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Infrastructure

Real Perspectives on an Evolving Asset Class

This webinar will begin at 10 am PDT

March 21, 2018

Mark Andersen
Trust Advisory Group

Jan Mende
Real Assets Consulting

Brianne Weymouth, CAIA
Fund Sponsor Consulting

About the Presenters



Mark Andersen is a Senior Vice President in Callan's Trust Advisory Group (TAG), where he is responsible for asset allocation, manager structure, and general investment research for discretionary portfolios. He also supports firm-wide research on liquid alternatives, multi-asset, and real asset investments, and serves as a portfolio strategist. Mark is a member of Callan's Defined Contribution, and Alternatives Review Committees and is a shareholder of the firm.



Jan Mende is a Senior Vice President in Callan's Real Assets Consulting group. She is responsible for strategic planning, implementation, and performance oversight of plan sponsor clients' real assets portfolios. Her role includes the evaluation of managers and their respective real estate products for plan sponsor clients. This due diligence process includes meeting and coordinating with investment managers regarding various strategies, investment processes, track records and organizational structures. Jan focuses on infrastructure and Asian real estate research.



Brianne R. Weymouth, CAIA, is a Senior Vice President in Callan's Chicago Fund Sponsor Consulting office. She works with a variety of fund sponsor clients, including corporate defined benefit and defined contribution plans, public plans, endowments, and foundations. Her client responsibilities include strategic planning and implementation, investment manager reviews, performance evaluation, continuing education and the coordination of special projects. She is a member of Callan's Alternatives Review, Manager Search and its Emerging and Minority, Women, or Disabled-owned Managers committees. Brianne is a shareholder of the firm.

Roadmap

- **The Infrastructure Investment Opportunity**
- The Infrastructure Landscape
- Access Point: Listed
- Access Point: Unlisted
- How it fits in a Portfolio

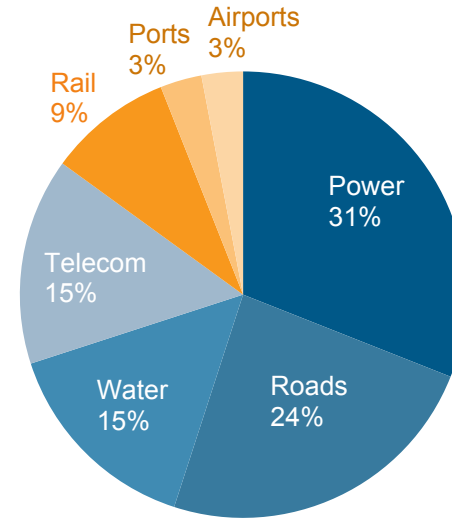


State of Global Infrastructure

\$3.3 trillion of global annual investment is required—only \$2.5 trillion is being invested

- Since 2009, infrastructure declined as a share of GDP in 11 of the G20 economies
- Public-private partnerships only account for 5-10% of total investment
- \$1 of infrastructure investment can raise GDP by 20 cents by increasing employment (construction) and ultimately productivity

Investment Required (2016-2030)

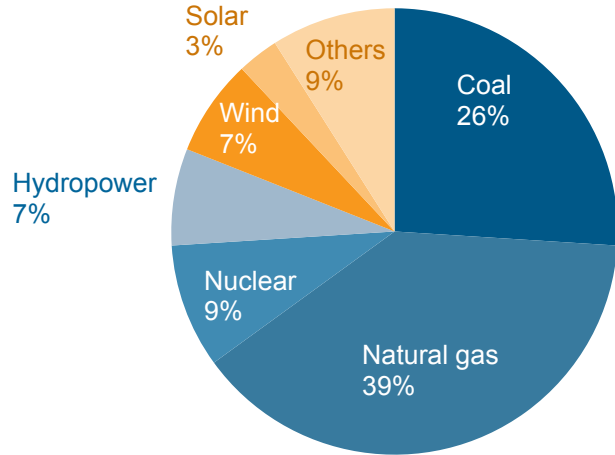


Source: McKinsey Bridging Global Infrastructure Gaps, Full Report June 2016

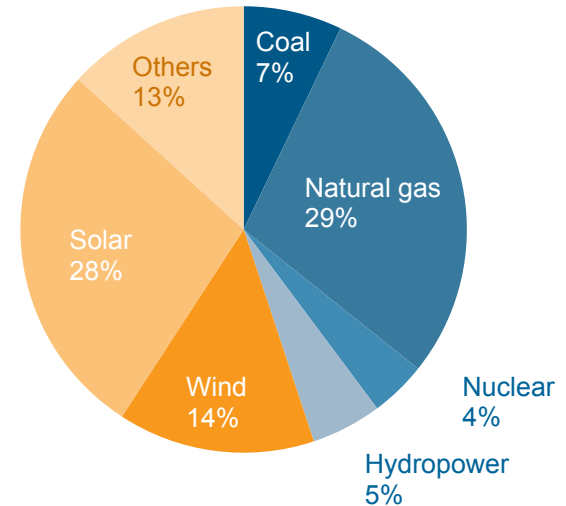
Expected Changes to U.S. Energy Mix

U.S. energy mix is changing rapidly ... wind and solar may account for 40% by 2040

2015 power mix



2040 power mix



Source: Bloomberg New Energy Finance, New Energy Outlook (2016, p.19)

Year-to-Date 2018 Infrastructure Headlines in the U.S.



Legislative Outline for Rebuilding Infrastructure in America

THE WHITE HOUSE

REBUILD AMERICA'S Infrastructure

BY THE NUMBERS

✓ **\$200 Billion**
INFRASTRUCTURE FUNDING

✓ **\$15 Billion**
FOR TRANSFORMATIVE PROJECTS

✓ **8 Year Reduction**
IN PERMIT PROCESS TIME

✓ **\$100 Billion**
FOR LOCAL PRIORITIZATION OF
INFRASTRUCTURE NEEDS

✓ **\$25 Billion**
FOR RURAL INFRASTRUCTURE

✓ **1 Million Apprentices**
IN 2 YEARS

**Florida Power & Light
brings 4 new solar plants
online, retires coal facility**

**Maryland receives 27 responses for
\$9b highway expansion project**

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Key Characteristics of Infrastructure Assets

- Hard asset
- Provides essential economic or social services
- Monopolistic or near-monopolistic in nature
- High barriers to entry
- Low demand elasticity
- Long-life assets
- Stable cash flow
- Illiquid underlying assets
- High leverage



Relative Risk by Sector

	Lower		Higher
Utilities and Energy	<ul style="list-style-type: none"> Regulated utilities Brownfield renewable energy projects Electricity transmission lines Select gas pipelines 	<ul style="list-style-type: none"> Storage facilities Gathering networks Greenfield renewable energy projects 	<ul style="list-style-type: none"> Refining Non-contracted greenfield pipelines Gathering and processing systems Fractioning
Transportation	<ul style="list-style-type: none"> Availability contracted roads Brownfield roads 	<ul style="list-style-type: none"> Greenfield roads Airports Seaports 	<ul style="list-style-type: none"> Roads with GDP-linked revenue Ferries Parking
Communications		<ul style="list-style-type: none"> Towers Fiber 	<ul style="list-style-type: none"> Communication services Data centers
Social	<ul style="list-style-type: none"> Public Private Partnerships (e.g. schools, detention centers, judicial facilities) 		

What is the Driver for U.S. Infrastructure Investment Today?

Aging Infrastructure, Renewable Energy Targets and U.S. Energy Discoveries

Sector	Demand driver	Infrastructure type
Energy	Development of gas and shale resources in the U.S.	Mid-stream energy assets related transmission and storage
Power	Trend for reduced carbon emissions and non-nuclear power	Wind, solar, hydro, geothermal power Energy storage
Transportation	Increased demand, historic underinvestment and aging infrastructure	Airports, seaports, rail and roadways
Water	Increased demand, historic underinvestment and aging infrastructure	Water utilities, wastewater systems
Communications	Increased demand with new technology	Telecom, fiber optic, cellphone towers
Social	Insufficient municipal budgets	Healthcare, judicial, education facilities Public Private Partnerships (PPP or P3)

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Definitions: Listed vs Unlisted

- Listed

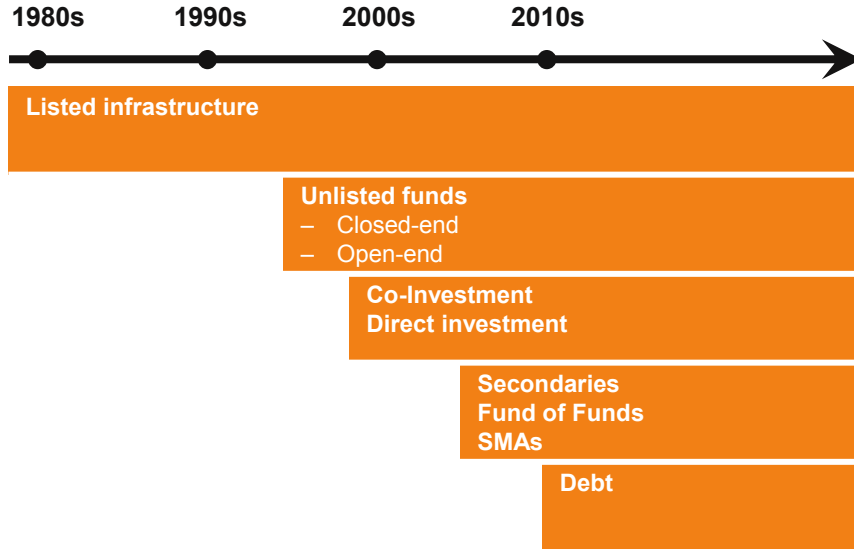
- Investments in public markets companies
- Separate accounts and commingled products

- Unlisted

- Investments made through private managers into infrastructure assets
- Open and closed-end, commingled fund structures

Development of Infrastructure Investment Options

Market development



Various strategies ...



Infrastructure

Listed vs Unlisted Investments

Listed Infrastructure Investments

- Consists of publicly traded stocks of companies engaged in infrastructure-related activities
- Economic infrastructure rather than social infrastructure
- Emphasis on appreciation

Strengths

- Quickly and easily assembled
- Liquidity
- Flexibility

Weaknesses

- Shares volatility of equity markets
- Higher emphasis on capital gains rather than income
- Appropriate benchmark undefined

Unlisted Infrastructure Investments

- Asset level investments
- Leverage can range from 20-75%+ on an asset level, generally less than 60% on an overall portfolio level
- Emphasis on income or appreciation depending on strategy

Strengths

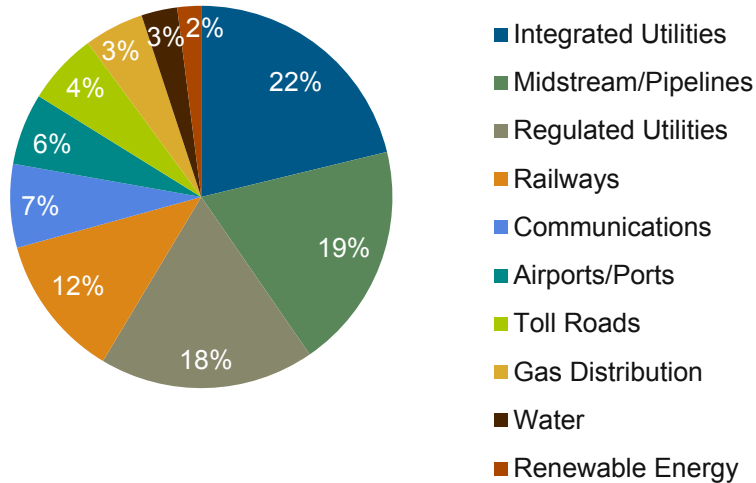
- Cashflows may be very durable and backed by stable offtake contracts, with a measure of inflation linkage
- Assets may be highly monopolistic
- Appraisal-based valuations thus reduced price volatility

Weaknesses

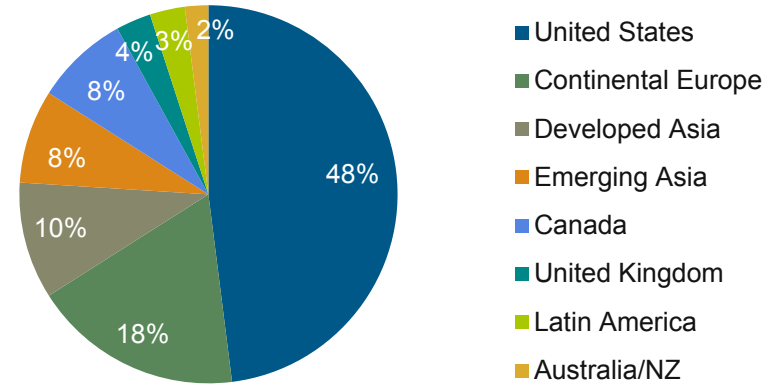
- Diversification may be challenging due to large asset sizes
- Long hold periods, exit strategy may be unclear
- Appropriate benchmark undefined

Listed Infrastructure Market Capitalization (\$3.6 Trillion)

By Sector



By Region



Source: CBRE Clarion Securities, September 30, 2017

Listed Infrastructure Manager Universe

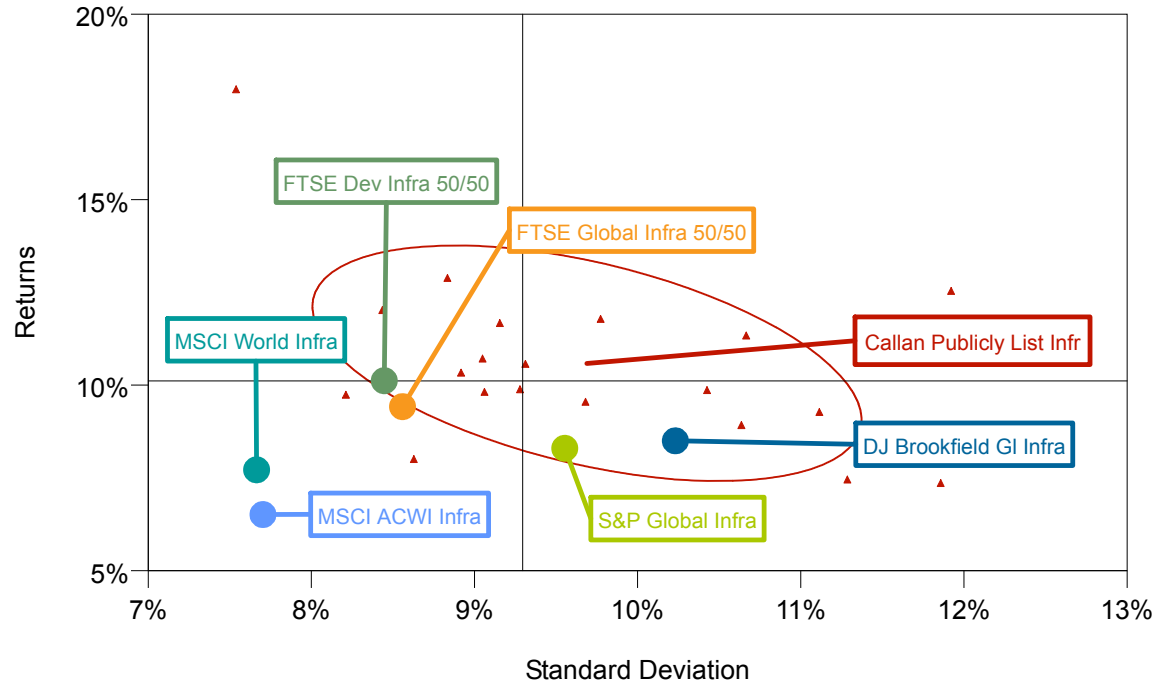
- There are roughly 20 established listed infrastructure managers targeting U.S. institutional investors
- A few manager created products in the early 2000s. Material product growth post global financial crisis
- Infrastructure assets under management for these platforms range up to nearly \$15 billion
- Fees range from 0.60% to 0.85% depending on account size
- Most managers offer separate accounts or commingled fund vehicle options. Separate account minimums range from \$25 - \$100 million
- Roughly half of the fund universe is benchmark agnostic

Sample Infrastructure Managers		
AMP	First State Investments	Maple-Brown
Brookfield Investment Management	Franklin Templeton	Morgan Stanley Investment Management
CBRE	Lazard Asset Management	Nuveen
Cohen & Steers	Macquarie Capital Investment Management	RARE Infrastructure
Deutsche Bank	Magellan Asset Management	Wellington Management Company

Listed Infrastructure Manager Universe

- Wide dispersion of returns and volatility
- Universe definition is critical
- Sector exposures and caps vary widely
- Emerging Markets weight can approach 15%
- About 20 managers, up from roughly 8 pre-GFC, representing over \$70 billion

Returns vs. Volatility for 5 Years ended December 31, 2017



Popular Listed Infrastructure Benchmarks

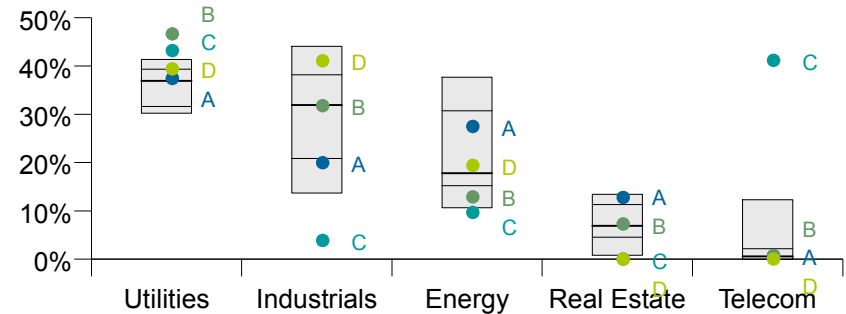
	Dow Jones Brookfield Infrastructure	FTSE Developed Infra Capped 50/50	FTSE Global Core Infra Capped 50/50	MSCI ACWI Infrastructure	MSCI World Infrastructure	S&P Global Infrastructure
Holdings	102	149	226	253	149	73
Individual Holding Cap	None	5%	5%	None	None	5%
Regional Breakdown						
North America	61%	62%	59%	48%	56%	46%
Europe	27%	21%	16%	25%	29%	34%
Japan	1%	5%	5%	7%	9%	0%
Pacific Rim	7%	12%	9%	6%	6%	12%
Emerging Markets	5%	1%	12%	15%	0%	8%
Sector Breakdown						
Utilities	37%	47%	47%	40%	43%	39%
Industrials	20%	32%	32%	5%	4%	41%
Energy	28%	13%	13%	9%	10%	19%
Real Estate	13%	7%	7%	0%	0%	0%
Telecom	1%	1%	1%	43%	41%	0%
Health Care	0%	0%	0%	2%	2%	0%
Consumer Discretionary	1%	1%	1%	1%	0%	0%

Data as of 12/31/2017

Listed Infrastructure Benchmarking

- Index methodologies vary widely across providers
- Much of the manager universe invests with only modest attention paid to index positioning
- Understanding strategy philosophy and methodology is key in performance monitoring

Sector Allocations – December 31, 2017 Group: Callan Publicly List Infr

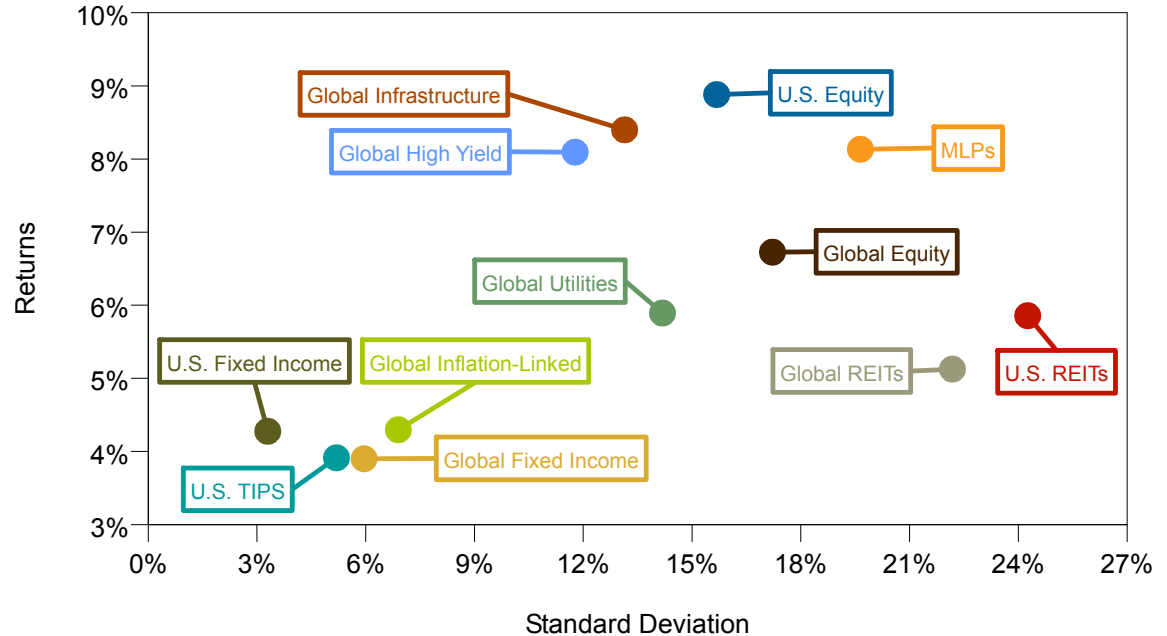


	Utilities	Industrials	Energy	Real Estate	Telecom
25th Percentile	39.4	38.2	30.7	11.3	2.2
Median	37.0	31.9	17.8	6.9	0.6
75th Percentile	31.7	20.9	15.2	4.6	0.0
DJ Brookfield Global Infra ● A	37.5	20.0	27.5	12.8	0.7
FTSE Dev Infra 50/50 ● B	46.7	31.8	12.9	7.3	0.7
MSCI World Infrastructure ● C	43.2	3.9	9.7	0.0	41.2
S&P Global Infra ● D	39.5	41.1	19.4	0.0	0.0

Listed Infrastructure vs Other Asset Classes

- Global Listed Infrastructure has performed well relative to broad asset classes as well as other listed real assets
- Equity volatility is clearly to be expected; albeit at the lower end of other broad and inflation sensitive equities

Returns vs. Volatility – Various Asset Classes
12 Years Ended December 31, 2017



Listed Infrastructure vs Other Asset Classes

- Listed Infrastructure has exhibited reasonable diversification benefits relative to other key asset classes
- Relative to broad equities, diversification benefits are modest; however, Listed Infrastructure does provide valuable diversification relative to other inflation sensitive asset types

Correlation with FTSE Developed Infrastructure 50/50 for 12 Years ended December 31, 2017

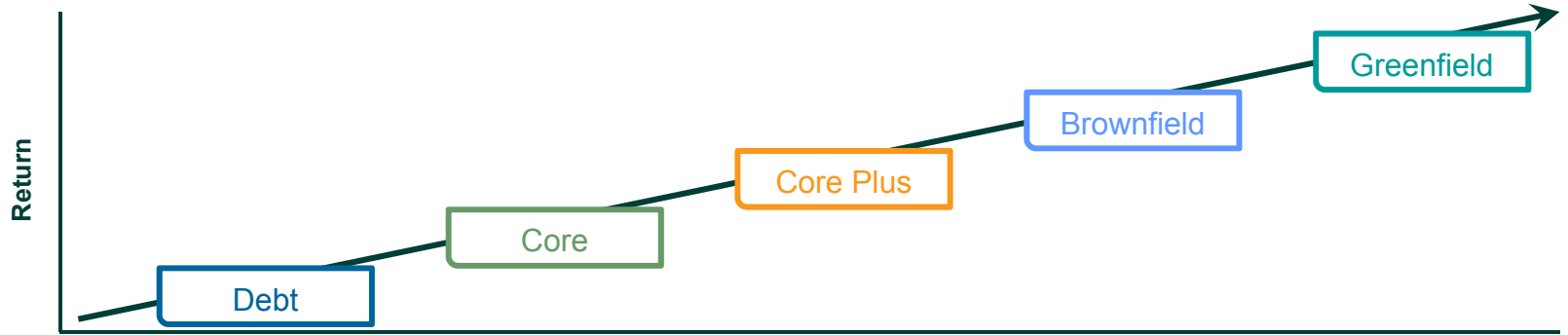
FTSE Developed Infrastructure 50/50	1.00
U.S. Fixed Income	0.31
Global Fixed Income	0.54
Global High Yield	0.70
Global Equity	0.84
U.S. Equity	0.79
U.S. TIPS	0.38
Global Inflation-Linked	0.63
MLPs	0.55
Global REITs	0.80
Global Natural Resources	0.69
Global Utilities	0.92
CPI-U	0.10

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Unlisted Infrastructure – Relative Risk/Return



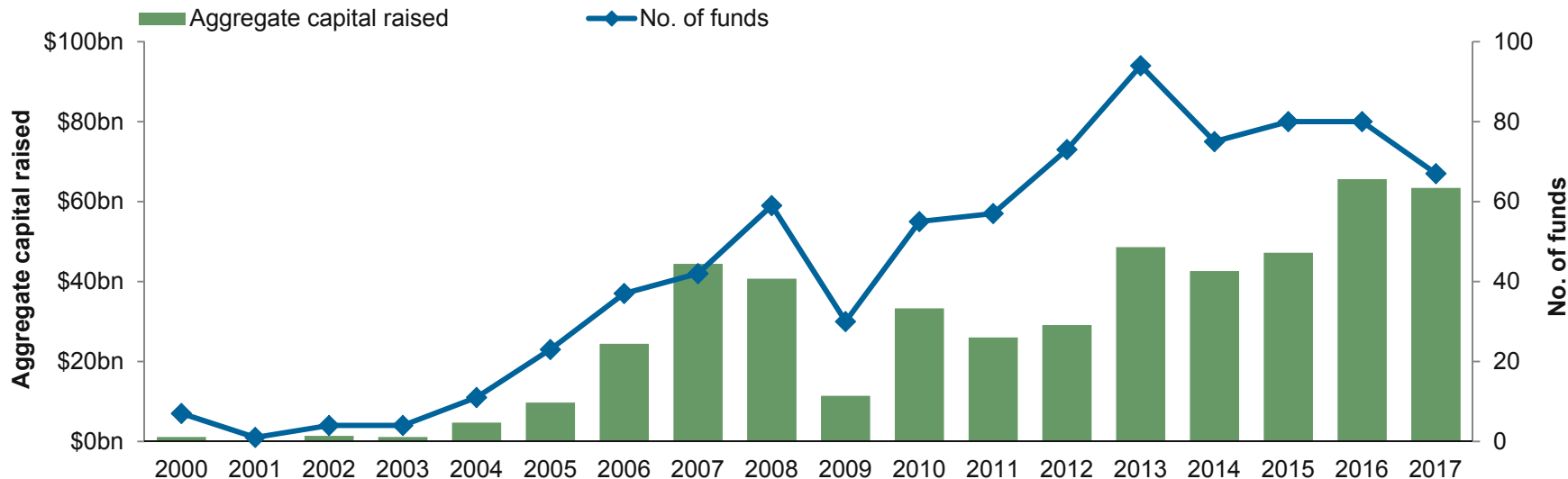
	Risk				
	Debt	Core	Core Plus	Brownfield	Greenfield
Net Return estimate	Typically 3-5% over a fixed rate such as LIBOR	5-7%	8-10%	10-12%	13%+
Asset	Asset level Corporate level	Stable asset	Existing asset	Enhancement of existing asset	Development of a new asset
Cash flow to investors	Interest payments	Regular distributions from operating cash flow	Semi-regular distributions from operating cash flow	Cash flow may be reinvested into the assets and not paid to investors until the enhancement is complete	No cash flow during the development of the asset, which may take 3-10 years depending on the type of asset and complexity to develop
Real Estate Equivalent	Debt	Core	Core plus	Value-add	Opportunistic

Unlisted Infrastructure: Closed-End vs Open-End Funds

	Closed-End	Open-End
Strategic consistency	Manager typically states its strategic focus and associated targets once , at fund's inception	The manager of a perpetual structure may restate strategy and targets through the reissuance of updated private placement memoranda
Fees	Range from 1.25-1.75% on commitments, then invested capital Incentive fees accrue with strong performance	Range from .75-1.00%, based on investor NAV Performance hurdles and incentive fees may apply
Target Returns	Typically 10-12% net IRR, or higher for some strategies Income return more likely after four or five years post-investment	Range from 8-12% net p.a. over the cycles Income is a significant component of return from the start
Investment discipline	The fixed timeline biases the manager to select assets it can improve over the stated investment period	The manager is never forced to sell assets which may be irreplaceable, but may elect to exit less attractive assets
Liquidity	Fund terms generally range from 10 to 12 years, with several additional years of extensions available to the manager A growing secondary market for closed-end funds may permit investors to exit a closed-end fund before the end of that fund	Periodic (often quarterly) liquidity provides greater flexibility Fund liquidity is only as good as the liquidity of the underlying assets or ability of the manager to attract new commitments

Unlisted Infrastructure Fundraising Trends – \$60+ billion raised in both 2016 & 2017

Mega funds are increasingly large

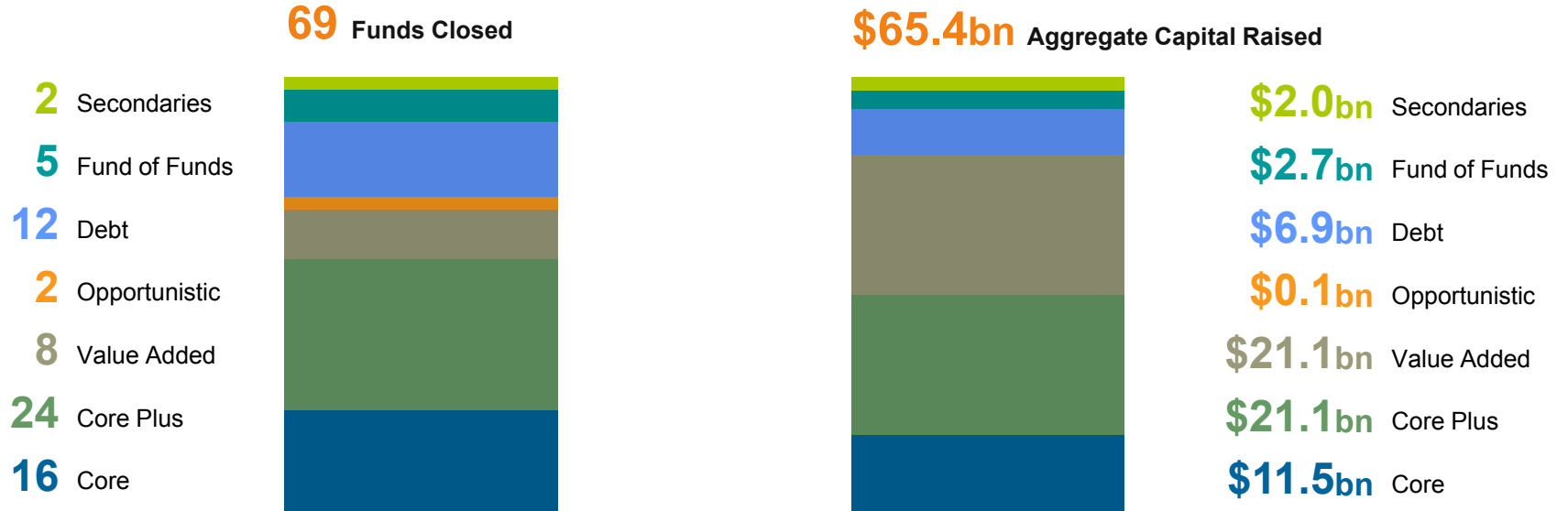


- Most of the capital to date, circa \$500 billion, has been raised for closed-end strategies.

Source: Preqin, January 2018

2017 Fundraising

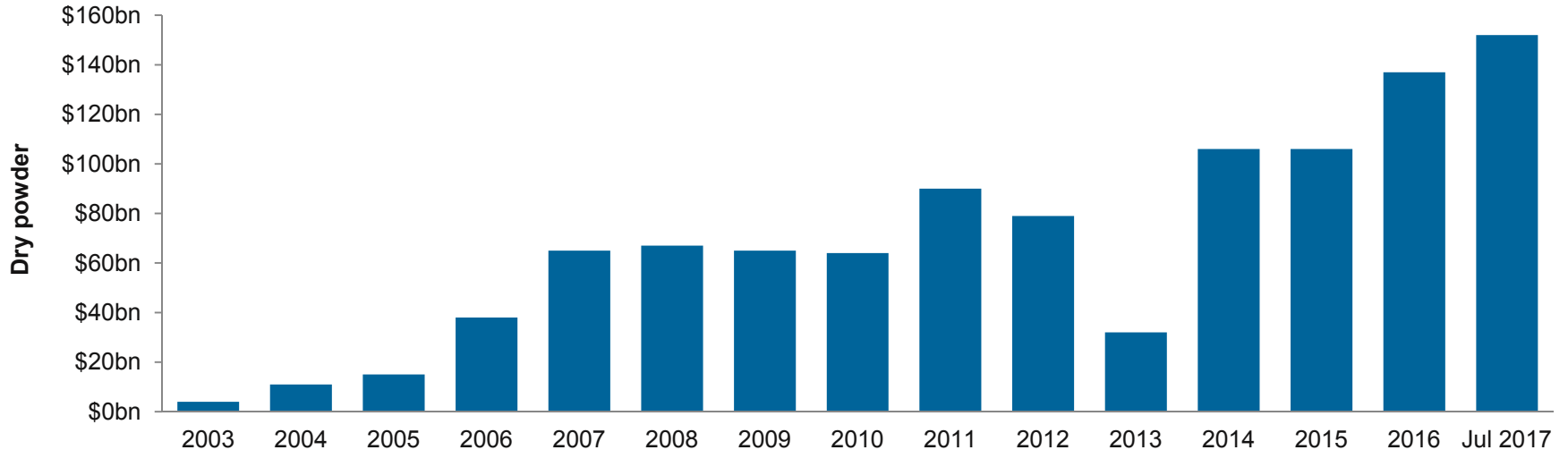
Unlisted infrastructure fundraising in 2017 by primary strategy



Source: Preqin

Unlisted Infrastructure Capital has been Raised Faster than Invested

Significant Dry Powder

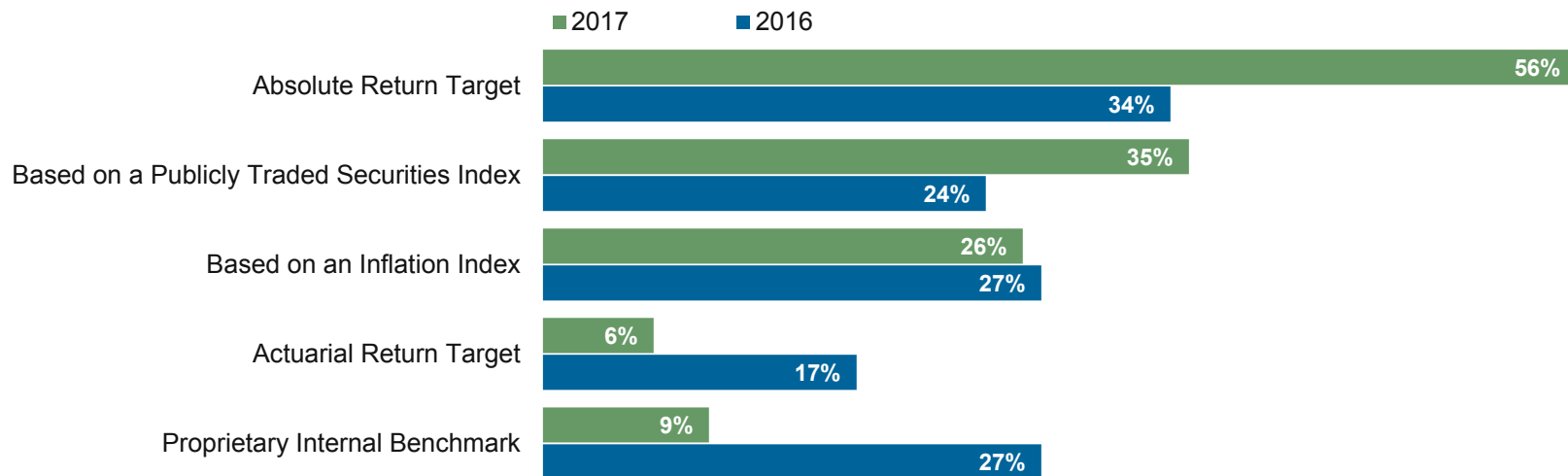


- Dry powder numbers may be understated by the amount money targeting the sector by direct investors, co-investors and open-end funds.

Source: Probitas, 2017 Infrastructure Investor Survey

The Sector is Still Developing, Benchmarking is Inconsistent

Absolute return targets have gained ground in 2017



- Absolute return benchmarks remain most popular, with significant numbers of investors also using a publicly traded securities index.
- Listed infrastructure indices are gaining ground.

Source: Probitas, 2017 Infrastructure Investor Survey

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Potential Benefits of Real Assets

Portfolio diversification

Real assets tend to have complementary return profiles relative to stocks and bonds.

Predictable and steady streams of income

Real assets tend to have predictable and steady cash-flow streams supported by regulated or contractual revenues and attractive operating margins.

Capital appreciation potential

As the backbone of the global economy, real estate, infrastructure and sustainable resources are all subject to long-cycle fundamental drivers. Examples include population growth, urbanization trends and periodic supply constraints that can lead to capital appreciation.

Potentially higher risk-adjusted returns

Historically, the volatility of many real asset classes has been lower than that of equities, leading to higher risk-adjusted returns.

Inflation protection

History shows that real assets have outperformed stocks and bonds in periods of unexpected inflation, based on total return. One reason is that the cash flows of the underlying assets tend to rise with inflation.

Callan Capital Market Expectations

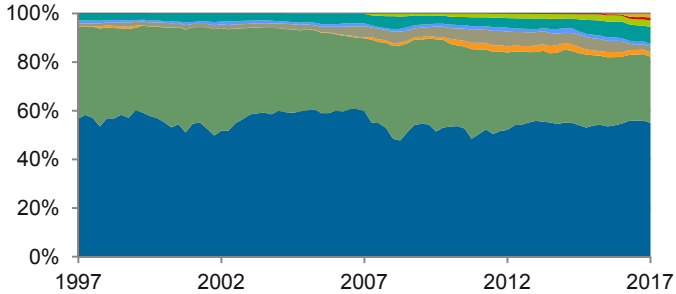
- Callan’s Capital Market Expectations:
 - Used for long term strategic planning
 - Forward looking, yet anchored in history and reflecting current environment
 - Return, Risk, Correlation across institutional asset classes
 - Meant to be consumed as a “set”, not in isolation
- Risk for private assets reflects “economic risk”
 - Observed standard deviations will be meaningfully lower due to valuation smoothing
- Implementation risk is high for niche asset classes
 - Limited universe, varying investment opportunity set, and definitional differences can lead to disparate product outcomes

	Arithmetic	10-Year Geometric	Standard
Listed Infrastructure	8.5%	6.6%	20.80%
Private Infrastructure	8.0%	6.4%	18.95%
Listed Real Estate	8.4%	6.5%	20.70%
Private Real Estate	6.9%	5.8%	16.35%
Timber	7.4%	6.0%	17.40%
Agriculture	7.4%	6.2%	16.90%

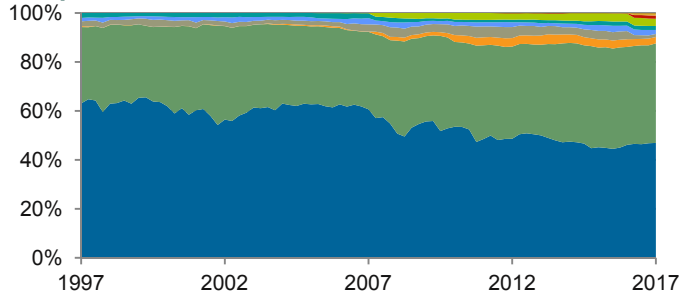
Institutional Allocation Trends

Historical Average Asset-Allocations (10 Years)

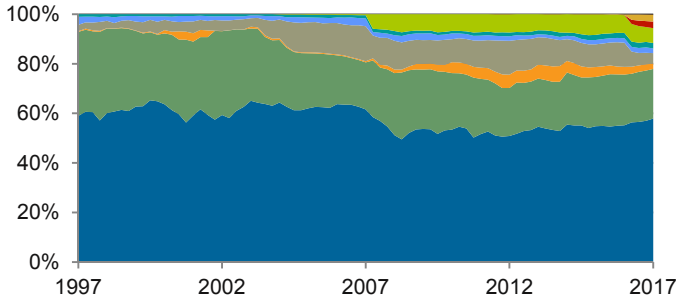
Public Funds



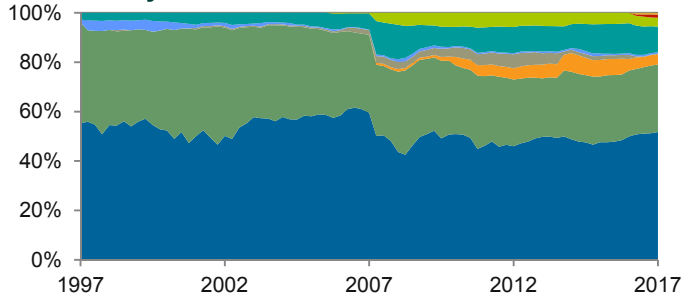
Corporate Funds



Endowments/Foundations



Taft-Hartley



- Div Multi-Asset
- Private Equity
- Real Assets
- Hedge Funds
- Real Estate
- Cash Equiv
- Other Alternatives
- Balanced
- Fixed
- Equity

Source: Callan. Callan's database includes the following groups: public defined benefit, corporate defined benefit, endowments/foundations, and Taft-Hartley plans. Approximately 10-15% of the database constituents are Callan's clients. All database group returns presented gross of fees. Past performance is no guarantee of future results.

Callan Search Activity

Since 2008, Callan has conducted 9 searches/evaluations - totaling \$1.3 billion in assets placed

- Four searches were conducted in 2017, resulting in \$172 million in assets placed. Two of these searches were for private infrastructure, and two were for publicly-listed infrastructure strategies.
- So far in 2018, Callan clients have initiated one private open-end infrastructure search.

Conclusions

- The infrastructure opportunity continues to evolve
 - Continued development of investment vehicles and return targets
- Assessing investments and benchmarking performance is still not straightforward
- Purpose or role within portfolio is important in vehicle and product selection
- Callan is experienced with advising investors on listed and unlisted infrastructure options

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