Introduction to Private Infrastructure
A Primer for Institutional Clients

Putting clients first.

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The Investment Challenge

- Expected return from a traditional institutional portfolio will be challenged to meet return targets

Equities		Fixed Income	
U.S. Large Cap	6.41%	Core	3.32%
U.S. Mid Cap	6.93%	High Yield	5.59%
U.S. Small Cap	7.35%		
International	7.61%		

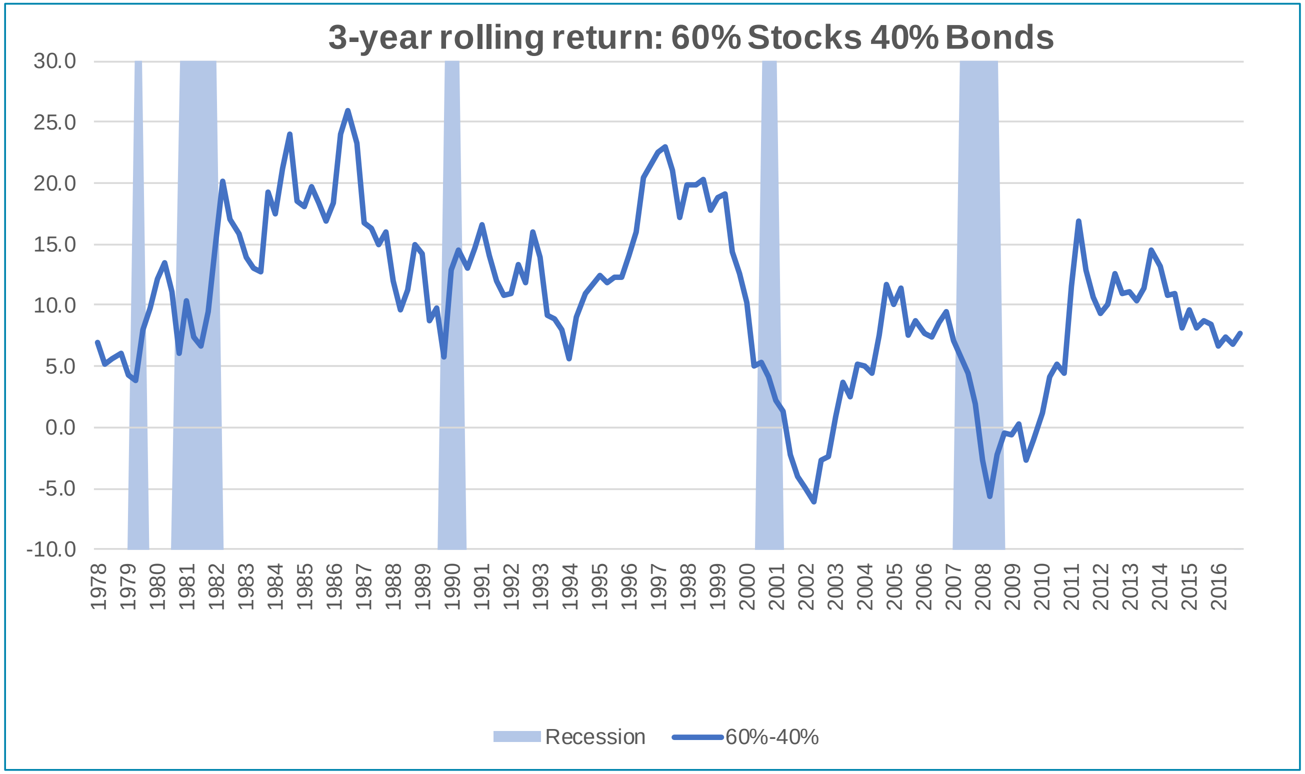
- Traditional asset classes (Equities and Fixed Income) tend to be highly correlated

	U.S. Large Cap	U.S. Mid Cap	U.S. Small Cap	International	Core FI	High Yield
U.S. Large Cap	1.00					
U.S. Mid Cap	0.96	1.00				
U.S. Small Cap	0.90	0.95	1.00			
International Equities	0.88	0.86	0.76	1.00		
Core Fixed Income	0.00	-0.01	-0.10	0.10	1.00	
High Yield	0.69	0.74	0.65	0.74	0.19	1.00

Source: Expected return and correlation are from the “2018 JPMorgan Long-Term Capital Market Assumptions”

The Investment Challenge

- The risk in most traditional institutional portfolios comes from exposure to economic growth, returns tend to decline significantly around recessions



**60-40 portfolio is comprised of 60% S&P 500 and 40% Bloomberg Barclays U.S. Aggregate Bond, rebalanced quarterly*

Addressing the Investment Challenge

Infrastructure assets have characteristics that can address these challenges:

- Strong cash flow profile and expected total return
  - Relatively steady cash flow through an economic cycle.
- Lower correlation to other asset classes
- Inflation protection
  - Some countries contractually link cash flows to inflation measures.
  - Overall value of investment should increase with inflation
- Less economic sensitivity than public equities
  - Essential nature of asset maintains cash flow during downturns
- Additionally, long term nature of assets match profile of institutional investor’s liabilities

Ultimately, these benefits improve the risk-return characteristics of a traditional institutional portfolio, resulting in a more optimal asset allocation for institutional investors

Defining Infrastructure

Infrastructure is defined as essential public services and facilities needed for the general economic operation of a region.

Characteristics include:

- Monopolistic or semi-monopolistic position, high barriers to entry
- Long useful life
- Operate in regulated environments
- Stable, relatively predictable cash flows
- Lower exposure to business cyclicality

Common types of Infrastructure assets:

Sectors	Transportation	Energy/Utilities	Communications	Social
Subsectors	Toll roads/bridges/tunnels Municipal Parking Airports Rail Mass Transit Networks Port Facilities	Oil and Gas Pipelines Regulated Utilities Renewable Energy Water Treatment/Distribution	Communication Towers Cable Networks Satellite Systems	Education Facilities Healthcare Facilities Correctional Facilities

Institutional Investment in Infrastructure

- Infrastructure is a global asset class with a majority of the assets in North America, Western Europe, and Asia/Australia.
  - Infrastructure transactions in emerging markets also continue to grow. Oxford Economics forecasts 48% of annual global infrastructure spending will occur in Emerging Asia by 2025, up from 30% in 2012.
- Infrastructure investing has been popular in Australia for many years within its superannuation funds. It has also been widely implemented as an asset class in the public retirement systems of Canada and Western Europe.
  - Based on Preqin data, as of March 2017, there was approximately $425 billion of unlisted infrastructure assets under management compared to $110 billion as of December 2008.
- Acceptance of the asset class among U.S. institutional investors is increasing with numerous potential opportunities. Investing in U.S. infrastructure assets allows investors exposure to the asset class without the currency risk exposure.
- In 2016, Oxford Economics forecasts total global infrastructure spending from 2015 to 2020 will be in the $26 to $28 trillion range

Benefits of Implementing an Allocation to Infrastructure

Risk-Adjusted Return Potential

Private global infrastructure is anticipated to generate an attractive long-term, risk-adjusted return profile relative to equites and fixed income, and a similar profile to core private real estate.

	Return	Standard Deviation
Global Infrastructure*	6.89	11.75
U.S. Large Cap	6.41	14.00
U.S. Mid Cap	6.93	16.00
U.S. Small Cap	7.35	18.75
International Equities	7.61	17.25
Core Fixed Income	3.32	3.75
High Yield	5.59	8.50
U.S. Core Real Estate*	5.79	10.75

Source: Forecast returns are from the "2018 JPMorgan Long-Term Capital Market Assumptions"
**The JPMorgan assumptions for infrastructure real estate are unlevered returns.*

Benefits of Implementing an Allocation to Infrastructure

Diversification

Private global infrastructure has a low correlation with equities, fixed income, and core private real estate.

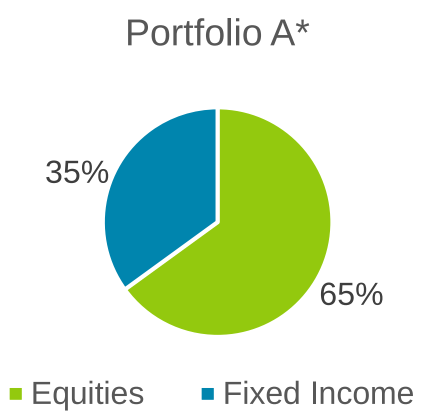
	Global Infrastructure	U.S. Large Cap	U.S. Mid Cap	U.S. Small Cap	International	Core FI	High Yield	U.S. Core RE
Global Infrastructure	1.00							
U.S. Large Cap	0.30	1.00						
U.S. Mid Cap	0.30	0.96	1.00					
U.S. Small Cap	0.28	0.90	0.95	1.00				
International Equities	0.26	0.88	0.76	0.76	1.00			
Core Fixed Income	0.00	0.00	-0.01	-0.10	0.10	1.00		
High Yield	0.22	0.69	0.74	0.65	0.74	0.19	1.00	
U.S. Core Real Estate	0.30	0.30	0.31	0.31	0.26	0.31	0.23	1.00

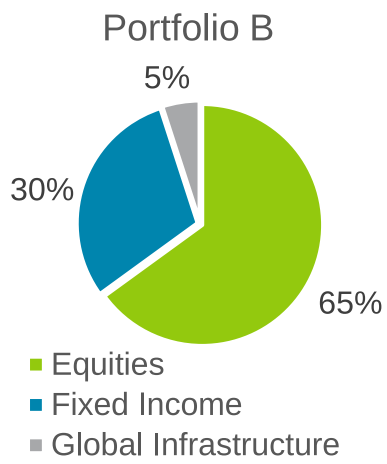
Source: Correlations are derived from the "2018 JPMorgan Long-Term Capital Market Assumptions"

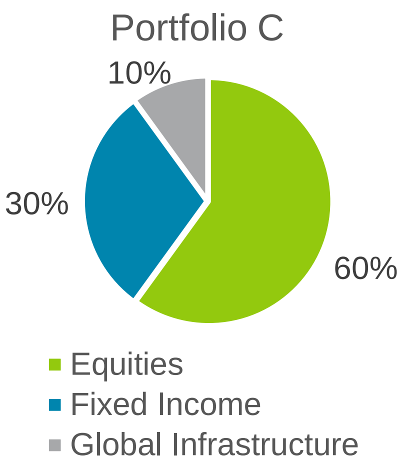
Benefits of Implementing an Allocation to Infrastructure

Impact on Total Portfolio

Implementing an allocation to private global infrastructure within a portfolio comprised of global equities and U.S. core fixed income may improve risk-adjusted returns







Return	5.66
Standard Deviation	10.01
Sharpe Ratio	0.56

Return	5.87
Standard Deviation	10.35
Sharpe Ratio	0.57

Return	5.89
Standard Deviation	9.87
Sharpe Ratio	0.60

**Portfolio A consists of 30% U.S.Large Cap, 10% U.S. Mid Cap, 10% U.S. Small Cap, 15% International, and 35% Core Fixed Income.*

The above charts demonstrate hypothetical scenarios and therefore should not be viewed as guarantees.
Source: Portfolio return, standard deviation, and Sharpe ratio are derived utilizing inputs from the "2018 JPMorgan Long-Term Capital Market Assumptions"
Note: The JPMorgan assumptions for infrastructure are unlevered returns.

Infrastructure Strategies

There are three primary types of strategies with varying risk and return profiles that an institution can utilize to construct an infrastructure portfolio.

- Core is a lower-risk strategy, driven primarily by current income
- Value-add provides more upside potential than Core, but also adds more risk. It seeks appreciation while mitigating volatility with some current income generation.
- Opportunistic offers the highest risk and highest return potential. It derives most of its return from appreciation.

	Core	Value-add	Opportunistic
Target Return (net)	8% to 10%	10% to 12%	15% to 17%
Key Risks	Operating	Operating Strategy Execution Construction	Construction Strategy Execution Market, Political
Primary Return Driver	Income	Appreciation	Appreciation
GDP Sensitivity	Low	High	High
Brownfield or Greenfield	Brownfield	Both	Both
Operating Complexity	Medium	High	High

Implementation Considerations

Infrastructure Strategies

Opportunistic

- Assets with development risk or less predicable revenues, such as uncontracted pipelines,
- Asset types include service companies, some telecom investments, and greenfield projects

Value-add

- A variety of strategies are implemented to increase the value of a core asset, with capital appreciation usually crystallized in an exit.
- Strategies include: Buy-and-builds, platform roll-ups, turnarounds are all relevant examples.
- Asset types include midstream oil and gas, long-haul oil and gas pipelines, airports, toll roads

Core

- Equity investments in operating assets with established cash flows and revenue security from contracts or a regulated position, situated in developed markets
- Asset types include social infrastructure, electrical distribution, water utilities

Risk

8%

15%

Return

Implementation Considerations

Investment Vehicles

Vehicle type	Minimum Investment	Liquidity	Fund Term	Typical Strategies
Open-end Funds (private)	$10 million (negotiable)	Quarterly	Perpetual	Core
Closed-end Funds (private)	$10 million (negotiable)	Illiquid	10 to 12 years	Core Value-add Opportunistic Debt

Implementation Considerations

What to consider when selecting the right strategy for your portfolio

	Open-end Funds (private assets)	Closed-end Funds (private assets)
Key Advantages	▪ Current income generated from cash-flowing assets ▪ Low correlation to equity markets ▪ Direct exposure to infrastructure assets	▪ Broadest number of managers and strategies to select from ▪ Low correlation to public equity markets ▪ Direct exposure to infrastructure assets
Key Disadvantages	▪ Higher fees ▪ Focus on cash-flow, less upside potential ▪ Leveraged ▪ Less liquid than listed securities	▪ Higher fees ▪ Leveraged ▪ Blind pool risk ▪ Liquidity is limited to complex secondary market transactions
Fit within Portfolio	▪ Tend to focus on investments with long-term hold periods and stable cash flows ▪ Primary component of an institutional investor's infrastructure program	▪ Tend to focus on investments with a higher risk/return profile ▪ Complementary component of an institutional investor's infrastructure program

Implementation Considerations - Risks

Primary considerations to implementing an infrastructure allocation:

- **Political/Regulatory:**
  - Regulated Infrastructure assets are subject to changes in government regulations and guarantees. Governmental regulators typically determine rates that can be charged to customers. Energy infrastructure, including oil & gas, solar, wind, and nuclear, are particularly vulnerable to this risk.
- **Asset types:**
  - For some assets, rate increases are not built into contacts which reduces the extent of inflation protection. Particularly in US, there is a high reliance on regulators for rate increases, which can be time-consuming.
- **Headline:**
  - High potential for public backlash on rate increases
- **Currency:**
  - Exchange rate fluctuations on foreign investments can severely impact returns.
- **Benchmarking:**
  - There is no benchmarking standard for private infrastructure strategies. Alternatives include absolute return, CPI + x%, public benchmark + x%, or comparison to funds of the same vintage year.
- **Credit:**
  - Private funds typically carry 40% to 70% leverage and are sensitive to credit market conditions
- **Liquidity:**
  - Open-end private fund's quarterly liquidity option can lock up depending on withdrawal queue and market conditions.

Implementation Considerations – Manager/Strategy Selection

What does AndCo look for when evaluating Infrastructure managers?

- Team stability
  - Due to the long-term nature of the investments it is crucial to partner with a team that has had minimal turnover of key professionals responsible for generating the firm's track record.
- Ability to add value through active management
  - Demonstrated capabilities of adding value through techniques such as adding key management personnel, negotiating contracts, optimizing the capital structure, and pursuing strategic acquisitions.
- Strong network for sourcing deal flow
  - A long history in the space provides the reputation and relationships needed to generate proprietary deals or greater participation in limited auctions, which can drive higher returns.
- Strong balance sheet for financing
  - Most private funds are levered, an ability to access attractive terms on debt will impact total return.
- Valuation Policy
  - Valuations are conducted on a quarterly basis. Managers must follow industry standard best practices that are audited annually by a third party.
- Exit strategy
  - Closed-end funds have a finite life, managers need to demonstrate a clearly defined exit strategy for the assets.
- Track record
  - Open-end funds manage redemptions through either cash inflows from new investors or selling assets. Poor performance can lead to increased redemptions and lack of new inflows. Current investors may be unable to receive redemption proceeds until assets are sold.

AndCo's View

- Allocating 5% to 10% of an institutional portfolio to Infrastructure can make sense, depending on the investor's objectives.
- We view Infrastructure as a component of a strategic allocation, not a short-term trade idea.
- Investors seeking to reduce equity and fixed income risk without sacrificing significant return potential would benefit from an allocation to infrastructure.
- Lower-risk/return strategies with a focus on investments that have stable cash flows and are less sensitive to economic growth should be the primary component of an infrastructure program.
- Higher-risk/return strategies that are dependent on a manager's operational expertise to create value or take on development risk can serve as a complementary component of an infrastructure program.
- We would avoid listed infrastructure, which does not offer as much diversification or risk reduction as private infrastructure does.

Glossary

Brownfield – projects that have existing assets generating cash flow

Capital Call – Occurs when a manager requests a transfer of the portion of the investors' committed capital. The called capital is utilized by the manager to make investments and cover expenses.

Carried Interest – performance fee collected by the manager on profits in excess of a predetermined return referred to as a preferred return

Closed-end Fund – A fund with specified term the manager must liquidate the investments by, generally eight years or longer

Committed Capital – The amount of capital an investor has agreed to invest in a closed-end, private infrastructure fund. The capital is called on an as needed basis by the manager.

Greenfield – projects that include the construction of new assets

Investment Period or Commitment Period – Refers to the established length of time a manager can call capital for new investments, generally three to four years

Monopolistic – markets in which a product is controlled by a single producer and there are few, if any, substitutes

Open-end Fund – A perpetual fund with no set end date. New investors buy in at the current Net Asset Value and existing investors sell at the current Net Asset Value.

Preferred Return – Also referred to as a hurdle rate. The minimum level of return the investment or fund needs to earn before the manager can earn carried interest.

Vintage Year – The calendar year in which the manager begins investing capital of an infrastructure fund

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