

CONTRIBUTOR

Hamish Preston
Senior Associate
Index Investment Strategy
hamish.preston@spglobal.com

The quality dimension of value provides a lens through which it may be possible to identify undervalued stocks.

Quality: A Practitioner's Guide

WHAT IS QUALITY?

Quality may seem like a relatively new concept for market participants that are already familiar with factors such as market risk, momentum, value, size, and growth. However, the idea of applying quality to investment decisions can be found in the philosophy of Benjamin Graham—nowadays considered the father of value investing. Indeed, five of the seven quality and quantity measures Graham advocated using when assessing a firm concerned the quality of the firm in question.¹

Some may find this surprising, especially because many value strategies today focus on valuations exclusively. Intuitively, though, the quality dimension of value provides a lens through which it may be possible to identify undervalued stocks—rather than simply the cheapest—by assessing underlying business characteristics, such as financing requirements and profitability. For this reason, quality is often considered an alternative to growth investing, focusing on companies that exhibit signs of above-average growth, even if those companies may be more expensive than some of their counterparts.

The S&P Quality Indices Methodology uses three metrics to capture quality.

- 1) The return on equity (ROE), which is calculated as a company's trailing 12-month earnings per share divided by its latest book value, gives an indication of a firm's profitability. Companies that provide a greater return using market participants' capital may be more likely to achieve above-average growth.
- 2) The financial leverage ratio, which is computed by dividing a firm's latest total debt by its book value, assesses the ability of a company to meet its financing obligations. Companies with less leverage should have more capital to invest in the underlying business, which could increase the growth rate.
- 3) The accruals ratio, which is the change in a company's net operating assets over the past year divided by the average net operating assets over the past two years, provides an assessment of the operating performance of the firm, excluding impacts from financing decisions. Firms with lower accruals ratios are likely to be more profitable and may achieve higher-than-average returns.

¹ [The Intelligent Investor](#), Graham, Benjamin, 1973.

For each stock in the underlying index and for each metric, a risk-adjusted z-score is calculated and a simple average of these three z-scores is taken. For more information about the computation of the quality z-scores, please refer to the [S&P Quality Indices Methodology](#).

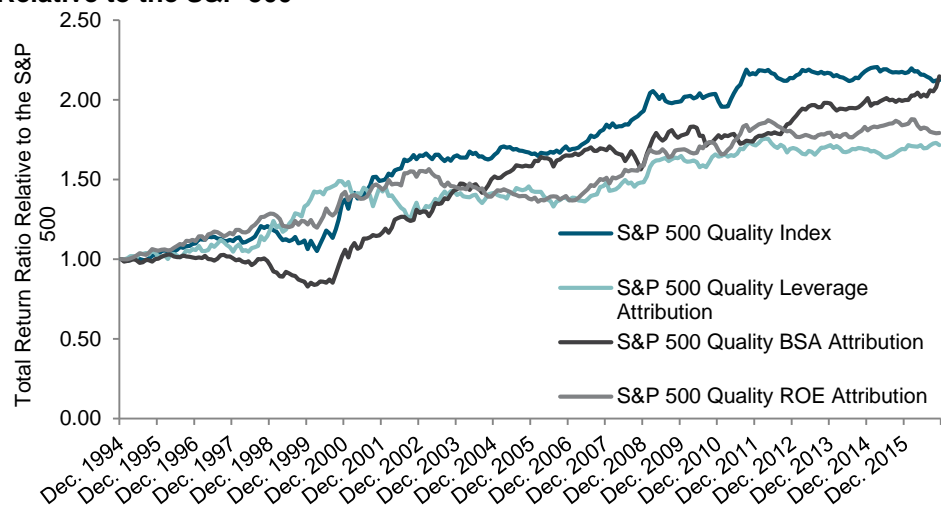
HOW HAS QUALITY PERFORMED OVER TIME?

Having introduced quality, one of the first questions to consider is: how has quality performed? For an answer, we turn to the [S&P 500® Quality Index](#), which was launched on July 8, 2014.

All four indices have routinely had ratios larger than one.

Exhibit 1 shows index performance relative to the [S&P 500](#); a ratio larger than one indicates that the index—or its attributions—delivered better returns than the S&P 500, and vice versa. All four indices have routinely had ratios larger than one, illustrating that since December 1994, the total return has been relatively better than that of the S&P 500. In addition, the periods when the ratios increased the most—early 2000, late 2008 and early 2009, and the middle of 2011—coincided with serious market turbulence. Perhaps this is not surprising; higher-quality companies with strong underlying businesses and a record of sustainable financing decisions may be less vulnerable to systemic issues facing economies and financial markets. Conversely, the ratios do not tend to change substantially during upturns in the market—quality offers participation in market gains, too. This is apparent from the percentage of up movements in the S&P 500 captured by the S&P 500 Quality Index, as shown in Exhibit 2. Over longer horizons, the lower percentage of down movements in the S&P 500 captured by the S&P 500 Quality Index indicates quality's potential to offer downside protection during periods of market turbulence.

Exhibit 1: Total Return of the S&P 500 Quality Index and its Attributions Relative to the S&P 500



Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

Exhibit 2: Percentage of Up and Down Movements in the S&P 500 Captured by the S&P 500 Quality Index

PERIOD	3-YEAR	5-YEAR	10-YEAR	15-YEAR	20-YEAR
DOWN CAPTURE (%)					
S&P 500 Quality Index	95.95	99.88	87.52	86.20	79.74
UP CAPTURE (%)					
S&P 500 Quality Index	93.01	98.04	98.32	98.24	95.55

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

The S&P 500 Quality Index has the lowest maximum drawdowns over the longest time horizons.

Exhibit 3 reinforces the notion that quality offers better downside protection than the [S&P 500](#); the [S&P 500 Quality Index](#) has the lowest maximum drawdowns over the longest time horizons, a period that encompasses the turbulent market events described previously. The market turbulence in September 2015 accounts for all the maximum drawdowns over three- and five-year horizons—quality has the largest maximum drawdowns during these periods, but the difference is rather small.

Exhibit 3: Maximum Rolling 12-Month Drawdowns

PERIOD	S&P 500 QUALITY INDEX (TR) (%)	S&P 500 QUALITY INDEX LEVERAGE ATTRIBUTION (%)	S&P 500 QUALITY INDEX BSA ATTRIBUTION (%)	S&P 500 QUALITY INDEX ROE ATTRIBUTION (%)	S&P 500 (%)
3-Year	8.97	8.34	8.95	7.45	8.36
5-Year	8.97	8.34	8.95	7.45	8.36
10-Year	40.31	42.70	44.60	40.71	46.41
15-Year	40.31	42.70	44.60	40.71	46.41
20-Year	40.31	42.70	44.60	40.71	46.41

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

The importance of combining the three attributes is clear from Exhibit 4. Compounding means that the lower risk levels for the S&P 500 Quality Index—particularly over the 10- to 20-year horizons—translate into higher risk-adjusted returns. The fact that quality has been a laggard over shorter periods may be related to the sector makeup of the index compared to the S&P 500. Exhibit 5 shows the relative weights of the S&P 500 Quality Index compared with those of the S&P 500; a positive (negative) percentage indicates an over- (under-) weight position in a sector within the S&P 500 Quality Index compared with the S&P 500. Notable is the strong, persistent underweighting of financials, which likely helps to explain the difference in returns over the one-year period ending November 2016.

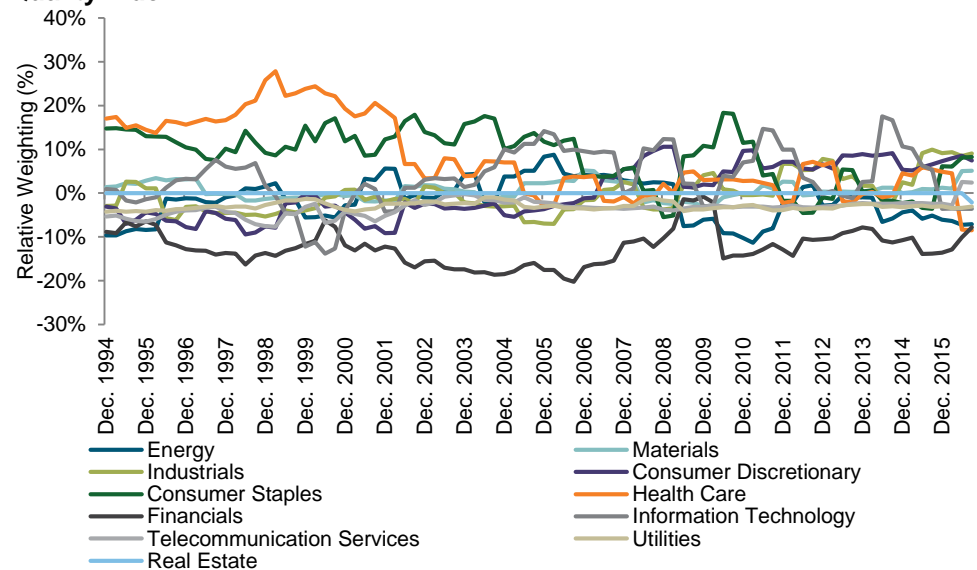
Exhibit 4: Risk/Return Characteristics

PERIOD	S&P 500 QUALITY INDEX (TR)	S&P 500 QUALITY LEVERAGE ATTRIBUTION	S&P 500 QUALITY BSA ATTRIBUTION	S&P 500 QUALITY ROE ATTRIBUTION	S&P 500
ANNUALIZED RETURN (%)					
1-Year	5.45	9.68	16.38	5.22	8.06
3-Year	8.29	9.27	12.03	9.07	9.07
5-Year	13.97	14.39	19.38	14.09	14.45
10-Year	9.24	9.21	9.72	9.58	6.89
15-Year	9.15	7.83	11.15	8.11	6.62
20-Year	11.08	10.08	11.59	10.02	7.47
ANNUALIZED RISK (%)					
3-Year	10.92	11.04	11.97	11.16	10.77
5-Year	10.82	11.01	11.50	10.64	10.36
10-Year	14.32	15.93	17.02	14.40	15.28
15-Year	13.55	16.17	16.48	13.32	14.35
20-Year	14.02	17.78	16.12	14.50	15.30
RISK-ADJUSTED RETURN					
3-Year	0.76	0.84	1.01	0.81	0.84
5-Year	1.29	1.31	1.69	1.32	1.39
10-Year	0.65	0.58	0.57	0.67	0.45
15-Year	0.68	0.48	0.68	0.61	0.46
20-Year	0.79	0.57	0.72	0.69	0.49

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

Notable is the strong, persistent underweighting of financials.

Exhibit 5: Sector Weight Comparison Between the S&P 500 and the S&P 500 Quality Index



Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

As a result, quality's return profile may reflect its defensive nature; while potentially providing participation in positive market movements, quality might also reduce downside risk by attempting to identify companies that are expected to withstand systemic difficulties most robustly.

POSSIBLE USES OF QUALITY

Another relevant question to consider is: how has quality interacted with other factors? Exhibit 6 shows us that the correlation between the [S&P 500 Quality Index](#) and each of the indices shown is high over various time horizons. On one hand, the high correlation between quality and value means it may not be entirely suitable to describe quality as a growth strategy, because growth and value have had low correlations historically. However, the strong correlation also illustrates why Graham advocated the use of five quality measures—quality seems to reinforce value.

Over longer horizons, the superiority of the blend has been driven by both lower annualized risk and higher annualized return than the S&P 500 Enhanced Value Index.

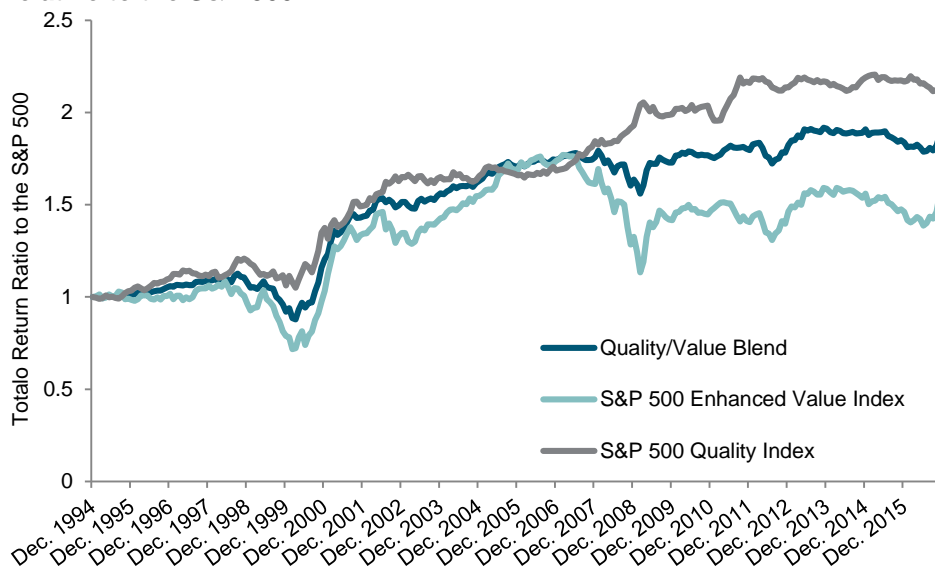
Exhibit 6: Correlation Comparison With the S&P 500 Quality Index

PERIOD	S&P 500 (%)	S&P 500 ENHANCED VALUE INDEX (%)	S&P 500 GROWTH (%)	S&P 500 LOW VOLATILITY INDEX (%)	S&P 500 MOMENTUM INDEX (%)
1-Year	98.51	85.97	95.65	84.13	90.64
3-Year	98.46	75.17	98.26	91.67	96.79
5-Year	99.81	97.25	99.56	97.55	99.45
10-Year	98.88	94.83	99.66	99.24	98.95
15-Year	98.88	95.09	99.27	99.49	98.99
20-Year	97.15	96.32	93.83	99.41	93.41

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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.

This result is made clearer when assessing the performance of a hypothetical 50%-50% blend of the [S&P 500 Enhanced Value Index](#) and S&P 500 Quality Index. This hypothetical blend is rebalanced on a monthly basis. Exhibit 7 shows the performance of this blend relative to the S&P 500; it is clear that adding quality to value delivered superior relative total returns compared with the relative return of the S&P Enhanced Value Index during the period studied. The maximum 12-month drawdowns were also lower for the blend than for the value index, and the risk-adjusted returns were significantly greater than those of the value factor. Over longer horizons, the superiority of the blend was driven by both lower annualized risk and higher annualized return than the S&P 500 Enhanced Value Index. The 50%-50% combination also offered greater participation in upward market movements—the risk-adjusted ratio was higher than that of the S&P 500 Quality Index over shorter horizons—and the blend's information ratio fell between the corresponding ratios for the individual factors across all time periods (see Exhibits 8 and 9). Consequently, blending quality and value has offered better downside protection than value alone and better upside participation than quality alone.

Exhibit 7: Total Return of the Quality/Value Blend and the Individual Factors Relative to the S&P 500



The blend's information ratio fell between the corresponding ratios for the individual factors across all time periods.

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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 Quality/Value Blend is a hypothetical portfolio.

Exhibit 8: Risk/Return Characteristics – Comparison of Benchmark, Quality, and Value Indices With Hypothetical Blended Portfolio

PERIOD	QUALITY/VALUE BLEND	S&P 500	S&P 500 ENHANCED VALUE INDEX	S&P 500 QUALITY INDEX
ANNUALIZED RETURN (%)				
1-Year	8.97	8.06	14.23	5.45
3-Year	8.38	9.07	8.34	8.29
5-Year	14.26	14.45	16.75	13.97
10-Year	7.39	6.89	5.83	9.24
15-Year	7.91	6.62	7.73	9.15
20-Year	9.16	7.47	9.85	11.08
ANNUALIZED RISK (%)				
3-Year	10.75	10.77	13.74	10.92
5-Year	10.64	10.36	14.15	10.82
10-Year	15.20	15.28	21.72	14.32
15-Year	14.31	14.35	19.65	13.55
20-Year	14.62	15.30	19.39	14.02

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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. The Quality/Value Blend is a hypothetical portfolio.

Exhibit 8: Risk/Return Characteristics – Comparison of Benchmark, Quality, and Value Indices With Hypothetical Blended Portfolio (Cont.)

PERIOD	QUALITY/VALUE BLEND	S&P 500	S&P 500 ENHANCED VALUE INDEX	S&P 500 QUALITY INDEX
RISK-ADJUSTED RETURN				
3-Year	0.78	0.84	0.61	0.76
5-Year	1.34	1.39	1.18	1.29
10-Year	0.49	0.45	0.27	0.65
15-Year	0.55	0.46	0.39	0.68
20-Year	0.63	0.49	0.51	0.79
12-MONTH MAXIMUM DRAWDOWNS (%)				
3-Year	9.51	8.36	14.65	8.97
5-Year	9.51	8.36	14.65	8.97
10-Year	45.80	46.41	61.29	40.31
15-Year	45.80	46.41	61.29	40.31
20-Year	45.80	46.41	61.29	40.31

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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. The Quality/Value Blend is a hypothetical portfolio.

Blending quality and value has offered better downside protection than value alone and better upside participation than quality alone.

Exhibit 9: Tracking Error and Information Ratio Comparisons

PERIOD	QUALITY/VALUE BLEND	S&P 500 ENHANCED VALUE INDEX	S&P 500 QUALITY INDEX
TRACKING ERROR (%)			
3-Year	1.87	6.46	2.09
5-Year	1.77	6.98	2.10
10-Year	1.81	9.31	3.28
15-Year	1.86	8.46	3.42
20-Year	3.51	10.02	5.24
INFORMATION RATIO			
3-Year	-0.3683	-0.1133	-0.3737
5-Year	-0.1023	0.3296	-0.2265
10-Year	0.2782	-0.1135	0.7179
15-Year	0.6964	0.1316	0.7426
20-Year	0.4825	0.2382	0.6887

Source: S&P Dow Jones Indices LLC. Data from December 1994 to November 2016. 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. The Quality/Value Blend is a hypothetical portfolio.

CONCLUSION

Even though market participants may view quality as a relatively new concept, its origins can be found as early as the 1930s.

As a result, even though market participants may view quality as a relatively new concept, its origins can be found as early as the 1930s. Over the 20-year period ending in November 2016, the [S&P 500 Quality Index](#) provided participation in the [S&P 500](#) gains while offering a degree of downside protection. This downside protection manifested itself in superior risk-adjusted returns over longer horizons compared with the S&P 500. The sector biases in the S&P 500 Quality Index—underweighting financials, for example—are important for explaining why its risk-adjusted returns have been lower than those of the S&P 500 over shorter horizons.

The hypothetical 50%-50% blend of quality and value demonstrated the potential benefits of diversification; the blend offered better downside protection than value alone and better upside participation than quality alone. While it remains to be seen if this pattern will continue, the 20-year period ending in November 2016 supports the thinking behind Benjamin Graham's philosophy—quality reinforces value.

PERFORMANCE DISCLOSURE

The S&P 500 Quality Index was launched on July 8, 2014. The S&P 500 Quality BSA Attribution, S&P 500 Quality Leverage Attribution, and S&P 500 Quality ROE Attribution were launched on March 7, 2016. The S&P 500 Enhanced Value Index was launched on April 27, 2015. 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).

GENERAL DISCLAIMER

Copyright © 2017 by S&P Dow Jones Indices LLC, a part of S&P Global. All rights reserved. Standard & Poor's®, S&P 500® and S&P® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global. Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones"). Trademarks have been licensed to S&P Dow Jones Indices LLC. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, Dow Jones, S&P or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. All information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Dow Jones Indices keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P Dow Jones Indices may have information that is not available to other business units. S&P Dow Jones Indices has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.