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Let's Get Real About Indexing Real Assets: Introducing the S&P Real Assets Index

INTRODUCTION

Over the past five years, investment in real asset strategies has increased by 325%, with 80% of institutions targeting up to 15%, and two-thirds still feeling they are underinvested.[1] One of the main reasons for the increase in allocations to real assets is that investors are looking to manage risk in a new way with new tools. From the high correlation across assets through the recessions of 2001-2003 and 2007-2009, many investors are moving from traditional asset class allocations defined by security type to risk-type based allocations.[2] For example, rather than defining asset classes by traditional definitions like stocks, bonds, and real estate, investors are considering asset classes by risk-type similarities that tend to provide inflation protection and diversification. Popular risk-based allocation models often include growth, income, liquidity, and real assets as categories for portfolio construction.

The S&P Real Assets Index gives investors an innovative yet simple tool that may improve diversification and inflation protection while meeting the risk requirements of today.

In this paper, a group of real assets will be defined as an investable index created to measure the performance of the underlying asset class and to serve as an index benchmark. This is the first time a complete set of liquid real assets (infrastructure, property, natural resources, and inflation bonds) have been combined in an index by using equities, fixed income, and futures. The S&P Real Assets Index gives investors an innovative yet simple tool that may improve diversification and inflation protection while seeking to meet the risk requirements of today.

WHAT ARE REAL ASSETS?

Despite the inflows into real assets, it has been a loosely defined space. To illustrate this, the range of real asset definitions can include tangible assets, assets with inflation and diversification properties, and investments that are independent from the variations in the value of money. The following are a few definitions from well-known sources that have emphasis on different characteristics.

[1] Source: Greenwich Associates 2014 Institutional Real Assets Research. Based on 107 respondents in 2014.

[2] Source: Cerulli's Investment Management Report, 2013. Cerulli Associates, in partnership with the Institutional Investor Institute. Based on 27 corporate-defined benefits, 33 public-defined benefits, 15 endowment/foundation, and 14 defined contribution respondents in 2014.

1. In an investment concept, a real asset is defined as a good that is independent from variations in the value of money.[3]
2. Real assets are physical or tangible assets that have value, due to their substance and properties. Their value is derived from a contractual claim on an underlying asset, which may be real or intangible. For example, commodities and property are real assets, but commodity futures, ETFs, and real estate investment trusts constitute financial assets for which value depends on the underlying real assets.[4]
3. Real assets is its own asset class that aims to have either an explicit or implicit return correlation to inflation. Real assets include inflation-linked bonds, commodities, and real estate, or some combination of those assets. This can potentially enhance portfolio diversification, mitigate inflation risk, and provide more stable real (after-inflation) returns.[5]
4. Real assets are often defined as physical or tangible assets that tend to provide a "real return," often linked to inflation. This definition encompasses a wide range of potential investments, including real estate, infrastructure, timberlands, agrilands, commodities, precious metals, and natural resources. Additionally, real-return financial instruments, such as inflation-protected bonds, are often included in the real asset conversation as well.[6]

Real assets are often defined as physical or tangible assets that tend to provide a "real return," often linked to inflation.

Not only asset managers differ in opinions about what are real assets, but investors also disagree about the topic. However, most consider real estate, infrastructure, and raw materials to be real assets. The results of two surveys[7] of institutional investors found that more than 90% of those surveyed classified real estate and commodities (land and forests, precious metals, and agriculture) as real assets. The level of agreement decreases in the case of renewable energy, infrastructure, and ships. Equities are frequently classified as real assets because the purchaser of shares acquires an interest in the company. Luxury goods such as art, jewelry, and vintage cars are also often defined as real assets. Given the variety of opinions on what comprises real assets and their recent high demand, the S&P Real Assets Index was launched to help define the asset class and allow investors an easy way to measure it.

Real assets are like other asset classes when it comes to index inclusion criteria. Despite the many different types of assets that are commonly viewed as real assets, like private real estate, private infrastructure, physical commodities, and farmland, only listed real assets that have pricing availability and liquidity fit within an investable indexing framework.

[3] Source: Deutsche Bank. DB Research. June 6, 2012.

[4] Source: Investopedia. http://www.investopedia.com/terms/r/realasset.asp, viewed on May 23, 2013.

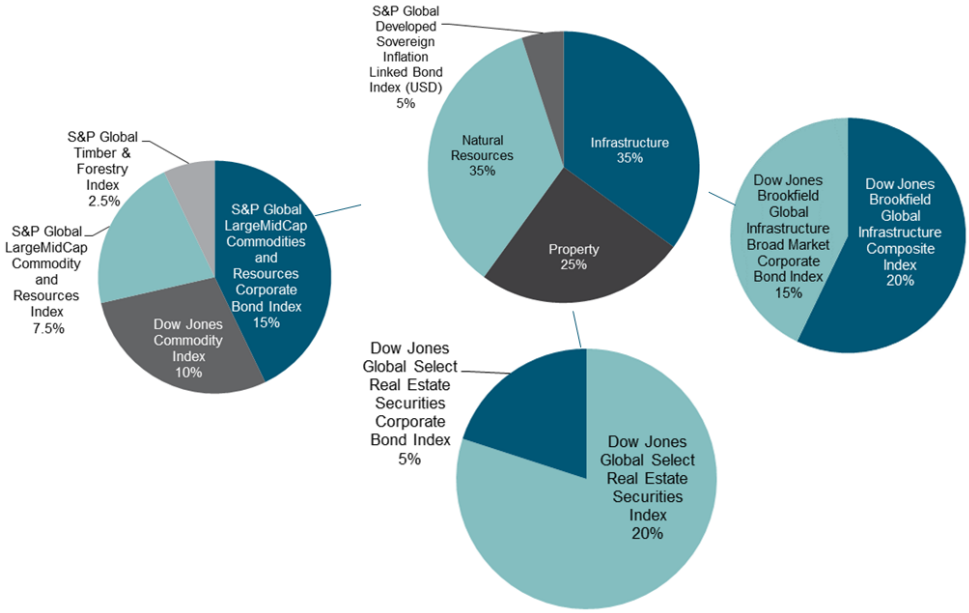
[5] Source: PIMCO. http://www.pimco.com/EN/Solutions/Pages/DiversifiedRealAsset.aspx?origin=Strategies.

[6] Source: Brookfield. http://www.brookfield.com/_Global/42/img/content/File/marketing/private_funds/2013/BAM_WhitePaper_Nov_2013_F_PR.pdf. Viewed on Jan. 21, 2015.

[7] Source: Greenwich Associates 2014 Institutional Real Assets Research. Based on 110 respondents in 2014. Steinbeis Study 2010.

The S&P Real Assets Index includes global infrastructure (35%), property (25%), natural resources (35%), and inflation-linked bonds (5%), using stocks (50%), bonds (40%), and futures (10%). It is constructed as a weighted-return index, using the components and weights illustrated in Exhibit 1.

Exhibit 1: S&P Real Assets Index Components and Weights

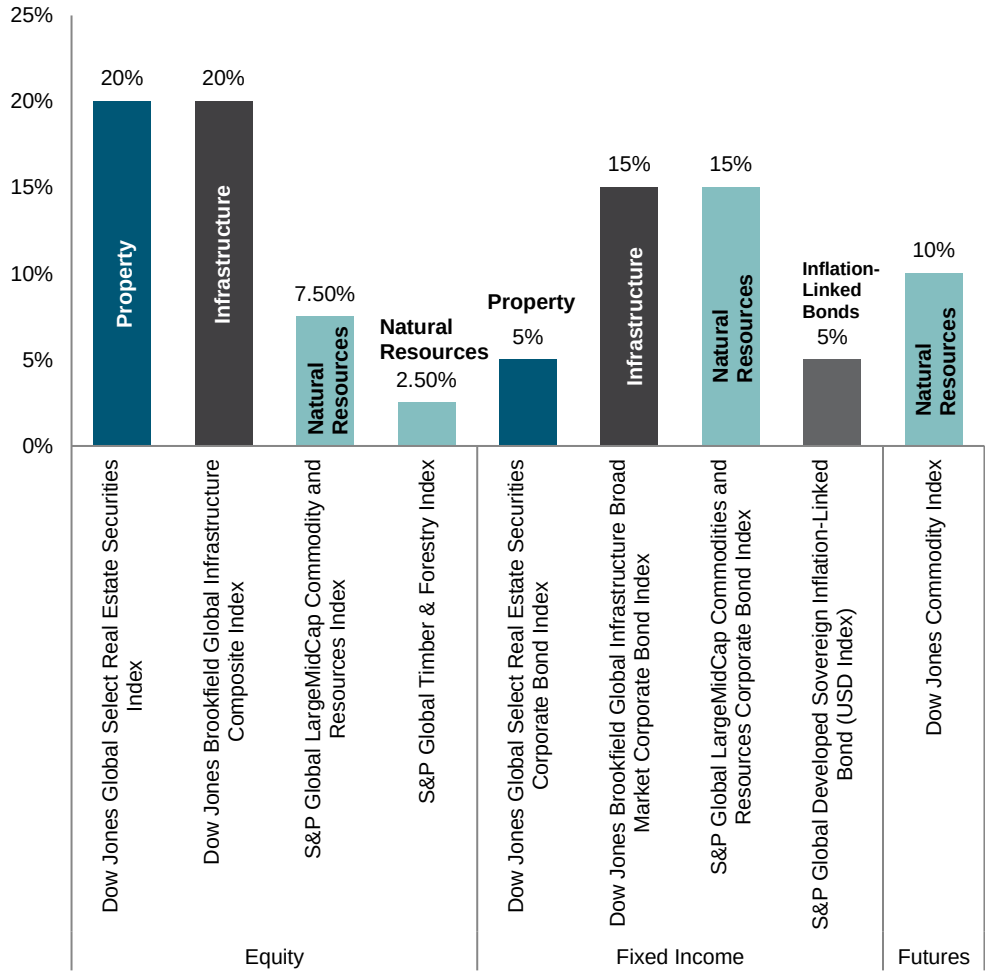


Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes. Index target weights are rebalanced to these percentages every April and October.

Equities are frequently classified as real assets because the purchaser of shares acquires an interest in the company.

Although most investors view real assets divided into the aforementioned categories, it is important to note that the S&P Real Assets Index reflects these categories using all public, liquid, and eligible instruments to capture the full picture of the asset class. This index is the first of its kind to utilize such a broad spectrum that goes beyond equities to include fixed income and futures. The index holds 50% equities, 40% fixed income, and 10% commodity futures, allowing the full (public) capital structure of real asset companies to be represented.

Exhibit 2: Breakdown of S&P Real Assets Index Components and Weights



Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes. Index target weights are rebalanced to these percentages every April and October.

The basic weighting methodology for real assets is drawn from traditional indexing that uses market capitalization to apply weights to constituents.

ASSET WEIGHTINGS INSIDE REAL ASSETS

Just as the eligibility criteria for inclusion follow traditional indexing rules requiring pricing data availability and liquidity, the basic weighting methodology for real assets is drawn from traditional indexing that uses market capitalization to apply weights to constituents. First, the floating market capitalization and outstanding market value for each equity and fixed income index component of infrastructure, property, natural resources, and inflation-linked bonds for a three-year period were examined to determine size and stability. The proportions showed high relative stability, allowing fixed weights to be applied and rebalanced twice per year, in April and October.

Since commodity futures have no market capitalization, their weight is set to 10%, which is a general constraint for allocation models that yield excessively high unconstrained weights from commodity futures' low correlation to other asset classes. Since, historically, commodity futures

have a similar risk/return profiles as equities, despite the low correlation,[8] investors that allocate to commodity futures are likely to take money from equities to do so. For this reason, the weight of natural resource equities is also set to 10% to match the allocation of commodity futures. From this set allocation, the floating market capitalization of the equity natural resources is removed from the total market value used to calculate relative weights.

Additionally, the outstanding market value of USD 3 trillion dollars of inflation-linked bonds is removed from the total market value, since it is disproportionately large compared with the fixed income market value outstanding in infrastructure, property, and natural resources. Furthermore, similar to commodity futures, inflation-linked bonds tend to have low correlation to other asset classes, so models often yield a high weight that can be excessive, especially for their relatively low volatility. Since there is a wide range of optimal inflation-linked bond allocations based on assumptions, the weight is set to 5% of the index and equals 12.5% of the fixed income portion. Each remaining component is relatively weighted by its floating market capitalization and outstanding bond market value as a percentage of the total market value, as measured by the equities and fixed income components.

With the S&P Real Assets Index, investors may achieve more diversification and inflation protection than with just equities or any single asset.

WHY USE REAL ASSETS?

The two main reasons investors use real assets are for diversification and inflation protection. The S&P Real Assets Index design incorporates both equities and fixed income in an attempt to fully represent companies, plus it adds commodity futures for the most direct exposure to natural resources. The result is that investors may achieve more diversification and inflation protection than with just equities or any single real asset.

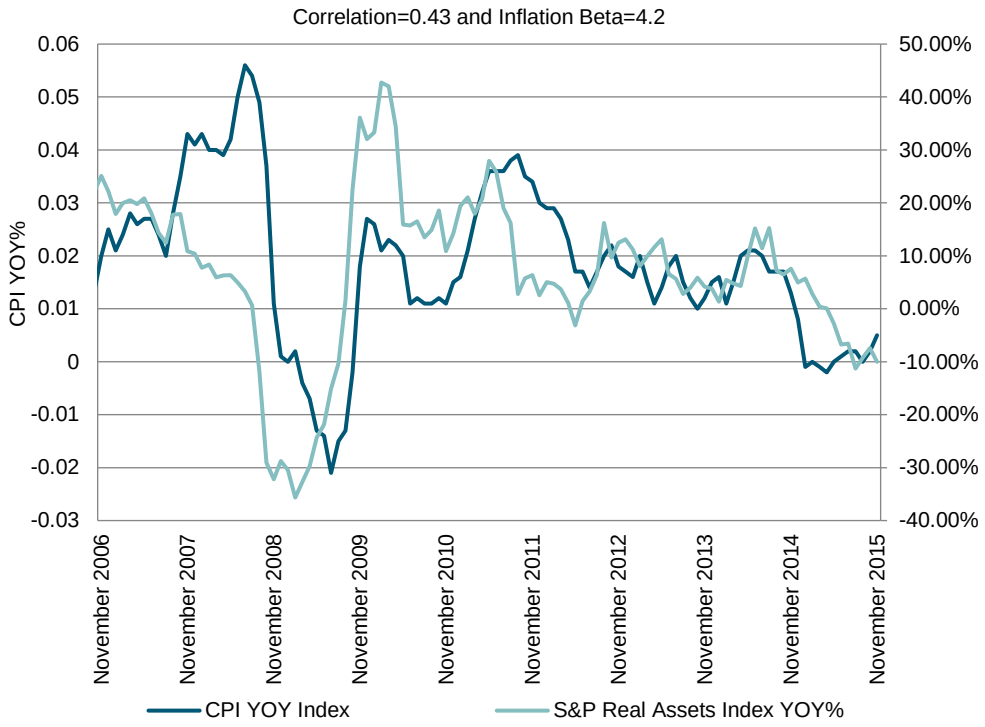
Inflation

Based on back-tested data, the S&P Real Assets Index has demonstrated relatively strong inflation protection, with a correlation of 0.43 to inflation and an inflation beta of 4.2, as measured by year-over-year returns measured monthly and the CPI.[9] Inflation beta can be interpreted as a 1% increase in inflation results in a 4.2% increase in the return of the S&P Real Assets Index from April 2006 to December 2015.

[8] Source: S&P Dow Jones Indices. S&P 500® annualized return equals 8.0% and risk equals 15.0%. S&P GSCI® annualized return equals 6.9% and risk equals 19.1%. The correlation between the S&P 500 and S&P GSCI is 0.18. All measures use monthly data from January 1976 to December 2013. Historical results are not indicative of future results.

[9] Source: S&P Dow Jones Indices. Inflation beta data are measured by CPI-U as listed on the website: ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.

Exhibit 3: Real Assets Inflation Protection



Source: S&P Dow Jones Indices LLC. Back-tested data from April 2005 to December 2015 and measures year-over-year changes. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance. The S&P Real Assets Index was launched Dec. 31, 2015. All data prior to the launch dates are back-tested.

Until now, the real assets indices publicly available have been based on only equities or a single asset category.

Until now, the real assets indices publicly available have been based on only equities or a single asset category. To demonstrate the power of combining the assets and capital structure, like in the S&P Real Assets Index, the correlation to inflation and inflation beta can be found for the equity composite of property, infrastructure, and natural resources, then for each component alone in addition to solely inflation-linked bonds in Exhibit 4. Only natural resources show a higher inflation protection, which is to be expected given that the same energy and food components in the CPI are included in the commodity futures index, and that energy is the most volatile component of CPI. The inflation-linked bonds are, by definition, highly correlated to the CPI because their value is based on inflation; however, the inflation beta is relatively low.[10]

[10] Each single real asset category is defined by the S&P Real Assets Index and the indices inside the category component are weighted proportionally to its weighting in the composite index. For example, infrastructure equities are 20% and infrastructure bonds are 15% in the S&P Real Assets Index, so the weights used inside the hypothetical sector category for infrastructure in the analysis are 57% in infrastructure equities, as represented by the Dow Jones Brookfield Global Infrastructure Composite Index, and 43% in infrastructure bonds, as represented by the Dow Jones Brookfield Global Infrastructure Broad Market Corporate Bond Index.

Exhibit 4: Correlation to Inflation and Inflation-Linked Beta

ASSET CLASS	INFLATION BETA	CORRELATION TO INFLATION
Natural Resources (Equity + Fixed Income + Commodity Futures)	6.6	0.63
Property, Infrastructure, and Natural Resources (All Equity Only)	4.8	0.34
S&P Real Assets Index	**4.2**	**0.43**
Inflation-Linked Bonds (Fixed Income Only)	3.2	0.65
Property (Equity + Fixed Income)	3.0	0.20
Infrastructure (Equity + Fixed Income)	2.9	0.34

Source: S&P Dow Jones Indices LLC. Data as of December 2015. Table is provided for illustrative purposes.

Diversification

Because their underlying characteristics are alike in many ways, real assets are moderately correlated to each other. However, there is enough difference so that the average correlation between each compared to the group is only 0.58-0.67. The commodity futures and natural resource equities of timber and forestry have the lowest correlation, under 0.60, while the natural resource bond and infrastructure equities are more highly correlated to the rest of real assets (see Exhibit 5).

Because their underlying characteristics are alike in many ways, real assets are moderately correlated to each other.

Exhibit 5: Correlation Among Indices and Real Assets

INDEX	AVERAGE CORRELATION TO OTHER REAL ASSETS
S&P Global LargeMidCap Commodity and Resources Corporate Bond	0.67
Dow Jones Brookfield Global Infrastructure Composite	0.66
S&P Global Developed Sovereign Inflation-Linked Bond	0.65
Dow Jones Brookfield Global Infrastructure Broad Market Corporate Bond	0.65
S&P Global LargeMidCap Commodity and Resources	0.64
Dow Jones Global Select Real Estate Securities	0.63
Dow Jones Global Select Real Estate Securities Corporate Bond Index	0.60
Dow Jones Commodity Index	0.59
S&P Global Timber and Forestry	0.58

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

The correlation in equities is higher than in the bonds, as shown by the relatively strong correlation between the S&P 500 and the S&P Real Assets Index of 0.83, and a weak correlation of 0.24 between the S&P U.S. Aggregate Bond Index and the S&P Real Assets Index.

Exhibit 6: Correlation Matrix

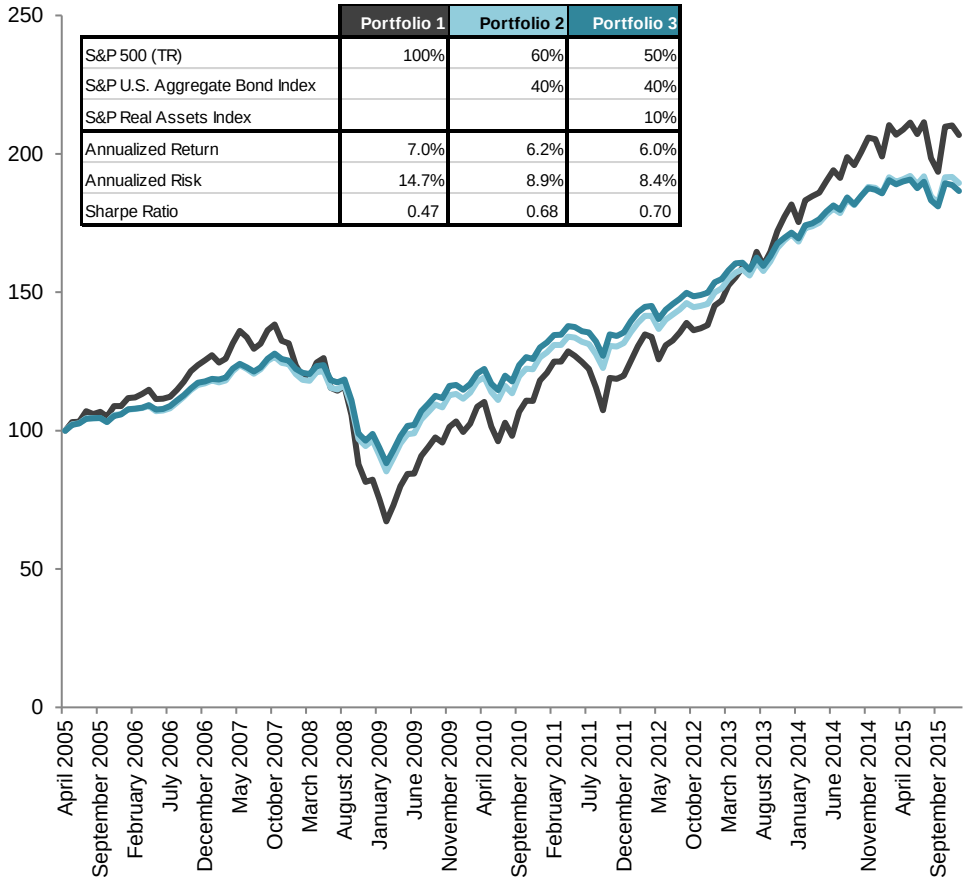
INDEX	S&P REAL ASSETS INDEX	DOW JONES BROOKFIELD GLOBAL INFRA-STRUCTURE COMPOSITE	DOW JONES GLOBAL SELECT REAL ESTATE SECURITIES	S&P GLOBAL LARGEMIDCAP COMMODITY AND RESOURCES	S&P GLOBAL TIMBER AND FORESTRY	DOW JONES BROOK-FIELD GLOBAL INFRA-STRUCTURE BROAD MARKET CORPORATE BOND	DOW JONES GLOBAL SELECT REAL ESTATE SECURITIES COR-PORATE BOND INDEX	S&P GLOBAL LARGEMIDCAP COMMODITY AND RESOURCES CORPORATE BOND	S&P GLOBAL DEVELOPED SOVEREIGN INFLATION-LINKED BOND	DOW JONES COM-MODITY INDEX	S&P U.S. AGGRE-GATE BOND INDEX	S&P 500 (TR)
S&P REAL ASSETS INDEX	1.00	-	-	-	-	-	-	-	-	-	-	-
DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE COMPOSITE	0.90	1.00	-	-	-	-	-	-	-	-	-	-
DOW JONES GLOBAL SELECT REAL ESTATE SECURITIES	0.88	0.78	1.00	-	-	-	-	-	-	-	-	-
S&P GLOBAL LARGEMIDCAP COMMODITY AND RESOURCES	0.85	0.76	0.61	1.00	-	-	-	-	-	-	-	-
S&P GLOBAL TIMBER AND FORESTRY	0.81	0.76	0.84	0.68	1.00	-	-	-	-	-	-	-
DOW JONES BROOKFIELD GLOBAL INFRASTRUCTURE BROAD MARKET CORPORATE BOND	0.75	0.57	0.57	0.56	0.43	1.00	-	-	-	-	-	-
DOW JONES GLOBAL SELECT REAL ESTATE SECURITIES CORPORATE BOND INDEX	0.73	0.61	0.62	0.51	0.50	0.67	1.00	-	-	-	-	-
S&P GLOBAL LARGEMIDCAP COMMODITY AND RESOURCES CORPORATE BOND	0.78	0.62	0.58	0.62	0.51	0.91	0.72	1.00	-	-	-	-
S&P GLOBAL DEVELOPED SOVEREIGN INFLATION-LINKED BOND	0.75	0.58	0.56	0.58	0.45	0.91	0.64	0.85	1.00	-	-	-
DOW JONES COMMODITY INDEX	0.76	0.60	0.48	0.83	0.50	0.56	0.54	0.57	0.63	1.00	-	-
S&P U.S. AGGREGATE BOND INDEX	0.24	0.12	0.16	0.06	0.02	0.62	0.24	0.63	0.57	0.04	1.00	-
S&P 500 (TR)	0.83	0.81	0.83	0.71	0.87	0.45	0.47	0.50	0.46	0.52	-0.02	1.00

Source: S&P Dow Jones Indices LLC. The Sharpe Ratio uses the one-month Treasury rate as of Dec. 31, 2015 of 0.14%. http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield.

This is a key to diversification within the S&P Real Asset Index that includes the entire spectrum of assets. When moving from a portfolio of 100% equities to a mix of 60% equities and 40% fixed income to a mix of 50% equities, 40% fixed income, and 10% real assets, the potential for risk management is clearly demonstrated. While the annualized return drops slightly from 7.0% to 6.2% to 6.0%, respectively, the annualized risk drops meaningfully from 14.7% to 8.9% to 8.4%, respectively. Meanwhile, the Sharpe Ratio, a measure of risk-adjusted return, increases from 0.47 to 0.68 to 0.70, respectively. That is impressive considering the natural resources annualized return of only 2.7% compared with 7.0% for the S&P 500 over the past 10 years.

Exhibit 7: Back-Tested Historical Performance for Hypothetical Portfolios

	Portfolio 1	Portfolio 2	Portfolio 3
S&P 500 (TR)	100%	60%	50%
S&P U.S. Aggregate Bond Index		40%	40%
S&P Real Assets Index			10%
Annualized Return	7.0%	6.2%	6.0%
Annualized Risk	14.7%	8.9%	8.4%
Sharpe Ratio	0.47	0.68	0.70



Source: S&P Dow Jones Indices LLC. Back-tested monthly data from April 2005 to December 2015. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance. The S&P Real Assets Index was launched Dec. 31, 2015. The S&P U.S. Aggregate Bond Index was launched July 15, 2014. All data prior to the launch dates are back-tested.

The poor performance of natural resources is apparent when evaluating the addition of each real asset compared to the addition of the composite S&P Real Assets Index to equities and fixed income.

The poor performance of natural resources is apparent when evaluating the addition of each real asset compared to the addition of the composite S&P Real Assets Index to equities and fixed income. The low correlation of commodity futures and natural resource bonds to the S&P 500 is not enough to improve the Sharpe Ratio. On the other hand, if an identical exercise is performed with infrastructure rather than natural resources, the Sharpe Ratio increases significantly to 0.73 when moving 10% away from equities in the simple 60% equity/40% fixed income portfolio and into infrastructure for a portfolio of 50% equities, 40% fixed income, and 10% infrastructure, but the inflation protection is relatively weak. Adding only inflation-linked bonds was undesirable as shown by the return loss, and the equity sleeve of real assets or property was not as efficient, yielding Sharpe Ratios of 0.68 and, 0.67, respectively. In fact, the high correlation of the equity real assets to the S&P 500 increased the risk and the volatility of property increased the risk.

Exhibit 8: Sharpe Ratio, Return, and Risk Comparison

Asset Class	Sharpe Ratio	Annualized Return (%)	Annualized Risk (%)
S&P 500 (100%)	0.47	7.0	14.7
S&P 500 (60%)/ S&P U.S. Aggregate Bond (40%)	0.68	6.2	8.9
S&P 500 (50%)/S&P U.S. Aggregate Bond Index (40%)/(10%) Listed Asset:	-	-	-
Infrastructure (Equity + Fixed Income)	0.73	6.2	8.3
Inflation-Linked Bonds	0.72	5.8	7.9
S&P Real Assets Index	**0.70**	**6.0**	**8.4**
Property, Infrastructure, and Natural Resources (Equity Only)	0.68	6.2	9.0
Property (Equity + Fixed Income)	0.67	6.1	9.0
Natural Resources (Equity + Fixed Income + Commodity Futures)	0.67	5.8	8.4

Source: S&P Dow Jones Indices LLC. Back-tested monthly data from April 2005 to December 2015. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance. The S&P Real Assets Index was launched Dec. 31, 2015. The S&P U.S. Aggregate Bond Index was launched July 15, 2014. All data prior to the launch dates are back-tested.

The S&P Real Assets Index is redefining the investable index and benchmarking space with the combination of infrastructure, property, natural resources, and inflation-linked bonds using equities and fixed income plus commodity futures.

CONCLUSION

Despite the recent inflows and high interest in real assets, defining them has been challenging. Therefore, the S&P Real Assets Index is redefining the investable index and benchmarking space with the combination of infrastructure, property, natural resources, and inflation-linked bonds using equities and fixed income plus commodity futures. The definition is executed using the traditional eligibility criteria of pricing availability and liquidity combined with the market capitalization weighting scheme commonly used in indexing.

The results show that by including this wide range of assets in a composite index, better inflation protection and diversification may be achieved. Although the natural resources sector alone has a higher inflation protection than the S&P Real Assets Index, the return performance has been unattractive when combined with a portfolio of stocks and bonds. Also, while the infrastructure sector adds efficiency to the stock/bond mix, the inflation protection is low compared with the S&P Real Assets Index. Overall, the S&P Real Assets Index demonstrates strong characteristics for portfolio diversification and inflation protection.

APPENDIX

Dow Jones Global Select Real Estate Securities Index

The Dow Jones Global Select Real Estate Securities Index (RESI) represents equity real estate investment trusts (REITs) and real estate operating companies (REOCs) traded globally.

http://www.djindexes.com/mdsidx/downloads/fact_info/Dow_Jones_Global_Select_Real_Estate_Securities_Index_Fact_Sheet.pdf

Dow Jones Brookfield Global Infrastructure Composite Index

The Dow Jones Brookfield Global Infrastructure Composite Index includes global companies globally that qualify as "pure-play" infrastructure companies—companies whose primary business is the ownership and operation of infrastructure assets, activities that generally generate long-term stable cash flows. The index is designed to measure all sectors of the infrastructure market. The index includes Master Limited Partnerships (MLPs) in addition to other equity securities.

http://www.djindexes.com/infrastructure/

S&P Global LargeMidCap Commodity and Resources Index

The S&P Global LargeMidCap Commodity and Resources Index is designed to measure the performance of constituents that fall into three different natural resources buckets: energy, materials, and agriculture. This tradable index provides investors with liquid exposure to the natural resources market and offers a more balanced index by capping each bucket at 33.33%.

http://spindices.com/indices/equity/sp-global-largemidcap-commodity-and-resources-index-us-dollar

S&P Global Timber & Forestry Index

The S&P Global Timber & Forestry Index is designed to measure 25 of the largest publicly traded companies engaged in the ownership, management or the upstream supply chain of forests and timberlands. These may be forest products companies, timber REITs, paper products companies, paper packaging companies, or agricultural product companies that are engaged in the ownership, management, or the upstream supply chain of forests and timberlands.

http://spindices.com/indices/equity/sp-global-timber-and-forestry-index

Dow Jones Commodity Index

The Dow Jones Commodity Index is designed to be a broad measure of the commodity futures market that emphasizes diversification and liquidity through a simple, straightforward, equal-weighted approach.

http://spindices.com/indices/commodities/dow-jones-commodity-index

Dow Jones Brookfield Global Infrastructure Broad Market Corporate Bond Index

The Dow Jones Brookfield Global Infrastructure Broad Market Corporate Bond Index is a market-value-weighted index that is designed to track the performance of corporate debt issued by infrastructure companies globally.

http://spindices.com/indices/fixed-income/dow-jones-brookfield-global-infrastructure-broad-market-corporate-bond-index

Dow Jones Global Select Real Estate Securities Corporate Bond Index

The Dow Jones Global Select Real Estate Securities Corporate Bond Index is designed to measure the performance of corporate debt issued globally by real estate companies.

http://spindices.com/indices/fixed-income/dow-jones-global-select-real-estate-securities-corporate-bond-index

S&P Global LargeMidCap Commodity and Resources Corporate Bond Index

The S&P Global LargeMidCap Commodity and Resources Corporate Bond Index is designed to measure the performance of corporate debt issued globally by commodity and resource companies.

http://spindices.com/indices/fixed-income/sp-global-largemidcap-commodity-and-resources-corporate-bond-index

S&P Global Developed Sovereign Inflation Linked Bond Index (USD)

The S&P Global Developed Inflation-Linked Bond Index is a broad, comprehensive, market value weighted index designed to track the performance of the inflation-linked securities market in developed countries.

http://spindices.com/indices/fixed-income/sp-global-developed-sovereign-inflation-linked-bond-index

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PERFORMANCE DISCLOSURE

The S&P Real Assets Index was launched on Dec. 31, 2015. The S&P U.S. Aggregate Bond Index was launched July 15, 2014. 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. Complete index methodology details are available at www.spdji.com.

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.

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. 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).

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