S&P Dow Jones Indices

A Division of S&P Global

Research

Approaches to Benchmarking Listed Infrastructure

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Investing in infrastructure has become popular among institutional and private investors in recent years. Investors could be attracted to the potentially long-term, low-risk, and inflation-linked profile that can come with infrastructure assets, and they may find that it is an alternative asset class that could provide new sources of return and diversification of risk.

WHY CONSIDER INVESTING IN INFRASTRUCTURE?

Infrastructure assets provide essential services that are necessary for populations and economies to function, prosper, and grow. They include a variety of assets divided into five general sectors: transportation (e.g., toll roads, airports, seaports, and rail); energy (e.g., gas and electricity transmission, distribution, and generation); water (e.g., pipelines and treatment plants); communications (e.g., broadcast, satellite, and cable); and social (e.g., hospitals, schools, and prisons). Infrastructure assets operate in an environment of limited competition as a result of natural monopolies, government regulations, or concessions. The stylized economic characteristics of this asset class include the following.

- **Relatively steady cash flows with a strong yield component:** Infrastructure assets are generally long lived. Most companies have long-term regulatory contracts or concessions to operate the assets, which can provide a predictable return over time. As a result, infrastructure assets have the potential to generate consistent, stable cash flow streams, usually with lower volatility than other traditional asset classes.
- **High barriers to entry:** Due to significant economies of scale, infrastructure assets are often regulated in such a way that discourages competition. The high barriers to entry often result in a monopoly for existing owners and operators.
- **Inflation protection:** Revenues from infrastructure assets are typically linked to inflation and are often supported by regulation. In certain instances, revenue increases linked to inflation are embedded in concession agreements, licenses, and regulatory frameworks. In other cases, owners of infrastructure assets are able to pass inflation on to consumers via price increases, due to the essential nature of the assets and their inelastic demand.

Infrastructure assets operate in an environment of limited competition…

Consequently, the infrastructure asset class may provide investors with a degree of protection from the business and economic cycles, as well as attractive income yields and an inflation hedge. It could be expected to offer long-term, low-risk, non-correlated, inflation-protected, and acyclical returns.

It is also generally believed that infrastructure is, as an asset class, poised for strong growth. As the global population continues to expand and standards of living around the world become higher, there is a vast demand for improved infrastructure. This demand includes the refurbishment and replacement of existing infrastructure worldwide and new infrastructure development in emerging markets.

…a result of natural monopolies, government regulations, or concessions.

Financing public infrastructure has traditionally been the responsibility of the state. However, fiscally constrained governments are increasingly turning to the private sector to provide funding for new projects. As a result, the investment opportunities in this sector continue to grow.

DIRECT AND INDIRECT EXPOSURE TO INFRASTRUCTURE

Exposure to infrastructure can be achieved either directly or indirectly.

Direct exposure is gained through private markets in which investors own the companies that build or operate the infrastructure assets, like toll roads, airports, etc. The most important benefit of investing through these vehicles is that market participants obtain the direct exposure they are looking for and all of the benefits that come with owning the infrastructure itself.

On the other hand, infrastructure assets are often highly regulated, so this type of investment can have more concentrated regulatory risk. It also often involves significant leverage, along with the risks that are bundled with it. The other potential downside is that these assets are illiquid, so there is no price transparency on an ongoing basis. Market participants would typically have to invest in the asset class for the long term, as there are no liquid secondary markets in which their investments could be quickly traded.

Exposure to infrastructure can be achieved either directly or indirectly.

Indirect investment can be achieved through publicly listed companies whose business is directly related to infrastructure assets.

The primary advantage of listed infrastructure vehicles is that they are traded on an exchange. The size of the listed market is large—the total market capitalization of the universe of "pure-play" infrastructure companies, from which the Dow Jones Brookfield Global Infrastructure Index is constructed, was USD 1.76 trillion as of Dec. 31, 2019. Listed companies also provide access to unique assets that might only be available in public markets. Daily price transparency and relative liquidity, which are characteristics of listed companies, are important to many market

participants. Listed firms also have extensive financial reporting requirements that are regulated by the various stock exchanges.

The primary disadvantage of this type of investment is that publicly traded stocks that make up the listed infrastructure vehicle may already be part of the investor's equity portfolio. Another negative aspect of this type of infrastructure investment is that infrastructure assets are sometimes just one piece of a larger conglomerate's operations, particularly on a global basis.

BENCHMARKING PUBLICLY LISTED INFRASTRUCTURE SECURITIES

A number of new infrastructure indices have emerged since the mid-2000s…

A number of new infrastructure indices (capturing only publicly listed infrastructure securities) have emerged since the mid-2000s. Most indices take one of two construction approaches: either applying a market-cap-weighting methodology to infrastructure sectors (in which case, utilities will always dominate the index) or imposing hard caps on these sectors. In order to identify effectively companies with the pure-play characteristics previously outlined, it is necessary to dig into financials and identify what percentage of earnings comes from competitively exposed versus regulated lines of business.

Managers in infrastructure investment may consider different benchmarks, depending on their own definition of the investment universe. Some managers favor pure-play infrastructure sectors, considering only stocks with stable cash flow patterns and low correlations to broader equities for portfolio inclusion. Other managers operate under a less-constrained definition of the space, with a thematic view of what constitutes infrastructure. Such portfolios may include infrastructure-related companies such as shipping, diversified communications, power generation, etc.

…including the Dow Jones Brookfield Global Infrastructure Indices and S&P Global Infrastructure Indices.

S&P Dow Jones Indices has been a leader in benchmarking the publicly listed infrastructure market. Two distinct approaches are provided to the different types of managers for benchmarking. The Dow Jones Brookfield Global Infrastructure Indices use a pure-play approach. Companies that obtain a majority (70% or higher) of their cash flows from owning and operating infrastructure assets are selected for the indices. On the other hand, the S&P Global Infrastructure Index Series uses a broad-based approach. Companies from infrastructure-related sectors, industries, and subindustries, as defined by the Global Industry Classification Standard (GICS®), are selected for the indices. Both series of indices could be appropriate for market participants seeking diversified, globally listed infrastructure exposure. Exhibit 1 shows a detailed comparison of the methodologies of two examples from the index series mentioned above. Exhibit 2 shows the sector weights of the two indices—the Dow Jones

S&P Dow Jones Indices has been a leader in benchmarking the publicly listed infrastructure market.

Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index—as of Dec. 31, 2019.

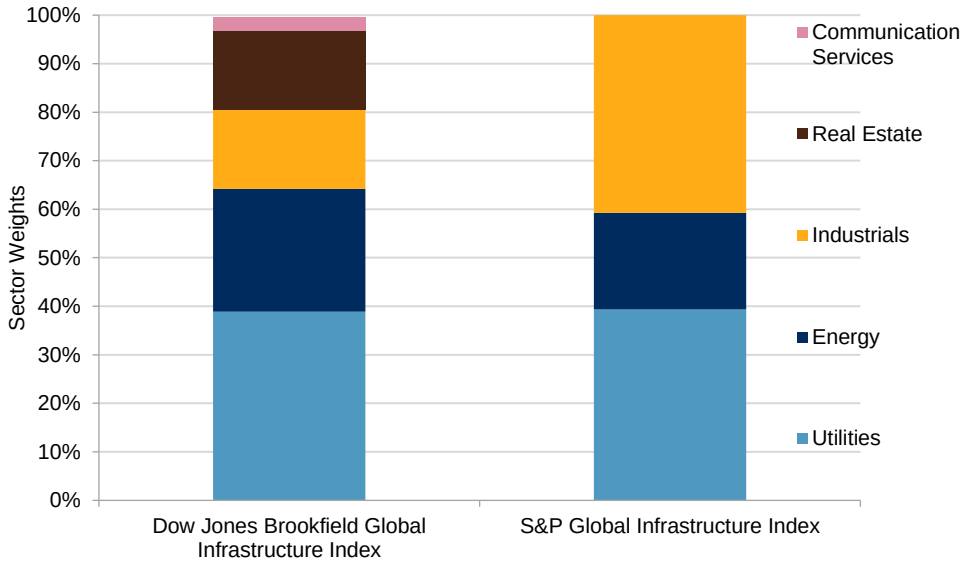
Exhibit 1: Methodology Comparison

CATEGORY	DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE INDEX	S&P GLOBAL INFRASTRUCTURE INDEX	
Summary	Developed through a partnership with Brookfield, a leader in the infrastructure space, this index relies on a pure-play approach. Cash flows of companies are evaluated to make sure that the primary driver of revenues for those companies comes from owning and operating infrastructure assets.	Relying on a transparent, rules-based methodology that relies on the GICS classification system, this index seeks to provide a more broad-based exposure to infrastructure that includes access to pure-play infrastructure and infrastructure service companies.	
Index Universe	Maintained by S&P Dow Jones Indices	Three infrastructure clusters (combination of GICS industries) from the S&P Global BMI	
Sectors	Airports	Energy	Oil & Gas Storage & Transportation
	Toll roads	Transportation	Airport Services
	Ports		Highways & Railtracks
	Communications		Marine Ports & Services
	Electrical transmission and distribution	Utilities	Electric Utilities
	Oil & gas storage & transportation		Gas Utilities
	Water		Multi-Utilities
	Diversified (multiple sectors)		Water Utilities
			Independent Power Producers & Energy Traders
			Renewable Electricity
Size	Minimum float-adjusted market cap: USD 500 million with a buffer*	Minimum total market cap: USD 250 million Minimum float-adjusted market cap: USD 100 million	
Liquidity	Thresholds of three-month average daily value traded: USD 1 million with a buffer*	Thresholds of three-month average daily value traded: USD 1 million for developed markets USD 500,000 for emerging markets	
Listing	Have a developed market listing	Have a developed market listing	
Diversification	Individual stock weights are capped at 10% Country weights are capped at 50% Industry weights are capped at 50%	Individual stock weights are capped at 5% 15 stocks from emerging markets and 60 from developed markets The target number of stocks from the Energy cluster is 15, with the total weight capped at 20%; 30 stocks each from the Transportation and Utilities clusters, with the total weight capped at 40% each	
Number of Constituents	Variable; 101 stocks as of Dec. 31, 2019	75 stocks	
Rebalanced	Semiannually in June and December	Semiannually in March and September	
Launch Date	July 14, 2008	Feb. 22, 2007	

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Table is provided for illustrative purposes. *For details, refer to Dow Jones Brookfield Global Infrastructure Index Methodology.

The risk/return profile of the Dow Jones Brookfield Global Infrastructure Index is differentiated from that of an index taking a broad-based approach.

Exhibit 2: Sector Weights of the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index



Note: Sector classification follows GICS effective after September 2018. Stocks in Real Estate were previously classified as Specialized REITs under the Financials sector. Communication Services includes those stocks that were previously classified as Cable & Satellite under the Consumer Discretionary sector and those that were under Telecommunication Services before September 2018.
Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Chart is provided for illustrative purposes.

The Dow Jones Brookfield Global Infrastructure Index outperformed the S&P Global BMI over the past 10 years.

Several other indices are offered by competitors (UBS, MSCI, Macquarie, and FTSE) in this space—the UBS Global 50/50 Infrastructure & Utilities Net of Tax Index (which has been retired), the MSCI ACWI Infrastructure Index, the Macquarie Global Infrastructure 100 Index (which was retired in November 2016), and the FTSE Global Core Infrastructure 50/50 Index. All of them rely on a broad-based approach that is similar to the S&P Global Infrastructure Index (see Exhibit 3).

Exhibit 3: Comparison of Methodologies (High Level)

CATEGORY	DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE INDEX	S&P GLOBAL INFRASTRUCTURE INDEX	FTSE GLOBAL CORE INFRASTRUCTURE 50/50 INDEX	MSCI ACWI INFRASTRUCTURE INDEX
Components	101	75	263	248
Selection Process	Driven by cash flow from infrastructure-related operations (has to be in excess of 70%[1])	Based on GICS (combination of GICS sectors and industries). Clusters include Energy (20%), Transportation (40%), and Utilities (40%)	Based on ICB (combination of ICB subsectors). Clusters include utilities (50%), transportation (30%), and others (20%). Revenue must be greater than 65% from the three clusters.	Based on GICS (combination of GICS sectors and industries). Clusters include Telecommunications, Utilities, Energy, Transportation, and Social infrastructure[2]
Review	Semiannually	Semiannually	Semiannually	Quarterly

Source: S&P Dow Jones Indices LLC, MSCI, FTSE. Components as of Dec. 31, 2019. Table is provided for illustrative purposes.

[1] Current index constituents meeting all other eligibility requirements will remain eligible for index inclusion if at least 60% of estimated cash flows are derived from pure-play infrastructure assets.

[2] The Social infrastructure cluster includes two GICS subindustries: Education Services and Health Care Facilities.

The risk/return profile of the Dow Jones Brookfield Global Infrastructure Index, which takes a pure-play approach, is differentiated from that of an index taking a broad-based approach (as seen in Exhibit 4). The Dow Jones Brookfield Global Infrastructure Index has shown the highest return and risk-adjusted return over the past 10 years. The index has an annualized return of 10.22% over the past 10 years, outperforming the S&P Global BMI by 1.34% and all other infrastructure indices studied here by more than 3.45% per year.

Exhibit 4: Historical Risk/Return Profile of Listed Infrastructure Equity Indices

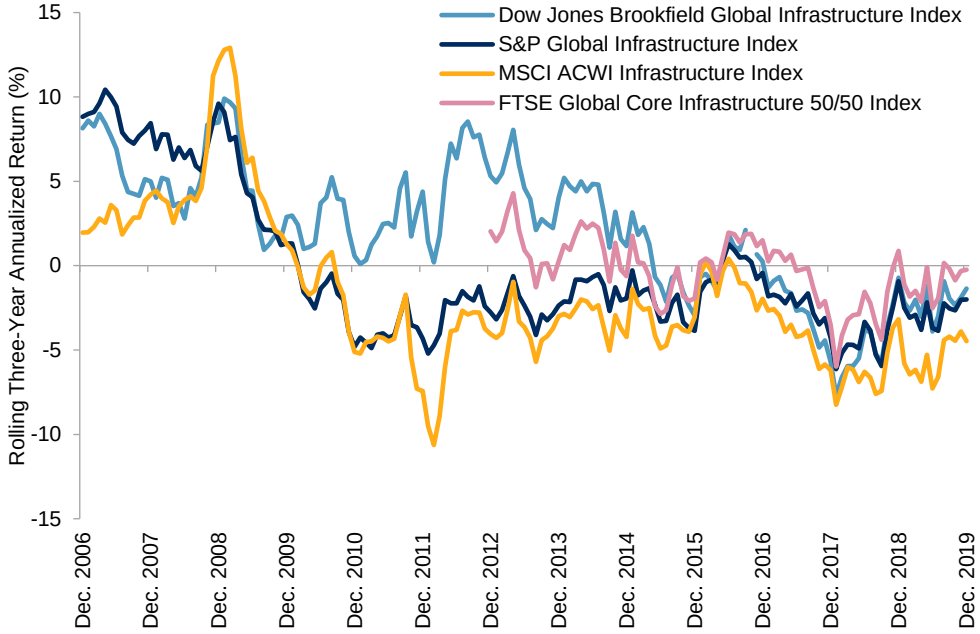
TIME PERIOD	S&P GLOBAL BMI	DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE INDEX	S&P GLOBAL INFRASTRUCTURE INDEX	MSCI ACWI INFRASTRUCTURE INDEX	FTSE GLOBAL CORE INFRASTRUCTURE 50/50 INDEX
ANNUALIZED RETURNS (%)					
1-Year	26.07	28.69	25.75	20.05	25.13
3-Year	12.01	11.14	10.30	7.70	12.46
5-Year	8.29	5.75	5.61	4.30	7.54
7-Year	9.68	8.61	7.68	6.36	9.48
10-Year	8.88	10.22	6.77	5.60	-
ANNUALIZED VOLATILITY (%)					
3-Year	11.45	9.50	9.86	8.38	8.42
5-Year	11.80	10.70	10.68	9.67	9.56
7-Year	11.09	10.62	10.56	9.80	9.74
10-Year	13.32	11.08	12.14	10.69	-
RETURN/VOLATILITY					
3-Year	1.05	1.17	1.04	0.92	1.48
5-Year	0.70	0.54	0.53	0.44	0.79
7-Year	0.87	0.81	0.73	0.65	0.97
10-Year	0.67	0.92	0.56	0.52	-
MAXIMUM DRAWDOWN (%)					
7-Year	-14.74	-17.05	-15.72	-12.04	-9.98
10-Year	-21.15	-17.05	-15.72	-12.04	-
RETURN/MAXIMUM DRAWDOWN					
10-Year	0.42	0.60	0.43	0.47	-
CORRELATION WITH THE S&P GLOBAL BMI					
3-Year	-	0.66	0.74	0.72	0.68
5-Year	-	0.67	0.74	0.71	0.66
7-Year	-	0.70	0.76	0.73	0.68
10-Year	-	0.75	0.84	0.79	-
BETA TO THE S&P GLOBAL BMI					
3-Year	-	0.55	0.64	0.52	0.50
5-Year	-	0.61	0.67	0.58	0.53
7-Year	-	0.67	0.72	0.65	0.60
10-Year	-	0.62	0.77	0.64	-

Source: S&P Dow Jones Indices LLC, MSCI, FTSE. Data from Dec. 31, 2009, to Dec. 31, 2019. Index performance is based on net total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

In terms of downside protection and diversification benefits, the Dow Jones Brookfield Global Infrastructure Index, S&P Global Infrastructure Index, and MSCI ACWI Infrastructure Index showed the best statistics over the 10-year period. For these three indices, the maximum drawdowns were cut from 21.15% for the S&P Global BMI to 17.05%, 15.72%, 12.04% respectively; betas against the S&P Global BMI were below 0.9 over the past 10 years. On a rolling three-year basis, the Dow Jones Brookfield Global Infrastructure Index has shown continuous significant positive returns in excess of the S&P Global BMI; while the other infrastructure indices have experienced diminished outperformance since the global financial crisis in 2008 and 2009 (see Exhibit 5). On a rolling three-year basis, the Dow Jones Brookfield Global Infrastructure Index underperformed the S&P Global BMI from May 2015 to April 2016 and from January 2017 to December 2019, with two prolonged periods of oil price decline in the background.

The Dow Jones Brookfield Global Infrastructure Index has shown continuous significant positive returns in excess of the S&P Global BMI…

Exhibit 5: Listed Infrastructure Equity Indices – Rolling Three-Year Annualized Return in Excess of the S&P Global BMI

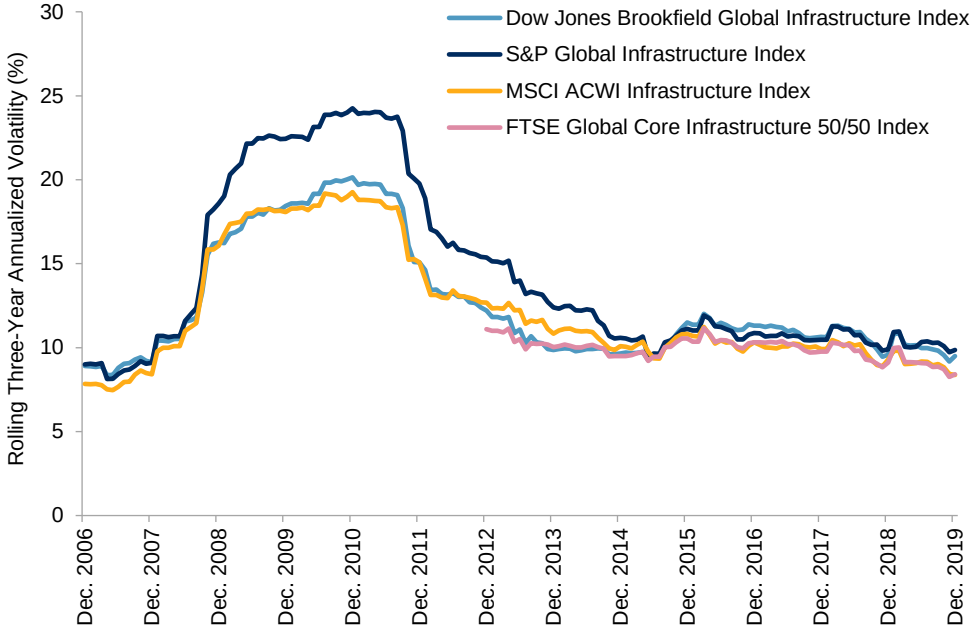


Source: S&P Dow Jones Indices LLC, MSCI, FTSE. Data from Dec. 29, 2006, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

…while the other infrastructure indices experienced diminished outperformance since the global financial crisis in 2008 and 2009.

In terms of volatility and correlation, the S&P Global Infrastructure Index is on the high side of the spectrum (see Exhibits 6 and 7). This is consistent with the index's construction idea. Of note, volatility and correlation have increased significantly since 2008. This phenomenon has been observed among all asset classes, making it challenging for market participants to construct a diversified portfolio during crisis periods. Fortunately, we saw volatility and correlation come down since the end of 2011, before increasing slightly in 2019.

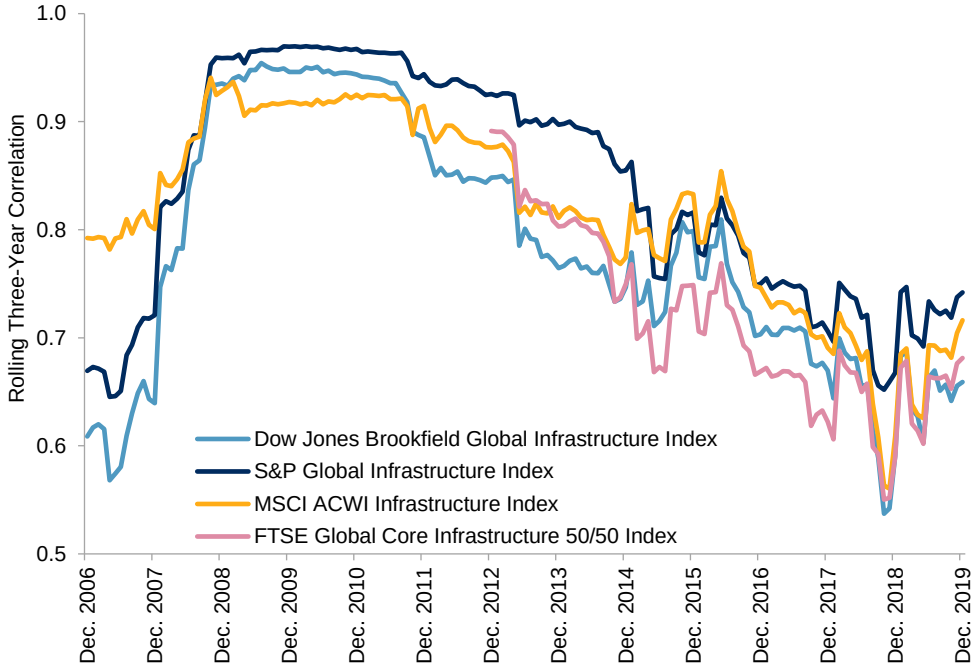
Exhibit 6: Listed Infrastructure Equity Indices – Rolling Three-Year Annualized Volatility



Source: S&P Dow Jones Indices LLC, MSCI FTSE. Data from Dec. 29, 2006, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

In terms of volatility and correlation, the S&P Global Infrastructure Index is on the high side of the spectrum.

Exhibit 7: Listed Infrastructure Equity Indices – Rolling Three-Year Correlation with the S&P Global BMI



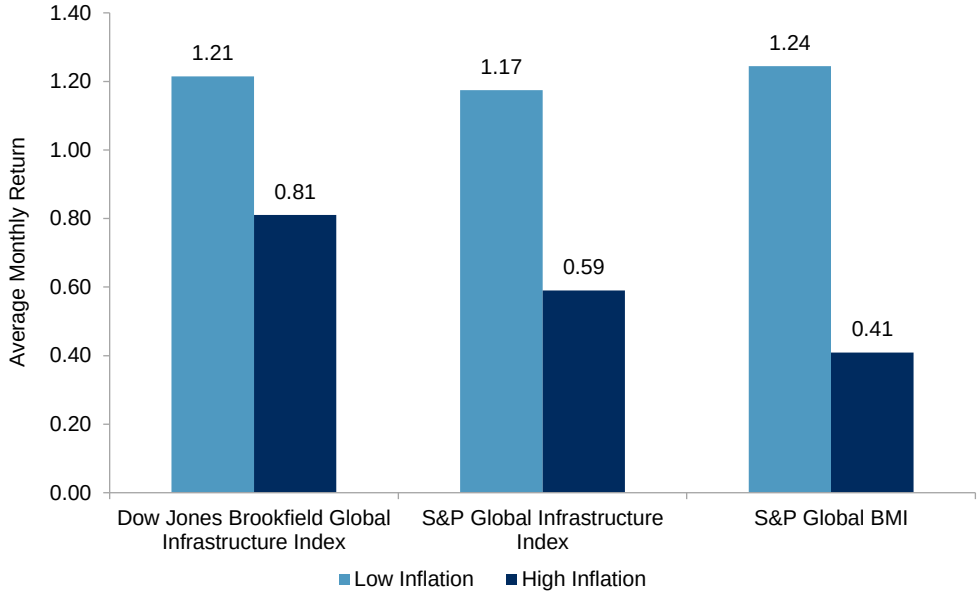
Source: S&P Dow Jones Indices LLC, MSCI, FTSE. Data from Dec. 29, 2006, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Inflation Hedge

One of the potential benefits of investing in infrastructure is the historical inflation hedge that it has provided.

One of the potential benefits of investing in infrastructure is the historical inflation hedge that it has provided. To illustrate this, we studied the relationship between the indices' monthly returns and inflation rates[3] compared with the broad market benchmark. Exhibit 8 shows that over the past 17 years (from Dec. 31, 2002, to Dec. 31, 2019), the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index have outperformed the S&P Global BMI by a monthly average of 40 bps and 18 bps, respectively, in high-inflation months. These two indices have slightly underperformed the S&P Global BMI in low-inflation months.

Exhibit 8: Average Monthly Return of the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index versus the S&P Global BMI during Different Inflation Periods



In high-inflation months, the S&P DJI infrastructure indices outperformed by 18-40 bps.

Source: S&P Dow Jones Indices LLC, OECD. Data from Dec. 31, 2002, to Dec. 31, 2019. Index performance based on net total return. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Listed Infrastructure and Oil Prices

The impact of oil prices on companies owning or operating infrastructure assets is not trivial. First, there is generally low exposure to oil prices, as companies that typically own or operate these assets tend to have stable cash flows backed by long-term contracts that are sometimes regulation enabled. It also helps that most of these assets are monopolistic in nature.

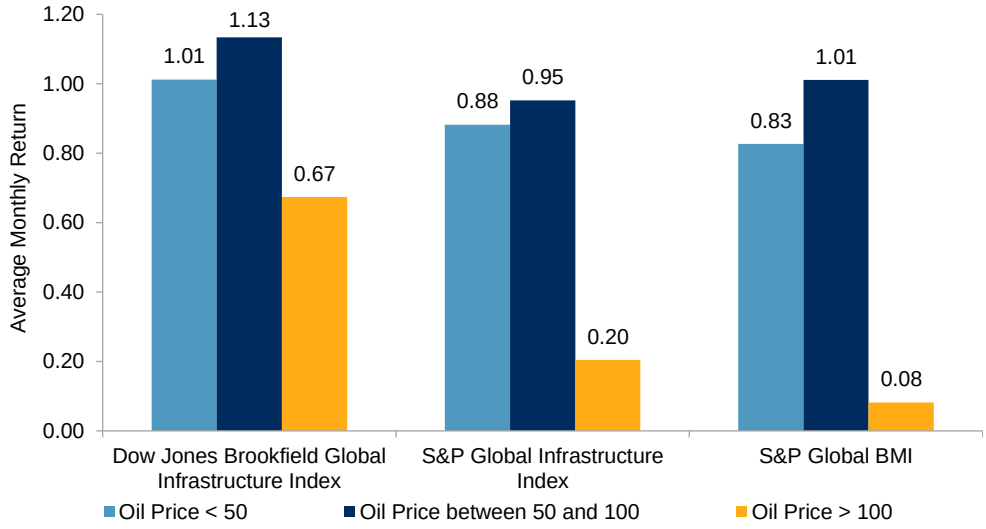
[3] Inflation was measured by year-over-year changes in the U.S. Consumer Price Index (Consumer Price Index for All Urban Consumers, Source: FRED). The median of inflation was calculated from January 2003 to December 2019. Months when inflation was greater than median inflation were considered to be high inflation, and vice versa. This analysis was performed from the hypothetical point of view of investors based in the U.S. or having exposure to U.S. inflation in their portfolios.

Sensitivity to oil prices varies from company to company…

Second, there is no linear relationship between oil prices and performance of listed infrastructure. Exhibit 9 shows that from Dec. 31, 2002, to Dec. 31, 2019, the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index almost always outperformed the S&P Global BMI, regardless of oil prices. When oil prices were high (above USD 100 per barrel), the monthly outperformance was 59 bps and 12 bps on average, respectively. When oil prices were low (below USD 50 per barrel), the monthly outperformance was 19 bps and 6 bps on average, respectively. When oil prices were moderate (between USD 50 and USD 100 per barrel), the monthly outperformance was 12 bps for the Dow Jones Brookfield Global Infrastructure Index, and the S&P Global Infrastructure Index slightly underperformed on average. It seems that low oil prices may not be a bad thing for listed infrastructure.

…depending on whether they are net consumers or producers of oil.

Exhibit 9: Average Monthly Return of the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index versus the S&P Global BMI at Different Oil Prices



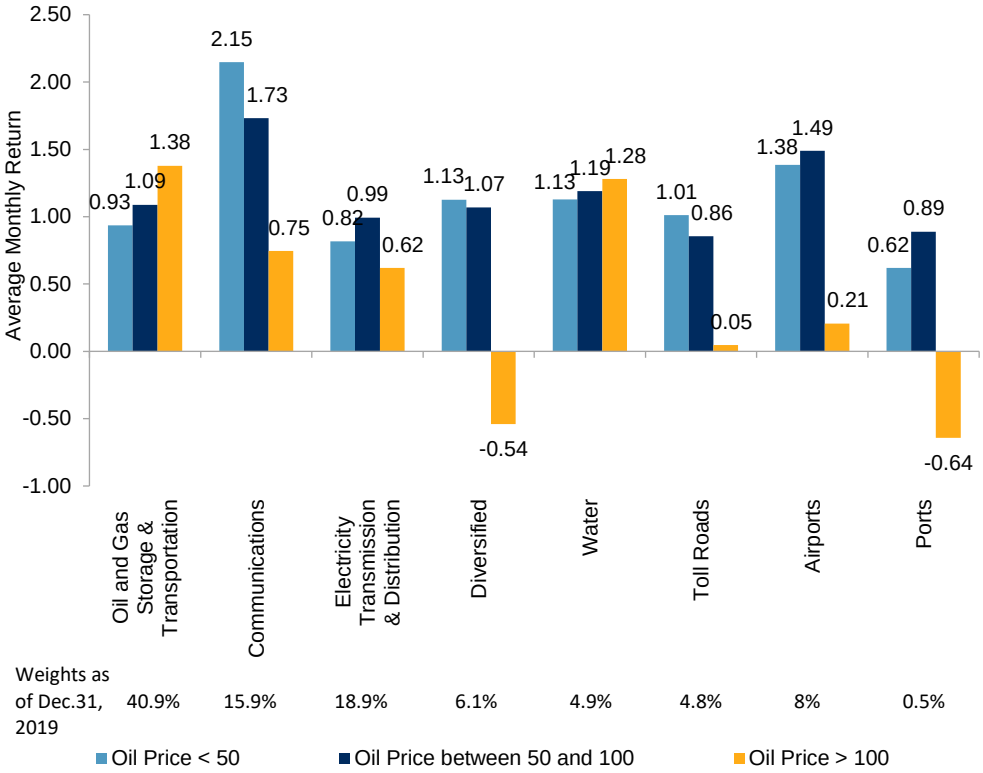
Source: S&P Dow Jones Indices LLC, CME. Oil price is represented by WTI crude oil prices (the generic 1st 'CL' future). Data from Dec. 31, 2002, to Dec. 31, 2019. Index performance based on net total return. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

The S&P DJI infrastructure indices nearly always outperformed, regardless of oil prices.

Third, the sensitivity to oil prices varies from company to company, depending on whether they are net consumers or producers of oil. Exhibit 10 shows the average monthly return of the Dow Jones Brookfield Global Infrastructure Sector Indices at different oil prices from Dec. 31, 2002, to Dec. 31, 2019. Oil & Gas Storage & Transportation seemed to be the infrastructure subsector most negatively affected by low oil prices. Other sectors, except Water, seemed to benefit from low oil prices.

Oil & Gas Storage & Transportation seemed to be the infrastructure subsector most negatively affected by low oil prices…

Exhibit 10: Average Monthly Return of the Dow Jones Brookfield Global Infrastructure Sector Indices at Different Oil Prices



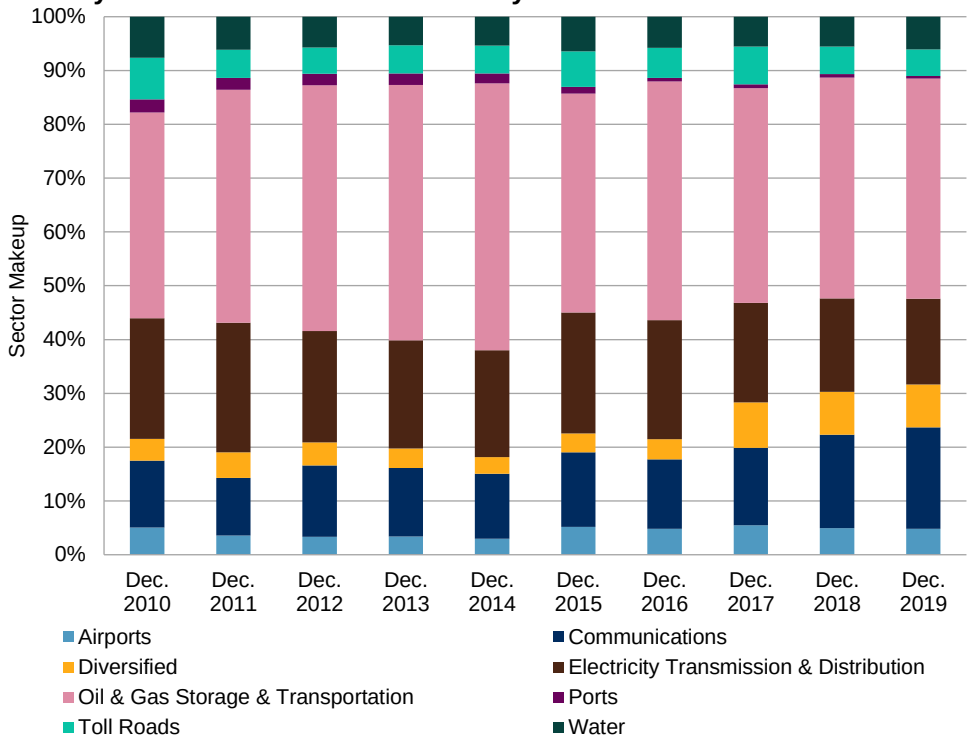
Source: S&P Dow Jones Indices LLC, CME. Oil price is represented by WTI crude oil prices (the generic 1st 'CL' future). Data from Dec. 31, 2002, to Dec. 31, 2019. Index performance based on net total return. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

IMPACT OF OIL & GAS STORAGE & TRANSPORTATION

…while other sectors, except Water, seemed to benefit from low oil prices.

Among all eight Dow Jones Brookfield pure-play sectors, the Dow Jones Brookfield Global Infrastructure Index is most heavily exposed to Oil & Gas Storage & Transportation. As of Dec. 31, 2019, it took up 41% of the index and averaged 43.01% over the past 10 years (see Exhibit 11).

Exhibit 11: Sector Breakdown of Dow Jones Brookfield Global Infrastructure Index by Dow Jones Brookfield Pure-Play Sectors



Source: S&P Dow Jones Indices LLC. Data from December 2010 to December 2019. Weights of sector indices represent end of year status. Chart is provided for illustrative purposes.

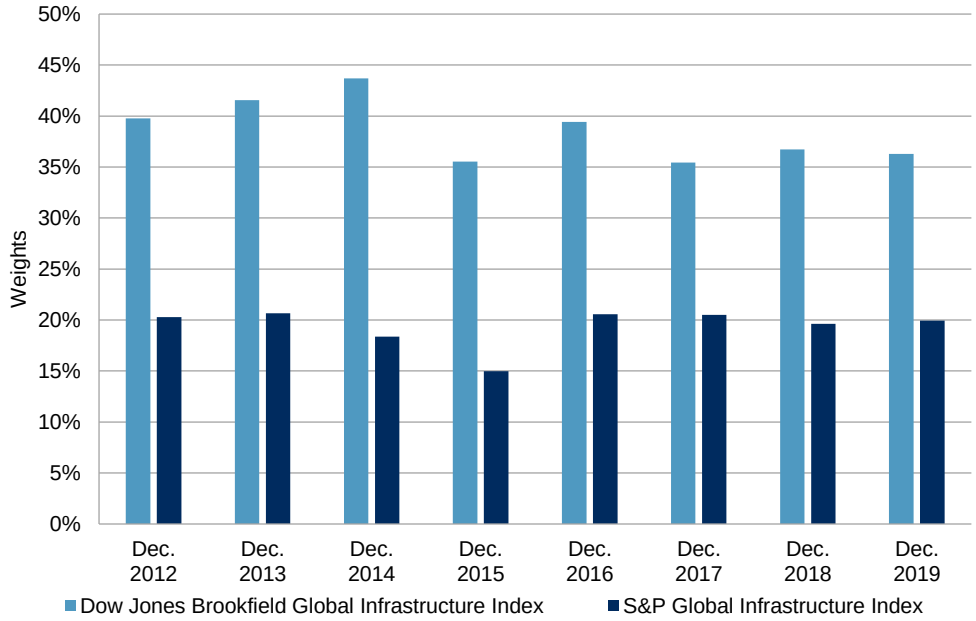
The Dow Jones Brookfield Global Infrastructure Index applies an unconstrained approach to allocation…

…while the S&P Global Infrastructure Index is capped at 20% for the Energy sector and 40% for Utilities.

Companies in the Oil & Gas Storage & Transportation sector are defined as being engaged in the development, ownership, lease, concession, or management of oil and gas (and other bulk liquid products), fixed transportation or storage assets, and related midstream energy services. This pure-play infrastructure sector corresponds to a combination of two GICS sub-industries: Oil & Gas Storage & Transportation and Gas Utilities. Exhibit 12 shows that over the past eight years (GICS was not available for the Dow Jones Brookfield Indices before 2012), the Dow Jones Brookfield Global Infrastructure Index had allocated 19% more on average to Oil & Gas Storage & Transportation than the S&P Global Infrastructure Index. The difference is a natural result of unconstrained versus constrained index design. The Dow Jones Brookfield Global Infrastructure Index applies an unconstrained approach, while the S&P Global Infrastructure Index is capped at 20% for the Energy sector (Oil & Gas Storage & Transportation) and 40% for the Utilities sector (Gas Utilities; see Exhibit 1).

Oil & Gas Storage & Transportation plays an important role in understanding the performance of the Dow Jones Brookfield Global Infrastructure Index.

Exhibit 12: Weight of Oil & Gas Storage & Transportation Industry in the Dow Jones Brookfield Infrastructure Index and S&P Global Infrastructure Index



Source: S&P Dow Jones Indices LLC. Data from December 2012 to December 2019. Weights of sector indices represent end of year status. Chart is provided for illustrative purposes.

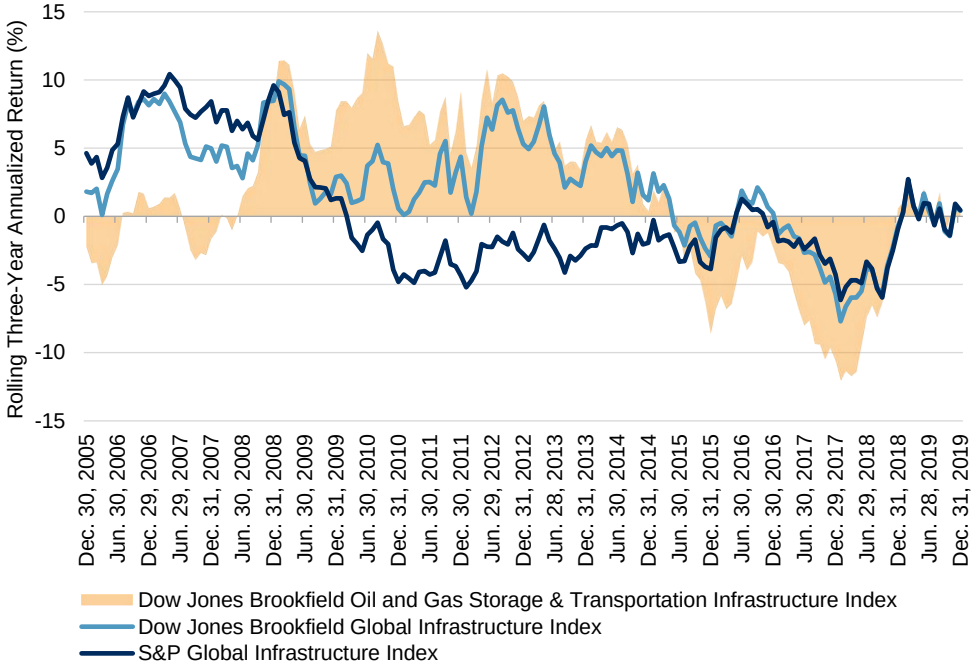
From January 2009 to mid 2015, the Dow Jones Brookfield Global Infrastructure Index presented a long-lasting outperformance over the S&P Global Infrastructure Index…

Given its substantial weight, Oil & Gas Storage & Transportation plays an important role in understanding the performance of the Dow Jones Brookfield Global Infrastructure Index. Exhibit 13 demonstrates the impact of Oil & Gas Storage & Transportation on the Dow Jones Brookfield Global Infrastructure Index in comparison with the S&P Global Infrastructure Index on a rolling three-year basis. There are two clear-cut intervals since the 2008 financial crisis. First, from January 2009 to mid 2015, the Dow Jones Brookfield Global Infrastructure Index presented a long-lasting outperformance over the S&P Global Infrastructure Index, which can be largely attributed to the rapid growth in Oil & Gas Storage & Transportation during this period. On the other hand, the Oil & Gas Storage & Transportation sector could also drag down the Dow Jones Brookfield Global Infrastructure Index when its performance is heavily suppressed; e.g., during the period from mid 2015 to late 2018, the Dow Jones Brookfield Global Infrastructure Index underperformed the S&P Global Infrastructure Index when Oil & Gas Storage & Transportation sector fell due to depressed oil prices or supply uncertainties.

…which can be largely attributed to the rapid growth in Oil & Gas Storage & Transportation during this period.

Infrastructure could offer return, risk, and diversification characteristics that are different from those of other asset classes.

Exhibit 13: Dow Jones Brookfield Infrastructure Index versus S&P Global Infrastructure Index – Rolling Three-Year Annualized Return in Excess of the S&P Global BMI



Source: S&P Dow Jones Indices LLC. Data from Dec. 30, 2005, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

LISTED INFRASTRUCTURE IN ASSET ALLOCATION

Infrastructure could offer return, risk, and diversification characteristics that are different from those of other asset classes; thus, it may merit consideration for allocation in a diversified portfolio.

Exhibit 14 provides a detailed comparative overview of two infrastructure indices from S&P Dow Jones Indices versus a few major asset classes, including U.S. medium-term Treasury Bonds (as measured by the S&P U.S. Treasury Bond 7-10 Year Index[4]), U.S. investment-grade corporate bonds (as measured by the S&P U.S. Investment Grade Corporate Bond Index), U.S. high-yield corporate bonds (as measured by the S&P U.S. High Yield Corporate Bond Index), global leveraged loans (as measured by the S&P/LSTA U.S. Leveraged Loan 100 Index), and global equities (as measured by the S&P Global BMI). Exhibit 14 demonstrates that, over the past 10 years, the Dow Jones Brookfield Global Infrastructure Index outperformed all other asset classes in terms of absolute return. It also outperformed the S&P Global BMI in terms of the Sharpe, Sortino, and MAR ratios. The latter two of these ratios could be of interest to market participants who are more concerned about downside risk.

[4] The S&P U.S. Treasury Bond 7-10 Year Index was formerly known as the S&P/BG Cantor 7-10 Year U.S. Treasury Bond Index.

Exhibit 14: Return Profile of S&P DJI Infrastructure Indices versus Alternatives

METRIC	S&P U.S. TREASURY BOND 7-10 YEAR INDEX	S&P U.S. INVESTMENT GRADE CORPORATE BOND INDEX	S&P U.S. HIGH YIELD CORPORATE BOND INDEX	S&P/LSTA U.S. LEVERAGED LOAN 100 INDEX	S&P GLOBAL BMI	DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE INDEX	S&P GLOBAL INFRASTRUCTURE INDEX
Annual Return (%)	4.57	5.08	7.36	4.71	8.88	10.22	6.77
Maximum Drawdown (%)	-7.54	-4.46	-9.27	-5.84	-21.15	-17.05	-15.72
Annual Volatility (%)	5.55	3.61	5.34	4.23	13.32	11.08	12.14
Annual Skewness	0.06	-0.03	-0.05	-0.13	-0.09	-0.06	-0.07
Monthly Alpha to the S&P Global BMI (%)	0.52	0.39	0.36	0.21	-	0.38	0.01
T-Statistics of Alpha	3.77	4.06	4.03	2.68	-	1.89	0.04
Beta to the S&P Global BMI	-0.17	0.03	0.32	0.23	-	0.62	0.77
Correlation with the S&P Global BMI	-0.40	0.13	0.79	0.72	-	0.75	0.84
Sharpe Ratio[5]	0.73	1.26	1.28	0.99	0.63	0.87	0.51
Sortino Ratio	1.52	2.75	2.52	1.89	1.04	1.56	0.88
MAR Ratio	0.61	1.14	0.79	0.81	0.42	0.60	0.43
Omega Ratio	1.76	2.74	2.71	2.74	1.73	2.04	1.58

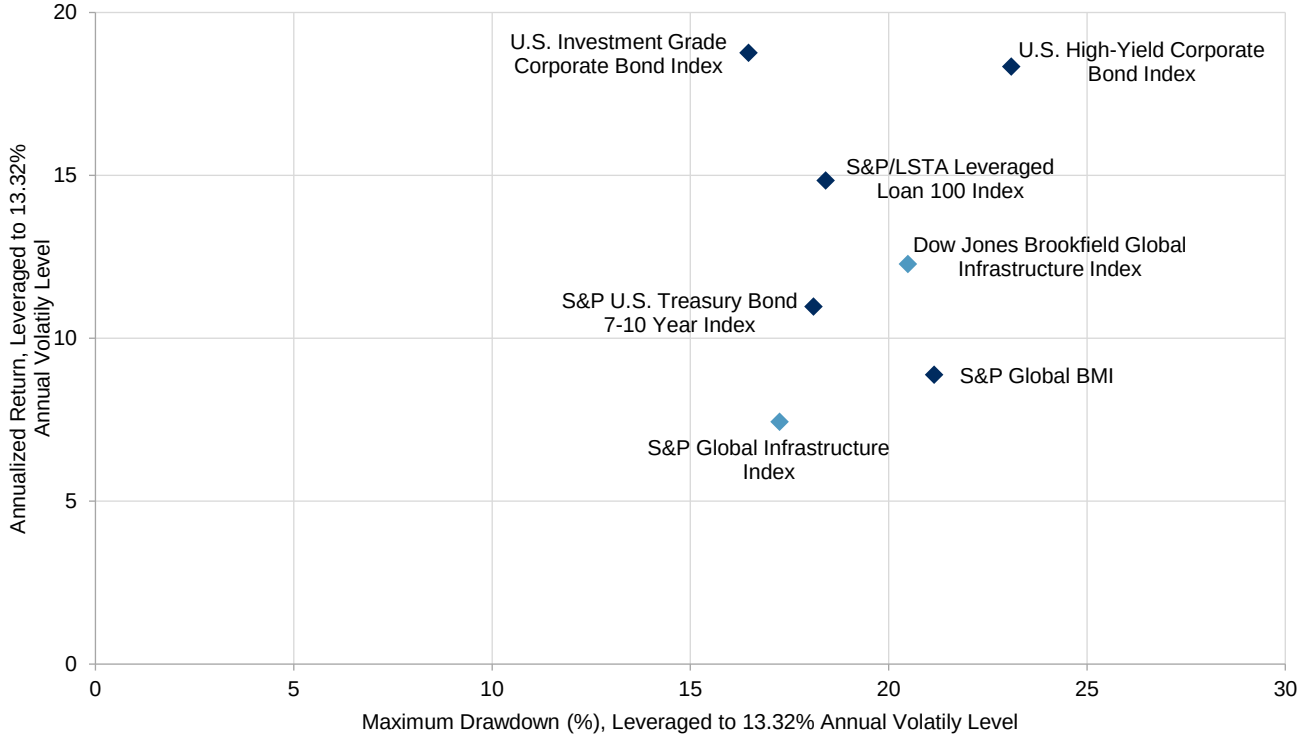
Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Table is provided for illustrative purposes reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 15 provides a visual illustration of the return versus the drawdown of the Dow Jones Brookfield Global Infrastructure Index, the S&P Global Infrastructure Index, and other asset classes. All index returns and drawdowns are leveraged to a 13.32% annual volatility level, which is the annual volatility of the S&P Global BMI's net total returns over the past 10 years. For market participants who focus on return per unit of risk, it is worth noting that with the same downside risk, the Dow Jones Brookfield Global Infrastructure Index generated higher return than global equities from Dec. 31, 2009, to Dec. 31, 2019.

Diversification is the key advantage of infrastructure ownership in a portfolio context. Over the past 10 years, the Dow Jones Brookfield Global Infrastructure Index had a correlation of 0.01 with U.S. Treasury Bonds, 0.40 with U.S. investment-grade corporate bonds, 0.75 with U.S. high-yield bonds, 0.57 with global leveraged loans, and 0.75 with global equities (see Exhibit 16).

[5] The Sharpe ratio is the annualized excess return of an index over the S&P U.S. Treasury Bill 0-3 Month Index divided by the annualized standard deviation of monthly returns. The Sortino ratio is the annualized excess return of an index over the S&P U.S. Treasury Bill 0-3 Month Index divided by the standard deviation of negative asset returns. The MAR ratio is the annualized return divided by the maximum drawdown for the measurement period. The Omega ratio is the absolute value of the sum of positive returns divided by the sum of negative returns, based on monthly returns.

Exhibit 15: Risk/Return Profile of S&P DJI Infrastructure Indices versus Alternatives



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, to Dec. 31, 2019. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. Net total returns displayed are actual performance leveraged to a 13.32% annual volatility level, which is the annual volatility of the S&P Global BMI during the period.

Exhibit 16: Pairwise Correlation between S&P DJI Infrastructure Indices and Alternatives

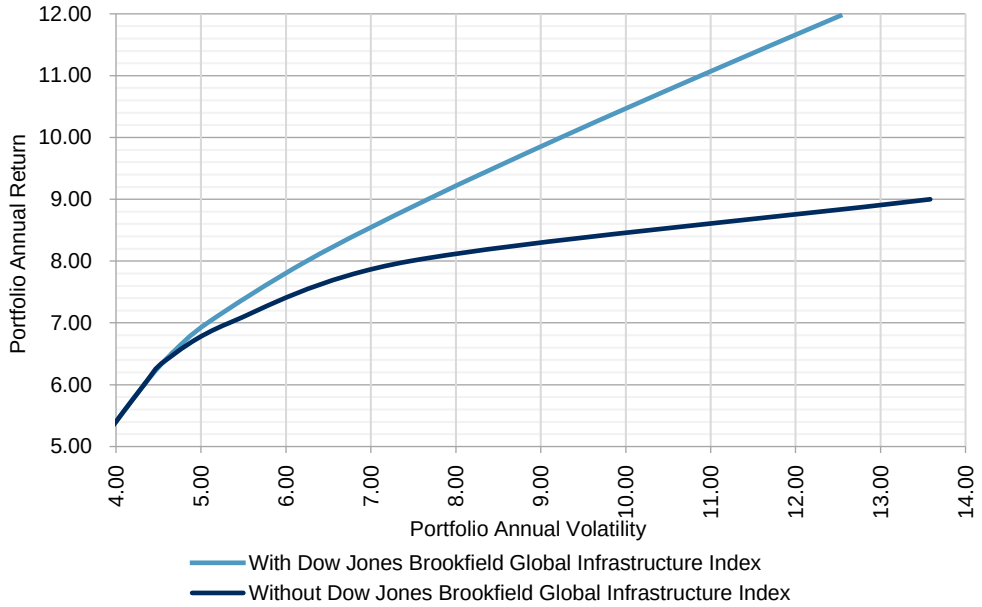
INDEX	S&P U.S. TREASURY BOND 7-10 YEAR INDEX	S&P U.S. INVESTMENT GRADE CORPORATE BOND INDEX	S&P U.S. HIGH YIELD CORPORATE BOND INDEX	S&P/LSTA U.S. LEVERAGED LOAN 100	S&P GLOBAL BMI	DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE	S&P GLOBAL INFRASTRUCTURE INDEX
S&P U.S. TREASURY BOND 7-10 YEAR INDEX	-	0.74	-0.12	-0.39	-0.40	0.01	-0.11
S&P U.S. INVESTMENT GRADE CORPORATE BOND INDEX	0.74	-	0.46	0.16	0.12	0.40	0.35
S&P U.S. HIGH YIELD CORPORATE BOND INDEX	-0.12	0.46	-	0.83	0.79	0.75	0.77
S&P/LSTA U.S. LEVERAGED LOAN 100	-0.39	0.16	0.83	-	0.70	0.57	0.64
S&P GLOBAL BMI	-0.40	0.12	0.79	0.70	-	0.75	0.84
DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE	0.01	0.40	0.75	0.57	0.75	-	0.94
S&P GLOBAL INFRASTRUCTURE INDEX	-0.11	0.35	0.77	0.64	0.84	0.94	-

Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, to Dec. 31, 2019. Index performance based on net total return. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

There is a clear improvement in the efficiency of the resulting asset allocations after adding infrastructure into the opportunity set.

Finally, we performed two traditional Markowitz mean-variance optimizations, with and without the Dow Jones Brookfield Global Infrastructure Index included in the opportunity set of U.S. medium-term Treasury Bonds, investment-grade corporate bonds, high-yield corporate bonds, leveraged loans, and global equities. The resulting historical efficient frontiers are presented in Exhibit 17. There is a clear improvement in the efficiency of the resulting asset allocations after adding infrastructure into the opportunity set. The portfolio information ratio was maximized with an allocation of 50% to U.S. medium-term Treasury Bonds, 47% to U.S. high-yield corporate bonds, and 3.2% to the Dow Jones Brookfield Global Infrastructure Index.

Exhibit 17: Historical Efficient Frontier



Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2002, to Dec. 31, 2019. Index performance based on net total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance. The following indices were used in preparation of the exhibit: S&P U.S. Treasury Bond 7-10 Year Index, S&P U.S. Global Investment Grade Corporate Bond Index, S&P U.S. High Yield Corporate Bond Index, S&P/LSTA U.S. Leverage Loan 100 Index, S&P Global BMI, and Dow Jones Brookfield Global Infrastructure.

Given the essential role of infrastructure assets as a backbone for economic growth, this sector is an emerging asset class in its own right.

CONCLUSION

Infrastructure is an asset class that has proven to be a strong source of diversification, yield, and attractive net total returns. Given the essential role of infrastructure assets as a backbone for economic growth, and in light of the growing trend of privatization of these assets, this sector is an emerging asset class in its own right. Unlike other listed infrastructure indices, the Dow Jones Brookfield Global Infrastructure Index and the S&P Global Infrastructure Index use a broad-based approach that identifies companies that fall into the pure-play infrastructure category. Listed infrastructure, in particular, may offer a sound anchor and immediate entry point into the asset class.

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PERFORMANCE DISCLOSURE

The S&P Global Infrastructure Index was launched February 22, 2007. The Dow Jones Brookfield Global Infrastructure Index was launched July 14, 2008. The S&P U.S. Treasury Bond 7-10 Year Index was launched March 24, 2010. The S&P U.S. Investment Grade Corporate Bond Index was launched July 31, 2017. The S&P U.S. High Yield Corporate Bond Index was launched December 15, 2016. The S&P/LSTA U.S. Leverage Loan 100 Index was launched October 20, 2008. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at www.spdji.com. Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US $100,000 investment for a 12-month period (or US $10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US $1,650), the net return would be 8.35% (or US $8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US $5,375, and a cumulative net return of 27.2% (or US $27,200).

GENERAL DISCLAIMER