

# State of Connecticut Retirement Plans

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# State Street Global Advisors Reinventing Investing

Fourth Quarter – 2019

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# About State Street Corporation

Responsible for 10% of the world's assets<sup>1</sup>

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## Asset Servicing

Customized servicing solutions across traditional and alternative investments, with \$34.4T under our care<sup>2</sup>

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## Research and Trading

Data-driven insights and technology platforms that improve clients' access to global financial markets

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## Data and Analytics

Data management tools, analysis and software that can help clients make better investment decisions

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## Asset Management

Active and index investment strategies and solutions that help clients reach their financial goals

<sup>1</sup>State Street and McKinsey Global Institute, Global Capital Markets December 31, 2019

<sup>2</sup>This represents State Street's year-end 2019 Assets Under Custody and Administration, AUCA, (USD \$34.4T) as a proportion of December 31, 2019

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# About State Street Global Advisors

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**\$3.12**

Trillion in Assets<sup>1</sup>

---

**2500+**

Clients<sup>2</sup>

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**20**

Million DC Participants<sup>3</sup>

---

**63**

Countries with Clients<sup>2</sup>

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**9**

Investment Centers<sup>4</sup>

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**24-hour**

Global Trading Capability<sup>5</sup>

<sup>1</sup>AUM reflects approximately \$43.72 billion (as of December 31, 2019), with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent; SSGA FD and State Street Global Advisors are affiliated

<sup>2</sup>As of December 31, 2019

<sup>3</sup>As of December 31, 2019

<sup>4</sup>As of December 31, 2019

<sup>5</sup>During regional market hours

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# Mission

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To invest responsibly to enable economic prosperity and social progress.

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# A Leading Partner to Institutions and Intermediaries

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## #1

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government retirement plan provider globally

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sovereign wealth fund asset manager

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US endowment & foundation asset manager

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## #2

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US Defined Benefit provider

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US Defined Contribution Investment Only (DCIO) manager

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## #3

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largest asset manager

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largest ETF provider

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largest index manager (excluding ETFs)

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central bank asset manager

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## Top 10

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Institutional Money Market provider

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Outsourced Chief Investment Officer (OCIO) services

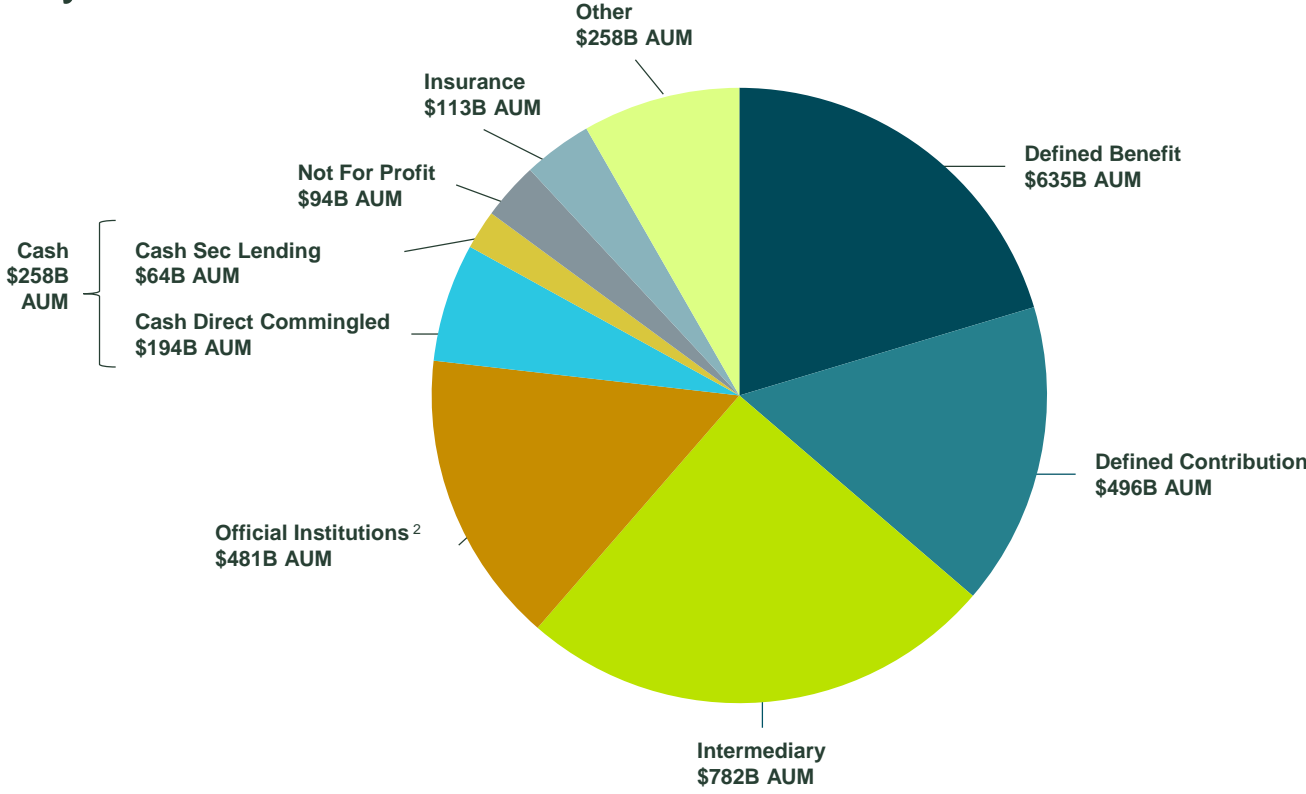
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ETF Model Portfolio manager

Source: P&I Research Center as of 12/31/2019, iMoneyNet as of 12/31/2019 and Morningstar as of 12/31/2018

# US \$3.12 Trillion in Assets Under Management<sup>1</sup>

## Clients by AUM



<sup>1</sup>AUM reflects approximately \$43.72 billion (as of December 31, 2019), with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent; SSGA FD and State Street Global Advisors are affiliated

<sup>2</sup>Official Institutions is a client type that includes all plan type assets including DB and DC.



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# Guiding Principles

Since 1978 we've had a drive to always reinvent the way we invest for our clients.

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## Start with Rigor

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Our more than 500 investment professionals worldwide take a highly risk-aware approach to all investing challenges.

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## Build from Breadth

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We build from a universe of active and index strategies to create cost effective solutions.

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## Invest as Stewards

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We help our portfolio companies understand that what's fair for people and sustainable for the planet can deliver long-term performance.

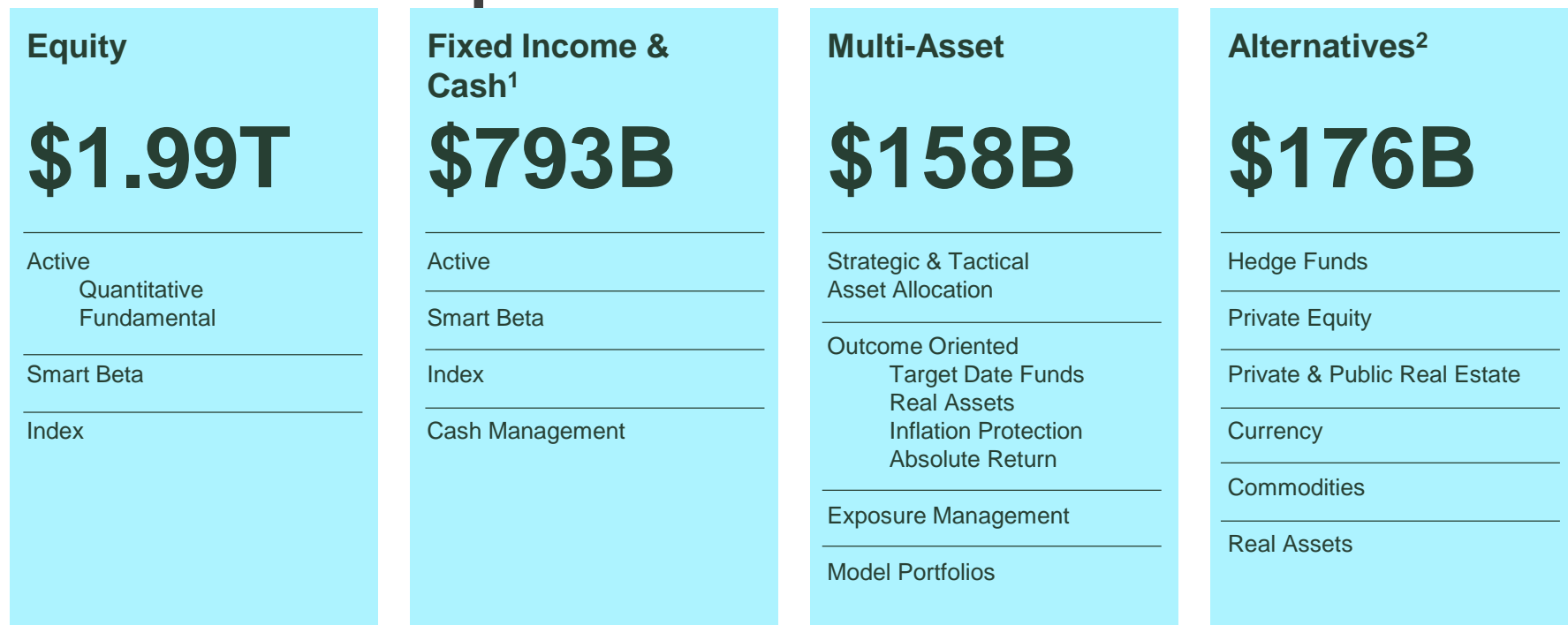
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## Invent the Future

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We created the first US ETF and we're pioneers in index, active, and ESG investing.

# Our Active and Index Capabilities Cover the Risk/Reward Spectrum



**Environmental, Social & Governance**

**Defined Benefit / Defined Contribution Solutions**

**Global Fiduciary Solutions**

**Alternatives Program Management**

Figures are in USD dollars; Period end as of December 31, 2019

<sup>1</sup>Cash includes both floating- and constant-net-asset-value portfolios held in commingled structures or separate accounts. <sup>2</sup>Alternatives Includes real estate investment trusts, currency and commodities, including gold-backed ETFs for which SSGA only serves as marketing agent.

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# Our ESG Approach to Making Better Decisions

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## Data Analytics

Helping investors better understand their ESG exposures & take action to achieve their investment goals.

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## Differentiated Solutions

Designing the next generation of ESG investing solutions and integrating it into our investment processes.

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## Asset Stewardship

Using our voice & vote to push portfolio companies to take material ESG issues seriously.

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## Integration

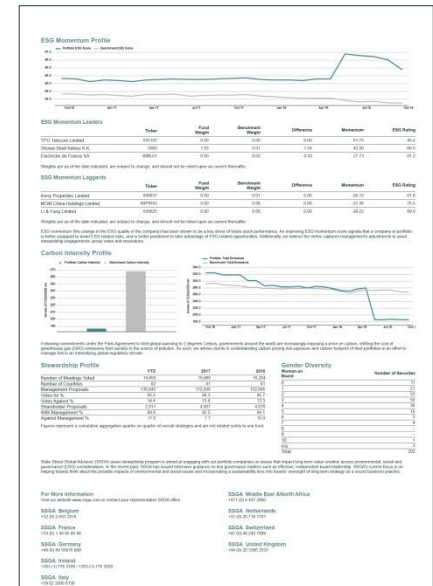
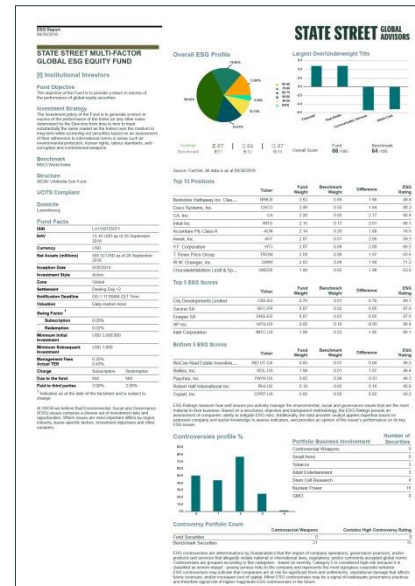
The consideration of financially material ESG issues in the investment process is part of our fiduciary duty to clients.

# R-Factor

## Scoring that Helps Clients Understand Their Exposures, Set Goals and Monitor Progress

### Our multi-source ESG scoring system

- Utilizes Sustainability Accounting Standards Board materiality map to identify ESG issues most relevant to certain industries
- Reduces investor risk associated with relying on a single data provider
- Provides ESG analytics at the company-, fund- and portfolio-level
- Guides portfolio company engagement



The information contained above is for illustrative purposes only.

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# ESG in Action:

## Wall Street, Meet Fearless Girl

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Starting in 2017, our Asset Stewardship team has called on companies in our investment portfolio to increase the number of women on their boards, and made clear we would use our proxy voting power to effect change if they failed to act.



Photo: Sculpture by Kristen Visbal

Source: State Street Global Advisors Asset Stewardship Team, February 2020.

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### 1300+

companies identified in the US, UK, Australia, Japan, Canada and continental Europe that had no women on their boards.

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### 1,690+

companies voted against for failing to take adequate steps toward adding a female director to their board since the start of the campaign in 2017.

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### 681

companies have now added a female director to their board globally and 6 more have committed to doing so.

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# Our ESG Practices

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## Environmental.

- Reduced greenhouse gas emissions by 1/3
- Reduced water usage by 21%
- Diverted 90% of waste sent to landfills
- Aligned with the UN Global Compact

## Social.

- 75%+ of our \$3.12T<sup>1</sup> in AUM is overseen by women and minority leaders
- 30%+ of VPs and MDs in State Street are women
- 75% increase since 2012 in SVPs or above at State Street who are persons of color
- Our supply chain has environmental certification and policies covering equal opportunity, child or forced labor and health and safety

## Governance.

- Board independence for Audit, Compensation and Corporate Governance Committees
- 30% of State Street Board composition are women
- Employee training on a range of ethical, risk and compliance issues
- Data protection and IT resilience, including identity and access management, data loss prevention and cyber operations

<sup>1</sup>AUM reflects approximately \$43.72 billion (as of December 31, 2019), with respect to which State Street Global Advisors Funds Distributors, LLC (SSGA FD) serves as marketing agent; SSGA FD and State Street Global Advisors are affiliated

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# Investment Philosophy

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## **Understanding Multiple Dimensions**

Creating successful investment outcomes starts with understanding the multiple dimensions of a client's long-term objectives and liabilities.

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## **Knowing Markets are Not Always Efficient**

Due to behavioral biases, informational inefficiencies and limits to arbitrage, markets are not always efficient, leading to opportunities for excess returns.

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## **Focusing on Asset Allocation**

The primary driver of long-term returns is asset allocation.

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Investors need efficient access to a broad universe of capital market exposure.

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Focus should be on underlying risks, not asset class labels.

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## **Achieving Capital- & Risk-Efficient Portfolios**

A thoughtful and precise combination of market-, factor- and idiosyncratic-risk, along with manager skill, are key to achieving capital-, and risk-efficient portfolios.

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# What Keeps Clients Awake at Night?

## Investor Challenges and Needs

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### Policy Matters

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Policy risk muted but not gone away

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Corporate leverage is high

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### The New World Order

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China: Too big to ignore

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Populism fallout

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Climate risk moves up the agenda

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### Risk Rises as Cycle Matures

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Actively manage equity and fixed income exposures

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Valuations matter

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Hedge your tail risks

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### Value for Fees

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Systematize where effective

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Demand true alpha



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# Business Leadership Team

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## Cyrus Taraporevala, President & CEO

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**Chris Baker**  
Chief Compliance Officer

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**Susan Lasota**  
Chief Technology Officer and Head of Transformation

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**Barry F.X. Smith**  
Chief Operating Officer, Global Institutional Group

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**Marc Brown**  
Chief Administrative Officer

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**Steven Lipiner**  
Chief Financial Officer

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**Kat Sweeney**  
Head of Institutional, Americas

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**Cuan Coulter**  
Head of Europe, Middle East & Africa

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**James MacNevin**  
Head of Asia Pacific

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**Sue Thompson**  
Head of SPDR® ETFs Americas Distribution

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**Lochiel Crafter**  
Head of Global Institutional Group

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**Kate McKinley**  
General Counsel

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**Stephen Tisdalle**  
Chief Marketing Officer

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**Tim Corbett**  
Chief Risk Officer

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**Miles O'Connor**  
Head of Institutional, EMEA

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**Rory Tobin**  
Head of Global SPDR® ETFs

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**Kem Danner**  
Head of Human Resources

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**Jim Ross**  
Chairman of Global SPDR® ETFs & Funds Management

As of December 31, 2019

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# Global Investment Team

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**Cyrus Taraporevala**, President & CEO

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**Rick Lacaille**, Global CIO

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**Lynn Blake**  
CIO, Global Equity Beta Solutions

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**Barry Glavin**  
CIO, Fundamental Value Equities

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**Michael Solecki**  
CIO, Fundamental Growth & Core Equity

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**Olivia Engel**  
CIO, Active Quantitative Equities

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**Greg Hartch**  
Head of Private Investments

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**Matthew Steinaway**  
CIO, Global Fixed Income, Currency & Cash

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**Dan Farley**  
CIO, Investment Solutions Group

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**Lori Heinel**  
Deputy Global CIO

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**Dave Wiederecht**  
Head of Global Fiduciary Solutions

Head of Investments, EMEA, position to be filled.  
As of December 31, 2019

# Governance Structure

## Executive Management Group (EMG)

Consultative and decision-making body responsible for strategic planning, business goal and financial tracking, overall firm governance and talent management

Reporting

## Risk Committee

Responsible for ensuring the alignment of strategy, risk appetite and risk management standards (corporate-wide)

### Subcommittees:

- EMEA Risk
- Liquidity
- Model Risk

Reporting

Escalation of Material Risk Breaches

### Global Investment Committee

Responsible for the firm's investment philosophy and processes, investment strategies, approach to new markets and instruments and relationships with counterparties

#### Subcommittees:

- Technical
- Proxy Review
- Trade Management Oversight
- Investment Strategy Review
- Securities Lending
- Indices Oversight

### Global Product Committee

Responsible for the creation of products based on the firm's investment strategies

#### Subcommittees:

- North America Product
- EMEA Product
- APAC Product
- Sub-Advisory Oversight

### Global Fiduciary & Conduct Committee

Responsible for addressing fiduciary and business conduct matters across the firm and oversight of the firm's collective investment funds

#### Subcommittees:

- EMEA Fiduciary
- APAC Fiduciary
- Independent Fiduciary
- Class Action Litigation
- Sales Practices

### Global Operations & Compliance Committee

Responsible for the firm's operating infrastructure compliance functions

#### Subcommittees:

- North American Valuation
- Alternatives Valuation
- EMEA Valuation
- APAC Valuation
- Global Operational Risk
  - EMEA
  - APAC
- IT Steering

As of December 31, 2019

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# Equity Indexing Skillfully Delivered

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# Who We Are

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# Why State Street Global Advisors for Index, Smart Beta & ESG Investing

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## Core Focus Area and Key Strength

- 40 years history of delivering high quality, broad based index solutions
- Index represents 80%<sup>1</sup> of assets under management and 68%<sup>1</sup> of revenues
- >98%<sup>1,2</sup> of equity index funds have historically tracked within their tolerance bands

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## Industry Leader and Innovator

- ✓ Launched first US ETF
- ✓ In-house index creation
- ✓ Developing smart beta since 2006

Groundbreaking efforts in ESG research and integrated portfolio solutions

In-house proprietary ESG framework and screening tool

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## Experienced and Reliable Team

- 20 years average portfolio manager tenure
- Utilize a globally consistent investment management platform and processes
- Strategic focus on implementation and risk management
- Deep Research expertise with innovative heritage

<sup>1</sup> Source: State Street Global Advisors, December 2018.

<sup>2</sup> Based on cumulative quarterly gross-of-fees returns for all GEBS managed pooled, and separate account for both 3 years and 5 years period ending December 31, 2019. Tracking error based on the difference between portfolio and benchmark cumulative returns.

# Investment Philosophy

We aim to deliver to each client the returns and characteristics of a targeted index or strategy

## We believe in...

### Integration of technology & human insight

- Maintain a primary portfolio manager structure while using a state of the art portfolio management platform
- Continuous investment in our technology infrastructure to gain further efficiencies

### Supporting long-term shareholder values

- Engage with investee companies to promote responsible investing and protect long term shareholder returns through asset stewardship
- Firm wide proxy voting platform

### Innovating through research

- Value add strategies based on core beta research
- Development of propriety strategies and indexes
- ESG screening tools & framework, thematic strategies and portfolio integration

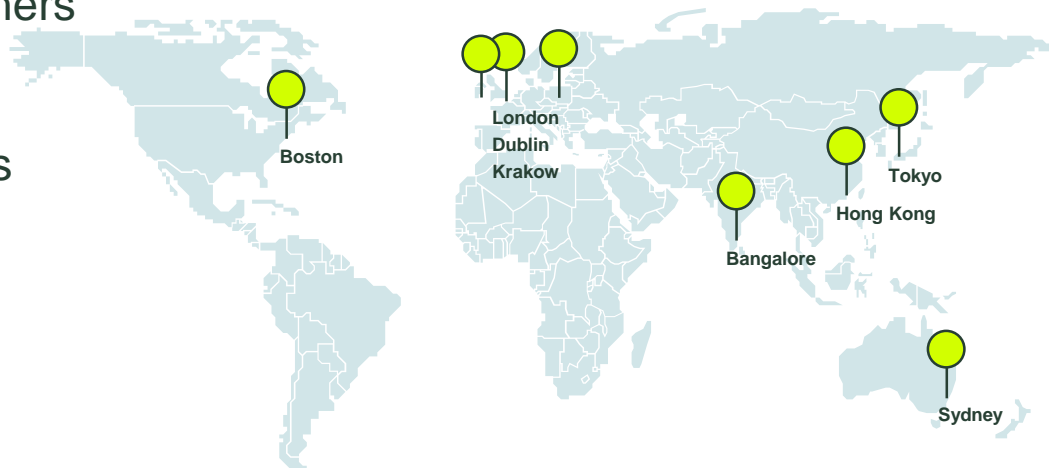
Source: State Street Global Advisors.

# State Street Global Equity Beta Solutions

70+ Portfolio Managers & Researchers

30+ Traders & Analysts

10+ Equity Strategists & Specialists



CIO	Exp Yrs
Lynn Blake, CFA	32

## Team Highlights

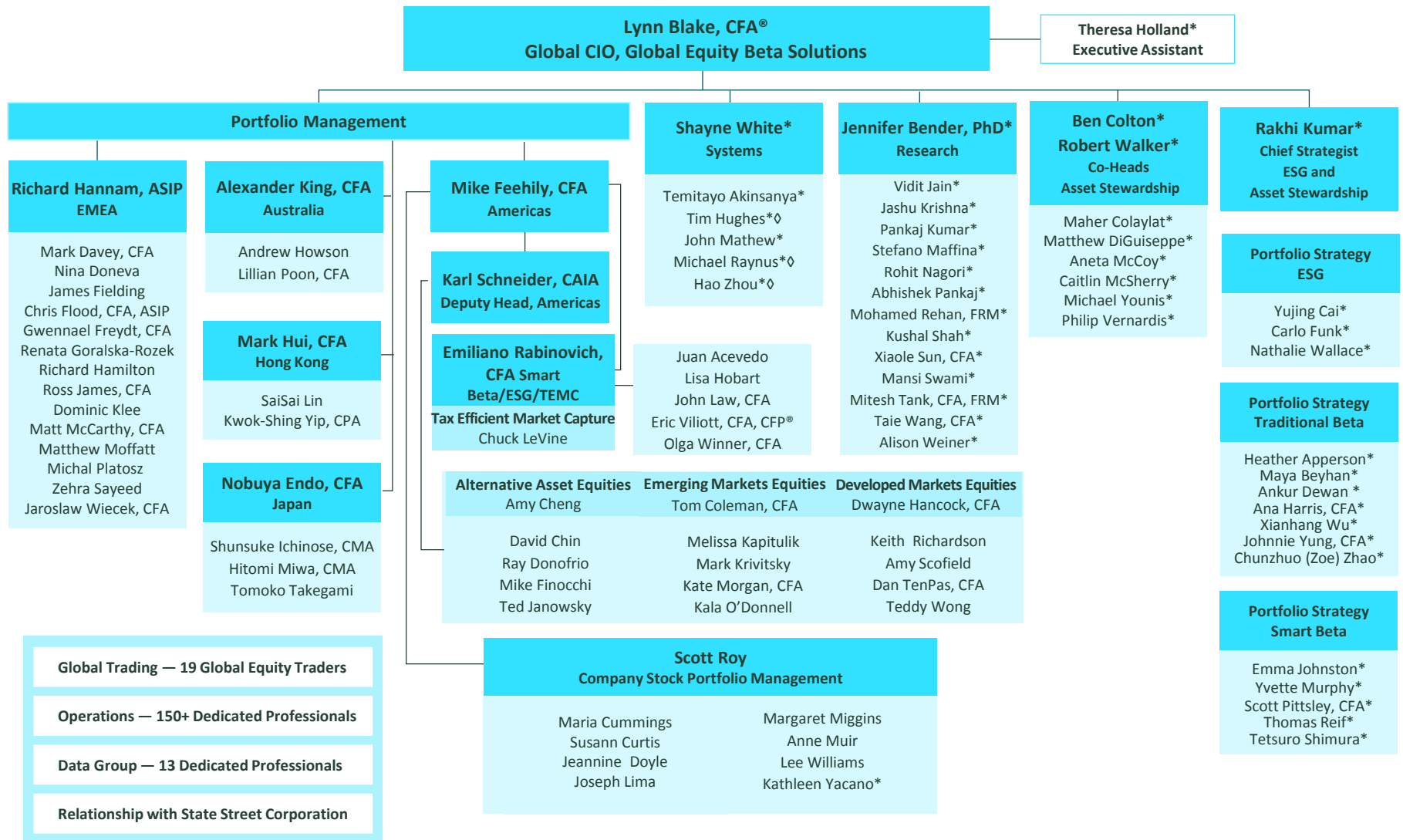
Investment Team Members <sup>1</sup>	72
Average Experience Years	21
Number of CFA Charter Holders	26

Senior Leadership	Exp Yrs
Nobuya Endo, CFA (Japan)	26
Mike Feehily, CFA (US)	27
Richard Hannam, ASIP (EMEA)	34
Mark Hui, CFA (Hong Kong)	21
Alex King, CFA (Australia)	17
Jennifer Bender <sup>2</sup> , PhD (Research)	23
Rakhi Kumar <sup>2</sup> (ESG/ Stewardship)	18
Shayne White <sup>2</sup> (Technology)	27

Portfolio Strategists <sup>2</sup>	Exp Yrs
Heather Apperson	15
Carlo Funk	10
Ana Harris, CFA	15
Yvette Murphy	11
Thomas Reif	25
Tetsuro Shimura	33
Nathalie Wallace	24

As of December 31, 2019. <sup>1</sup> Investment Team members include portfolio managers and researchers. <sup>2</sup> Does not manage assets for the Global Equity Beta Solutions team. CFA® is a trademark of the CFA Institute.





As of February 21, 2020.

\* Does not manage assets for the Global Equity Beta Solutions team. ◇ Indicates team supports Cortex overall.

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# Robust Research Guides Investment Decisions & Strategy Design

## Global Head of Research

Jennifer Bender,\* PhD



## Global Team

Global Headcount **15**

Members with CFA **3**

Peer-reviewed articles & chapters authored **17**



## Core Beta

Adding incremental value through risk-aware implementation and cost-reduction strategies, and strategic execution of index changes

## Smart Beta

Blending empirical and theoretical research, and balancing intuition and complexity make us a leader in factor definition, combination, and implementation

## Thematic & ESG

Identifying and capturing ESG-driven risks and opportunities and optimal portfolio construction across a spectrum of ESG exposures

## Self-Indexed & Proprietary Beta

Developing innovative solutions while incorporating implementation insights into our range of cap-weighted, factor, and ESG indexes

As of December 31, 2019. \* Does not manage assets for the Global Equity Beta Solutions team.

# ESG & Asset Stewardship

## Head of ESG & Asset Stewardship

Rakhi Kumar



## Our Belief

Companies embracing ESG best practice have strong, effective, independent boards and are able to incorporate sustainability into their long term strategy.

## ESG

- **Proprietary** ESG research and innovation driving multi asset classes solutions
- **Strong focus** on independent board leadership, financial impacts of climate change and other crucial ESG issues like gender diversity

## Asset Stewardship

- **Alignment** of asset stewardship, portfolio management, research, technology and ESG solutions
- Commissioned the **Fearless Girl** statue and developed the **Gender Diversity Index**

## 30+ Years

of commitment to ESG investors

## \$359B<sup>1</sup>

assets under management in ESG

## 445<sup>2</sup> of the 1,265

companies we called on made positive progress on board gender diversity



Photo:  
Sculpture by Kristen Visbal.

Source: State Street Global Advisors. <sup>1</sup> Data as of December 31, 2019 and listed in USD.

<sup>2</sup> 423 companies added a female board member and 28 committed to add a female director.

# Global Trading

20 year global desk in place

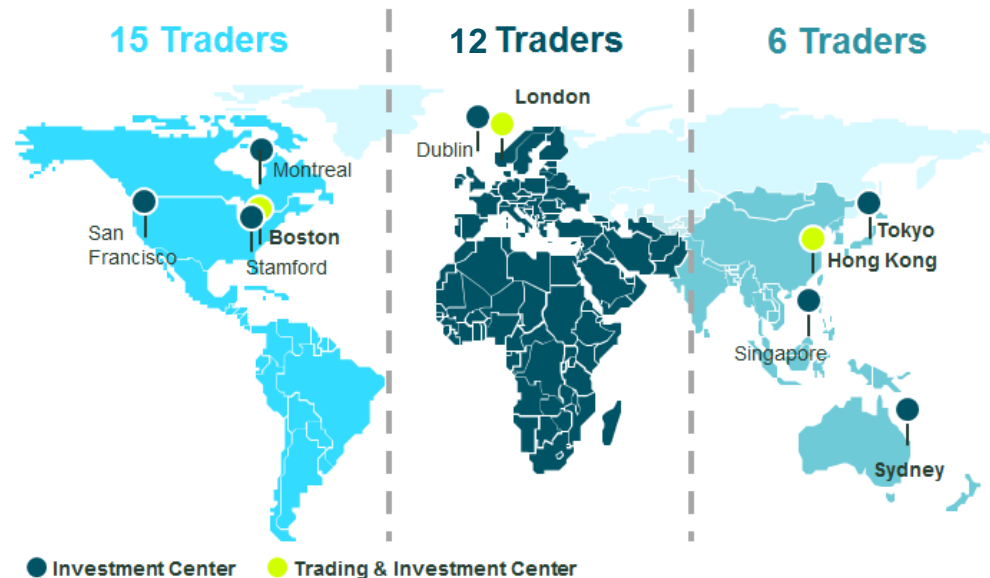
24 hour trading capabilities

30+ Traders (Equity & Fixed Income)

+19 year's average experience

\$2.5 Trillion dollars traded in 2019

3.2 Million tickets executed in 2019



## What Differentiates Us from the Competition?

### Spectrum of Trading Tools

- **Internal crossing network:** Use of security & unit level crossing when possible to minimize transactions costs
- **Algo Wheel:** Seeks to reward better performing algorithmic trading strategies and remove trader bias through a performance driven broker selection process

### Trading Analytics Group (TCA)

- Cross asset class team performing transaction cost analysis, data and analytics reporting, as well as market research
- TCA results incorporated into Algo selection process
- Quarterly review of best execution and governance oversight framework

### Connectivity & Expertise

- Regional trading desks with local expertise — coverage across 95 global markets
- Strong partnership between trading, portfolio management and research helps drive value-add strategies and routine implementation decisions

As of December 31, 2019. Updated Annually. Asset classes include equity, fixed income, futures and currency. Figures are in USD. Availability of internal crossing at SSGA may be affected by your asset class, vehicle type, jurisdiction, or other factors.

# Industry Trends Q4 2019

<b>Market Recap &amp; Flows</b>	<p><b>Global markets had a strong closed the year on a strong note</b> despite late cycle signals. Accommodative monetary policy, low unemployment, stable consumer spending /services data, particularly in the US have been supportive of near term equity performance. PMIs have also bottomed out in some major markets, such as China. The US and China also appear to be coming to an agreement on trade which has helped improve business sentiment. In the US <sup>1</sup> Market consensus predicting the S&amp;P 500 peaking at 3400 in Q32020.</p> <p><b>Cash positions remain low</b> relative to historic averages and investors appear have a <b>slight overweight to equities</b>. While this suggests optimism in equity markets, <b>gold has also had a strong rally</b>. Investors also appear to have the highest allocations to broad based commodities since 2012. Peak US dollar valuations suggests a potential decline, which could be supportive of EM and other traditionally dollar sensitive trades.<sup>2</sup></p> <p><b>Lastly, investors continue to favor index strategies</b>. Recent findings show funds tracking US equity indices now surpassing actively managed US focused funds. And a similar trend was cited in fixed income, which has historically been more active focused.<sup>3</sup></p>		
<b>Smart Beta &amp; Factor Investing</b>	<p><b>Factor volatility re-entered markets in 2019</b>. A significant rotation in early September represented one of the most extreme value/momentum rotations in the last decade. Robust equity markets, in a large part fuelled by high growth, high beta mega cap names, have historically not been favourable for factor strategy outperformance. Despite interim changes in performance, <b>smart beta still remains an area of focus for assets owners</b> - 77%<sup>4</sup> of investors are either implementing or currently evaluating smart beta strategies. ESG integration is the next step in the evolution of smart beta, particularly in Europe.</p>		
<b>Asset Stewardship</b>	<p><b>Stewardship moving from “nice to have” to “must have.”</b> A recent institutional survey sited 80% of respondents expect stewardship demands on their index managers to increase overtime.<sup>5</sup> Dedication of stewardship among index managers has come under increased pressure . The top three firms now account for 25% of all votes cast on the S&amp;P500, making stewardship all that more important for index managers. Top priorities and engagement activities cited in recent annual stewardship reports include; governance, board/ executive compensation &amp; diversity, environmental risks (i.e. climate) and capital management/ deployment.</p>		
<b>ESG</b>	<p><b>Climate change and the anticipation of regulatory changes in some regions have put ESG front and center for clients</b> and asset mangers alike. Consistency in data and disclosure among companies remain headwinds but is improving.</p> <p><b>Bloomberg recently launched the Bloomberg SASB ESG Index series</b>, which are aligned with the Sustainability Accounting Standards Board’s (SASB) materiality framework via SSGA’s R-Factor ESG scoring system that incorporates multiple data providers. MSCI is also in the process of transitioning the MSCI Climate Change Indices to the MSCI Provisional Climate Change EU Climate Transition indexes methodology by April, 2020 to align with climate benchmarks proposed by the EU Technical Expert group.</p>		
<b>Noteworthy Global Index Events</b>	<table border="0"> <tr> <td> <b>MSCI</b> <ul style="list-style-type: none"> <li>• The third and final phase of the 5%-20% increase in the inclusion factor to China A concluded in November. At that time, midcap stocks were also added. No further increases planned for 2020.</li> <li>• Saudi Aramco was added to the MSCI EM Index in late 2019, although the FIF was relatively low. Final weigh was around 0.15%.</li> <li>• Kuwait will formally be added to the MSCI EM Index in May 2020</li> <li>• Argentina and Peru remain on watch</li> </ul> </td> <td> <b>FTSE</b> <ul style="list-style-type: none"> <li>• The 2<sup>nd</sup> of three tranches in the 25% China A inclusion factor increase was implemented in September 2019. The final trade scheduled in March 2020.</li> <li>• Tranche four and five of the Saudi Arabian addition implemented in September 2019 and March 2020</li> </ul> </td> </tr> </table>	<b>MSCI</b> <ul style="list-style-type: none"> <li>• The third and final phase of the 5%-20% increase in the inclusion factor to China A concluded in November. At that time, midcap stocks were also added. No further increases planned for 2020.</li> <li>• Saudi Aramco was added to the MSCI EM Index in late 2019, although the FIF was relatively low. Final weigh was around 0.15%.</li> <li>• Kuwait will formally be added to the MSCI EM Index in May 2020</li> <li>• Argentina and Peru remain on watch</li> </ul>	<b>FTSE</b> <ul style="list-style-type: none"> <li>• The 2<sup>nd</sup> of three tranches in the 25% China A inclusion factor increase was implemented in September 2019. The final trade scheduled in March 2020.</li> <li>• Tranche four and five of the Saudi Arabian addition implemented in September 2019 and March 2020</li> </ul>
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<sup>1</sup> Macrobound, Duke CFO Magazine BEA, January 2020. <sup>2</sup> BAML Global Fund Manager Survey, January 2020. <sup>3</sup> Morningstar and EPRA, September/ December 2019. <sup>4</sup> FTSE Russell, 2018. <sup>5</sup> DWS and Create-Research 2019’,. Unless otherwise noted, all data as of December 2019

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# What We Do

# A Long History of Indexing Innovation

	1970s	1990s	2000s	2010s					
<b>Standard Indices</b>			S&P HY Div Aristocrats (2005) FTSE RAFI US 1000 (2006)	Nikkei 225 (2008)	FTSE RAFI ALL World 3000 MSCI Min Volatility (2010)	MSCI World Equally-weighted (2011) RAFI Low Vol (2012)	FTSE EDHEC Risk Efficient EM Russell 1000 Factors (2015) MSCI Quality Mix Series (2014)	Kensho New Economies Indices (2018)	
<b>Proprietary Indices and Strategies</b>	State Street Global Advisors launched International Index Fund and S&P Strategy (1979)	SSGA S&P 500 Equal Weighted (1993)	SSGA US Valuation-Tilted (2005)	SSGA Global Managed Vol (2008) SSGA Global Size Tilted SSGA Global Valuation Tilted (2009)	SSGA Europe Managed Volatility (2010)	SSGA Canadian Div Tilted (2012)	SSGA Global Multi-factor SSGA US Multi-factor (2015)	Gender Diversity Index (2015) Core Factors (2017) US Cap Weighted Self Indices (2017)	Developed and Emerging Markets Cap Weighted Self Indices (2019)

Source: State Street Global Advisors, as of December 31, 2019. Inception date of select portfolios.

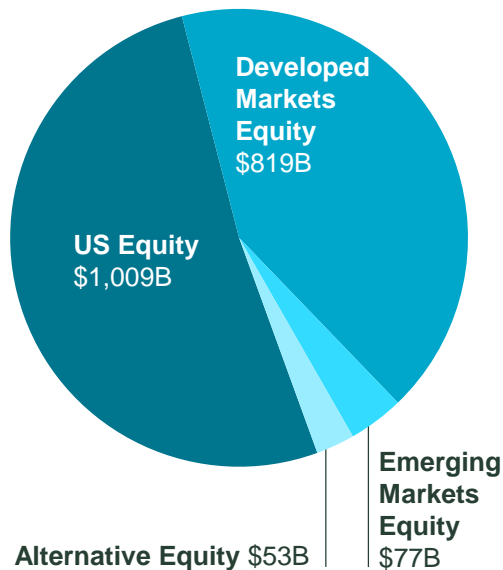
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# A Leading Manager of Global Indexed Assets

Equity Index AUM: \$1.96 Trillion (USD)

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## Breakdown of Global AUM



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## Cap Weighted

- US, Developed ex US, Emerging Markets
- Large, Mid & Small Cap

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## Style/Sector/ESG

- Value & Growth
- Sector/Industry Specific
- Carbon
- Climate

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## Smart Beta

- Third-Party Indices
- Proprietary Solutions: Single, Multifactor, Tilted & Optimized

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## Alternatives

- Commodity
- REITs
- Infrastructure
- Natural Resources

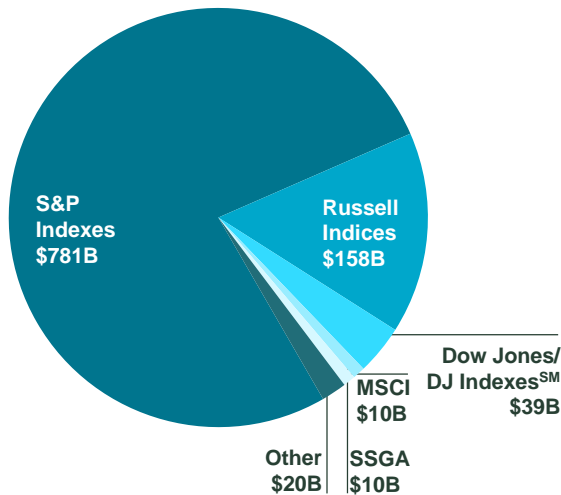
Source: State Street Global Advisors. Exclusive of Emerging Markets Equities invested in other MSCI-benchmarked strategies such as MSCI ACWI and MSCI ACWI ex-US. Data as of December 31, 2019.



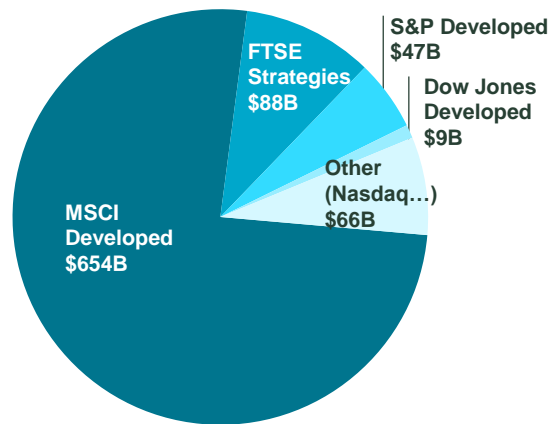
# A Leading Manager of Global Indexed Assets

Total Global Equity Beta Solutions Assets Under Management: \$1.96 Trillion (USD) as of December 31, 2019

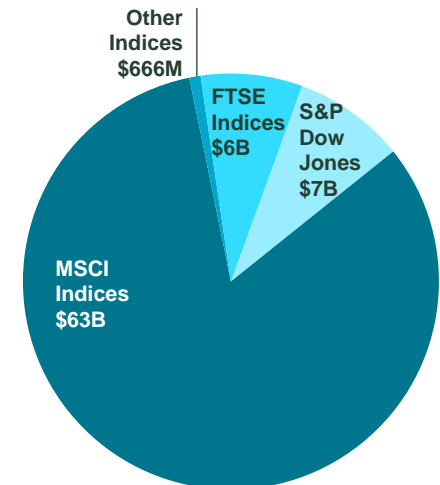
**US Index AUM**  
\$1,017B



**International & Global Equity AUM** \$864B



**Emerging Markets Equity AUM** \$77B



Source: State Street Global Advisors. As of December 31, 2019.

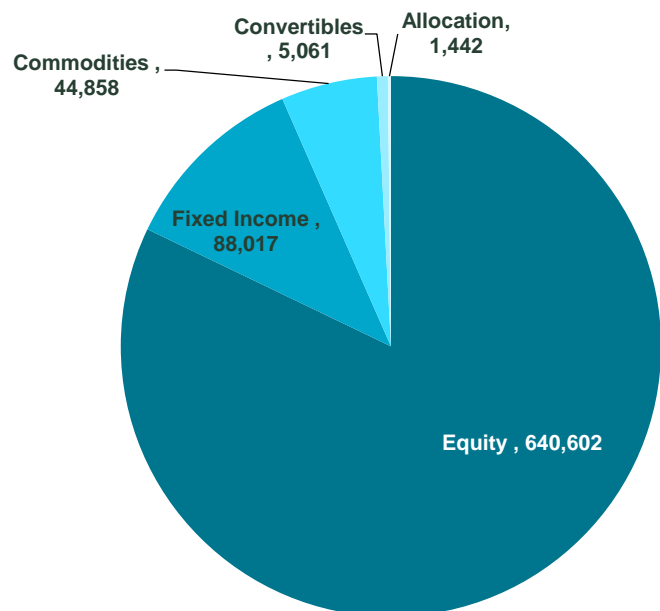
Exclusive of Emerging Markets Equities invested in other MSCI-benchmarked strategies such as MSCI ACWI and MSCI ACWI ex-US.

# SPDR: Third Largest ETF Manager

ETF AUM: \$779.9 Billion

Offerings: 255

Global AUM by Asset Class



Global ETF AUM

Region	Country of Domicile	ETF Offerings	Assets (\$M)
Americas	United States	140	717,894
EMEA	Ireland	95	41,657
APAC	Australia	16	4,490
	Hong Kong	2	11,617
	Singapore	2	4,322

Source: Morningstar, as of December 31, 2019.

# State Street Global Advisors' Smart Beta Equity Strategies & AUM

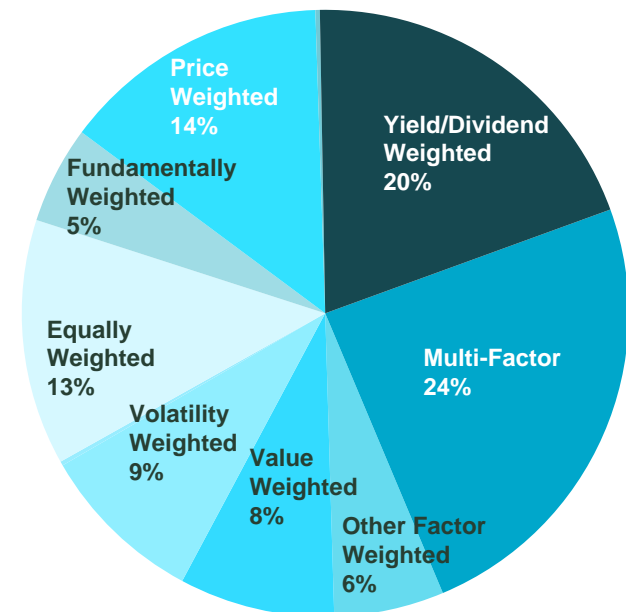
Total Smart Beta AUM \$161B

State Street has been managing Smart Beta portfolios for over 25 years

- Huge selection of strategies to meet varying interests of investors
- At forefront of research and development of Smart Beta solutions

Investor flows into Smart Beta continues to be positive

- In recent years, most interest in Low Volatility, Multi-Factor and Multi-Factor + ESG strategies

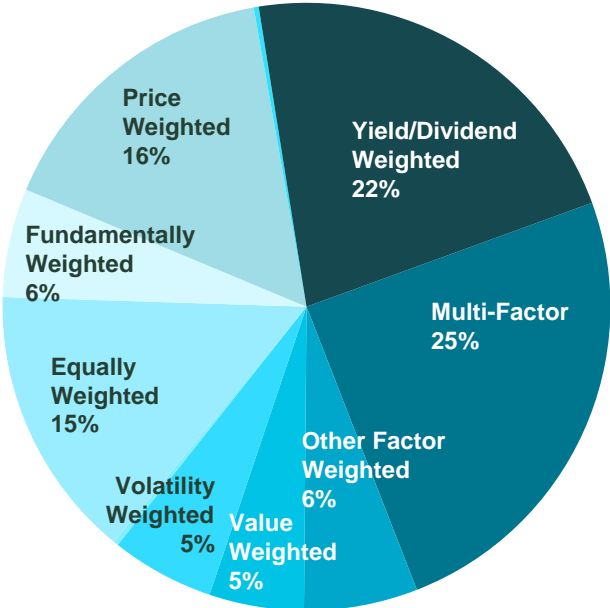


Source: State Street Global Advisors. Data as of 31 December 2019 in USD.

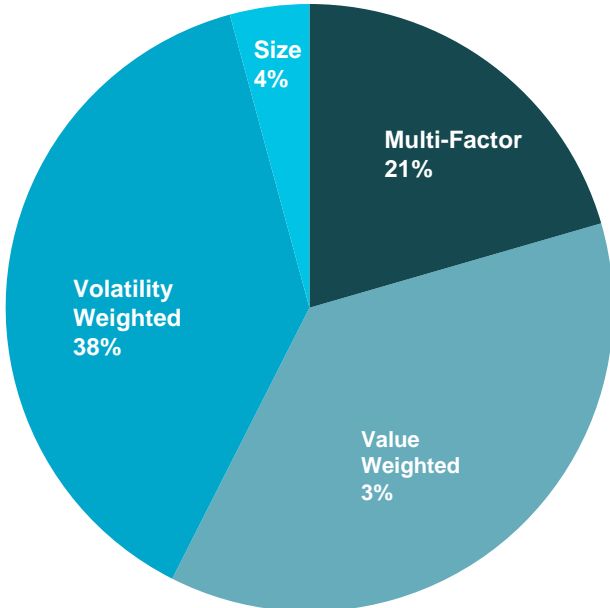
# Expertise in Smart Beta Portfolio Development and Implementation

Total Smart Beta AUM: \$161 billion

Index Provider Smart Beta Assets: \$145 billion



Proprietary Smart Beta Assets: \$16 billion



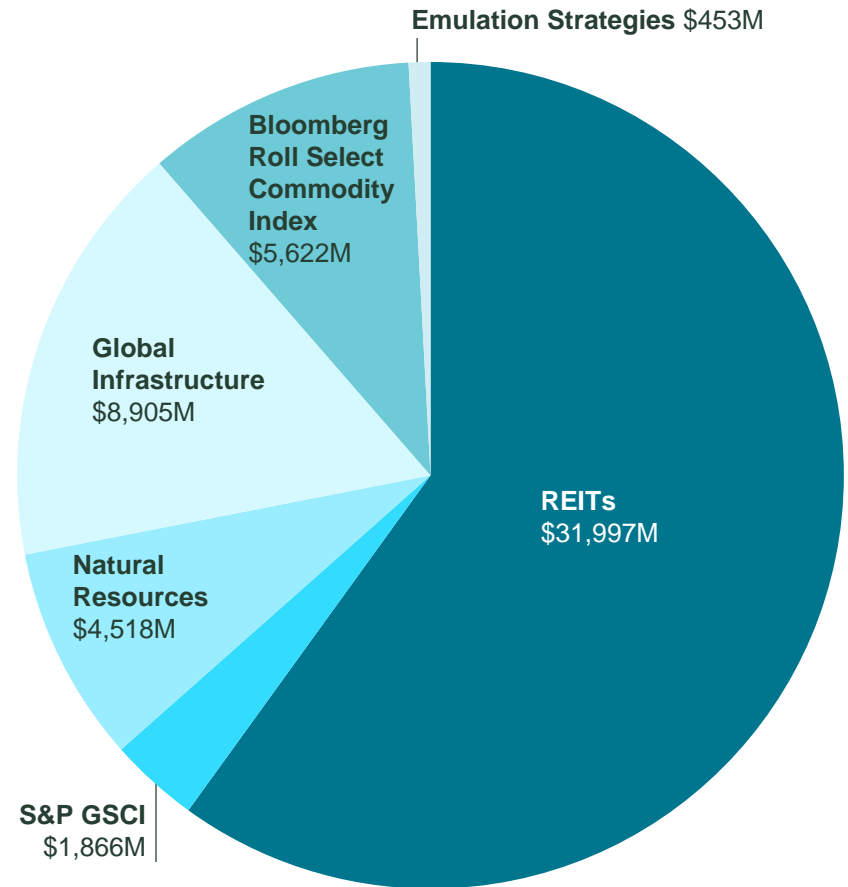
As of 31 December 2019. All figures in USD.

# Alternative Asset Betas

Commodities, REITs & Additional  
Alternative Asset Classes

## \$53,362 Million

AUM as of December 31, 2019



Source: State Street Global Advisors. Data as of December 31, 2019 in USD.

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# Investment Process

# Index Equity Management Techniques

Benchmark returns can be achieved through...

## Replication

Hold all or the majority of securities in the index at approximately market cap weight

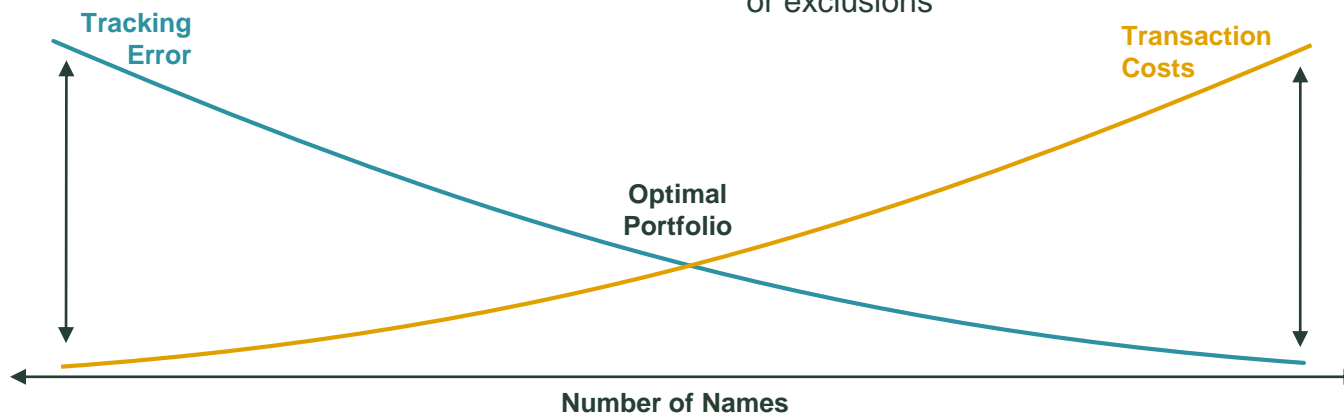
Typically applied to reasonable sized portfolios with minimal liquidity or accessibility constraints (US large cap, Developed markets)

## Optimization

Construct a portfolio with the same risk & return characteristics of the index but with a smaller subset of securities

Typically applied to liquidity constrained portfolios (small cap, Emerging markets) or smaller sized portfolios tracking a broader index

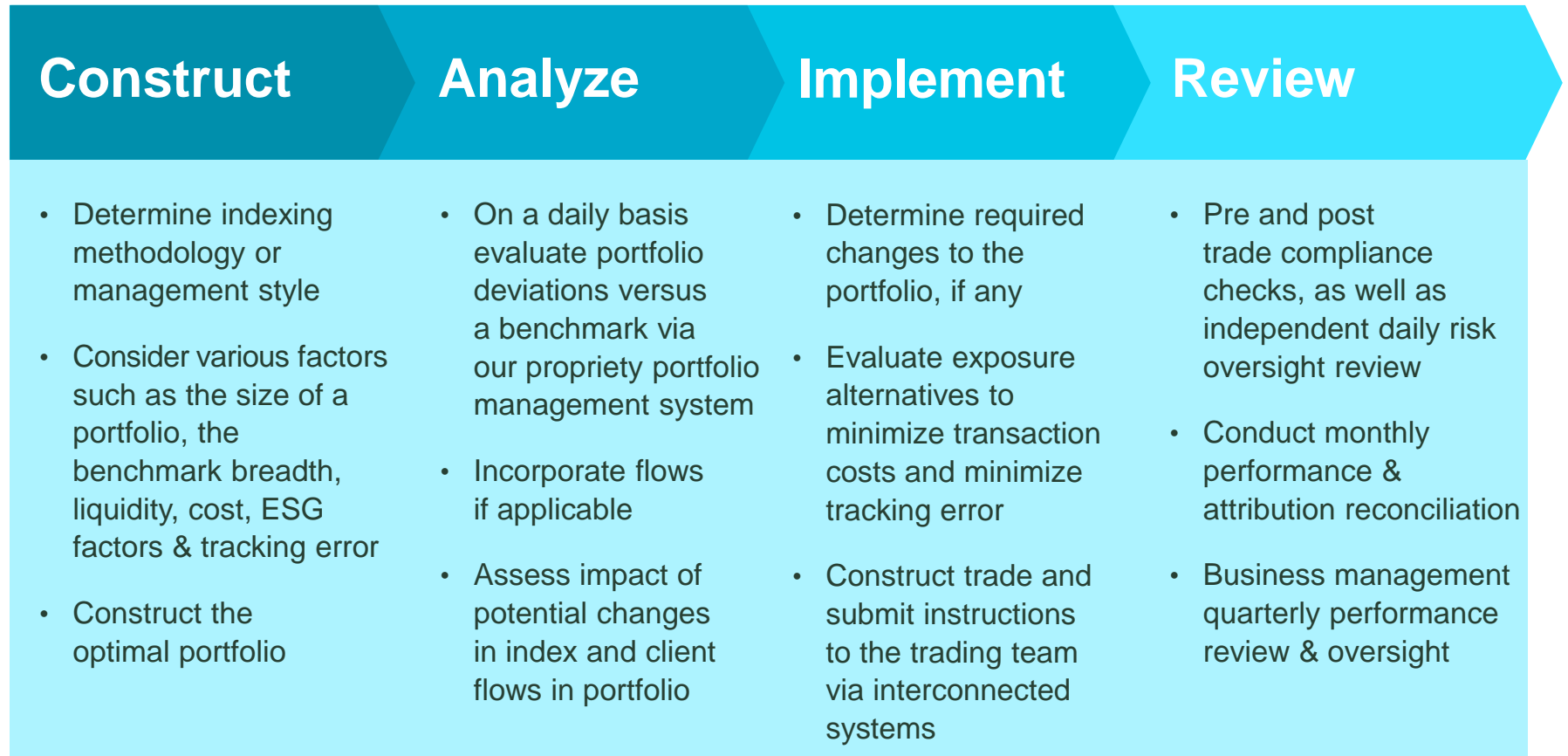
Also applicable to broad portfolios with restrictions or exclusions



The information contained above is for illustrative purposes only.

# Investment Process

A tried and tested process marrying human insight and technology



Source: State Street Global Advisors.



# Improving Risk Controls & Oversight Through Technology

## Features of our portfolio management system:

- Full data integration with other State Street Global Advisors applications and risk/oversight teams
- Designed and customized to our process, workflow and portfolio universe
- Provides a comprehensive portfolio view for portfolio management, as well as risk and oversight
- Dedicated software development resources to ensure continuous development and improvements



Source: State Street Global Advisors.

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# How We Add Value

# Why Choosing The Right Index Manager Matters?

<b>Indexes make numerous assumptions, which can lead to mistracking (+/-), and wealth erosion if not managed with precision and skill</b>	<b>Index Assumptions</b>	<b>Reality</b>
	<b>No transaction costs</b>	Effective implementation techniques can minimize implicit and explicit costs (i.e., internal crossing)
	<b>All trades executed at market on close</b>	Trading strategies can reduce turnover and improve execution
	<b>Dividends reinvested at ex date — before cash received</b>	Equitize cash with futures when possible to minimize cash drag
	<b>Maximum foreign dividend withholding tax rate</b>	Investors realize different withholding tax rates relative to the index, resulting in income via tax reclaims
	<b>Assumed corporate action elections</b>	Multiple options may exist presenting opportunities to add value
	<b>Dividends are the only income source</b>	Income from securities litigation payments or securities lending can help offset negative tracking*

\* Other sources of tracking deviation may include but are not limited to transactions costs, taxes, cash drag, futures tracking versus the benchmark or securities mis-weights.

---

# Adding Value Through Effective Implementation

## Index Reconstitution

Pursue the best outcome for the client

## Portfolio Rebalancing

Be pragmatic  
It doesn't always make sense to trade

## Index Events

Research corporate actions/events to assess impact fully and manage risk

## Trading

Determine the most cost-efficient approach

## Scrip Dividends

Look for the Premium Cash versus stock

## Derivatives

Used to overlay cash and synthesize full exposure to equity markets

## Stock Lending

Can help offset costs and potentially add value

## Core Beta Research

Continuously look for opportunities to improve and evolve implementation

ESG integration/screening to our portfolios.

---

# Implementation Research Leads to Tangible Results

Historical Value Add and Turnover Analysis

Pre Announcement, Identify High Conviction Predictions

Post Announcement, Rebalance Review & Liquidity Analysis

Discussion and Definition of Trading Strategies

Implementation and Review

---

Global Organized Trading (GOT)

Result for Index Rebalances<sup>1</sup>

**2019\*: \$34M+**

Through thoughtful trading we have been able to achieve better trading prices relative to index effective date

Source: State Street Global Advisors, as of December 2019. Figures in USD and approximate.

<sup>1</sup> This represents the aggregate gain/loss for both base and special situations.

\* This includes MSCI, FTSE and S&P events.

# Portfolio Rebalancing: Be Pragmatic

Example: S&P Quarterly Rebalance December 2019

	S&P500 Index	S&P400 Index	S&P600 Index
Rebalance Turnover	0.82%	4.55%	2.09%
Traded	0.46% approx. (Typical State Street Global Advisors S&P500 portfolio)	4.41% (Typical State Street Global Advisors S&P400 portfolio)	1.58% (Typical State Street Global Advisors S&P600 portfolio)
Reduction in Turnover	44%	3%	24%

By monitoring ex-ante tracking closely, we can avoid trading some of the smaller names of a given index rebalance. This **reduces the overall turnover** of a portfolio and also **reduces the transaction costs** associated with it.

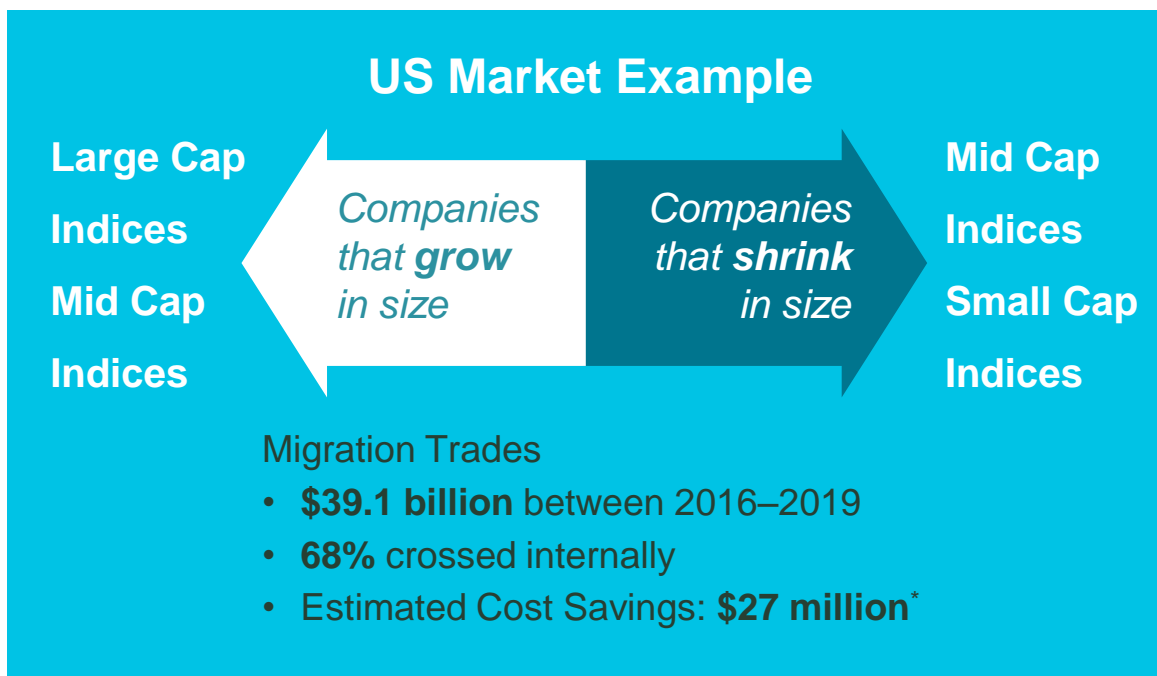
Source: State Street Global Advisors. For illustrative purposes only.

# Minimizing Turnover Through Internal Crossing

## Index Migrations

Companies regularly move between indices

A diverse book of business creates opportunities to reduce transaction costs around index change events



As of December 2019, updated annually. Source: State Street Global Advisors. All figures are in USD. S&P US indices are used in this index migration analysis. Availability of internal crossing at State Street Global Advisors may be affected by your asset class, vehicle type, jurisdiction, or other factors. \* Impact and spread cost estimates are based on calculations provided by vendor tools that specialize in these estimations but are proprietary to the vendor. Commissions, taxes, and other explicit cost estimates are based on standard schedules published within State Street Global Advisors but may vary from the results experienced in actual trading. Savings are calculated by multiplying the estimated market trading costs (ranging from 10 to 20 basis points depending on liquidity type and region) by the relevant trade volume amount. US large cap stocks account for about 64% of the noted savings.

# Russell Reconstitution Trade Crossing

- Turnover due to rebalancing for the annual Russell Reconstitution totaled **\$53 billion** for the combined years 2016–2019
- Over **\$29 billion was crossed internally**. This represents an average crossing rate for the period of **55%**.
- Estimated costs to trade a full slice of US large cap stocks in the open market is 10 bps while it costs about 20 bps for US mid/small cap stocks
- **Savings** passed on to our clients are estimated to be approximately **\$33 million<sup>1</sup>** from 2016-2019

## Russell Index Family

Russell 1000	Russell 2000 Growth
Russell 1000 Growth	Russell 2000 Value
Russell 1000 Value	Russell 3000
Russell 2000	Russell Small Cap

**State Street Global Advisors US  
Russell Assets Under Management<sup>2</sup>:  
\$137B**

Source: State Street Global Advisors. All currency figures in USD. Updated annually. As of June 30, 2019. <sup>1</sup> Availability of internal crossing at State Street Global Advisors may be affected by your asset class, vehicle type, jurisdiction, or other factors. <sup>2</sup> Impact and spread cost estimates are based on calculations provided by vendor tools that specialize in these estimations but are proprietary to the vendor. Commissions, taxes, and other explicit cost estimates are based on standard schedules published within State Street Global Advisors but may vary from the results experienced in actual trading. Savings are calculated by multiplying the estimated market trading costs (ranging from 5 to 20 basis points—depending on liquidity type and region) by the relevant trade volume amount. US large cap stocks account for about 70% of the noted savings.



# Internal Crossing: A Powerful Source of Cost Savings & Liquidity

	Total Value <sup>5</sup>	In-kind <sup>4</sup> /Internal Crossing/ Unit Crossing	Estimated Cost Savings <sup>6</sup>	Transaction Cost Savings <sup>6</sup>
<b>US Market Case Study<sup>1</sup> (2017–2019)</b>	\$155.5 Billion	92% of the Total	0.05% of the Total	<b>\$71.5M</b>
<b>Non-US Developed Case Study<sup>2</sup> (2017–2019)</b>	\$28.4 Billion	72% of the Total	0.20% of the Total	<b>\$40.8M</b>
<b>Emerging Markets Case Study<sup>3</sup> (2017–2019)</b>	\$21.4 Billion	64% of the Total	0.25% of the Total	<b>\$34.5M</b>

Availability of internal crossing at State Street Global Advisors may be affected by your asset class, vehicle type, jurisdiction, or other factors.

<sup>1</sup> Based on actual client order flow trading activity in the S&P 500<sup>®</sup> Defined Contribution Commingled Fund.

<sup>2</sup> Based on actual client order flow trading activity in the Thrice-Monthly EAFE ERISA Commingled Funds.

<sup>3</sup> Based on actual client order flow trading activity in the Thrice-Monthly Emerging Markets ERISA Commingled Funds.

<sup>4</sup> In-kind transfers are redemptions/contributions made via security transfers.

<sup>5</sup> For calendar years 2017–2019. It is not known whether similar results have been achieved after 2019.

<sup>6</sup> This represents estimated average savings across all aggregate trading over the period. These estimates are based on subjective judgments and assumptions and do not reflect the effect of unforeseen economic and market factors on decision making. There is no guarantee that a particular client transaction will experience the same level of savings.

In fact, savings could differ substantially. Any savings is contingent upon other activity taking place on a given transaction day. Had other funds been selected, different results of transaction cost savings may have been achieved. All figures are in USD.

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# Derivatives and Other Exposures

**While the goal is to remain fully invested in stocks & invest locally... it may not be possible or the most pragmatic approach**

## **Index Futures**

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Portfolios hold some residual cash either to accommodate daily cash flows or because of dividend accruals

Futures provide a cost-efficient and liquid way of gaining exposure to the underlying index while minimizing cash drag and trading costs

## **Other Exposures**

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Investing locally is preferred; however, accessibility and cost in some markets can present challenges

ADRs/GDRs or swaps can be used in place of locally listed securities

Source: State Street Global Advisors.

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# Securities Lending: Can Help Offset Costs and Potentially More

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## Securities Lending

Act of loaning a security for a specified period of time to generate additional income

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## Program Overview

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Leading securities lending provider since 1974

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Managed through State Street Securities Finance (SSSF):

- Lendable assets of \$4.2T
  - 153+ borrower relationships
  - Scale & market presence is attractive for high quality borrowers
  - Manages quality of borrowers & collateral diversification
- 

Focus on income generation in a risk controlled manner

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Global coverage across equities and fixed income

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~358 dedicated employees in 30+ international markets

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As of December 31, 2019. Figures in USD. Updated annually. Securities lending programs and the subsequent reinvestment of the posted collateral are subject to a number of risks, including the risk that the value of the investments held in the collateral may decline in value and may at any point be worth less than the original cost of that investment.

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# Current Core Beta Research Agenda

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## Index Analysis

Comprehensive analytics around index rebalances

Analysis of Offerings

Analysis of IPOs

Analysis of Intraday Price Movements on and around Rebalance Dates

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### Goal:

Provide unique and granular insights for our Global Organized Trading (GOT) Strategies

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## Index Predictions

Index prediction models and trading strategies

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### Goal:

Provide additional value add opportunities in a dynamic and ever changing marketplace

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## Trading Strategies

Pairs trading

Extreme passive for factor strategies

---

### Goal:

Continue to innovate and retain a trading edge

---

## Index Construction

Development of core market exposure best-in-class indices

US Indices completed and implemented

Global Indices in progress

---

### Goal:

Support our Self Indexing efforts and our ambition to provide effective choice to investors

Source: State Street Global Advisors, as of 30 June 2019.

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# Why Choose State Street Global Advisors?

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## Indexing Skillfully Delivered

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## Research

Embedded research team delivering innovative solutions — such as factors, ESG and implementation techniques

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## Client Centric Focus

Listen, understand and adapt to client needs and challenges

---

## Performance

Aim to before deliver performance by striking the appropriate balance between return, risk and costs (>98% of funds have consistently\* tracked within expectations)

---

## Team

Tenured and stable team with dedicated portfolio managers

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## Asset Stewardship

Effective steward of client assets with a coordinated firm wide proxy voting platform and focused engagement

Source: State Street Global Advisors. \* Based on cumulative quarterly gross-of-fees returns for all GEBS managed pooled, and separate account for both 3 years and 5 years period ending December 31, 2019. Tracking error based on the difference between portfolio and benchmark cumulative returns.

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# Additional Information

# Index Vehicle Considerations for Institutional Investors — US

	CIT	Segregated Account	ETF	Mutual Fund	Notes
<b>Investor Eligibility</b>	ERISA (DB & DC) & tax exempt entities	All Institutions	All	All	CITs and segregated accounts are not registered products.
<b>Holding Period</b>	Long	Long	Varies by client but typically <1 yr	Long	Institutions may use ETFs for tactical or short term purposes. However, longer term use cases may also apply.
<b>Mandate Size</b>	Some minimum size requirements	Preferably large	No size requirements	No size requirements	Mutual funds may have multiple share classes with different fee and investment minimums.
<b>Relative Price Range</b>	Low to Ultra-Low	Typically High with fee minimums	Ultra-Low to Mid	Low –High (varies by manager/fund)	Effective fee rates vary based on mandate size. However, CITs generally have a lower effective fee rate than other investment vehicles listed.
<b>Ability to Replicate</b>	Yes	Yes — assuming sufficient size	Yes	Yes	Replication may vary by strategy or mandate size. Generally, smaller segregated accounts and/or less liquid exposures may be optimized.
<b>Customization</b>	Possible but limited	Yes	No	No	CITs can be combined to create custom fund of fund structures.
<b>Transaction Costs</b>	Typically Lower	Higher	Typically lower*	Medium	CITs (ex DC funds) isolate t-costs at the individual client level., thus shielding market impact from other participate flows. ETFs can minimize t-costs through the 'create redeem' process.
<b>Account set-up/ Opening &amp; Maintenance</b>	None for existing funds — some legal maintenance	Complex (all)	Purchased on exchange — registered fund	Purchased on exchange — registered fund	Set up time for segregated accounts can be complex and lengthy, particularly in the case of emerging markets. Additional legal attention and documentation are required as well.

\* Frequent trading of ETFs could significantly increase commissions and other costs such that they may offset any savings from low fees or costs.

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# Fixed Income Index Investing



# A Leader in Fixed Income Indexing

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## We Offer Real Breadth and Depth in Fixed Income

- Managing fixed income index strategies for over 30 years
- Over 40 fixed income strategies offered globally
- Investment centres in Boston, London, Singapore, Sydney, and Tokyo

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## Our Heritage is Index Investing

- Over 30 portfolio managers and dedicated trading desk
- Our PMs average more than 15 years of experience
- Expertise across all major regions, currencies and sectors

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## Innovative Client Investment Solutions

- Market-leading research
- Real-world innovations that unlock new markets for investors
- ESG investment solutions

As of 30 September 2019.

# Intelligent Indexing in Fixed Income

## Index Change Strategies

### Minimise Turnover

Pursue the best outcome for the client

## Portfolio Rebalancing

### Be pragmatic

It doesn't always make sense to trade

## Primary Markets

### Look for the premium:

Access liquidity

## Security Selection

Experienced portfolio managers skilfully incorporate relative value in sampling approach

## Trade Execution

### Minimise costs

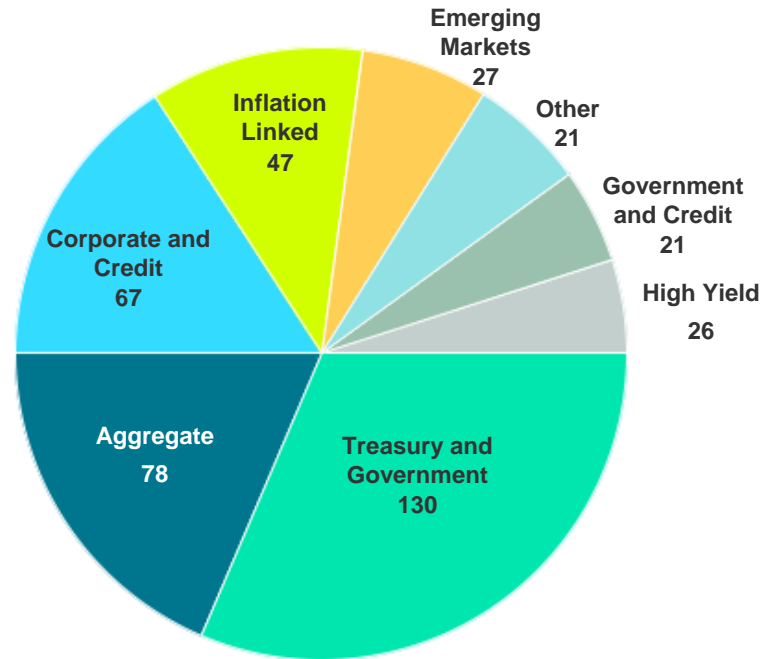
Experienced specialists, global reach and wide broker network

## Minimising Tax Drag

Proactive positioning across taxable strategies (e.g. Emerging Market Debt)

# Indexing by Sector

\$417 Billion Assets Under Management



December 31, 2019

Source: BIG (Fund View), State Street Global Advisors as of Total Assets Under Management (AUM) is for Fixed Income assets managed by the Fixed Income Beta Solutions team only, exclusive of all cash and securities lending assets and fixed income portfolios managed by ISG. All calculations are unaudited and are in USD.

Other includes: indexing accounts with large degrees of customization, Convertible, Securitized and Municipal Indexing Strategies.  
Fixed Income Indexing AUM of US\$ 417 bn is equivalent to: EUR 372 bn ; GBP 314 bn ; CHF 431bn ;(based on Bloomberg FX data as at date shown).

# Research and Innovation

From Early Days						To Present Times		
1993	1996	1999	2004	2005	2009	2011	2016	2018
Creators of the World's First ETFs SPDR®	Launch of Aggregate Index Offering (SPDR ETFs)	First Aggregate Sub-components	US High Yield Indexed Strategy	Indexed Asian Local Bond Strategy (incl. onshore China)	First US Convertible Bond Indexed ETF	<ul style="list-style-type: none"> <li>• First Indexed Local EM Bond Fund</li> <li>• Fixed Income Smart Beta Launch (ISCI)</li> </ul>	Multi-Factor Emerging Markets Bond Strategy	Quality Growth EM Currency Strategy

Important Disclosure: ETFs managed by State Street Global Advisors have the oldest inception dates within the US, Hong Kong, Australia, and Singapore. State Street Global Advisors launched the first ETF in the US on 22 January 1993; launched the first ETF in Hong Kong on 11 November 1999; launched the first ETF in Australia on 24 August 2001; and launched the first ETF in Singapore on 11 April 2002.

# Global Presence — Local Expertise

## US Team

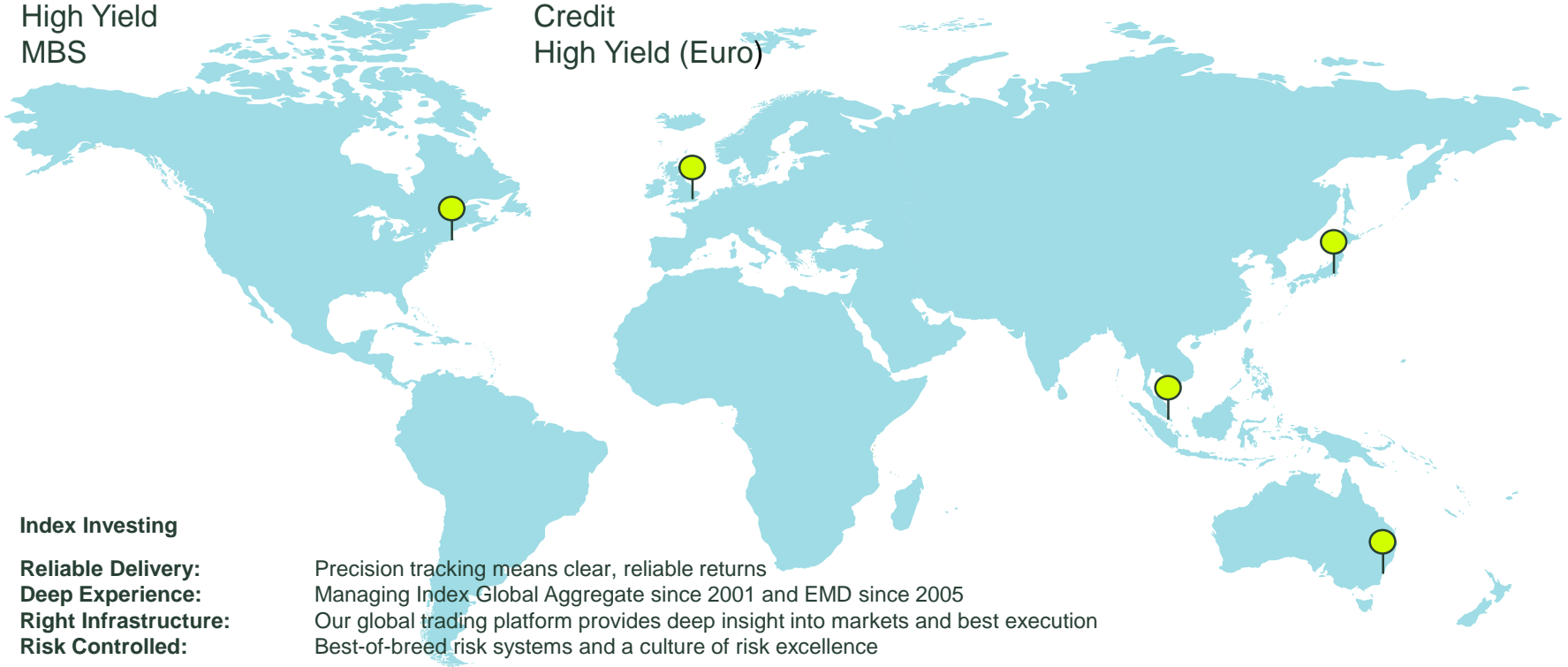
US Aggregate  
Treasury  
Credit  
High Yield  
MBS

## European Team

European & Global Aggregate  
Emerging Market Debt (HC & LC)  
Treasury  
Credit  
High Yield (Euro)

## Asia-Pacific Team

Asian Aggregate  
Treasury  
Credit



### Index Investing

**Reliable Delivery:**  
**Deep Experience:**  
**Right Infrastructure:**  
**Risk Controlled:**

Precision tracking means clear, reliable returns  
Managing Index Global Aggregate since 2001 and EMD since 2005  
Our global trading platform provides deep insight into markets and best execution  
Best-of-breed risk systems and a culture of risk excellence

# Dedicated Fixed Income Professionals Globally

## Global Chief Investment Officer



**Matthew Steinaway,**  
CFA

## Indexed Fixed Income

**Venky Venkataramani, CFA**  
Global Head of Beta Fixed Income

Indexing  
Smart Beta  
Liability Driven Investment  
Buy & Maintain

36 Investment Professionals

## Active Fixed Income

**Matthew Nest, CFA**  
Global Head of Active Fixed Income

Currency Solutions  
Active Rates and Credit  
Multi-sector Fixed Income  
Structured Credit  
Municipals

35 Investment Professionals

## Quantitative Research

**Ramu Thiagarajan, PhD**  
Global Head of Quantitative Research

Data Analytics  
Quantitative Strategy Design  
Model Implementation

11 Investment Professionals

## Cash Management

**Pia McCusker**  
Global Head of Cash Management

Cash Management  
Securities Lending  
Cash & Structured Credit Research  
Enhanced Cash

21 Investment Professionals

13 FI Portfolio Strategists & Specialists

17 Traders  
(11 Fixed Income & 6 FX)

13 FI Investment & Liquidity Risk Professionals

As of 30 September 2019  
CFA® is a trademark of the CFA Institute.

# Specialisation within Fixed Income

## European & Asia Pacific Index Investing Organization

Specialisation provides the insights to manage multiple portfolios and is designed to deliver world-class index solutions and performance



**Stephen Yeats, CFA**

Head of FICC, EMEA



**Peter Spano, CFA**

European Head of Portfolio Management

### Global Rates & Aggregate

Robert Golcher  
Volodymyr Liakh

Diane Gibb

### Credit

Konstantin Nemnov, CFA  
Richard Darby-Dowman

Paul Brown  
Alexis Royer\*

### Emerging Markets

Abhishek Kumar, CFA  
Esther Koon, CFA  
Kheng-Siang Ng, CFA, CAIA

Zhen Li, CFA  
Jonathan Camissar

Source: State Street Global Advisors, as of 30 September 2019.

\* Quantitative Investment Analyst

# Specialization within Fixed Income

## North America Index Investing Organization

Specialization provides the insights to manage multiple portfolios and is designed to deliver world-class index solutions and performance



**Venky Venkataramani, CFA**

Global Head of Fixed Income Index Strategies



**Patrick Bresnehan, CFA**

North America Head of Fixed Income Index Strategies

### Credit

Mike Brunell, CFA  
Brad Sullivan, CFA  
Christopher Distefano  
Kyle Kelly, CFA, FRM

Dave Marchetti, CFA  
Frank Miethe, CFA  
Read Burns  
Christian Hoffmann

### Global Rates

Jim Kramer  
Orhan Imer, PhD, CFA  
Nikita Imenov, PhD, FRM

Cindy Moy  
Joanna Madden

### Securitized

Marc DiCosimo, CFA  
Nic Fischer, CFA  
Mike Przygoda, CFA

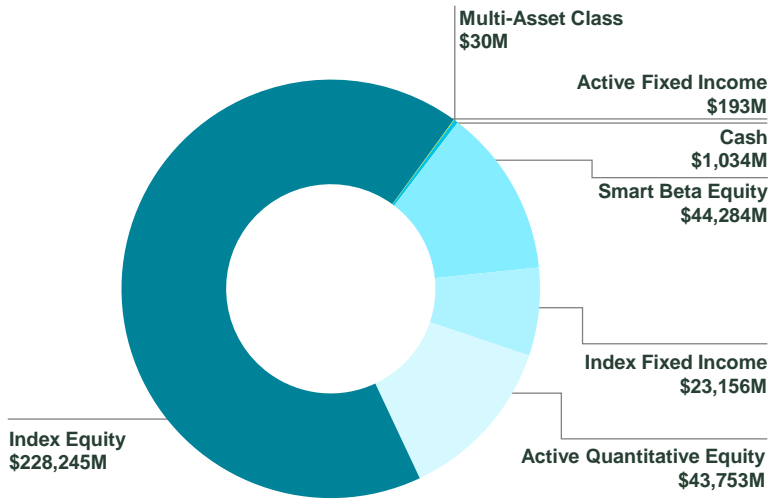
Source: State Street Global Advisors, as of 30 September 2019



# A Formidable Heritage in ESG Investing

**\$341 Billion in ESG Assets Under Management**

As of 30 September 2019



**2012**  
SSGA become signatory to Principles for Responsible Investing  
**1<sup>st</sup> US Green Bond strategy**  
First explicit ESG signal used (active quant equity)

**2014**  
Low carbon ETF launched  
Alpha integration (active quant equity)  
Risk factor integration (fundamental growth equity)

**2015**  
Fossil fuel reserves free ETF launched (equity indexing)  
**Global Green Bond Strategy**

**2016**  
Innovative gender diversity index (exchange traded fund)  
ESG integration (fundamental value equity)

**2017**  
Investor Stewardship Group launched



*Fearless Girl statue highlights commitment to encouraging greater diversity on boards*

**1985**  
First active ESG mandate

**1988**  
First equity index ESG mandate

**1996**  
First fixed income index ESG mandate

**2002**  
First factor-based equity ESG mandate

**2004**  
Inception of SRI exclusionary mandate (AQE)

**2011**  
1<sup>st</sup> Indexed Euro Sustainable Corporate Bond Strategy

## Looking to the future...

- Product development
- Deeper integration
- Enhanced ESG reporting

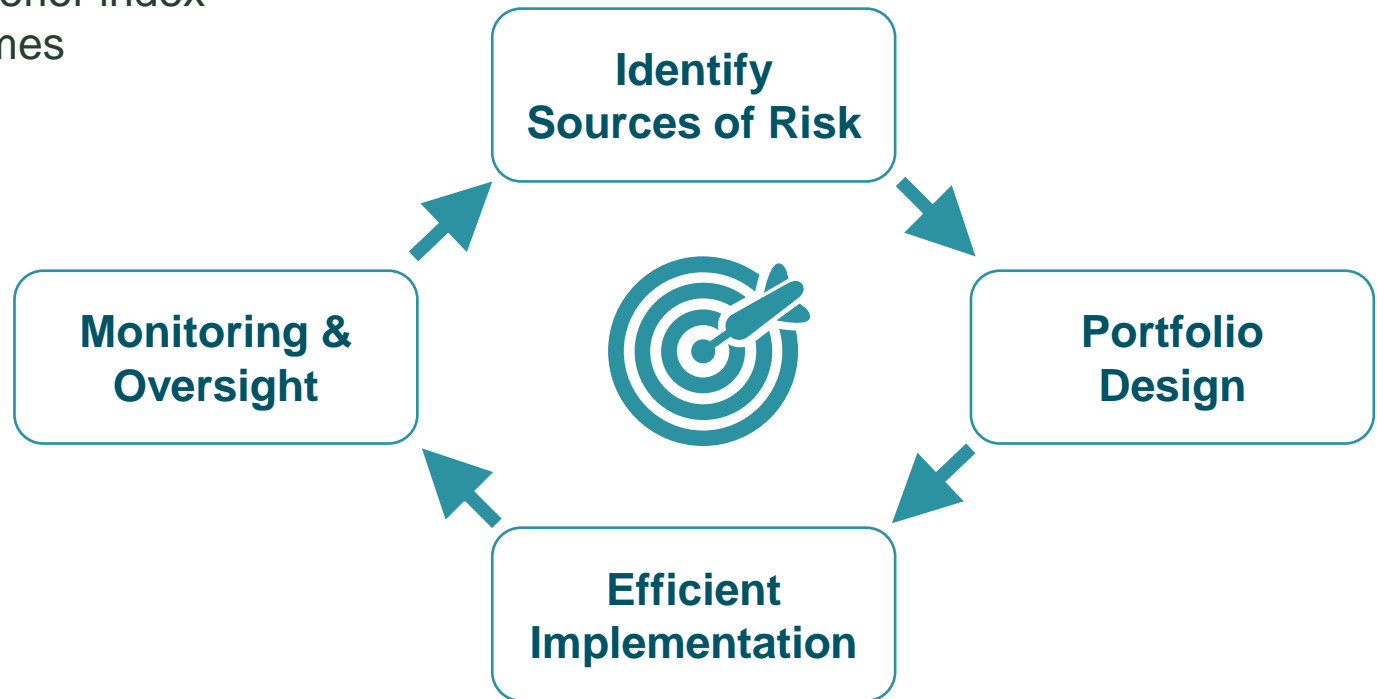
Source: State Street Global Advisors. Figures are in USD. Photo: Sculpture by Kristen Vishal Commissioned by State Street Global Advisors.

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# Index Investment Process

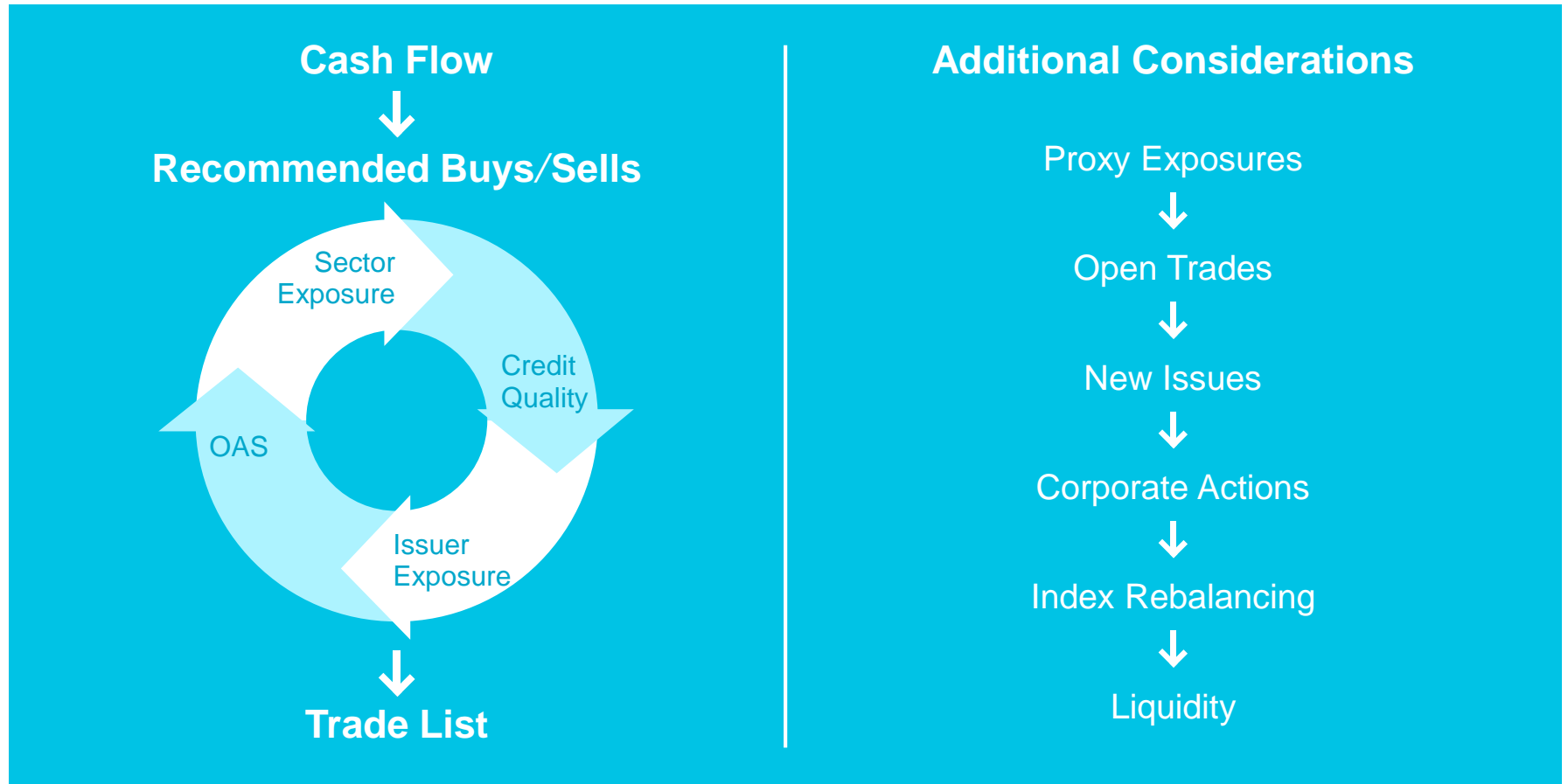
# Index Investment Management Process

- We understand markets
- We manage risks and costs
- Aim to deliver superior index investment outcomes



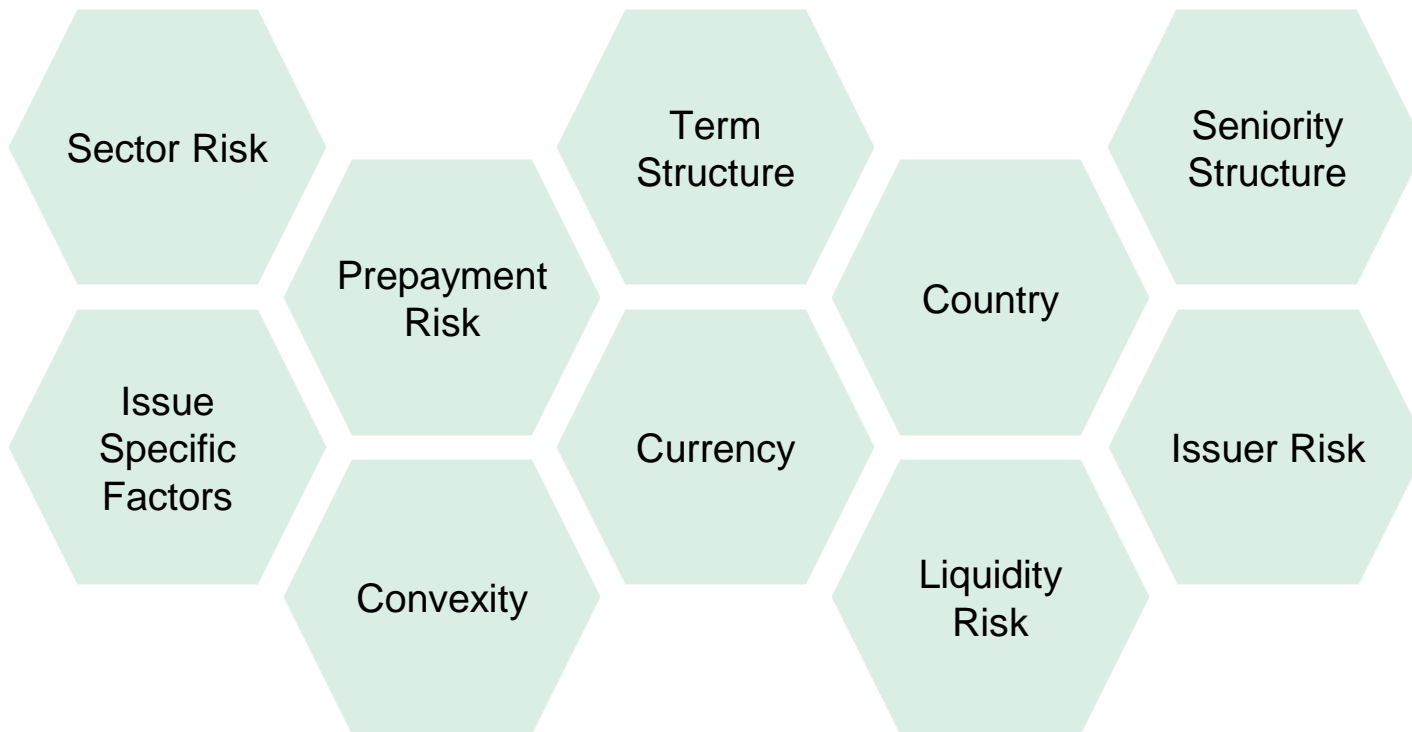
Source: State Street Global Advisors

# Investment Process — Further Considerations



# We Identify Sources of Risk

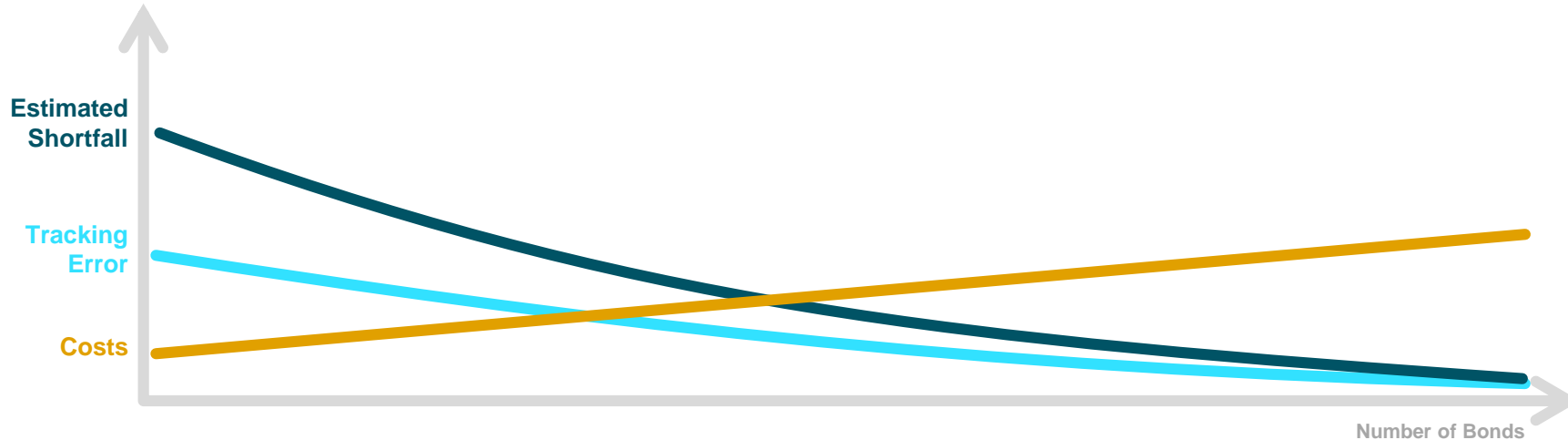
We slice the benchmark into precise risk categories and construct investment portfolios designed to deliver the desired investment outcome.



Source: State Street Global Advisors

# Constructing the Portfolio

Our stratified sampling process has a proven track record of delivering consistent investment outcomes



## From Stratified Sampling

Best for broad investment-grade mandates  
We aim to minimise risk exposures and limit trading costs to achieve consistent tracking error

## To Full Replication

Employed in a small set of indices with highly liquid securities. High transaction costs may increase tracking error for larger indices

The above information is for illustrative purposes only.

# We Trade and Implement Efficiently

## Portfolio Managers Work with Our Dedicated Securitised Trading Desk to Achieve Best Execution

- Centralised trading desk
- Dedicated EMD, Credit and MBS Traders

## Strong Relationship with Major Broker/Dealers

- Leverage our size to achieve superior execution
- Trade in primary and secondary markets
- Adapt trading venue for size, instrument and conditions

## Global Desk In Place For Over 17 Years

**24-hour** trading capabilities, with traders located in Boston, London, and Hong Kong

## 34 Traders Servicing 243 Portfolio Managers Across 10 Investment Centres

**US\$2.5 trillion** notional traded in 2018

## 3.3 Million Tickets Executed Last Year

As of 30 September 2019. Asset classes include equity, fixed income, futures and currency Fixed Income figures include activity under Boston and London desks only.

# Fixed Income Trading Cost Savings

Our trading platform has an established history of efficient trade execution. Between 2008-2012 SSGA was hired by the US Department of Treasury to assist with the Agency MBS Purchase Program. SSGA was one of two managers hired to purchase \$118bn of agency MBS, and sole manager to assist Treasury in selling \$134bn back to the private sector. Our recent trading accomplishments include the following:

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## Sep 2018: US High Yield Credit Inflow

\$540 million traded over two days for a pension fund. Actual trading cost was 17.5bps versus projected cost of 40bps.

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## Apr 2018: Emerging Market Debt Inflow

\$260 million traded over four days for a pension fund. Actual trading cost was 3.7bps versus projected trading cost of 13bps.

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## Jun 2018: European Credit

\$450 million euro and sterling credit traded over two days for a foreign banking company. Total trading cost was 11bps versus indicated cost of 35bps.

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## Feb 2019: US Investment Grade Intermediate Credit Inflow

\$255 million traded on a single day for a pension fund. Actual trading cost was 8bps versus projected cost of 20bps.

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## Feb 2019: 1–3 Year US Treasury

\$3.7 billion was sold in a single day for a state retirement plan. Trading over the day added almost 1bp to the account vs estimated 1–2bps in cost.

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## Feb 2019: Active Portfolio Implementation

On the same day for the same retirement plan, \$2.2 billion in securities were purchased for a custom active strategy, adding 3bps relative to 3–7bps in estimated costs

Source: SSGA as of 30 September 2019



# Interconnected Functions Improve Control and Oversight



## Proprietary PM System

- Designed and built around our portfolio management process and workflow
- Comprehensive view of portfolios
- Full data integration with other SSGA applications
- Continuous development and improvements

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# What We Deliver

Fixed Income Index Investing | **Conclusions**

Fixed income  
business  
with **proven**  
**track record**

**Expertise**  
across all  
major regions,  
currencies  
and sectors

Managed  
by an  
**experienced**  
**team** within a  
**disciplined**  
**framework**

**Investment**  
**innovation**  
unlocks new  
markets and  
strategies

Emphasis on  
**collaboration**  
to support  
clients in  
achieving the  
desired  
outcome

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# Appendix A: Important Disclosures

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# Important Risk Disclosure

Investing involves risk including the risk of loss of principal.

Past performance is not an indicator of future results. Diversification does not ensure a profit or guarantee against loss.

The whole or any part of this work may not be reproduced, copied or transmitted or any of its contents disclosed to third parties without SSGA's express written consent.

The information provided does not constitute investment advice and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell a security. It does not take into account any investor's particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor.

All information has been obtained from sources believed to be reliable, but its accuracy is not guaranteed. There is no representation or warranty as to the current accuracy, reliability or completeness of, nor liability for, decisions based on such information and it should not be relied on as such.

Equity securities are volatile and can decline significantly in response to broad market and economic conditions.

Indexing strategies are managed with a passive investment strategy, attempting to track the performance of an unmanaged index of securities. As a result, indexing strategies may hold constituent securities of the Index regardless of the current or projected performance of a specific security, which could cause their return to be lower than if they employed an active strategy. While the strategy seeks to track the performance of the Index as closely as possible, its return may not match or achieve a high degree of correlation with the return of the Index due to operating expenses, transaction costs, cash flows and operational inefficiencies.

Foreign investments involve greater risks than US investments, including political and economic risks and the risk of currency fluctuations all of which may be magnified in emerging markets. Investing in foreign domiciled securities may involve risk of capital loss from unfavourable fluctuation in currency values, withholding taxes, from differences in generally accepted accounting principles or from economic or political instability in other nations. Investments in emerging or developing markets may be more volatile and less liquid than investing in developed markets and may involve exposure to economic structures that are generally less diverse and mature and to political systems which have less stability than those of more developed countries.

Currency Risk is a form of risk that arises from the change in price of one currency against another. Whenever investors or companies have assets or business operations across national borders, they face currency risk if their positions are not hedged.

Investing in futures is highly risky. Futures positions are considered highly leveraged because the initial margins are significantly smaller than the cash value of the contracts. There are a number of risks associated with futures investing including but not limited to counterparty credit risk, basis risk, currency risk, derivatives risk, foreign issuer exposure risk, sector concentration risk, leveraging and liquidity risks.

Derivative investments may involve risks such as potential illiquidity of the markets and additional risk of loss of principal.

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This document contains certain statements that may be deemed forward-looking statements. Please note that any such statements are not guarantees of any future performance and actual results or developments may differ materially from those projected.

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# Important Risk Disclosure

Bonds generally present less short term risk and volatility than stocks, but contain interest rate risk (as interest rates rise bond prices usually fall); issuer default risk; issuer credit risk; liquidity risk; and inflation risk. These effects are usually pronounced for longer-term securities. Any fixed income security sold or redeemed prior to maturity may be subject to a substantial gain or loss.

Investing in high yield fixed income securities, otherwise known as "junk bonds", is considered speculative and involves greater risk of loss of principal and interest than investing in investment grade fixed income securities. These Lower-quality debt securities involve greater risk of default or price changes due to potential changes in the credit quality of the issuer.

Government bonds and corporate bonds generally have more moderate short-term price fluctuations than stocks, but provide lower potential long term returns.

ETFs trade like stocks, are subject to investment risk, fluctuate in market value and may trade at prices above or below the ETFs net asset value. Brokerage commissions and ETF expenses will reduce returns.

Passively managed funds invest by sampling the index, holding a range of securities that, in the aggregate, approximates the full Index in terms of key risk factors and other characteristics. This may cause the fund to experience tracking errors relative to performance of the index.

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Web: [www.ssga.com](http://www.ssga.com)

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# Appendix B: Biographies

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# Biographies



## Patrick Bresnehan, CFA

Patrick is a Managing Director and North America Head of the Fixed Income Beta Solutions team at State Street Global Advisors. In his role, he oversees a team of portfolio managers providing clients with a broad range of fixed income index strategies including SPDR ETFs, institutional separate accounts and commingled funds.

Prior to joining SSGA, Patrick was a Director and Senior Portfolio Manager at PanAgora Asset Management and managed multi-asset class quantitative strategies within the firm's Macro-Strategies Group. Preceding this, he was a Senior Vice President at Fleet Investment Advisors responsible for a team managing investment-grade strategies for institutional clients. Patrick began his investment management career as a Fixed Income Portfolio Manager at Scudder, Stevens and Clark, Inc.

Patrick received a BA in Economics from Norwich University and an MS in Finance from the Carroll School of Management at Boston College. He has earned the Chartered Financial Analyst designation and is a member of the CFA Institute and Boston Security Analysts Society. He also holds the FINRA Series 3 license.



## Taylor Famiglietti, CAIA

Taylor is a Client Relationship Manager at State Street Global Advisors in the Institutional Client Group. In this role, he is responsible for managing institutional client relationships located throughout the United States.

Prior to his current role, Taylor served as a Senior Client Service Manager on the ISG OCIO team. Prior to that, Taylor served as a Client Implementation Officer in the Client Implementation team at SSGA.

Prior to joining SSGA in 2007, Taylor worked in various fund accounting divisions at JP Morgan and State Street Bank & Trust.

Taylor earned a Bachelor of Arts from Eckerd College and a Masters in International Business from Florida International University. He has earned the Chartered Retirement Plans Specialist® designation and the Chartered Alternative Investment Analyst® designation. He is a member of the CAIA® Association. Taylor also holds the FINRA Series 3, 7 and 63 registrations.

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# Biographies



## **Michael Feehily, CFA**

Mike is a Senior Managing Director and the Head of Global Equity Beta Solutions in the Americas. He is also a member of the Senior Leadership Team and is a voting member on the firm's Trade Management Oversight Committee and the North America Product Committee.

Mike rejoined SSGA in 2010 after spending four years in State Street Global Markets where he helped to build the Global Exposure Solutions business. This group created and managed portfolios that were designed to meet the short-term market exposure needs of our institutional clients. Prior to this Mike had been Head of the US Passive Equity Team within SSGA, which he originally joined in 1997. He began his career at State Street within the Global Services division in 1992.

Mike received a Bachelor of Science Degree from Babson College in Finance, Investments, and Economics. He received an MBA in Finance from Bentley College and also earned the Chartered Financial Analyst designation. He is a member of the CFA Institute and the Boston Security Analysts Society. Mike is also a former member of the Russell Index Client Advisory Board.



## **Matthew Steinaway, CFA**

Matthew Steinaway is a Senior Managing Director of State Street Global Advisors and is the Chief Investment Officer of the firm's Global Fixed Income, Currency and Cash Group. In this role, he oversees a team of approximately 120 professionals managing more than US\$823BN of assets across active, smart beta and passive strategies for fixed income, cash and currency portfolios. Matt joined the company in 2003 and has more than 25 years of credit and investment experience. He is also a member of State Street Global Advisors' Executive Management Group and Investment Committee.

Prior to his current role, Matt was the Chief Risk Officer for State Street Global Advisors where he was responsible for all investment, credit, and operational risks across State Street Global Advisors' global investment platform. He also previously was the Head of Global Cash Management, where he oversaw the global investment activities of short duration and money investment strategies and has served in leadership roles in the firm's Cash and Fixed Income research efforts.

Matt has a BA in Philosophy from Saint Anselm College, graduated with an MBA from Bentley College and has earned the Chartered Financial Analyst designation.