environment in which the investors directly or indirectly invests will sometimes involve a high degree of business and financial risk. StepStone generally will not seek control over the management of the portfolio companies in which investments are made, and the success of each investment generally will depend on the ability and success of the management of the portfolio company.

Taxation. An investment involves numerous tax risks. Please consult with your independent tax advisor.

Conflicts of Interest. Conflicts of interest may arise between StepStone and investors. Certain potential conflicts of interest are described below; however, they are by no means exhaustive. There can be no assurance that any particular conflict of interest will be resolved in favor of an investor.

Allocation of Investment Opportunities. StepStone currently makes investments, and in the future will make investments, for separate accounts having overlapping investment objectives. In making investments for separate accounts, these accounts may be in competition for investment opportunities.

Existing Relationships. StepStone and its principals have long-term relationships with many private equity managers. StepStone clients may seek to invest in the pooled investment vehicles and/or the portfolio companies managed by those managers.

Carried Interest. In those instances where StepStone and/or the underlying portfolio fund managers receive carried interest over and above their basic management fees, receipt of carried interest could create an incentive for StepStone and the portfolio fund managers to make investments that are riskier or more speculative than would otherwise be the case. StepStone does not receive any carried interest with respect to advice provided to, or investments made on behalf, of its advisory clients.

Other Activities. Employees of StepStone are not required to devote all of their time to the investment and may spend a substantial portion of their time on matters other than the investment.

Material, Non-Public Information. From time to time, StepStone may come into possession of material, non-public information that would limit their ability to buy and sell investments.

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Chiyoda-ku, Tokyo 100-0005, Japan

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Cleveland, Ohio 44114

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London SW1Y 4AH

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Yeoungdeungpo-gu,
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77 St George's Terrace
Perth, WA 6000, Australia

SYDNEY
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One Farrer Place
Sydney NSW 2000 Australia

Risk Diversifying Sub-Portfolio Review

September 23, 2020

CCCERA
Contra Costa County Employees'
Retirement Association

Timothy Price, CFA

Chief Investment Officer

1

Review of Risk Diversifying Sub-Portfolio

1. Role of Risk Diversifying in CCCERA portfolio
2. Features of diversifying assets
3. Structure of Risk Diversifying allocation
4. CCCERA performance
5. Potential programmatic enhancements

Role of Risk Diversifying

- Downside protection to help buffer the large growth allocation

- Liquid pool of capital to capture stressed growth opportunities
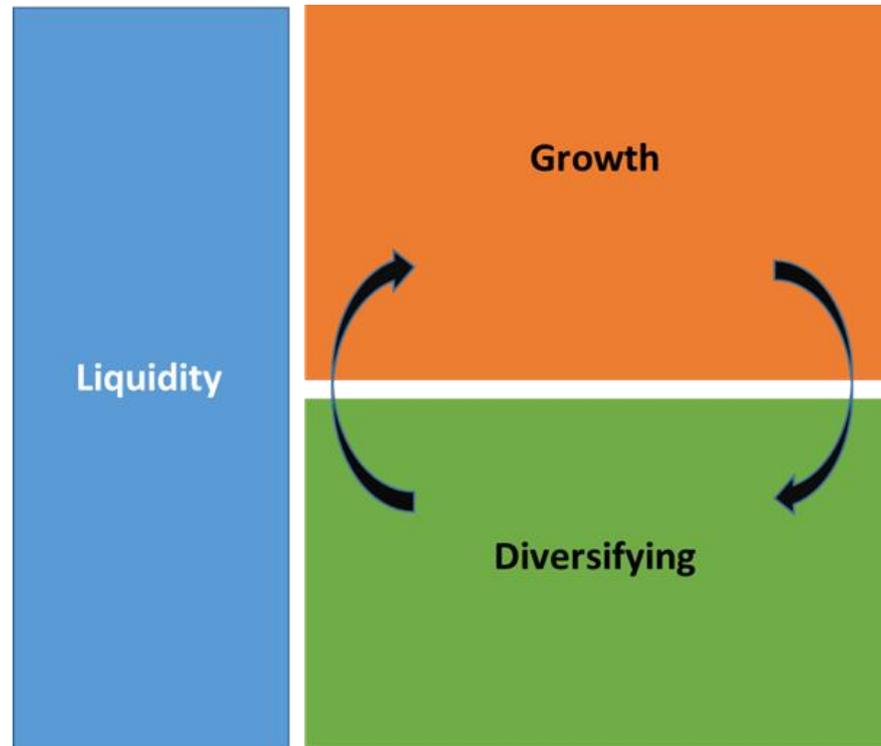
Features of Risk Diversifying Strategies

Quality	Rationale
Low to negative correlation with growth assets	Act as diversifying offset to CCCERA's large growth (equity) allocation
High liquidity during periods of equity market stress	Must be able to redeploy these assets to capture opportunities in stressed environment.
Positive expected real return	We want strategies that can be held on a permanent basis without acting as a drag on overall expected returns

CCCERA

Risk Diversifying Universe

Generally falls into two camps, explicit and implicit market hedges. We focus on implicit hedges.

Hedge Type	Example	Efficiency of Hedge	Opportunity Cost
Explicit	Tail risk hedge (buying equity put options)	High, creates an explicit positive payoff when equity market conditions deteriorate	High, essentially an insurance premium is paid every month that the puts expire worthless
Implicit	US government guaranteed debt	Medium, not an explicit negative correlation, typically an uncorrelated return	Medium-low. Should have an economic rationale for a positive expected return

CCCERA

Evolution of Risk Diversifying Allocation

2015
Adopted Functional Portfolio Construction

2016
Re-categorized AFL-CIO, Wellington strategies as Risk Diversifying assets

2017
Issued RFI for Risk Diversifying strategies

2018
Funded Parametric Defensive Equity strategy

2019
Continuing research on several prospective strategies

2020
Used allocation to rebalance during market volatility.
Liquidated Wellington, Funded Acadian.

CCCERA Performance

As of June 30, 2020

Objective	Measurement	Current Period Data	Status
Offset Volatility in Growth Portfolio	Correlation	0.7 over trailing 5 years	Below Expectations
Positive Real Returns	Returns	Trailing 5yr real return of -1.4%	Below Expectations
High Liquidity	% of Portfolio that can be liquidated within 90 days	100%	Meeting Expectations

CCCERA

Performance Under Stress

Raised cash during stress in equity markets

Liquidated Wellington (~$180 mm) in early April and May 2020

$75 mm redemption from AFL-CIO in May 2020

Deployed into credit and equity opportunities

Took profits from rebalancing activities during annual rebalancing in late July

Funded Acadian MAARS in early August

CCCERA

Current Asset Allocation

Strategy	Allocation as of 8/4/20	Current Target Allocation
AFL-CIO Housing Investment Trust	2.9%	3.0%
Parametric Defensive Equity	1.9%	2.0%
Acadian MAARS	1.1%	1.5%
Total	**5.9%**	**6.5%**

CCCERA

CCCERA Performance

Preliminary as of June 30, 2020 (Net)

Asset Class	1 Year	3 Years	5 Years
Risk Diversifying	**-1.3%**	**0.7%**	**0.2%**
AFL-CIO HIT	7.0%	4.7%	3.8%
Parametric Defensive Equity	-11.0%	-	-

Risk Diversifying vs. MSCI ACWI

Manager Consistency 1 Year Rolling, Monthly

As Of: June 30, 2020

	# of Observations	# OutPerform Benchmark	% OutPerform Benchmark
◆ CCCERA	188	51	27.13%
— MSCI ACWI-ND	---	---	---

Results displayed in USD using Spot Rate (SR).
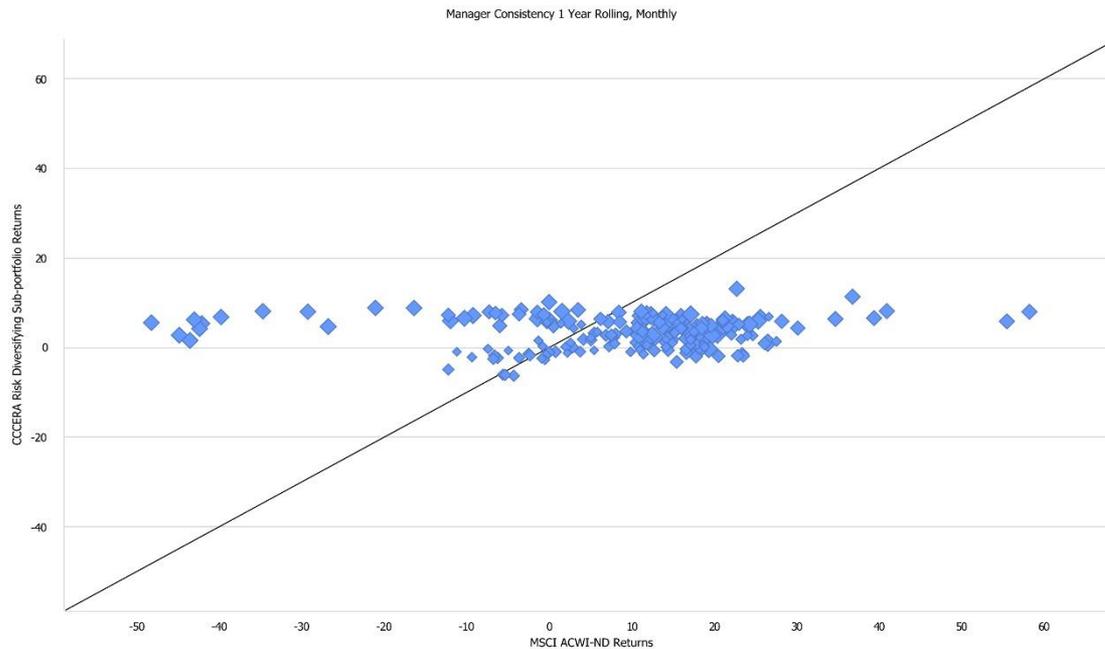
MSCI ACWI-ND

Risk Diversifying trailing one-year performance vs. MSCI ACWI (global equity) index.

Demonstrates low correlation and modest positive performance historically.

EVESTMENT

CCCERA

Future Enhancements

Identifying complementary strategies is a priority for the CCCERA investment team

Currently researching three types strategies for potential inclusion:

Multi-asset absolute return strategies

Fixed income opportunities

Alternative risk premia

Expect to fund 1-2 new strategies by 2Q21

Verus

**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

SEPTEMBER 2020

Enterprise Risk Tolerance Assessment for

Contra Costa County Employees' Retirement Association

Table of contents

Verus

I. Introduction

Enterprise Risk Tolerance in Context

- Properly assessing Enterprise Risk Tolerance has important and practical implications for investment strategy development.

- Identifying the appropriate risk tolerance for a plan involves viewing risk in terms of the Plan's willingness and ability to bear risk.

- The ability to bear risk depends on financial circumstances while the willingness to bear risk is generally based on investor's attitudes and beliefs about investments.

- Although the CCCERA Board's duty is to the beneficiaries of the Association, assessing the County's financial situation and ability to make contributions to the Pension is one component in evaluating the Plan's ability to take on risk.

- In today's session, we review CCCERA's willingness and ability to incur investment risk, based on our findings from recent Trustee and Staff interviews, as well as an assessment of the financial health of the Plan sponsor.

Risk Tolerance

	Ability →
Naive	Capitalizing
Protective	Defensive

Willingness ↑
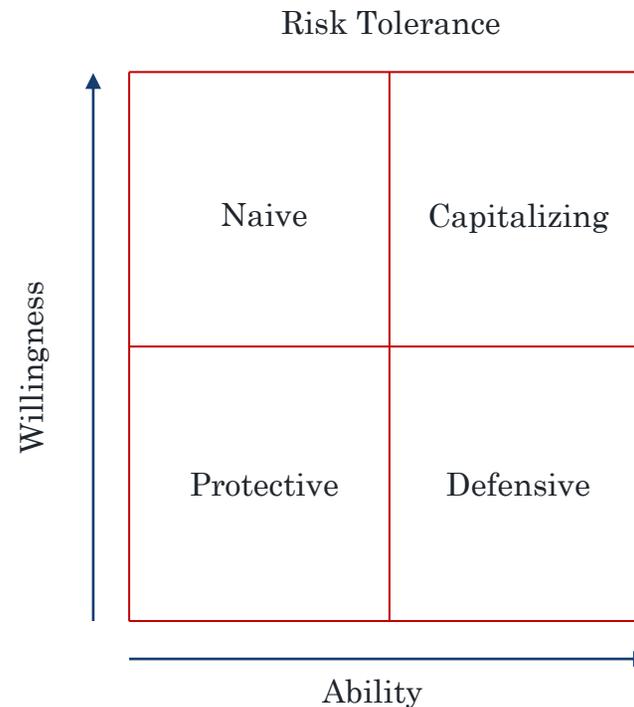
Observations

- Plan sponsor health remains high (as reflected in fiscal fitness of Contra Costa County), notwithstanding incremental risk associated with global pandemic:

  - High credit rating;

  - Manageable debt load;

  - Diversified employer base and low unemployment; and

  - Steadily growing revenue.

- Survey responses indicate similar willingness to accept risk as compared to original study conducted in 2015 but with a modest increase in collective risk tolerance:

  - Reduction in peer risk;

  - Increase in willingness to deviate from the herd; and

  - Broad agreement that key-person risk exists within investment staff (i.e., CIO).

- Unanimously high confidence in governance structure.

- Sense that additional study on appropriate size of liquidity reserve is warranted.

Risk Tolerance

Naive	Capitalizing
Protective	Defensive

Willingness (vertical axis)

Ability (horizontal axis)

Rough CCCERA Heuristic

2020

2015

Verus
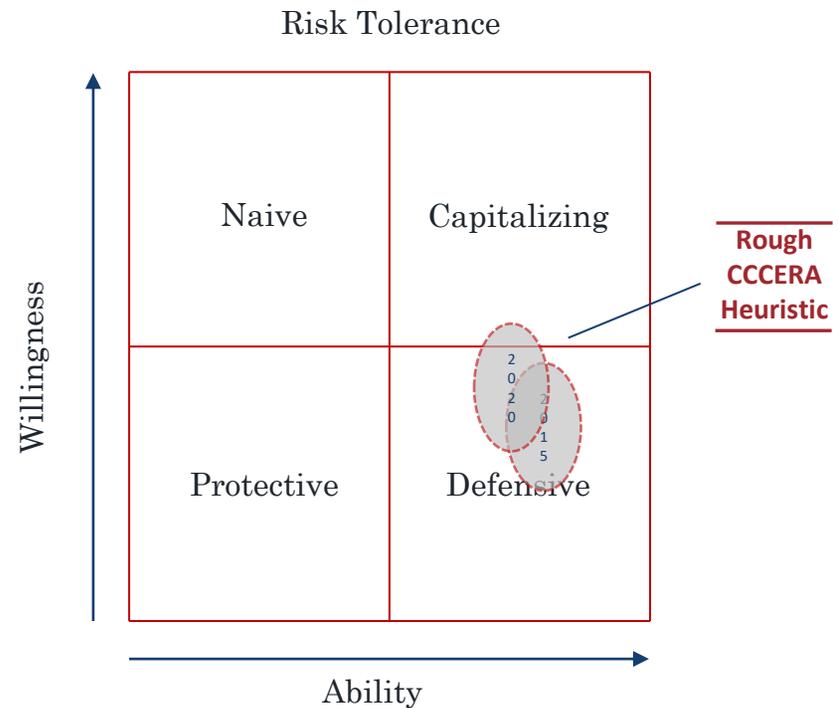
II. Plan Sponsor Review

Credit Ratings

— Moody's assigned the County an issuer rating in the High Quality Investment Grade category and the County's POBs fall within the Upper-Medium grade.

— S&P's Issuer Credit Rating for the County is highest issued by the company and the POBs rating was upgraded to this highest rating in February 2018.

— Both firms assigned the County's ratings a Stable outlook, which has been unchanged since 2007.

Strengths

— Large, diverse tax base
— Strong resident wealth levels
— Quick payout of general fund and lease obligations
— Improved fiscal position relative to similarly rated credits.

Challenges

— Notable but manageable social service burden
— Combined lease and pension obligations, which are among the highest relative to similarly rated credits

	Moody's	S&P
CCC Issuer Rating	Aa2	AAA
Pension Obligation Bonds	A1	AAA

County Issuer Ratings, POBs, and Revenue Relative to Other Counties

	S&P	Moody's	Pension Funded Ratio	Outstanding POBs (000s)	County Revenue (000s)	POB to Revenue	Funded Ratio as of FY
Alameda	AAA	Aaa	77.2%	$0	$3,377,159	0.00%	12/31/2018
San Diego	AAA	Aaa	76.3%	$508,765	$4,895,069	10.39%	6/30/2019
Contra Costa	**AAA**	**Aa2**	**89.3%**	**$176,325**	**$3,630,142**	**4.86%**	**12/31/2018**
Los Angeles	AAA	Aa2	80.6%	$0	$27,813,219	0.00%	6/30/2018
Orange	AA+	Aa1	72.4%	$5,445	$4,503,391	0.12%	12/31/2018
Riverside	AA	Aa3	82.5%	$243,850	$4,741,792	5.14%	6/30/2018
Sacramento	AA-	A2	82.6%	$862,383	$3,300,233	26.13%	6/30/2019
San Bernardino	AA+	Aa3	80.0%	$442,351	$4,724,352	9.36%	6/30/2019
Santa Clara	AA+	A1	71.4%	$352,379	$3,874,914	9.09%	6/30/2019

Sources:
Contra Costa County CAFR FY 6/30/19
Funded Ratio from each respective County's ERS/ERA PAFR as of FY Ended in table
Revenue and POB data from each respective County's CAFR as of FY Ended 6/30/19

Long-Term Obligations

— The county's legal General Obligation bonded debt limit is 5% of the value of taxable property (taxable property is also commonly referred to as assessed value).

— The county's assessed value is $196.4 billion, and the legal debt limit is approximately $9.8 billion.

— Total long-term debt obligations for the county is valued at $525.7 million, well under the legal limit.

— Pension Obligation Bonds were issued in 2003 & 2005 and will mature in 2022 & 2023, respectively.

— If necessary, the County has the capacity to issue POBs to meet contribution requirements or to fund the unfunded liability.

Allocation of Outstanding Debt

Pension Obligation Bonds, 33.5%

Lease Revenue Bonds, 49.8%

Certificates of Participation, 10.2%
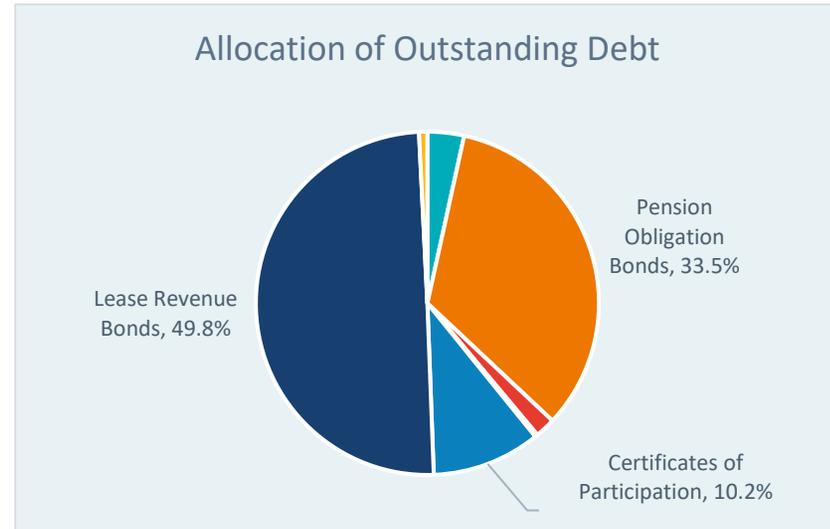
County's Outstanding Long-Term Debt	Value (in Thousands)	Allocation %
Capital Lease Obligations	18,121	3.4%
Pension Obligation Bonds	176,325	33.5%
Retirement Litigation Settlement	10,097	1.9%
Notes Payable	1,329	0.3%
Certificates of Participation	53,831	10.2%
Lease Revenue Bonds	261,825	49.8%
Special Assessment Debt	4,120	0.8%
Total	**525,648**	**100.0%**

Source: 2019 Contra Costa County CAFR and Contra Costa County 2017-18 Annual Debt Report

Debt Ratios

— Total County debt is 19% of total revenues, which is in line with the median Large Urban California County.

— Total debt is 0.21% of the County's assessed value (taxable property), well below the legal limit of 5%; also below the median Large Urban California County.

— Debt payments to the General Fund reserves is 5.2%, which is a higher ratio relative to the benchmark.

DEBT AS % OF REVENUE
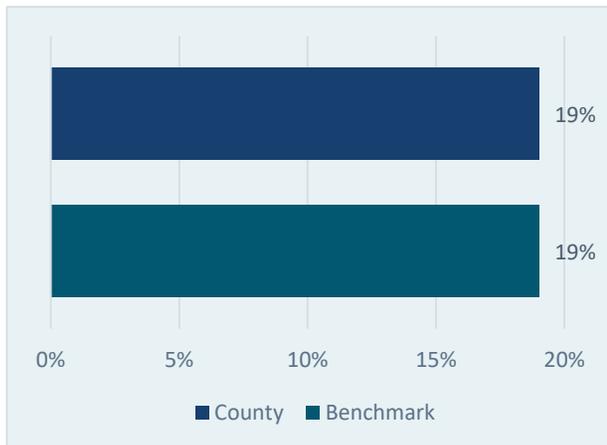
DEBT TO ASSESSED VALUE
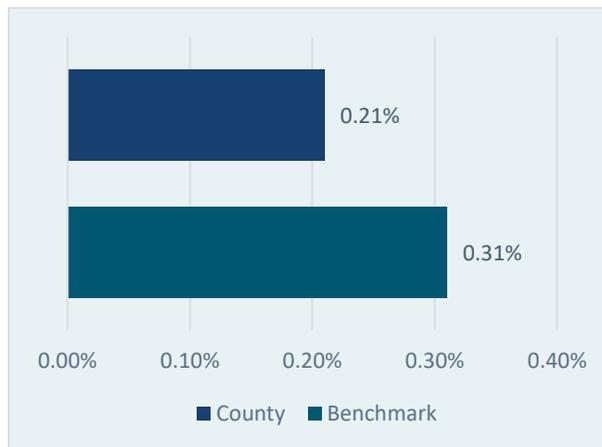
DEBT PAYMENTS TO GENERAL FUND RESERVES
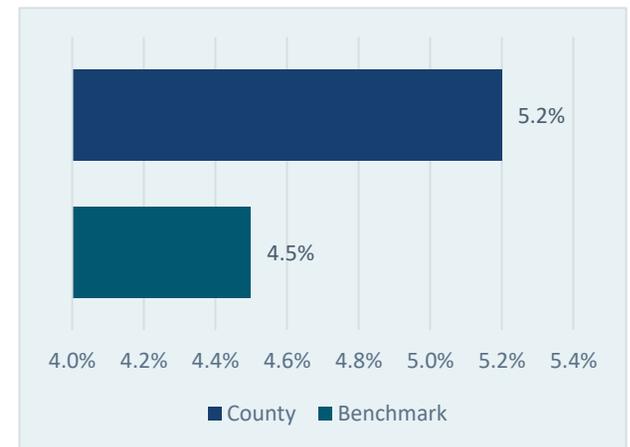
1. Source: Contra Costa County FY 2017-18 Debt Report
2. Benchmark: MDA's Large Urban California County Median, Montague DeRose and Associates (MDA) is the County's financial advisor and compiles a database for these measures

County Revenues

— Total county revenues have increased steadily over the past 15 years to $3.63 billion in Fiscal Year 2019

— The county's primary revenue sources are Service Charges, Program Operating Grants, and Taxes (predominantly property tax), which together make up more than 95% of total county revenue

— Concern exists around COVID-19 impact on future revenue

REVENUE GROWTH

CAGR: 5.0%

Legend: Total Revenues ($MM), Average

REVENUE MIX

2019

Legend: Service Fees, Operating Grants, Taxes, All Other
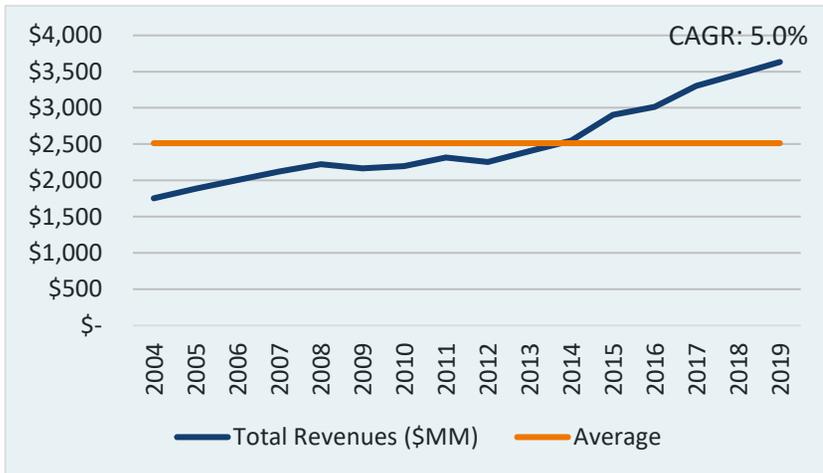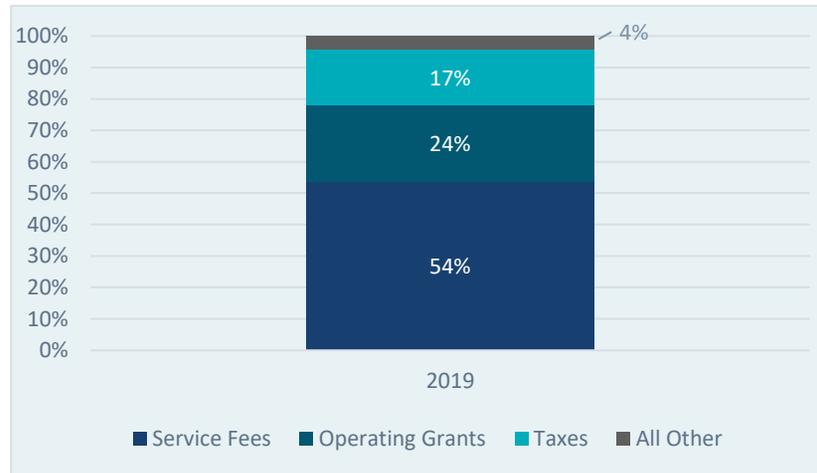
Source: Contra Costa County CAFRs, 2005 to 2019

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Employment by Industry
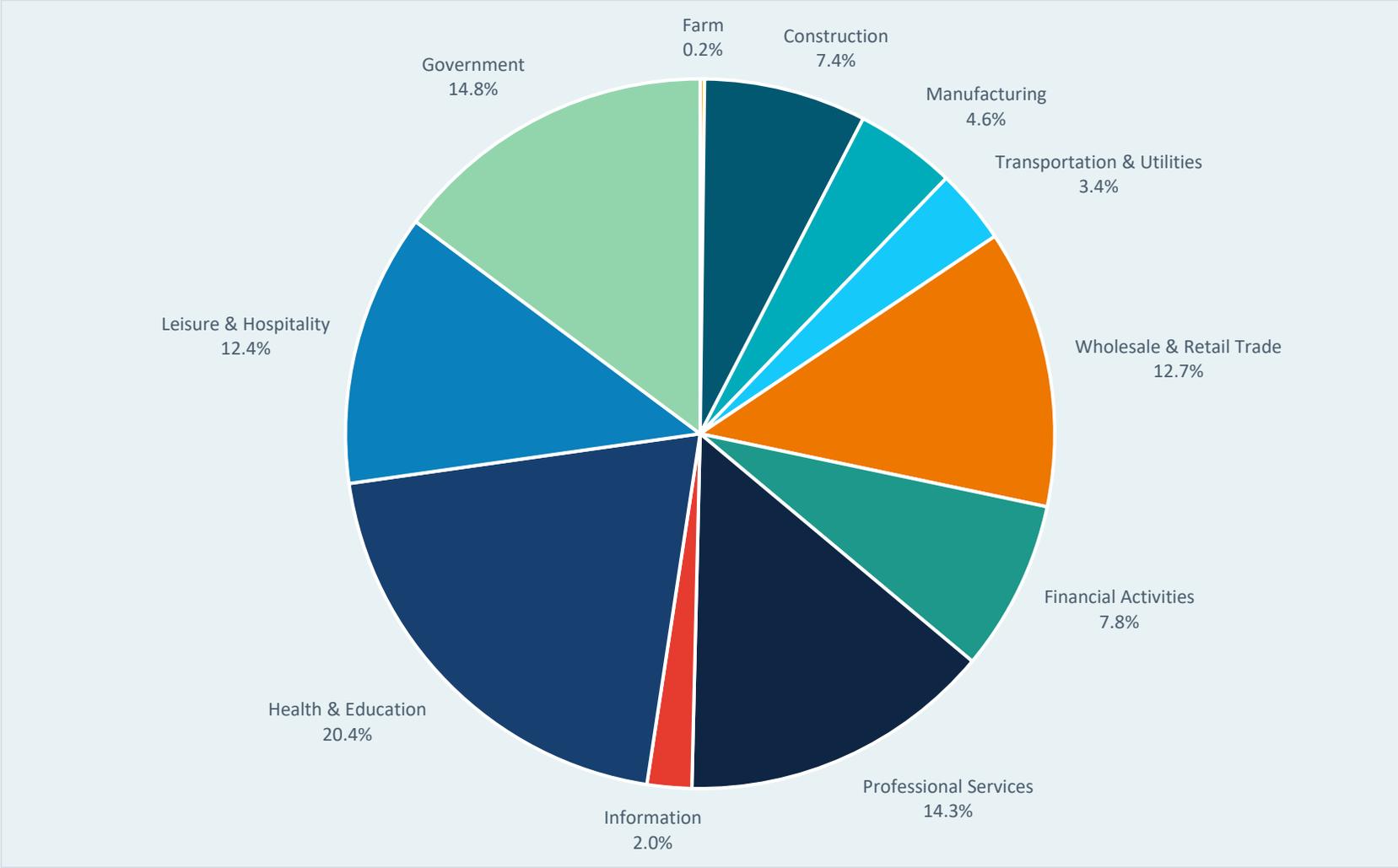
Well-diversified employment base <u>not</u> highly dependent on any single industry.

Farm 0.2%
Construction 7.4%
Manufacturing 4.6%
Transportation & Utilities 3.4%
Government 14.8%
Wholesale & Retail Trade 12.7%
Leisure & Hospitality 12.4%
Financial Activities 7.8%
Health & Education 20.4%
Professional Services 14.3%
Information 2.0%

Source: Current Employment Statistics - Contra Costa County https://data.edd.ca.gov/Industry-Information-/Current-Employment-Statistics-Contra-Costa-County/drzy-6t46/data

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Top Employers in the County

Employer Name	Location	Industry	Employer Size Class
Chevron Corp	San Ramon	Oil Refiners (Mfrs)	10,000+
Chevron Research & Technology	San Ramon	Service Stations-Gasoline & Oil	5,000 - 9,999
Bart	Richmond	Transit Lines	1,000 - 4,999
Bio-Rad Laboratories Inc	Hercules	Physicians & Surgeons Equip & Supls-Mfrs	1,000 - 4,999
Chevron Richmond Refinery	Richmond	Oil Refiners (Mfrs)	1,000 - 4,999
Contra-Costa Regional Med Ctr	Martinez	Hospitals	1,000 - 4,999
Job Connections	Danville	Personnel Consultants	1,000 - 4,999
John Muir Health Concord Med	Concord	Hospitals	1,000 - 4,999
John Muir Medical Ctr	Walnut Creek	Hospitals	1,000 - 4,999
Kaiser Permanente	Walnut Creek	Hospitals	1,000 - 4,999
Kaiser Permanente Antioch Med	Antioch	Hospitals	1,000 - 4,999
La Raza Market	Richmond	Grocers-Retail	1,000 - 4,999
Martinez Medical Offices	Martinez	Clinics	1,000 - 4,999
St Marys College	Moraga	Schools-Universities & Colleges Academic	1,000 - 4,999
Uss Posco Industries	Pittsburg	Steel Mills (mfrs)	1,000 - 4,999
Broadspectrum Americas	Richmond	Oil Refiners (Mfrs)	500 - 999
C&H Sugar Co Inc	Crockett	Sugar Refiners (Mfrs)	500 - 999
Nordstrom	Walnut Creek	Department Stores	500 - 999
Robert Half Intl	San Ramon	Employment Agencies & Opportunities	500 - 999
San Ramon Regional Medical Ctr	San Ramon	Hospitals	500 - 999
Santa Fe Pacific Pipe Lines	Richmond	Pipeline Companies	500 - 999
Shell Oil Products	Martinez	Oil & Gas Producers	500 - 999
Sutter Delta Medical Ctr	Antioch	Hospitals	500 - 999
Tesoro Golden Eagle Refinery	Pacheco	Service Stations-Gasoline & Oil	500 - 999
US Veterans Medical Ctr	Martinez	Outpatient Services	500 - 999

Source: State of California Employment Development Department. http://www.labormarketinfo.edd.ca.gov/majorer/countymajorer.asp?CountyCode=000013

Economic & Demographic Statistics

— Population growth has been relatively stable over the last 10 years averaging about 0.8%, even with a surge in 2015. The only year the county experienced negative population growth over that time frame was in 2011.

— Personal income per capital has been steadily increasing through the observation period and has been above the 10-year average since 2012.

— The unemployment rate has recovered from the highs following the Global Financial Crisis and recently reached record lows.

POPULATION GROWTH

PERSONAL INCOME PER CAPITA
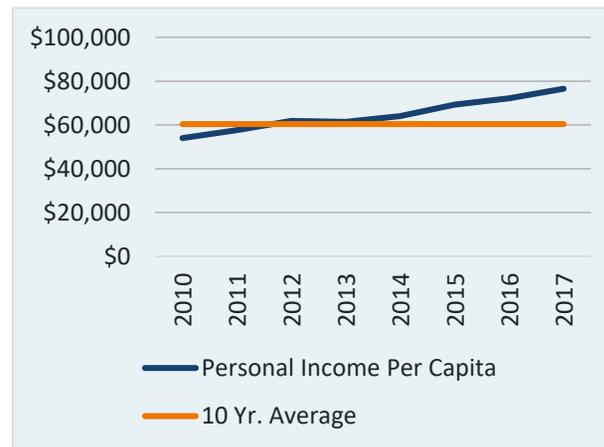
UNEMPLOYMENT RATE
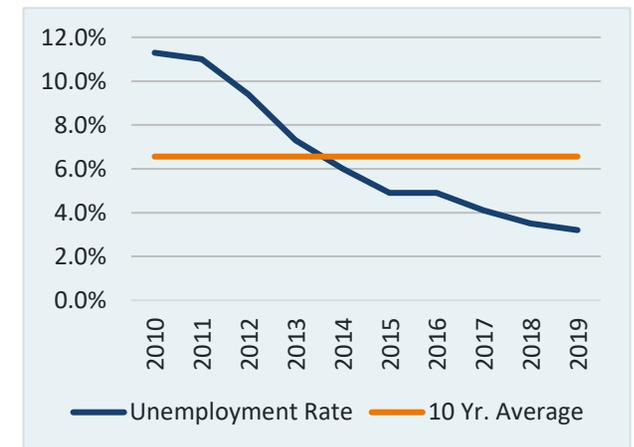
1. Source: Contra Costa County CAFRs, 2019

2. Personal income per capita not available FY End 2018 & 2019

Summary

Overall, Contra Costa County demonstrates a strong position as a sponsor to the Plan with little risk (based on historical observations) of missing contributions.

— The County's credit ratings from Moody's and S&P are favorable.

— Long-Term debt obligations are well under the legal limit.

— Total Debt was less than 1/4 of revenue, indicating good coverage.

— County revenues have steadily increased since the GFC.

— Steady population growth and diverse employment is a good indicator of a solid tax base.

— Wild card remains with uncertain outlook resulting from impact of global pandemic.

III. Interview Findings

Mission and objectives

Mission

— Complete consistency

  ▪ Ensuring payment of promised benefits

Objectives

— High consistency

  ▪ Meet actuarial assumed rate of return

— Other considerations

  ▪ Ensure assumed rate is appropriate

  ▪ Maximize return given acceptable risk threshold

  ▪ Increase funded status

  ▪ Earn more than the rate of inflation

  ▪ Minimize plan sponsor contribution volatility

Time horizon

Overall Plan

— High consistency

  ▪ Very long-term (10+ years through "perpetuity")

Strategy evaluation

— Low consistency

  ▪ Annual review

  ▪ 2-6 years

  ▪ 3-5 years

  ▪ 5-7 years

  ▪ >5 years

  ▪ 7-20 years

  ▪ Market cycle

Longer-term time horizon implies an increased ability to assume risk

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Time horizon (cont'd)

Manager evaluation

— Medium consistency

- Up to 3 years

- Roughly 3 years

- 3-5 years

- 3-7 years

- Market cycle

- More important to understand style and compare against pre-established expectations

Investment philosophy

Simple vs. complex

— High consistency

— General preference for simplicity with acceptance of complexity if convinced it will lead to a favorable outcome

— Sample responses

  ▪ OK with reasonable level of complexity, as long as strategy is well understood

  ▪ Too simple may lead to missed opportunities; too complex could get you in trouble

  ▪ Not so complex that you can't explain it to plan constituents

  ▪ As simple as possible; as complex as necessary

Complexity is ok if it is understood and can be explained

Investment philosophy (cont'd)

Active vs. passive

— Low consistency

- Some strongly in favor of active

- Some biased toward passive

- Others open to either

— Sample responses

- Prefer active; believe it leads to higher returns

- The Plan has had success in picking active managers

- Like active, but need to concentrate on net-of-fee results

- OK with active, as long as they're getting the job done

- Appreciation for passive has increased over time

- Depends on the asset class

Differing views on active vs. passive investment management

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Investment philosophy (cont'd)

Thought leader vs. safety in numbers

— High consistency

— Generally comfortable with diverging from the herd if there is confidence in the investment thesis

— Sample responses

- Don't need to be first, but likes creative thinking

- Need to be well-educated and convinced of merits of new ideas before moving away from the herd

Comfort with moving away from the herd

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Investment philosophy (cont'd)

Action vs. patience

— High consistency

— Bias towards patience with respect to broad market movements (comfortable with response to recent market dislocation)

— Willing to take action with managers if appropriate

— Sample responses

   ▪ Patient, but looking to take advantage of opportunities when they come up

   ▪ Patience when things align with expectations; not afraid to take action then they don't

   ▪ Be patient, but have a strategy in place for when things go wrong

   ▪ Patience follows experience

Patient but attentive

Organizational risk

Key person

— High consistency

— High risk associated with CIO departure

— Mitigated by institutional knowledge resident in Board and Consultant

Board turnover

— High consistency

— Low risk due to low turnover and staggered terms

Key person risk is viewed as high

Environmental risk

Peer risk

Peer risk is viewed as low

— High consistency

— Most believe risk is low

— General acceptance of near-to-medium-term underperformance in favor of outperformance during market dislocations and long-term attainment of enterprise objectives

— Sample responses

  ▪ Like to do better than peers, but not actively trying to compete

  ▪ Not too concerned with peer comparisons; high confidence in FFP strategy

Governance structure

— High consistency

— Generally, very comfortable with level of delegation of authority and how that is evolved over time

— General view that information received is sufficient to facilitate execution of fiduciary duty

— High confidence in investment and administrative staff

Confidence in governance structure

Liquidity reserve sufficiency

— High consistency

— General view that 3-4 years is about right

— Some requested supporting analysis to determine if a change is appropriate

Need a better sense of opportunity cost

Appendix

Moody's Credit Ratings

Aaa	Obligations rated Aaa are judged to be of the highest quality, with minimal credit risk.
Aa	Obligations rated Aa are judged to be of high quality and are subject to very low credit risk.
A	Obligations rated A are considered upper-medium grade and are subject to low credit risk.
Baa	Obligations rated Baa are subject to moderate credit risk. They are considered medium-grade and as such may possess certain speculative characteristics.
Ba	Obligations rated Ba are judged to have speculative elements and are subject to substantial credit risk.
B	Obligations rated B are considered speculative and are subject to high credit risk.
Caa	Obligations rated Caa are judged to be of poor standing and are subject to very high credit risk.
Ca	Obligations rated Ca are highly speculative and are likely in, or very near, default, with some prospect of recovery of principal and interest.
C	Obligations rated C are the lowest rated class of bonds and are typically in default, with little prospect for recovery of principal or interest.

Note: *Moody's appends numerical modifiers 1, 2, and 3 to each generic rating classification from Aa through Caa. The modifier 1 indicates that the obligation ranks in the higher end of its generic rating category; the modifier 2 indicates a mid-range ranking; and the modifier 3 indicates a ranking in the lower end of that generic rating category.*

1. Source: Moody's rating Symbols & Definitions

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S&P Credit Rating Definitions

Long-Term Issuer Credit Ratings*	
Category	Definition
AAA	An obligor rated 'AAA' has extremely strong capacity to meet its financial commitments. 'AAA' is the highest issuer credit rating assigned by Standard & Poor's.
AA	An obligor rated 'AA' has very strong capacity to meet its financial commitments. It differs from the highest-rated obligors only to a small degree.
A	An obligor rated 'A' has strong capacity to meet its financial commitments but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligors in higher-rated categories.
BBB	An obligor rated 'BBB' has adequate capacity to meet its financial commitments. However, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity of the obligor to meet its financial commitments.
BB; B; CCC; and CC	Obligors rated 'BB', 'B', 'CCC', and 'CC' are regarded as having significant speculative characteristics. 'BB' indicates the least degree of speculation and 'CC' the highest. While such obligors will likely have some quality and protective characteristics, these may be outweighed by large uncertainties or major exposures to adverse conditions.
BB	An obligor rated 'BB' is less vulnerable in the near term than other lower-rated obligors. However, it faces major ongoing uncertainties and exposure to adverse business, financial, or economic conditions which could lead to the obligor's inadequate capacity to meet its financial commitments.
B	An obligor rated 'B' is more vulnerable than the obligors rated 'BB', but the obligor currently has the capacity to meet its financial commitments. Adverse business, financial, or economic conditions will likely impair the obligor's capacity or willingness to meet its financial commitments.
CCC	An obligor rated 'CCC' is currently vulnerable, and is dependent upon favorable business, financial, and economic conditions to meet its financial commitments.
CC	An obligor rated 'CC' is currently highly vulnerable. The 'CC' rating is used when a default has not yet occurred, but Standard & Poor's expects default to be a virtual certainty, regardless of the anticipated time to default.
R	An obligor rated 'R' is under regulatory supervision owing to its financial condition. During the pendency of the regulatory supervision the regulators may have the power to favor one class of obligations over others or pay some obligations and not others.
SD and D	An obligor rated 'SD' (selective default) or 'D' is in default on one or more of its financial obligations including rated and unrated financial obligations but excluding hybrid instruments classified as regulatory capital or in non-payment according to terms. An obligor is considered in default unless Standard & Poor's believes that such payments will be made within five business days of the due date in the absence of a stated grace period,or within the earlier of the stated grace period or 30 calendar days. A 'D' rating is assigned when Standard & Poor's believes that the default will be a general default and that the obligor will fail to pay all or substantially all of its obligations as they come due. An 'SD' rating is assigned when Standard & Poor's believes that the obligor has selectively defaulted on a specific issue or class of obligations but it will continue to meet its payment obligations on other issues or classes of obligations in a timely manner. An obligor's rating is lowered to 'D' or 'SD' if it is conducting a distressed exchange offer.
NR	An issuer designated 'NR' is not rated.

*The ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

1. Source: Standard and Poor's Ratings Definitions. http://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/504352

MEMORANDUM

Date: September 23, 2020

To: CCCERA Board of Retirement

From: Gail Strohl, Chief Executive Officer

Subject: Consider and take possible action to authorize the CEO to execute a contract with ICON Integration and Design, Inc. for data cleansing services.

_____

Overview

CCCERA has been working with Segal in making preparations for the possible conversion to a new pension administration system. This new system will allow for additional operational efficiencies and effectiveness that will ultimately improve the member experience.

On June 24, 2020, the Board of Retirement approved the issuance of a request for proposal (RFP) for data cleansing services, with the goal of identifying a vendor to work on the project prior to the beginning of the conversion to a new pension administration system.

On July 10, 2020 an RFP was issued for Data Services – Analysis/Cleansing/Conversion.

CCCERA received proposals from these respondents:

1. ICON Integration and Design, Inc.
2. Viviente
3. Worldwide TechServices Software Solutions

The CCCERA PAS Oversight Team evaluated proposals in concert with Segal, based on these criteria; 1) respondent's qualifications, 2) cost, 3) proposed methodologies for analysis, cleaning and conversion and staffing, and 4) reference checks. ICON Integration and Design, Inc. was selected as the finalist based on these criteria, including its experience working on similar projects with other pension systems.

It is anticipated the length of this project would be approximately 48 months. The best and final offer received from ICON is a total not-to-exceed cost of $2,115,000, which includes a data security software tool for $42,480 and potential manual cleansing of $451,273. Payment would be based on deliverables received and would include holdbacks.

It is recommended that ICON Integration and Design, Inc. be selected to assist CCCERA with data assessment, data cleansing and data migration to a new pension administration system.

Recommendation
Consider and take possible action to authorize the CEO to execute a contract with ICON Integration and Design, Inc. for data cleansing services for a total not-to-exceed cost of $2,115,000.

BEFORE WE START…..

We appreciate Contra Costa County Employees' Retirement Association allowing us to present ICON's methodology, ICON's work products, and ICON's emphasis on data management.

WHAT WE WILL COVER TODAY

- ✔ Introductions
- ✔ Who Is ICON
- ✔ ICON Clients
- ✔ Pension Project Elements
- ✔ ICON Methodology
- ✔ ICON Tools and Reports
- ✔ CCCERA Data Project
- ✔ Questions

ICON Integration & Design, Inc.
the data experts ...

WHO IS ICON?

ICON Integration & Design provides Strategic Information Technology Solutions and Services nationwide. We specialize in data and the processes affecting data quality and integrity.

DATA SERVICES:
- Analysis
- Audit/Assessment
- Conditioning
- Transformation
- Migration/Conversion
- Integration
- Reconciliation
- Bridging
- Stewardship
- Governance

We focus on data and the processes affecting data quality and integrity. We do not pretend to be "all-things to everyone" …….. **we only do data** …….. and we work directly with clients to provide premiere data solutions.

ICON Integration & Design, Inc.
the data experts …

ICON PAST AND CURRENT CLIENTS

Client	Oversight Vendor	PAS/BAS Vendor	Active Members	Retirees	Employers
Texas Teachers Retirement System	Provaliant	Hewlett Packard (HP)	957,068	312,680	1,360
Virginia Retirement System (Phase 3)	None	Home Grown & Sagitec	342,118	161,006	829
Virginia Retirement System (Phase 4)	None	Home Grown & Sagitec	342,118	161,006	829
Iowa Public Employee's Retirement System	LRWL	Home Grown & Vitech	164,467	100,000	2,177
Public School & Education Employees Retirement System of Missouri	LRWL	Levi, Ray, and Shoup & Sagitec	153,490	69,148	536
Kansas City Missouri Public School Retirement System	LRWL	Sagitec	4,336	3,317	1
Arkansas Public Employee Retirement System	Linea	Vitech	46,000	27,000	710
Public Employees Retirement System of Idaho	Provaliant	Watson Wyatt & Tegrit	65,798	35,334	742
Missouri Local Government Employees Retirement System	Linea	Tegrit	33,241	16,687	610
Wisconsin Employee Trust Fund	LRWL	Vitech	412,423	159,787	1,500
University of California Retirement System	Linea	Sagitec	155,100	63,800	16
Wyoming Retirement System	None	Watson Wyatt & Catapult	70,173	24,443	709
North Dakota Public Employee Retirement System	Linea	Sagitec	27,560	8,163	390
Texas County & District Retirement System	Agile	Pegasus	258,874	53,167	677
Healthcare of Ontario Pension Plan	None	Morneau Shepell	180,000	80,000	480
New Mexico Public Employee Retirement Association	Linea	jClarety	56,530	41,189	718
Contra Costa County Employees' Retirement Association	LRWL	CPAS	10,021	9,547	16
Nevada Public Employees' Retirement System	Provaliant	jClarety & Tegrit	109,167	43,919	212
City of Tampa Fire and Police Retirement System	Provaliant	Levi, Ray, and Shoup	1,457	2,077	1
City of Tampa General Employees' Retirement System	Linea	Levi, Ray, and Shoup	2,412	2,220	1
City of Dallas, Texas Employees' Retirement System	Agile	Vitech	7,584	7,224	1
Sacramento County Employees' Retirement System	Linea	Morneau Shepell	12,678	12,381	11
Municipal Public Employees of Louisiana	Provaliant	Tegrit	6,858	4,628	158
South Carolina Public Employees' Benefit Association	Linea	TBD	196,184	142,278	1,152
Hawaii EUTF	Segal	Morneau Shepell			

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PENSION PROJECT ELEMENTS

- **System**
  - ➢ Business Rules and Processes
  - ➢ Software Application
  - ➢ Technology/Infrastructure

- **People**
  - ➢ Staffing to implement and then support the system
  - ➢ Training for internal and external users
  - ➢ Managing the organizational culture

- **Data**
  - ➢ Assessment of legacy system(s) data
  - ➢ Collecting, profiling, cleansing, and organizing activities
  - ➢ Conversion and quality control tasks

ICON METHODOLOGY

- **ICON's Methodology**
  - Approaches a client's data in "levels".
  - Allows us to methodically research, analyze, identify and condition data in an order that matches the flow of the entire Pension Administration System (PAS).

- **ICON DQCP Library**
  - Library of 750+ Data Quality Check Points
  - DQCP Library is used as the starting point to discover and then apply business rules specific to your organization

- **Confidence In Data**
  - Once conditioning is completed your staff and board will trust the data in your Pension Administration System (PAS).

- **Repeatable Methodology**
  - Methodology is "repeatable" from client to client, with adjustments made to account for individual client nuances and timelines.

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ICON METHODOLOGY
DATA QUALITY INITIATIVE PROCESSES

1. Identify Sources of Legacy Data

2. Define business rules (documented/undocumented) associated with key legacy data

3. Assess Key Data

   - Determine the authoritative data source at the data element level

   - Execute Data Quality Check Points (DQCPs)

4. Condition and Migrate Data to Target Staging Database (TSD)

   - Identify deltas (where legacy data does not match business rules)

   - Execute staggered parallel conditioning with the data assessment effort

   - Move data from disparate data sources/formats to a single normalized structure and format

5. Reconcile Data

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DATA ASSESSMENT/PROFILING REFINEMENT PHASES

DOCUMENT

- Introduce DQCPs from ICON's library (per Data Level)

- Document how/if the DQCP applies to the client

- Identify the authoritative data element(s) pertaining to each DQCP

- Provide DQCP Form to client for approval

DEVELOP

- Develop a customized script for each DQCP (per Data Level)

- Test DQCP script for validity and accuracy

- Coordinate with client what data elements are to be reported on report

- Generate a DQCP Instance Report for each DQCP

REVIEW & REFINE

- Review the finished DQCP with client for approval

- Refine DQCP scripts per requested modifications after review

- Review DQCP Instance Report with client for approval

- Refine DQCP Instance Report per requested modifications after review

GENERATE & REPORT

- Generate and Automate the execution of DQCP scripts and reports

- Execute scripts and generate reports

- Monitor progress and execution

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ICON DATA QUALITY METHODOLOGY PROCESS

We categorize an organization's data to provide a solid foundation of knowledge and quality throughout the data quality project. As shown below, data assessment is regression tested after each data level is completed.
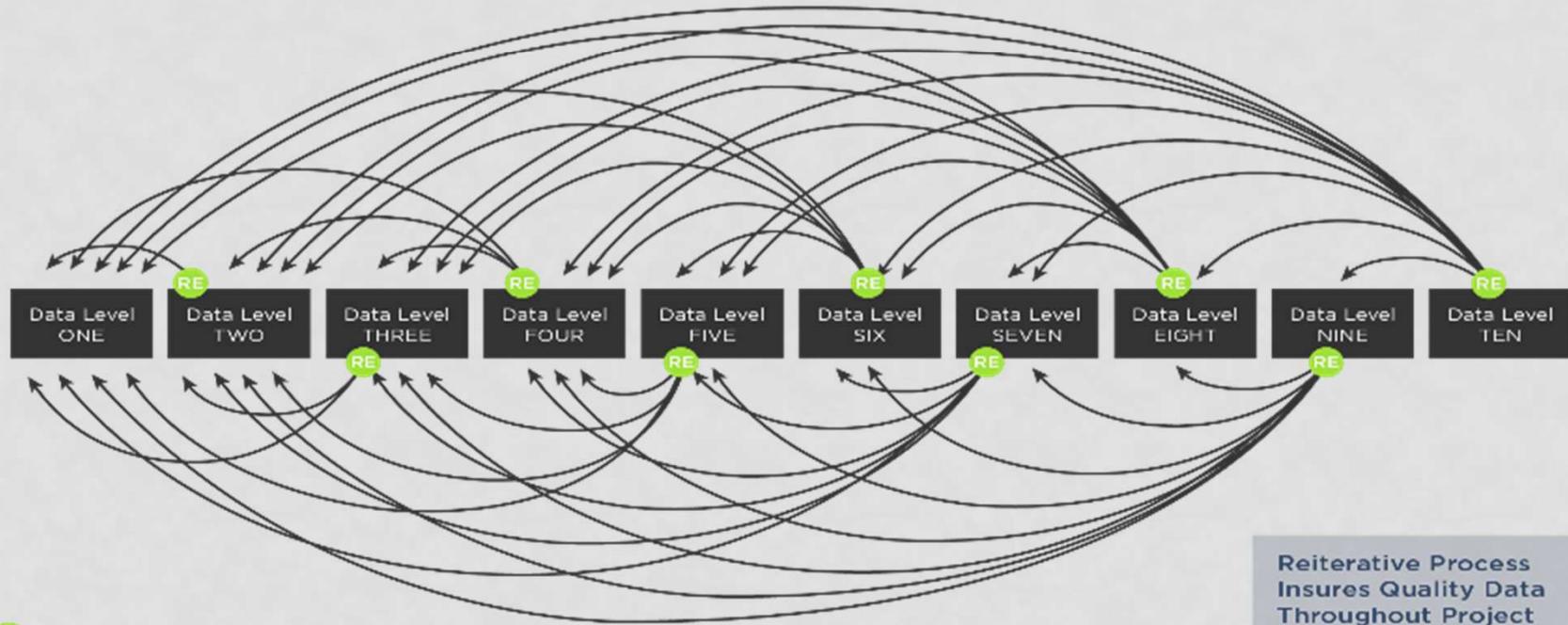
EXECUTING ASSESSMENT AND CONDITIONING IN PARALLEL

COMMON ENVIRONMENT OVERVIEW
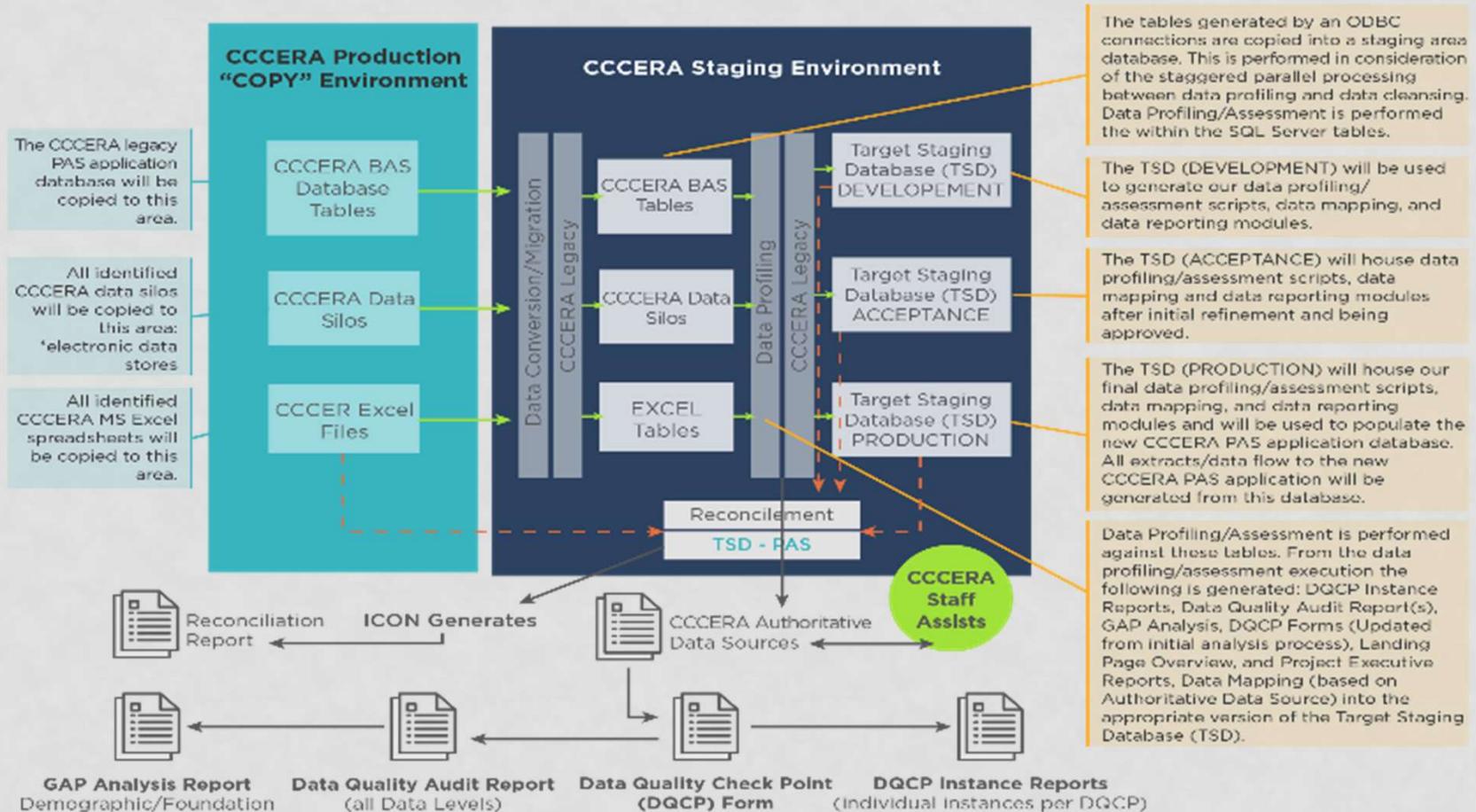
CCCERA ENVIRONMENT OVERVIEW

ICON Integration & Design, Inc.
the data experts ...
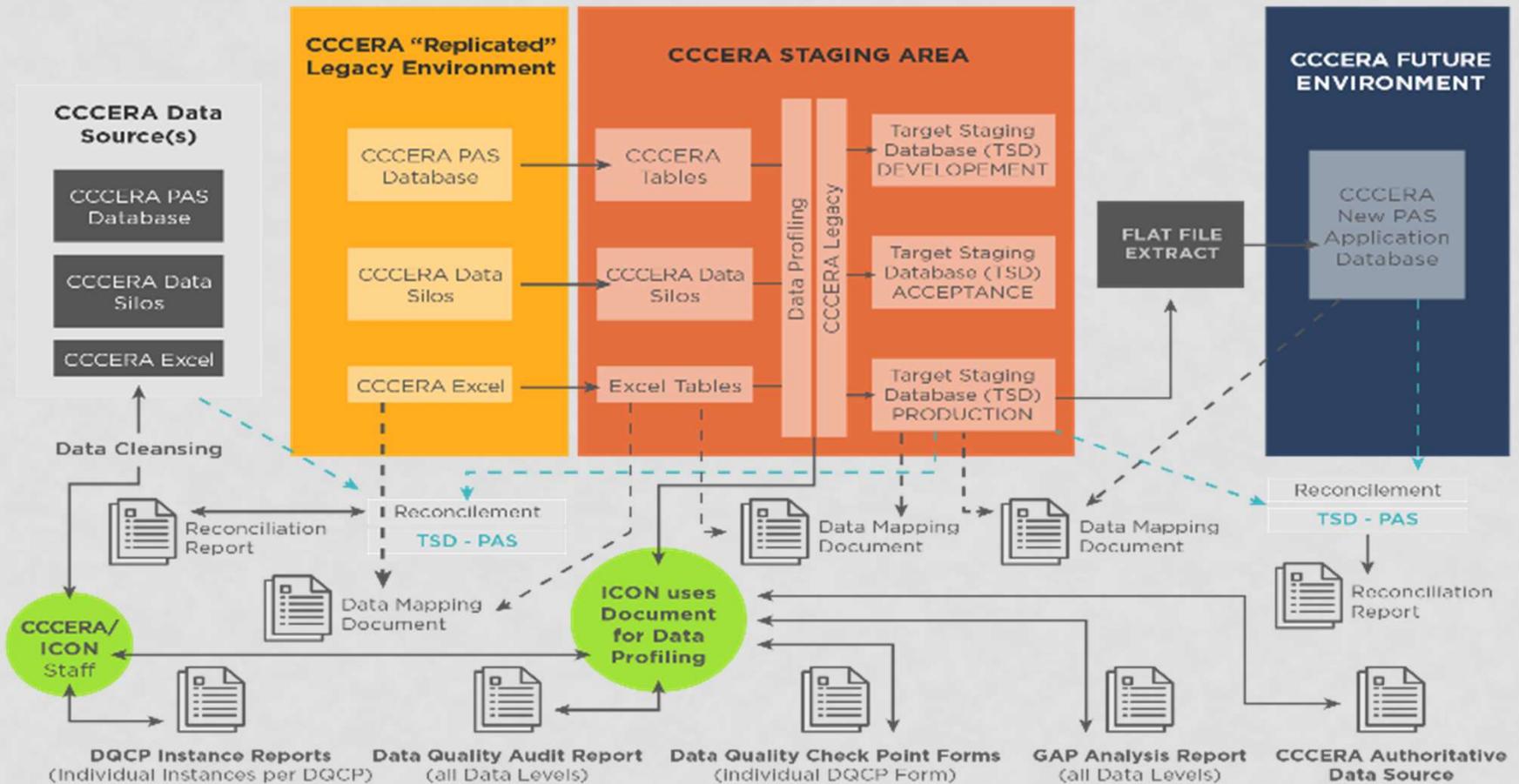
ICON INTEGRATION PROPOSED CCCERA ENVIRONMENT

ICON Integration & Design, Inc.
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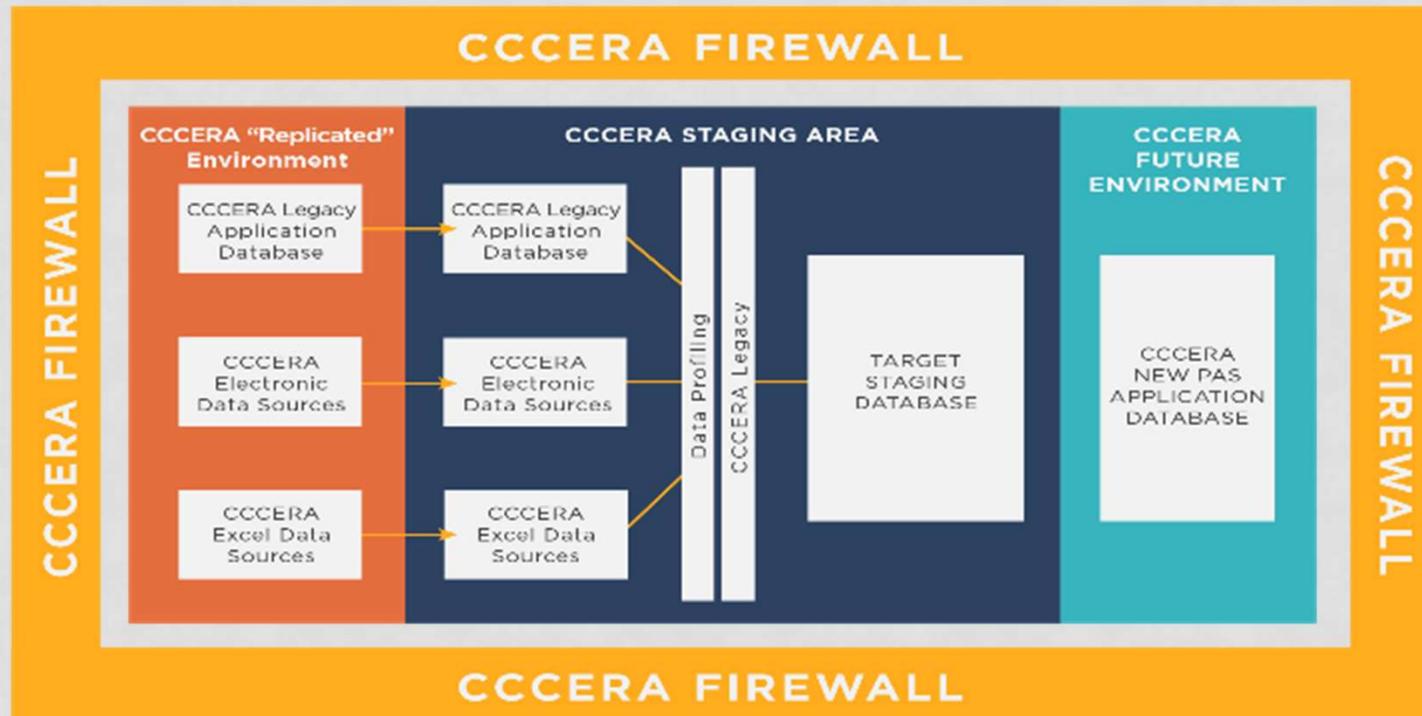
ICON METHODOLOGY REPORTS

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DATA QUALITY AUDIT REPORT

EXAMPLE - Data Quality Audit Report:
Table of Contents:

DATA QUALITY AUDIT REPORT

Data Quality Audit Report:

EXAMPLE - Member Benefits Data Quality Check Point Summary:

Data Quality Check Point	DQCP Title	Original Counts	Current Counts
6_3_1	RFUND Type Not retired or termed	3	3
6_3_2	Payment Type Issue	0	0
6_3_3	Member_ID_IN_PAYRECOR_NOT_IN	1	1
6_3_4	LEVELCODE_MisMatch_IN_ACTIVEME_AND_PAYRECOR	1	1
6_3_5	RFUND_MisMatch_IN_ACTIVEME_AND_PAYRECOR	32	32
6_3_6	Different_SSN_For_Same_MemUNIQUEID	1	1
6_3_7	Different_RETNO_IN_ACTIVEME_AND_PAYRECOR	0	0
6_3_8	Different_SEQCODE_IN_ACTIVEME_AND_PAYRECOR	0	0
6_3_9	Different_MARITALSTATCODE_IN_ACTIVEME_AND_PAYRECOR	19730	19730
6_3_10	PAYRECNUM_NOT FOUND_ANYWHERE	3175	97
6_3_12	Levelcode mismatch in Payrecor and Assesschecks	15	15
6_3_13	SSN mismatch in Payrecor and checks	28	28
6_3_14	Marital status mismatch in Payrecor and checks	277	277
6_3_15	BANKIDCHECK mismatch in Payrecor and checks	2882	2882
6_3_16	Difference_In_Listed_And_Actual_Interest_Amounts	7075	7075

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DATA QUALITY CHECK POINT (DQCP) SUMMARY BY DATA LEVELS

EXAMPLE - DQCP Summary by Data Level

D_ata_Q_uality_C_heck_P_oint_ Summary

ALL DATA LEVELS

Data Level	Nbr of DQCPs	Original Count	Previous Count	Current Count
01-Foundation	331	1,288,788	251,234	252,415
02-Employment History	63	388,579	210,301	210,109
03-Contribution & Wages	195	1,952,074	147,178	146,516
04-Employer-Employee Invoicing	200	403,806	321,753	320,924
05-Insurance	302	605,317	82,347	84,973
06-Service Credit	60	269,392	88,302	88,186
07-Lump Sum Benefits	170	16,287	18,496	18,605
08-Annuity Benefits	272	372,460	380,546	379,539
09-Other	84	84,805	27,588	27,895

12/12/2016 11:18:00 AM   ***Confidential***   *Page 1 of 1*

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DATA QUALITY CHECK POINT (DQCP) CYCLE SUMMARY

EXAMPLE - Data Quality Check Point Cycle Summary – By DQCP

DQCP	DQCP Title	Original Count	Previous Count	Current Count	Unique Member count	Unique Active Member count	Unique Vested Member count
1.3.0044	Tax ID Number Validation	215	112	113	113	13	0
1.3.0045	Date of Birth Validation	52031	47229	157	129	9	45
1.3.0046	Date of Death Validation	17054	9328	9324	9289	0	5129
1.3.0048	Validate the Retire/Rehire Date	2	7	7	7	0	6
1.3.0050	Gender Validation	8377	0	0	0	0	0
1.3.0051	Marital Status Validation	0	0	0	0	0	0
1.3.0052	Public/Elected/Sheriff Validation	324	391	391	300	91	190
1.3.0117	Validation of Birth Dates	33	27	27	27	4	13
1.3.0125	Beneficiary - Spouse	1951	385	407	375	144	143
1.3.0126	Beneficiary - Incompetent Child	16	12	12	7	3	3
1.3.0128	Beneficiary - Drop Account Beneficiary	31	55	85	61	23	52
1.3.0129	Beneficiary - Annuity Option Beneficiary	183	293	294	241	3	221
1.3.0148	Member Spouse Gender	804	57	58	58	27	24
1.3.0149	Member Reciprocity System Indicator	35656	0	0	0	0	0
1.3.0150	Member Birth Certificate Indicator	12901	0	0	0	0	0
1.3.0162	Member Vesting	8564	2857	2875	2819	2080	201

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DATA QUALITY CHECK POINT (DQCP) INSTANCE REPORT

EXAMPLE - Data Quality Check Point Instance Report

DataQualityCheckPoint Summary

DQCP	Member SSN	Member Id	Employer Id	Member First Name	Member Last Name	Employment Start Date	Employment End Date	First Contribution Pay Period	Member Entry Date
3.3.149		323478	547	Garry		4/23/1992	6/30/2012	4/5/1992	4/1/1992
3.3.149		78683	462	Michael		6/12/1998		5/30/1990	6/12/1998
3.3.149		145749	281	Sharon		2/5/2011		2/15/2011	3/1/2011
3.3.149		54889	293	Dax		8/16/1989	11/30/2005	8/1/1989	8/4/1989
3.3.149		926547	415	Robert		9/2/2014		3/30/1981	9/2/2014
3.3.149		38490	176	Evan		6/28/1975	3/16/1988	7/10/1976	6/28/1975
3.3.149		145908	311	Jeff		5/19/2001	10/1/2010	5/12/2000	5/19/2001
3.3.149		168770	277-1	Anne		10/1/2001	7/20/2010	10/1/2001	10/1/2001

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DATA CONVERSION LOAD REPORT

EXAMPLE - LOADING TSD 'Data Conversion Scorecard'

Data Conversion ScoreCard

Legacy Tables				TSD Tables			
Source Table Name	WLS Count	DQCP Filter	WLS Clean Count	TSD Filter	TSD Count	Off By Counts	TSD Table Name
WLS.TBL_ADDL_FUND_PAL	287,367	3	287,364	9,391	277,973	0	TSD.EMPLOYEE_ADDITIONAL_FUND_PAL
WLS.TBL_EE_PART_ER_PS	8,109	0	8,109	122	7,987	0	TSD.EMPLOYEE_EMPR_PRIOR_SVC
WLS.TBL_EE_PART	775,723	251	775,472	19,280	756,192	0	TSD.EMPLOYEE_PARTICIPATION
WLS.TBL_EE_RET_FUND	912,057	6,918	905,139	23,855	881,284	0	TSD.EMPLOYEE_RETIREMENT_FUND
WLS.TBL_RET_FUND_PAL	13,029,746	18,716	13,011,030	399,909	12,611,121	0	TSD.EMPLOYEE_RETIREMENT_FUND_PAL
WLS.TBL_ER_EMPR	2,520	0	2,520	0	2,520	0	TSD.EMPLOYER
WLS.TBL_ER_EMPR	2,520	0	2,520	-2,590	5,110	0	TSD.EMPLOYER_CONTACT
WLS.TBL_ER_DEPOSIT	66,905	14,772	52,133	0	52,133	0	TSD.EMPLOYER_CONTRIB_RECV
WLS.TBL_ER_PS_ADJ	55,151	620	54,531	1,823	52,708	0	TSD.EMPLOYER_PRIOR_SERVICE_ADJUSTMENT
WLS.TBL_ER_PS_DTL	43,031	839	42,192	0	42,192	0	TSD.EMPLOYER_PRIOR_SERVICE_DETAIL
WLS.TBL_ER_RATES_ACT10	143,262	0	143,262	253	143,009	0	TSD.EMPLOYER_RATES_ACT10
WLS.TBL_EE_RECONCILE	4,277,270	8,727	4,268,543	0	4,268,543	0	TSD.EMPLOYER_RECONCILE

DATA RECONCILIATION SCORECARD

EXAMPLE - Data Reconciliation by Data Level

Data Conversion ScoreCard Detail

SOURCE TABLE NAME	TSD TABLE NAME	RULE DESCRIPTION	TSD_RECON_COUNT
WLS.TBL_EMPE_EMPR_CAT	TSD.EMPLOYMENT_CATEGORY_HIST	ORPHAN - CAT HIST NOT FOUND IN ACCOUNT	36,723
WLS.TBL_EMPE_EMPR_CAT	TSD.EMPLOYMENT_CATEGORY_HIST	CAT_TERM_DT IS NOT FORMATTED CORRECTLY	10
WLS.TBL_EMPE_EMPR_CAT	TSD.EMPLOYMENT_CATEGORY_HIST	EEC.CAT_LST_DAY_PAID IS NOT FORMATTED CORRECTLY	10
			36,743

12/12/2016 2:20:18 PM   **Confidential**   Page 1 of 1

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CONCLUSION

All successful projects have common traits:

- A specific goal,
- A proven approach and methodology,
- Repeatable consistent process
- Experience to provide an accurate "real-life" project plan,
- Applying the project plan,
- A commitment to critical documentation,
- Proven quality assurance, testing, and reconciliation techniques,
- Appropriate experienced staffing (client and vendor),
- A healthy client and vendor relationship,
- An effective "change management" plan,
- Dedicated project team.

Our approach to Data Projects is built around these traits and why we are the industry leader.

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QUESTIONS

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The Voice for Public Pensions

NCPERS FALL CONFERENCE
September 29 – 30, 2020
A Virtual Event

FINAL AGENDA

SEPTEMBER 29

11:00 am - 11:30 am   WELCOME AND ORIENTATION

11:00 am – 5:00 pm   EXHIBIT HALL

11:30 am – 12:15 pm   OPENING KEYNOTE PRESENTATION
Protecting Public Employees and Pensions During a Triple Crisis
Randi Weingarten, President, American Federation of Teachers

12:30 pm- 1:30 pm   THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK   *What's Next? Global Equity Markets Update*
Ronald Temple, Lazard

ACTUARIAL TRACK   *Societal Changes and Challenges Affecting Retirement Plans: A COVID-19 Perspective*
Tammy Dixon, Segal
Jennifer Benz, Segal

LEG. /LEGAL TRACK   *Pandemic Aftershocks: Protecting Your Portfolio*
Shawn Williams, Robbins Geller Rudman & Dowd

1:30 pm – 1:45 pm   BREAK
During the breaks we encourage you to visit the exhibit hall and participate in the "Exhibitor Trivia Hunt"

1:45 pm - 2:45 pm   THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK   *Infrastructure Debt – An Attractive Diversifier for Your Fixed Income Allocation*
Paul David, Allianz Global Investors

As of 8/31/20. Schedule of events subject to change.
All times listed are eastern standard time (EST).

ACTUARIAL TRACK   *Assessing the Health of Your Retirement System – An Integrated Look at Funding, Benefits and Risks*
Eric Atwater, Aon
Mark Meyer, Aon
Bryan Falato, Aon

LEG. /LEGAL TRACK   *We Just Got Hacked, What Will it Cost?*
John Farley, Gallagher Cyber Liability Practice
Ted Kobus, Gallagher Cyber Liability Practice

2:45 pm – 3:45 pm   EXPRESS TALKS

2:50 pm – 3:15 pm
Asset Allocation in a Post COVID-19 World
Jeffrey Covell, Gallagher Fiduciary Advisors

3:20 pm – 3:45 pm
Factors First: A Risk-based Approach to Harnessing Alternative Sources of Income
Nathan Shetty, Nuveen

2:45 pm – 3:45 pm   NETWORKING OPPORTUNITES
During this time attendees have the option to visit the exhibit hall and participate in the Exhibitor Trivia Hunt.

3:50 pm – 4:50 pm   THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK   *Financial System Impacts of the Rise of Passive Management*
Julian Regan, Segal Marco Advisers
Maureen O'Brien, Segal Marco Advisers

ACTUARIAL TRACK   *Ensuring Sustainable Public Pension Plans – A Qualitative Approach*
Joseph Newton, Gabriel, Roeder, Smith & Company

LEG. /LEGAL TRACK   *Preparing Your Board for Post-COVID Pressures & Beyond*
Brad Kelly, Global Governance Advisors
Peter Landers, Global Governance Advisors

4:50 pm – 5:00 pm   WRAP UP

SEPTEMBER 30

11:00 am - 11:15 am   WELCOME BACK

11:00 am – 4:30 pm   EXHIBIT HALL

11:20 am- 12:20 pm	THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK *6 Themes to Guide Public Pensions the Next 5 Years*
Michael Hunstad, Northern Trust Asset Management

ACTUARIAL TRACK *You Are All Individuals, You Are All Different: How Factor Based Mortality Models Can Capture Diversity in Public Sector Pension Plans*
Douglas Anderson, Club Vita
Doug Anderson, Minnesota PERA

LEG. /LEGAL TRACK *Legal, Legislative and Regulatory Update*
Rob Gauss, Ice Miller
Peter Mixon, Nossaman LLP
Tony Roda, Williams & Jensen PLLC

12:30 pm - 1:30 pm	THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK *Diverse Manager Investment Programs: Best Practices in Structuring and Implementation*
Peter Braffman, GCM Grosvenor
Jason Howard, GCM Grosvenor

ACTUARIAL TRACK *Pension Obligation Bonds: Are the Circumstances of 2021 Right for Taking a Fresh Look?*
Paul Angelo, Segal
Todd Tauzer, Segal

LEG. /LEGAL TRACK *Securities Fraud in the Age of COVID-19*
Chet Waldman, Wolf Popper LLP
Joshua Ruthizer, Wolf Popper LLP

| 1:30 pm – 1:45 pm | BREAK
During the breaks we encourage you to visit the exhibit hall and participate in the "Exhibitor Trivia Hunt" |
|---|---|

1:45 pm – 2:45 pm	EXPRESS TALKS

1:50 pm – 2:15 pm
Re-risking in a Time of Market Crisis
Sona Menon, Cambridge Associates

2:20 pm – 2:45 pm
Behind the Curtain: Private Equity Explained
Helen Lais, Capital Dynamics

| 1:45 pm – 2:45 pm | NETWORKING OPPORTUNITES
During this time attendees have the option to visit the exhibit hall and participate in the Exhibitor Trivia Hunt. |
|---|---|

2:50 pm – 3:50 pm	THREE CONCURRENT BREAKOUT SESSIONS

FINANCIAL TRACK *ESG Investing: The Challenges and Opportunities of Investing in Public Equities in the ESG Space*
Chris McDonald, Kennedy Capital Management, Inc.

FINANCIAL TRACK *How Negative Cash Flow in Defined Benefit Public Pension Plans Could Result in Smarter Investment Portfolio Design and Program Management*
Vijoy Chattergy, Sakala Portfolio Solutions, LLC
Scott Stone, Pentegra Investors, Inc.

LEG. /LEGAL TRACK *ESG Investing and Considerations of Non-Financial Factors: An Overview of Recent DOL Guidance and How it Impacts Your Fund*
Chuck Campbell, Jackson Walker LLP

3:50 pm – 4:00 pm	BREAK

4:00 pm – 4:45 pm CLOSING KEYNOTE PRESENTATION
Partnering to Impact the Battle Against COVID-19
Dr. Camillo Ricordi, M.D., Stacy Joy Goodman Professor of Surgery, Distinguished Professor of Medicine, Professor of Biomedical Engineering, and Microbiology and Immunology at the University of Miami (UM), Florida

4:45 pm – 5:00 pm WRAP-UP

PLATINUM SPONSOR

NORTHERN TRUST
ASSET MANAGEMENT

2020 FALL CONFERENCE REGISTRATION FORM

ATTENDEE REGISTRATION	REGISTRATION FEE
◯ Fund/Stakeholder	$300 per person
◯ Service Provider	$350 per person

ATTENDEE INFORMATION

(Please print clearly)

First Name: _____

Last Name: _____

Organization Name: _____

Title: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____

E-mail Address*: _____

*Please provide your e-mail address for updates and registration confirmation.

REGISTRATION/ORDER SUMMARY

Attendee Registration $ _____

GRAND TOTAL (U.S. funds) **$** _____

PAYMENT METHOD
(All payments must be in U.S. funds)

Electronic payment is strongly encouraged due to the current pandemic.

ONLINE at www.ncpers.org. You will need your username and password to login.

E-MAIL completed registration to registration@ncpers.org

FAX completed registration to 202-688-2387

If you must pay by check, please e-mail registration@ncpers.org for mailing instructions.

CREDIT CARD

☐ American Express   ☐ Visa   ☐ MasterCard

Credit Card #: _____

Expiration Date: _____ CC Verification Code: _____

Name (on the card): _____

Billing Address: _____

City: _____ State: _____ Zip: _____

Authorized Amount to Charge: $_____

By submitting this form, I certify I have read and understand the terms of this registration and agree to the NCPERS Code of Conduct for its virtual programs. If paying by credit card, I authorize NCPERS to charge my card for the total amount indicated.

Signature: _____

CANCELLATION POLICY

All registration cancellations must be received in writing 24 hours before the start of the program. **No refunds will be given to cancellations after the start of the program or to no-shows.** Please email your cancellation request to registration@ncpers.org or call 202-601-2445.

Virtual Trustees Round Table

Virtual Meeting

Friday, October 23, 2020
9:30 a.m - 3:30 p.m.
Zoom Meeting

Register Here

Register for the virtual Trustees Round Table on Friday, October 23rd from 9:30 AM to 3:30 PM. This meeting will be chaired by Henry Levy from the Alameda County Employees' Retirement Association.

Please see below for more details on the sessions available for this meeting: (you can attend just one, or both!)

Session I: 9:30 a.m. to 12:00 p.m.
Topic: "What is the Role of Trustees in Choosing and/or Monitoring Money Managers?"
Description: Currently, public pension plans have a variety of approaches to this question. On one end of the spectrum, some boards have the trustees choose all money managers and even do the due diligence calls to the manager's offices; at the other end of the spectrum, some boards have staff making all decisions to choose managers. In all cases, there is a need for the board to monitor manager performance, and boards must choose reporting tools and methodologies to do that.

Session II: 1:00 p.m. - 3:00 p.m.
Topic: "What is the Role of Trustees on Corporate Policies?"
Description: Corporations, as well as other entities in which pension plans invest, all have policies which may or not contribute to performance as well as other long-term sustainability. While there are various monitoring tools to help trustees, it is very difficult for either plan trustees or staff to become involved in all potential issues and with all the investments of a typical plan. There are shareholder activist groups which try to choose the issues with certain businesses. However, most plans have given the control to staff, which in turn have given it to one of two proxy-voting firms to vote on behalf of the board. It is not possible for trustees to vote on all the proxies coming before corporate shareholder meetings (not to mention getting more involved in limited partnerships), so trustees need to understand the resources available for them. Furthermore, for those boards which delegate manager selection process to staff, getting involved in policy issues may become the major work that trustees do.

This will be hosted as a zoom meeting so we encourage participants to join via computer with their web cameras on, however a phone-in option will also be available for those who cannot join by computer. The meeting will begin at 9:30 a.m. and end by 3:30 p.m with short break provided. For additional questions, you can contact our office at info@calaprs.org

Complete Registration Here
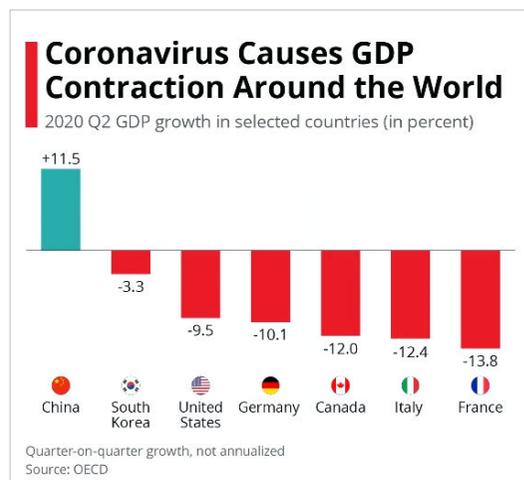
Overview

Portfolio Risk in a Post-COVID World

Monday October 26th - Wednesday October 28th 2020 │10am-12.30pm E.S.T.

"Scanning the future for risks and taking proper note of what you see is a mark of prudent maturity"
The Economist, June 27th 2020

Everything happens faster in a pandemic.

Risks that in normal times appear to be outliers quickly become pressing and real; whilst the economic and political orthodoxies by which institutional investors orientate themselves can swiftly be shorn of value.

Coronavirus Causes GDP Contraction Around the World
2020 Q2 GDP growth in selected countries (in percent)

+11.5 China
-3.3 South Korea
-9.5 United States
-10.1 Germany
-12.0 Canada
-12.4 Italy
-13.8 France

Quarter-on-quarter growth, not annualized
Source: OECD

Yet, despite all the turmoil, we are still only in the early stages of the pandemic, with many second and third order systemic investment risks yet to manifest themselves.

Never before has access to first-rate risk analysis and thinkers been so critically important.

Providing this is our Portfolio Risk event's raison d'etre.

Over the three days of the event, our academic, investor and manager speakers will provide our attendees with a comprehensive and up-to-the-minute analysis of the financial, macro-economic, political and geopolitical risks currently facing institutional investors and of how such risks are likely to impact upon the investment performance of different asset classes and investment strategies.

Key Characteristics of Global ARC Interactive

1. **Interactive Format**

In contrast to many other online events, the emphasis at Global ARC Interactive is, as it states-on-the-box, on interactivity. There are no pre-recorded presenters at Global ARC Interactive, all are live and everything is centered around empowering our delegates to question and interact with one another and our keynote speakers.

2. **Investor and Research Driven Agenda**

Global ARC Interactive provides access to the latest cutting-edge research and always seeks to provide an objective forum for the discussion of alpha-driven investing, strategies and furnish institutional investors with frank critiques of the active management and alternatives industries products and strategies.

3. **Restricted Attendance**

Institutional investor speakers always outnumber investment manager speakers at Global ARC Interactive. To maintain optimal ratios manager attendance Global ARC Interactive is limited to managers that support the event as sponsors.

Forthcoming Global ARC Interactive Events

Portfolio Risk in a Post-COVID World
10am-12.30pm EST Monday Oct. 26th to Wednesday Oct. 28th 2020
www.garcinteractive.com/risk

ESG: Reshaping Investor Allocations
10am-12.30pm EST Monday Dec. 7th to We dnesday Dec. 9th 2020
www.garcinteractive.com/esg

Academic Speakers

Professor Lawrence R. Douglas

Author of *'Will He Go? Trump and the Looming Electoral Meltdown'*

James J. Grosfeld Professor of Law, Jurisprudence and Social Thought

Amherst College – USA

Professor Douglas is the author of seven books. His most recent book is Will He Go? Trump and the Looming Electoral Meltdown in 2020 (Twelve/Hachette 2020). Others include The Memory of Judgment: Making Law and History in the Trials of the Holocaust (Yale, 2001) and The Right Wrong Man: John Demjanjuk and the Last Great Nazi War Crimes Trial (Princeton, 2016), a New York Times "Editor's Choice." His commentary and essays have appeared in Harper's, The New York Times, The Washington Post and The Los Angeles Times; and he is a regular contributor to the Times Literary Supplement and The Guardian (US), where he is a contributing opinion writer. The recipient of major fellowships from the National Endowment for the Humanities, the American Council of Learned Societies, the United States Holocaust Memorial Museum, the Institute for International Education, and American Academy in Berlin, and the Carnegie Foundation.

Professor David Hand OBE

Author of *'Dark Data: Why what you don't know matters'*

Emeritus Professor of Mathematics and Senior Research Investigator

Imperial College London – United Kingdom

Professor David Hand is Emeritus Professor of Mathematics and Senior Research Investigator at Imperial College, London, where he formerly held the Chair in Statistics. He has published thirty books, including Principles of Data Mining, Information Generation, Measurement Theory and Practice, The Improbability Principle, The Wellbeing of Nations, and Dark Data. In 2002 he was awarded the Guy Medal of the Royal Statistical Society, and in 2012 he and his research group won the Credit Collections and Risk Award for Contributions to the Credit Industry. He was awarded the George Box Medal in 2016, and the Research Medal of the International Federation of Classification Societies in 2019. In 2013 he was made OBE for services to research and innovation. He is a Fellow of the British Academy, and an Honorary Fellow of the Institute of Actuaries, and has served (twice) as President of the Royal Statistical Society.

Professor Rana Mitter OBE

Author of *'China's Good War: How World War II Is Shaping a New Nationalism'*

Director of the University of Oxford China Centre

University of Oxford – United Kingdom

Professor Rana Mitter's work has received international praise for its innovative approach to the study of China's contemporary politics and history. His current focus is on the origins and causes of nationalism in China and its impact upon the Chinese government's behavior. His most recent book 'China's War With Japan' was selected by The Financial Times as one of the ten best history books of the year, was chosen as a Book of the Year by The Economist and won the Duke of Westminster Medal. Rana Mitter's television documentary "The Longest War: China's World War II" was broadcast on the History Channel in 2015. Rana also presents and contributes regularly to the arts and ideas program Night Waves on BBC Radio and The Forum on BBC World Service. He was appointed Officer of the Order of the British Empire (OBE) in the 2019 for services to education.

Professor Joshua Gans

Author of *'The Pandemic Information Gap: The Brutal Economics of COVID-19'*

Jeffrey Skoll Chair of Technical Innovation and Entrepreneurship

University of Toronto Rotman School of Management - Canada

Professor Joshua Gans is holder of the Jeffrey S. Skoll Chair of Technical Innovation and Entrepreneurship at the Rotman School of Management, University of Toronto. Joshua is also Chief Economist of the University of Toronto's Creative Destruction Lab. Prior to 2011, he was the foundation Professor of Management (Information Economics) at the Melbourne Business School, University of Melbourne. Joshua holds a Ph.D. from Stanford University. His most recent books are 'The Pandemic Information Gap: The Brutal Economics of COVID-19' (MIT Press, 2020) and 'Innovation + Equality' (MIT Press, 2019). While Joshua's research interests are varied, he has developed specialties in the nature of technological competition and innovation, economic growth, publishing economics, industrial organization and regulatory economics. In 2017, Joshua won the Roger Martin Award for Research Excellence.

Dr. Ayhan Kose

Lead Author of The World Bank's Global Economic Prospects (GEP) Report

Director of the Prospects Group Equitable Growth, Finance and Institutions

World Bank – USA

Headed by Dr. Ayhan Kose, the Prospects Group produces The World Bank's flagship report, Global Economic Prospects. His articles have been published in leading academic journals and in The Economist, NYT, Financial Times and Wall Street Journal. He is on the editorial boards of several academic journals, and was the founding Co-Editor of the IMF's Economic Review and Editor of the IMF Research Bulletin. His latest book, 'Inflation in Emerging and Developing Economies' examines the remarkable decline in inflation over the past half century and its underlying drivers in these economies. His previous book, 'Collapse and Revival: Understanding Global Recessions and Recoveries', tracks the global business cycle through the destruction of a global recession to the renewal of recovery. He has taught at the University of Chicago's Booth School of Business and INSEAD.

Professor Frank Snowden

Author of *'Epidemics and Society: From the Black Death to the Present'*

Andrew Downey Orrick Professor Emeritus of History and History of Medicine

Yale University - USA

Yale historian, Professor Frank Snowden, has long been fascinated by the ways epidemics hold up a "mirror" to the social, cultural, and political conditions in which they arise. His most recent book, "Epidemics and Society: From the Black Death to the Present," published by Yale University Press in 2019, is the result of 40 years of research on the topic and was published to widespread acclaim. Since the outbreak of COVID-19, Snowden, has been featured in The New Yorker, The New York Times, and The Wall Street Journal for his historical expertise. His books have won a number of prizes including the Gustav Ranis Prize, the Helen and Howard R. Marraro Prize by the American Historical Association and the 2008 Welch Medal from the American Association for the History of Medicine. Professor Snowden received his Ph.D. from Oxford University.

Institutional investor Speakers

GlobalARC interactive

Sebastian Vadakumcherry, Chief Risk Officer and Chief Compliance Officer
Alaska Permanent Fund Corporation - USA

APFC is a state-owned corporation, based in Juneau, that manages USD 65 Billion of assets on behalf of the Alaska Permanent Fund and other funds designated by law, such as the Alaska Mental Health Trust Fund. Prior to joining APFC as its Chief Risk Officer and Chief Compliance Officer, Sebastian Vadakumcherry was Head of Risk Management Division at Gulf Investment Corporation. He holds an MBA rom from Texas A&M University.

Ingrid Albinsson, Chief Investment Officer
AP7 Pension Fund – Sweden

AP7 (the Seventh National Pension Fund) acts within the DC system in Sweden which is part of the national government pension plan. Its default product "Såfa" has approximately SEK 430 Billion (USD 54 Billion) under management and is a global diversified life cycle product. Ingrid Albinsson is the Chief Investment Officer and Executive Vice President of AP7. Prior to joining AP7 she spent 10 years with Swedbank Robur

Elena Manola-Bonthond Ph.D., Chief Investment Officer
CERN Pension Fund – Switzerland

Dr. Elena Manola-Bonthond is Chief Investment Officer, at the 5 Billion CHF (USD 5 ½ billion) pension fund of CERN, the European Organization for Nuclear Research. Elena played an instrumental role in creating the investment governance framework optimized for dynamic risk management, now popularly known as the 'CERN model'. Elena holds a PhD in particle physics from University of Savoie and CERN.

Clifton Isings, Chief Investment Officer and Vice-President
CN Investment Division (Canadian National Railways Pension Fund) - Canada

Clifton Isings is Chief Investment Officer and Vice-President of the CN Investment Division of the Canadian National Railway Company. It manages the CN Pension Fund which is one of the largest corporate pension plans in Canada with CAD 18 billion (USD 13 billion) AUM. The Division has 80 employees including 40 investments professionals. His responsibilities include public equities, real assets, liability hedging assets, and risk management.

Valerie Sill, President and Chief Executive Officer
DuPont Capital Management - USA

Valerie Sill is President and Chief Executive Officer of DuPont Capital Management and serves as its Chief Investment Officer. She is responsible for overseeing the investment of approximately USD 25 billion in assets held by DuPont Company plans and external clients. Prior to this, Valerie was Executive Vice President at The Boston Company Asset Management. Valerie holds an MBA from Harvard Business School.

Howard Hodel, Investment Officer, Risk Management
Employees' Retirement System of the State of Hawaii – USA

The Employees' Retirement System of the State of Hawaii is a public pension fund which has approximately USD 17 billion in assets under management. The Employees' Retirement System of the State of Hawaii engages in a range of alternative investment strategies including buyouts, distressed debt, real estate, timber and venture capital. Howard Hodel holds an MBA in Finance from University of Chicago's Booth School of Business.

Tom Tull, Chief Investment Officer
Employees Retirement System of Texas – USA

The Employees Retirement System of Texas is an agency of the Texas State government, which oversees retirement benefits on behalf of Texan state employees. Employees Retirement System currently manages over USD 26 billion in assets. Prior to joining Employees Retirement System of Texas, Tom Tull founded the investment adviser company, Gulfstream Global Investors, which he sold to West LB in 2001.

Sanjay Chawla, Chief Investment Officer
FM Global - USA

FM Global is one of the world's largest commercial and industrial property insurers. Assets managed include general account and pension assets, combined total in excess of USD 20 billion. He was previously Chief Investment Officer at Raytheon Company (AUM USD 38 billion). He received an MBA from Virginia Polytechnic Institute and State University and a B.Comm (honors) from Shri Ram College of Commerce, Delhi University, India.

Stephen Thompson, Executive Director, Capital Markets
Government of Alberta - Canada

Steve Thompson is the Executive Director of Capital Markets for the Government of Alberta. Steve is responsible for the borrowing and debt management strategy and the development of investment strategy and policy for the Province's CAD 20 billion (USD 16 Billion) Heritage Fund and other provincial endowments. Prior to this, Steve worked for the Province of Nova Scotia and with the Bank of Nova Scotia.

Srikanya Yathip Ph.D., Secretary General
Government Pension Fund of Thailand -Thailand

Srikanya Yathip, Ph.D., joined the USD 22 billion Government Pension Fund of Thailand in 2010. Prior to joining the Government Pension Fund of Thailand, she spent more than ten years studying and working first in Japan and later in the United Kingdom. Her responsibilities at the Government Pension Fund of Thailand include assessing investment choices, pension research and making pension policy reform recommendations.

Jerry Moriarty, Chief Executive Officer
IAPF – Ireland

IAPF's members are responsible for some €150 billion (USD 165 billion) in retirement savings and IAPF aims to ensure people in Ireland can have pensions that are secure, fair and simple. Jerry Moriarty is Vice-Chair of PensionsEurope and chairs its DC Committee and Brexit Working Group. In 2018, he was appointed to the European Insurance and Occupational Pensions Authority's Occupational Pensions Stakeholder Group.

Phillip Titolo, Head of Direct Private Investments
MassMutual Insurance – USA

Phillip Titolo is Head of Direct Private Investments and Portfolio Manager, Alternatives for MassMutual's GIA portfolio, focusing on strategic asset allocation and external investment relationships. Previously, Phillip was at Hartford Investment Management, Credit Suisse Asset Management and United Technologies. Education: Boston College (BS), University of Connecticut (JD & MBA). Phillip is a CFA charter holder.

Institutional investor Speakers

GlobalARC interactive

Eric Nierenberg Ph.D., Chief Strategy Officer
Massachusetts Pension Reserves Investment Management Board (MassPRIM) - USA

Eric Nierenberg has worked at the USD 60 billion Massachusetts Pension Reserves Investment Management ('MassPRIM') since 2013. In addition to his work at MassPRIM, Eric also teaches graduate courses in investments and international portfolio management at Brandeis University. Prior to which, he was a Vice President at Independence Investments. Eric Nierenberg holds a Ph.D. in Business Economics from Harvard University.

Clark Cheng, Chief Investment Officer
Merrimac Corp – USA

Merrimac is a large single-family office with investments in hedge funds, private equity, real estate and mutual funds. Prior to Merrimac, Clark was responsible for managing the hedge fund due diligence process in the Americas for HSBC's Alternative Investment Group which had USD 39 billion in hedge fund investments He holds an MBA from Duke University and the CFA, FRM and CAIA designations.

Craig Grenier, Director of Investments
Northeastern University Endowment - USA

Craig Grenier is the Director of Investments for Northeastern University, where he provides strategic direction for the management of over USD 1.5 billion in endowment and operating assets across both public and private markets. Prior to NE, Craig worked at Blue Cross Blue Shield of Massachusetts and GMO. Craig holds an MBA and a BS in Management from Northeastern University, and has both the CFA and CAIA designations.

Arjen Pasma, Chief Risk Officer
PGGM Investments – The Netherlands

PGGM Investments manages approximately EUR 190 billion (USD 210 billion) in investment assets from five Dutch Pension Funds in a worldwide diversified portfolio of both public and private investments. Arjen Pasma is the Chief Risk Officer at PGGM Investments and a board member of the investment committee, allocation committee, asset liability management committee and investment policy committees of PGGM Investments.

Mauricio Guzman, Chief Investment Officer
Pontificia Universidad Javeriana Endowment - Colombia

Mauricio Guzmán is Chief Investment Officer at Pontificia Universidad Javeriana, one Colombia's largest private universities, primarily responsible for the investment and risk management process, across local and global equity and fixed income assets, as well as alternative investments in hedge funds, private equity and real state. He holds an MBA from Universidad de Los Andes and is a Chartered Financial Analyst charter holder.

Farouki Majeed, Chief Investment Officer
School Employees Retirement System of Ohio – USA

Founded in 1937, the Ohio School Employees Retirement System currently manages USD 14 billion in assets on behalf of 121,000 active, contributing members and 72,000 benefit recipients. Farouki Majeed has served as Chief Investment Officer of the Ohio School Employees Retirement System since 2012. Prior to this he worked as Senior Investment Officer at CalPERS. Farouki holds an MBA from Rutgers University and is a Chartered Financial Analyst.

Olin Liu, Ph.D. Managing Director and Chief Economist
Sunshine Insurance Group - China

Olin Liu Ph.D. is Managing Director of the asset management arm of the Sunshine Insurance Group, responsible for Sunshine Insurance Group's strategic investment asset allocation overseas and macro thematic research. Previously Olin Liu was a director of CICC, China's first joint venture investment bank, and Mission Chief for the International Monetary Fund's Asia Pacific Department. She holds a PhD in Economics from Boston College.

Christopher Brockmeyer, Director of Employee Benefits
The Broadway League Inc – USA

Christopher Brockmeyer has been the Director of Employee Benefit Funds for the Broadway League, the national trade association for the Broadway theatre industry, since 2007. This includes eleven multi-employer pension funds, seven health funds and four annuity/401(k) funds with nearly USD 6 Billion in assets, covering 120,000 current or future retirees and providing health care coverage for 24,000 employees.

Roy Kuo, Head of Alternative Strategies
The Church Commissioners of England – United Kingdom

The Church Commissioners for England, which manages the Church of England's endowment, possesses approximately GBP 8 billion (USD 11 billion) assets under management. Roy Kuo is responsible for managing and growing the endowment's allocations in the alternatives sector. Prior to joining Church Commissioners for England, he was head of research at Dexion Capital. Roy holds an MBA from Said Business School, Oxford University.

Industry Speakers

GlobalARC interactive

Chris Hentemann, Managing Partner and Chief Investment Officer
400 Capital Management - USA

400 Capital Management ('400CM') is a structured credit asset management firm offering qualified investors access to a broad range of investment opportunities and innovative solutions across global structured credit markets. Chris Hentemann founded 400CM in 2008 and is its CIO and Chairs its Operating and Investment Committees. Prior to 400CM, Chris was the Head of Global Structured Products at Banc of America Securities.

Russ Ivinjack, Senior Partner
Aon - USA

Russ Ivinjack is a Senior Partner at Aon Hewitt Investment Consulting and chairs the firm's U.S. Investment Committee. Russ previously led the development of Aon's alternatives investment capabilities and global equity manager research teams. He has written research papers on defined contribution pension plan issues and what fiduciaries need to know when selecting asset allocation and fund selection models for participant-directed plans.

Bill Kelly, Chief Executive Officer
CAIA Association - USA

William (Bill) J. Kelly is the CEO of the CAIA Association and a frequent writer, and commentator on alternative investment topics globally since taking the leadership role in 2014. Previously, Bill was CEO of Boston Partners and one of seven founding partners of the predecessor firm, Boston Partners Asset Management. His career in the institutional asset management space spans over 30 years in successive CFO, COO and CEO roles.

Catherine Beard, Senior Vice President, Alternatives Consulting
Callan Associates - USA

Founded in 1973, Callan currently advises on more than USD 2 trillion in total fund sponsor assets, which makes it among the largest independently owned investment consulting firms in the U.S. Prior to Callan Catherine Beard she was a principal and director of research at specialist private credit funds-of-funds Blueprint Capital. Catherine holds an MBA from the Kelley Graduate School of Business and is a CFA.

David Stewart, Founder
Global ARC - Australia

Founded by David Stewart in 2002, Global ARC convenes a network of the world's foremost academics, pension funds, endowments, sovereign wealth funds and asset managers to analyze macro-economic, capital market, and alternative investment developments and their implications for the institutional investor community. Global ARC is an independent organization wholly owned by its founder.

Christopher Holt Ph.D., Senior Advisor
Global ARC - Canada

Chris Holt is an Associate Director at University of Waterloo's Conrad School of Entrepreneurship and Business, where he supervises the MBET Corporate Innovation Project and teaches undergraduate and postgraduate entrepreneurship, management consulting, and organizational behaviour courses. Chris has advised Global ARC in various roles since 2006. He holds an MBA from Duke University and a Ph.D. from University of Toronto.

Ted Koenig, President and Chief Executive Officer
Monroe Capital - USA

Theodore Koenig is President, Chief Executive Officer and Founder of Monroe Capital, a private credit asset management firm specializing in direct lending and opportunistic private credit investing, which he established in 2004. Prior to founding Monroe Capital, Ted Koenig was President and Chief Executive Officer of Hilco Capital LP, a junior secured/mezzanine debt fund.

George Sakoulis Ph.D., Managing Director and Head of Global Multi-Asset Solutions
QMA, a PGIM Company - USA

George Sakoulis, PhD, is a Managing Director and Head of Global Multi-Asset Solutions for QMA. He is responsible for research, development and portfolio management of systematic, total and absolute return strategies. Previously, he led quantitative research for the emerging markets team at GMO. George Sakoulis earned and an MA in economics and a PhD in financial econometrics from the University of Washington.

Amy Hsiang, Head of Traditional Fixed Income and Private Credit
RVK Consulting- USA

RVK is one of the largest fully independent and employee-owned investment consulting firms in the US. We provide unbiased general investing consulting services to nearly 200 institutional clients. Amy Hsiang is the Head of RVK's traditional fixed income and private credit investment manager research. Amy has a BA in Economics from the University of Chicago and an MBA from Harvard Business School. She is a CAIA and CFA Charterholder.

Program

Day 1: Monday October 26th 2020

10.00am EST **Monday chair's opening remarks**

Risks to Global Growth

"The coronavirus pandemic has triggered the most widespread global economic meltdown since at least 1870 and risks fueling a dramatic rise in poverty levels around the globe, the World Bank has warned in its Global Economic Prospects (GEP) report"
The Guardian, June 9th 2020

10.05am EST **Analyzing the key threats to global economic growth**

Dr. Ayhan Kose
Lead Author, The World Bank Global Economic Prospects Report
Director of the Prospects Group Equitable Growth, Finance and Institutions
The World Bank – USA

Breakout Rooms

10.20am EST **Discuss the World Bank's Global Economic Prospects (GEP) report and prepare questions**
The World Bank's 2020 Global Economic Prospects (GEP) report identified the two new elements impacting global growth in 2020 as COVID and the radically reconfigured pricing landscape for oil.

Breakout Room 1: **COVID and Global growth**
Breakout Room 2: **'Cheap oil' and Global growth**

10.50am EST **Analyzing the key threats to global economic growth: audience questions**
Based on feedback from their respective breakout sessions, our two institutional investor breakout streams chairs will reconvene to ask Dr Ayhan Kose follow up questions, before then opening the session to the floor for further questions.

Rethinking Strategic Asset Allocations

"COVID-19 has had an immediate and severe impact on the investment landscape…. In addition to the current volatility and uncertainty, CIOs, should be thinking about the reverberations of the pandemic that will continue in the coming months and years."
Forbes, May 26th 2020

11.10am EST **How is the COVID-19 driven macro-economic environment impacting institutional investor allocation decisions and risk tolerance?**
Which investment assumptions have investment managers and institutional investors been forced to reappraise since the onset of COVID-19; and how has this reassessment impacted upon their investing processes?

Political Risks… the 2020 U.S. Election

"President Trump's relentless efforts to sow doubts about the legitimacy of this year's election are forcing both parties to reckon with the possibility that he may dispute the result in November if he loses — leading to an unprecedented test of American democracy."
The Washington Post, July 23rd 2020

12.00pm EST **Why a close, or disputed, 2020 US Presidential election outcome poses a potentially devastating risk to the stability of the US political system.**

Professor Lawrence R. Douglas
Author, *Will He Go? Trump and the Looming Electoral Meltdown*
James J. Grosfeld Professor of Law and Jurisprudence
Amherst College – USA

12.30pm EST **Close of Day One**

Program

Day 2: Tuesday October 27th 2020

10.00am EST **Tuesday chair's opening remarks**

Post-COVID Economics

 "(Post-COVID) we will move to a new economic model in which business and society are more open to trade-offs between efficiency and resilience."
The Financial Times, July 20th 2020

10.05am EST **Why the repercussions of COVID-19 will require a fundamental rethink of economics.**

Professor Joshua Gans

Author of *The Pandemic Information Gap: The Brutal Economics of COVID-19*

Jeffrey Skoll Chair of Technical Innovation and Entrepreneurship

University of Toronto, Rotman School of Management – Canada

Private Market Risks and Opportunities

10.35am EST **How will COVID-19 reshape private equity and venture capital market risk and sector concentrations?**

"A number of (private credit) managers are busy raising capital to take advantage of the current market dislocation... the risk for investors committing capital for distressed or stressed investments is that no one knows how long the COVID-19-sparked recession and market downturn will last."
P&I July 13th 2020

11.00am EST **Where are the underappreciated or overlooked opportunities and risks in private credit and how do you protect yourself against the former, without compromising the latter?**

Geopolitical Risk

"Since the second world war, America has been the pulsating centre of the global financial system. Now, though, repeated missteps, and China's growing pull, have begun to tear at the seams. Many assume the status quo is too entrenched to be challenged, but that is no longer the case... the hegemon-in-waiting financially, as geopolitically, is China."
The Economist, May 12th 2020

11.25am EST **What is driving rising Chinese nationalism and how great a risk does it pose to the stability of our international system?**

Professor Rana Mitter OBE

Author of *China's Good War: How World War II Is Shaping a New Nationalism*

Director of the University of Oxford China Centre

University of Oxford – United Kingdom

Breakout Rooms

11.40am EST **Discuss Professor Rana Mitter's presentation and prepare questions and comments**

Breakout Room 1 **China's economic and trade relationships with the rest of the world**

Breakout Room 2 **China's political and geopolitical relationships with the rest of the world**

12.10pm EST **What is driving rising Chinese nationalism and how great a risk does it pose to the stability of our international system?**
Based on feedback from their respective breakout sessions, our two institutional investor breakout streams chairs will reconvene to ask Professor Rana Mitter follow up questions, before then opening the session to the floor for further questions.

12.30pm **Close of Day Two**

Program

Day 3: Wednesday October 28th 2020

10.00am EST **Wednesday chair's opening remarks**

Recognizing the Dangers of Bad or Incomplete Data

"Funds (are) scouring alternative data for edge on Covid and economy. Everything from social media to the R number is being tracked, but some question the value."
The Financial Times, August 4th 2020

10.05am EST **Dark data: why what you don't know matters**

Professor David Hand explores the many ways in which we can be blind to missing data and how that can lead us to conclusions and actions that are mistaken, dangerous, or even disastrous. To assist in the avoidance of such a fate, he will provide us with a practical taxonomy of the types of dark data that exist and the situations in which they can arise, so that we can learn to recognize and control for them.

Professor David Hand
Author: *Dark Data: Why What You Don't Know Matters*
Emeritus Professor of Mathematics and Senior Research Investigator
Imperial College, London – United Kingdom

Quant Strategies: Risks and Opportunities

10.45am EST **What range of internal capabilities must a quant manager possess in order to thrive in the current market environment and how can institutional investors best gauge whether their quant manager meets all these criteria?**

Public Markets: Risks and Opportunities

11.10am EST **Which segments of the bond market currently offer the best risk-adjusted rates of return?**

"The stock market is not the economy. Rarely has that adage been as clear as it is now… An amazing, months long rally means the S&P 500 is roughly back to where it was before the coronavirus slammed the U.S, even though millions of workers are still getting unemployment benefits and businesses continue to shutter across the country."
New York Times, August 12th 2020

11.35am EST **Small cap vs large cap, value vs growth, developed vs developing markets: how will COVID reorder the respective risk adjusted returns in equities markets?**

Lessons from Past Pandemics

12.00pm EST **Lessons from history: why and how epidemics such as COVID-19 as profoundly reshape nations and civilizations as do war and revolution.**

Drawing on historical examples from the Black Death to the Spanish Flu, Professor Frank Snowden's research analyzes how mass infectious outbreaks such as COVID-19 have profoundly reshaped society. Not only influencing the long-term development of medical science and public health, but also transforming the politics, intellectual history, and warfare of society

Professor Frank Snowden
Author *Epidemics and Society: From the Black Death to the Present*
Andrew Downey Orrick Professor Emeritus of the History of Medicine
Yale University - USA

12.30pm **Close of Day 3**

Sponsors

400 Capital Management ("400CM") was founded in 2008 by credit market veteran Chris Hentemann. Along with partners Alex Cha, Todd Leih and Bill Sanders, Chris and the team have been investing and trading in structured credit markets for over 27 years on average. 400CM offers investors access to securitized and structured credit strategies across its fund and managed account platform, including multi-sector and single-sector investment strategies, enabling investors to take advantage of the wide range of risk and return profiles available within the credit markets. 400CM invests across residential and commercial mortgage loans and securities, consumer loans and asset-backed securities, corporate assets and performing and distressed portfolios. 400CM and its affiliates employ 41 people, with offices located in New York City and London, and currently manage over USD 3 billion. www.400capital.com

Serving investors since 1975, QMA targets superior risk-adjusted returns by combining research-driven quantitative investment processes built on economic and behavioral foundations with judgment from experienced market practitioners. QMA partners with our clients to deliver long-term investment solutions anchored in fundamentals. Ultimately, each portfolio is constructed to meet the individual financial needs of the client. An independent boutique backed by the capabilities of one of the world's largest asset managers, QMA is the quantitative equity and global multi-asset solutions business of PGIM, the investment management businesses of Prudential Financial, Inc. As of December 31 2019, we manage approximately USD 127.2 billion in assets for a wide range of global clients. For further information please visit us at www.qma.com

Monroe Capital LLC is a private credit asset management firm specializing in direct lending and opportunistic private credit investing. Since 2004, the firm has provided private credit solutions to borrowers in the U.S. and Canada. Monroe's middle market lending platform provides senior and junior debt financing to businesses, special situation borrowers, and private equity sponsors. Investment types include unitranche financings; cash flow, asset based and enterprise value-based loans; and equity co-investments. Monroe is committed to being a value-added and user-friendly partner to business owners, senior management, and private equity and independent sponsors. Monroe has USD 9.3 billion of committed and managed capital and has a team of approx.. 130, with 70 investment professionals focused on deal sourcing and underwriting. www.monroecap.com

Forthcoming Global ARC Interactive Events

Portfolio Risk in a Post-COVID World
10am-12.30pm EST Monday Oct. 26th to Wednesday Oct. 28th 2020
www.garcinteractive.com/risk

ESG: Reshaping Investor Allocations
10am-12.30pm EST Monday Dec. 7th to Wednesday Dec. 9th 2020
www.garcinteractive.com/esg

OWS is 100% employee-owned with more than 70 employees and, as of January 1st 2020, over USD 4.5 billion of AUM. OWS's global investor base is primarily institutional, including pensions and sovereign wealth funds. Investment strategies are focused on generating attractive risk-adjusted returns across an actively managed portfolio of primarily asset-based and structured credit opportunities. OWS combines an experienced and robust fundamental value approach to security selection with quantitative risk and return metrics to seek to create attractive investment strategies and return profiles. Our investment strategies deploy capital in opportunities primarily across a diversified portfolio of structured credit and structured finance securities, as well as consumer loan and residential and commercial real estate debt investments. www.onewilliamstreet.com

Registration

Institutional Investor Attendance*

Institutional Investor Registration Rates:

Register <u>on or before September 28th</u> 2020	**USD 50** per person
Register <u>on or before October 18th</u> 2020	**USD 75** per person
Register <u>after October 18th</u> 2020	**USD 100** per person

* Who Qualifies for the Institutional Investor Rate?

Institutional Investor registration rates are solely for the use of full-time employees of not-for-profit pension plans, foundations, endowments, the investment arms of insurance firms, large single-family offices (with a minimum of USD 250M AUM) or sovereign wealth funds. Please note that institutional investor board members, investment managers, fund of funds managers, Outsourced Chief Investment Officers (OCIOs), wealth managers, pension consultants, multi-family offices or service provider clients do **not** qualify for the institutional investor registration rate. In the case of dispute, Global ARC Interactive retains the final right to determine which organizations qualify as institutional investors.

If you are unsure whether you qualify as an institutional investor please email David Stewart **david@global-arc.net** or Robert Bennett-Lovsey **robert@global-arc.net**

Asset Manager Attendance

Please note that Asset managers may only attend and participate in Global ARC Interactive as **sponsors** of the event.

Global ARC Interactive does not offer delegate passes to asset managers.

For further information please email David Stewart **david@global-arc.net**

Contacts

For sponsorship or program enquiries please email either:
David Stewart **david@global-arc.net** or
Robert Bennett-Lovsey **robert@global-arc.net**

For registration and administration questions please email:
Samantha Allwork **samantha@global-arc.net**

Terms & Conditions

To view a full list of our terms and conditions, please visit:
https://www.garcinteractive.com/page/1583534/terms-and-conditions

About Global ARC

Founded in 2002, Global ARC convenes a network of the world's foremost pension funds, endowments, sovereign wealth funds and asset managers focused on the intersection of macro-economic developments, capital markets, active management and alternative investments. Global ARC is an independent organization. It is wholly owned by its founder David Stewart and is not affiliated with any media company or individual supplier of services to the investment industry.

Forthcoming Global ARC Interactive Events

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