

Strengthening Your Core with Indices in South Africa

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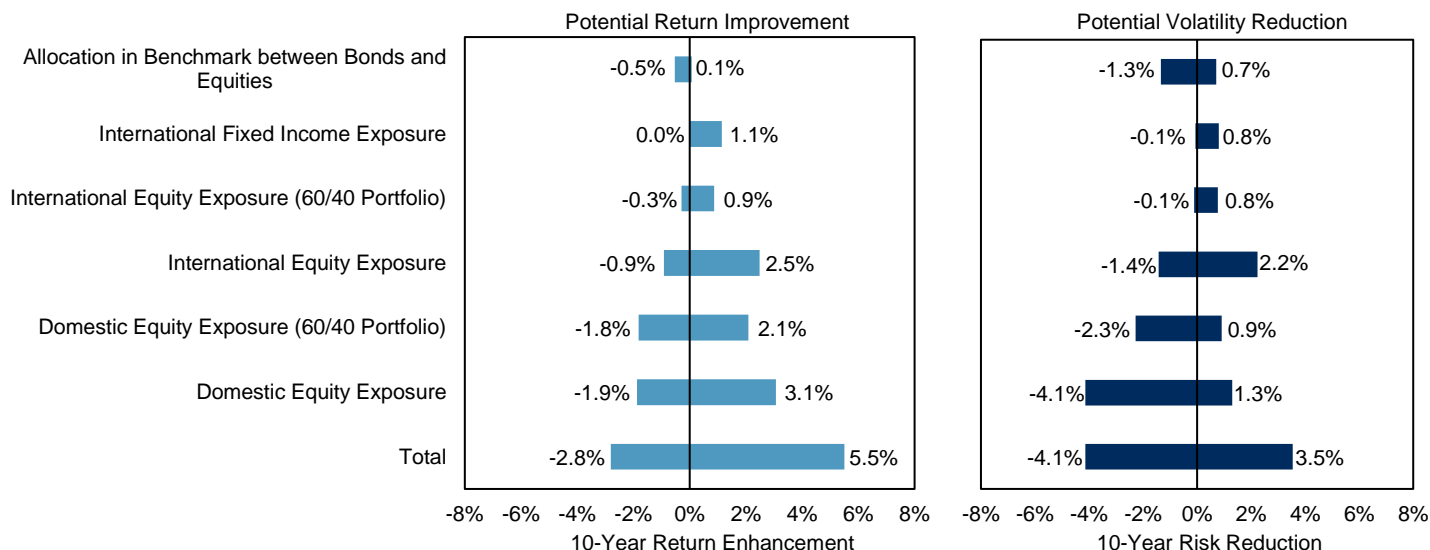
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Since the introduction of index-based investing in the 1970s, passively managed assets have grown substantially, with AUM in products tracking the [S&P 500®](#) reaching nearly USD 3 trillion.

South Africa has participated in the global trend; a wide range of indices has been developed for the region, meeting a growing demand for passive solutions that span asset classes and investment styles. This paper highlights the range of passive exposures and indices available in South Africa and uses S&P Dow Jones Indices' (S&P DJI) array of domestic and international indices to illustrate the variety of outcomes that could have been achieved with index-tracking portfolios, maintaining the perspective of a local investor.

Summarizing one of the key conclusions of this paper, Exhibit 1 shows the potential differences in risk and return profiles that a South African investor might have obtained over a 10-year period by making different possible choices among indices. An allocation to international equities would have proved beneficial in most cases, but the choice of domestic equity index—the “core” exposure—proves to be an important decision point.

Exhibit 1: Index Choice Matters in the Core



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. See Exhibits 8-11 for more details. Index performance based on total return in ZAR. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect 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.

SOUTH AFRICAN PASSIVE CONSIDERATIONS

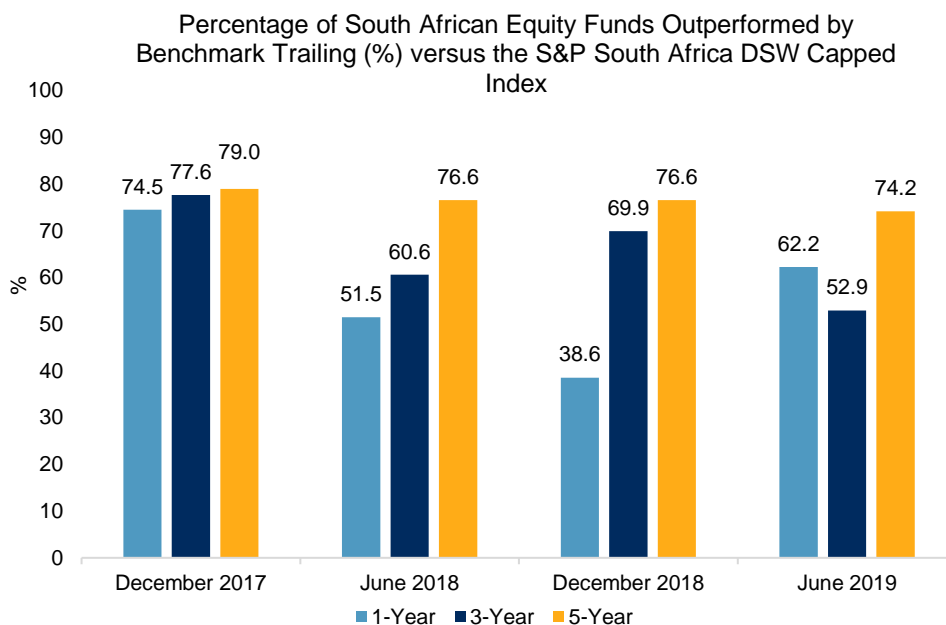
Index-based solutions are available to cover a broad array of different exposures and needs in South Africa.

Now approaching their 20th year in the region, index-based solutions are available to cover a broad array of different exposures and needs in South Africa, from standard core strategies to multi-asset tactical solutions. ETFs, for example, have grown to nearly ZAR 100 billion in AUM, a six-fold increase from 2008.¹

One driver of the growth of passive investing in the region has been opportunity: the development of new solutions to meet investor needs has filled gaps and expanded the amount of options for investors to use passive vehicles.

Another has been performance, as many active managers have struggled to outperform their benchmarks over the long term. According to the [SPIVA® \(S&P Index Versus Active\) South Africa Scorecard](#), as of June 30, 2019, 74% of South African active equity funds underperformed the [S&P South Africa Domestic Shareholder Weighted \(DSW\) Capped Index](#) over the trailing five years. Over the long term, as in many other regions, active managers in South Africa struggled to outperform.

Exhibit 2: Historical 5-Year Trailing South Africa SPIVA Results



Over the long term, as in many other regions, active managers in South Africa struggled to outperform.

Source: S&P Dow Jones Indices LLC. Data as of June 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.

¹ Mike Brown, *State of the South African Exchange Traded Product (ETP) Industry*, Sept. 30, 2019, etfSA.co.za.

APPLICATIONS OF INDICES IN SOUTH AFRICA

S&P DJI offers a wide variety of indices for South African equities, the most broad-based of which is the S&P South Africa Composite.

Capitalization-weighted equity indices in South Africa can have significant positions in the largest companies.

To limit single-stock exposure, some indices impose maximum weights in any single constituent, or even assign equal weights to all of them.

Indices can be used to define an overall allocation, or they may be used as building blocks in various combinations, such as using a passive vehicle to implement a diversified portfolio of offshore investments.

Not all indices are created equal, however; subtle differences in methodology can make a major impact on performance and risk characteristics. In South Africa, S&P DJI offers a wide variety of indices, the most broad-based of which is the [S&P South Africa Composite](#), which includes all large-, mid-, and small-cap companies listed on the Johannesburg Stock Exchange (JSE) and weights them in proportion to their market capitalization. While this represents the average performance of all investors participating in South African equities, the index can maintain significant positions in the largest companies; Naspers, for example, accounted for 14% of the S&P South Africa Composite at the end of 2019. This is not only the case in indices offered by S&P DJI; Naspers accounted for 21% of the FTSE/JSE SWIX 40 as of the same date.²

To limit single-stock exposure, the [S&P South Africa Composite Capped](#) imposes a 10% maximum weight in any single company, as does the [S&P South Africa 50](#), which also limits exposure to smaller, potentially illiquid securities by including only the 50 largest South African companies.

Another alternative to avoid large concentrations into any one position is equal weighting, which gives each constituent in the index the same weight. Reflecting South African fund managers' concerns that their portfolios should not be unduly influenced by capital flows into the region from international investors, S&P DJI also provides so-called "domestic shareholder" weighted indices, which reflect the allocations of domestic investors in aggregate and are often selected as benchmarks for active strategies.

A summary of the recent returns and volatility of each of these benchmarks is provided in Exhibit 3.

² Source: S&P Dow Jones Indices LLC and FTSE/Russell.

Exhibit 3: Selected South Africa Index Performance

PERIOD	MARKET CAP			DOMESTIC SHAREHOLDER WEIGHTED		EQUAL WEIGHT
	S&P SOUTH AFRICA 50	S&P SOUTH AFRICA COMPOSITE CAPPED	S&P SOUTH AFRICA COMPOSITE	S&P SOUTH AFRICA DSW 50	S&P SOUTH AFRICA DSW CAPPED	S&P SOUTH AFRICA 50 EQUAL WEIGHT
ANNUALIZED RETURN (%)						
1-Year	10.38	10.03	11.22	6.33	7.23	7.81
3-Year	7.98	6.99	7.93	4.40	3.42	4.19
5-Year	6.62	5.99	6.29	3.85	3.60	4.67
10-Year	11.36	10.94	10.91	10.45	10.39	10.59
ANNUALIZED RISK (%)						
1-Year	11.48	10.90	11.13	11.47	10.68	11.70
3-Year	12.00	11.45	12.13	11.29	10.62	10.98
5-Year	11.61	11.24	11.65	11.40	10.92	11.72
10-Year	12.17	11.67	11.99	11.73	11.05	11.47

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. 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.

Domestic shareholder weighted indices are often selected as benchmarks for active strategies.

South African equities have lagged broader global equities benchmarks by a 6% per year over the past decade.

Allocations to U.S. equities could have enhanced returns, while adding Japanese equities could have reduced volatility.

COMBINATIONS WITH INTERNATIONAL INDICES

Whatever the domestic allocation, the returns of a South African equity portfolio over the past decade would have likely been improved by the addition of an allocation to international equities. Since 2009, South African equities have lagged broader global benchmarks by a wide margin: in local terms, the S&P South Africa 50 underperformed the [S&P Global 1200](#) by 6% annually.³

However, many local investment managers are limited to including a maximum of 30% of offshore assets in client portfolios, which means that putative foreign exposures must be carefully optimized for their diversification and return potential.

Exhibit 4 illustrates the impact of reallocating 30% of a portfolio otherwise tracking the S&P South Africa 50 to any one of a range of indices reflecting various global equity markets. Different global exposures offered the potential to increase returns or reduce risk. For example, a 30% allocation to U.S. equities, as represented by the S&P 500, would have enhanced returns by 3% annually, while Japanese equities, as represented in Exhibit 4 by the [S&P/TOPIX 150](#), would have decreased annualized volatility by 2%.

³ Based on total returns in ZAR over the 10-year period ending Dec. 31, 2019.

Exhibit 4: Performance of Blended Equity Portfolios with 70% Weight to the S&P South Africa 50 and 30% Weight in Other International Benchmarks

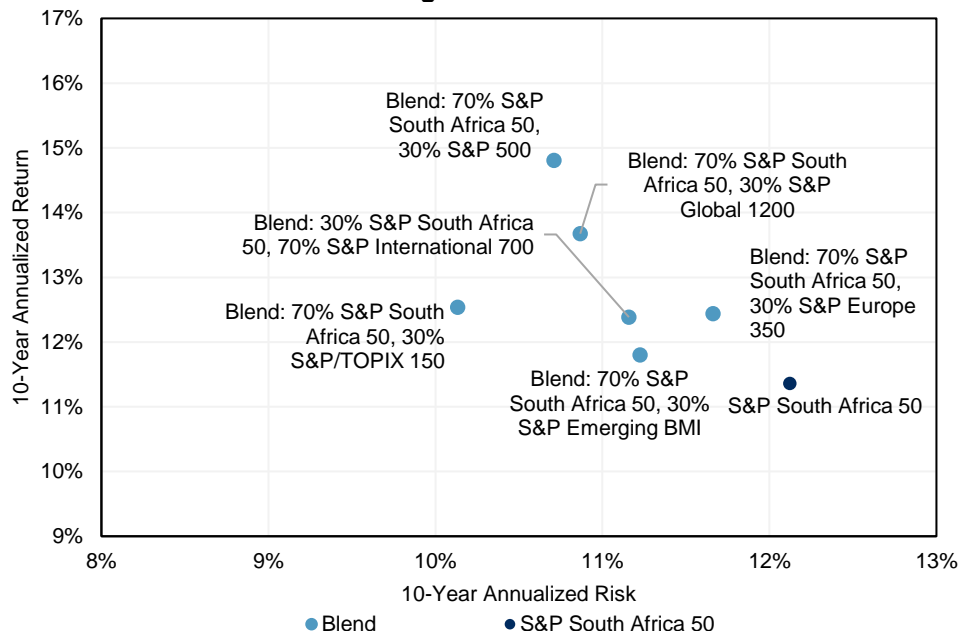


Exhibit 4 illustrates the impact of replacing South African equities with a range of global benchmarks at a 30% weight.

Source: S&P Dow Jones Indices LLC. Data from Dec. 31, 2009, to Dec. 31, 2019. Index performance based on total return in ZAR. 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 impacts of different foreign equities varied in part due to the nature of, and exposures within, the South African markets.

The impacts of different foreign equities varied in part due to the nature of, and exposures within, the South African markets. **European equities, as represented in Exhibit 4 by the [S&P Europe 350®](#), would have offered relatively limited risk reduction or return enhancement.** In part, this is due to an overlap in the exposures common to South African and European equities. The London Stock Exchange includes many large companies operating in similar industries to those that are already well represented in South Africa, such as mining. This overlap even includes individual companies; BHP and Anglo American, for example, are included in both the S&P South Africa 50 and the S&P Europe 350 due to their listings in both of those markets.

ADDING FACTORS TO THE CORE

Adding international exposure has not been the only option for diversification, however. As well as the different domestic equity indices listed in Exhibit 3, factor-based strategies—which target certain firm characteristics or patterns of returns—have experienced significant growth in recent years. These strategies share some of the common characteristics of other indices, such as rules-based construction, transparency, and cost efficiency. Strategies such as growth, value, quality, and momentum had historically been available only through active management, but they are increasingly available via index trackers. The [S&P Quality South Africa Index](#) is an example: this index screens for

companies with high return on equity, low accruals, and low leverage. Further examples are provided in Exhibit 5.

Exhibit 5: Selected South Africa Factor Based Index Performance

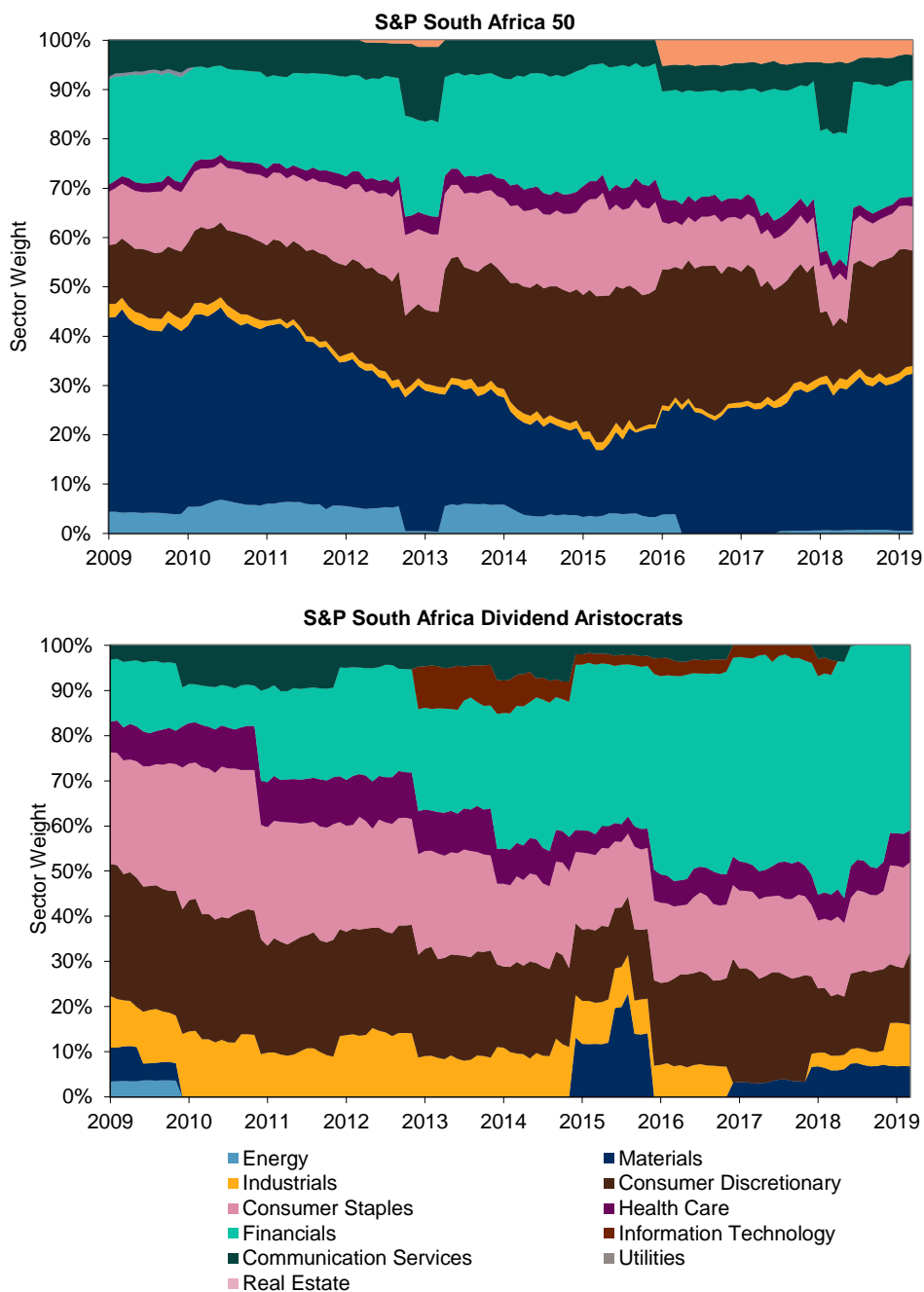
PERIOD	FACTOR BASED					MULTI FACTOR
	S&P QUALITY SOUTH AFRICA	S&P SOUTH AFRICA 50 EQUAL WEIGHT	S&P SOUTH AFRICA DIVIDEND ARISTOCRATS	S&P SOUTH AFRICA LOW VOLATILITY	S&P MOMENTUM SOUTH AFRICA	S&P SOUTH AFRICA COMPOSITE QUALITY, VALUE & MOMENTUM MULTI-FACTOR
ANNUALIZED RETURN (%)						
1-Year	5.09	7.81	3.40	-0.44	28.48	8.37
3-Year	10.31	4.19	0.46	-1.58	9.36	5.96
5-Year	5.51	4.67	3.87	0.91	3.97	2.96
10-Year	14.88	10.59	12.25	11.32	14.93	12.49
ANNUALIZED RISK (%)						
1-Year	11.49	11.70	11.65	11.09	17.58	12.58
3-Year	13.50	10.98	11.83	8.81	14.55	10.97
5-Year	13.57	11.72	12.96	9.54	14.83	12.16
10-Year	13.23	11.47	12.12	9.63	13.85	12.39

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. 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 Quality South Africa Index screens for companies with high returns on equity, low accruals, and low leverage.

Although they focus on particular factors, these indices can in practice add diversification.

Although they are focused by design on stocks with particular characteristics or patterns of return, in practice, factor indices can add diversification into different market segments. For example, as shown in Exhibit 6, the S&P South Africa 50 has historically been dominated largely by the Materials sector, while the [S&P South Africa Dividend Aristocrats](#) (which seeks to track only those companies that have maintained or increased their dividend payments for at least seven consecutive years) has had limited exposure to the Materials sector and instead has been driven by the Financials sector.

Exhibit 6: Sector Composition of S&P South Africa 50 and S&P South Africa Dividend Aristocrats

The S&P South Africa Dividend Aristocrats had less exposure to the Materials sector than the S&P South Africa 50 and more exposure to Financials.

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect 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.

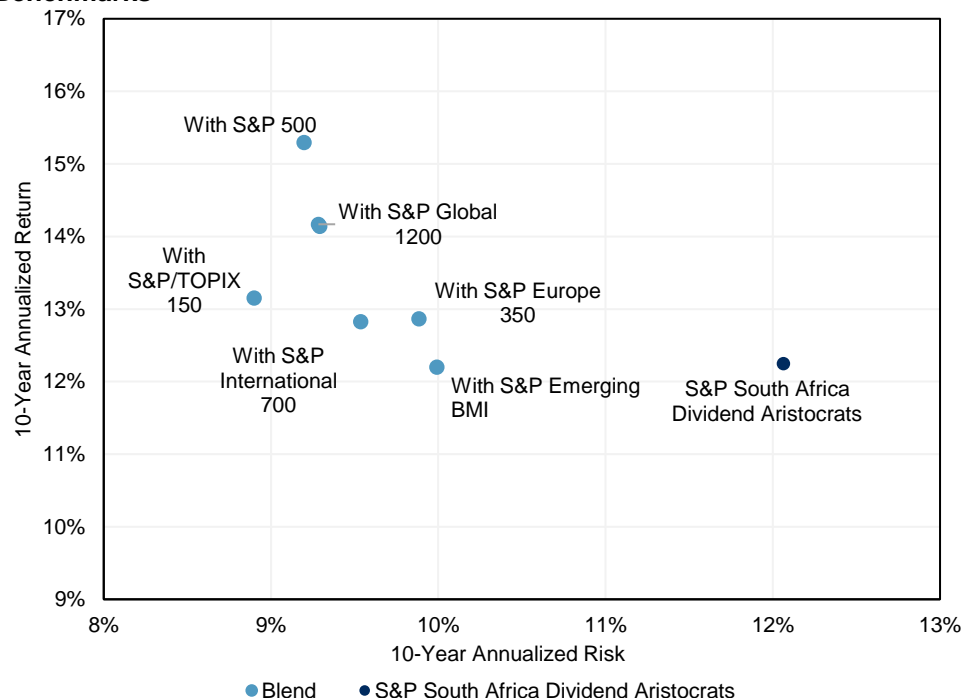
Of course, an investment's performance matters not only in isolation, but also in how it performs when combined with other assets. Replacing the S&P South Africa 50 in Exhibit 4 with the S&P South Africa Dividend Aristocrats, as illustrated in Exhibit 7, results in improvements in returns and

An investment's performance matters not only in isolation, but also in how it performs when combined with other assets.

Replacing the S&P South Africa 50 with the S&P South Africa Dividend Aristocrats results in improvements in returns and volatility when combined with international equities.

volatility when combined with international equities. Note: the scales in Exhibits 4 and 7 are identical for purposes of comparison.

Exhibit 7: Performance of Blended Portfolios with 70% Weight to the S&P South Africa Dividend Aristocrats and 30% Weight in Other Regional Benchmarks



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. 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.

QUANTIFYING POTENTIAL IMPROVEMENT

Different domestic and international allocation choices would have had sizable impacts on portfolios in South Africa over the past 10 years. **But how much could each of those choices potentially have affected historical performance?**

We reviewed 34,000 possible combinations of domestic and international equity and fixed income indices across regions from December 2009 to December 2019 to mimic returns over the past decade for hypothetical South African investors, providing a sample that may illustrate which decisions could have been the most impactful.⁴

The different portfolios varied in their allocations between stocks and bonds, in their allocations to international markets (and whether they had any), and in the choice of index to represent each portfolio segment. To

To identify the relative importance of particular decisions, we review various combinations of domestic and international indices for stocks and bonds.

⁴ See Appendix A for the full list of indices used and a brief description of their characteristics. A current list of related products is provided in Appendix B.

Beginning with a “benchmark position” split 60/40 between domestic equities and bonds...

construct the various portfolios, we began with a notional “benchmark” position that was invested entirely domestically and split 60/40 between the S&P South Africa 50 and the [S&P South Africa Sovereign Bond 1+ Year Index](#), respectively.

All the other portfolios may be thought of as arising from the benchmark through the operation of a few basic “levers,” such as including or excluding international stocks, among others. In total, we tested the impact of five separate portfolio levers to find where decision making would have been the most impactful. These levers, and the terms we used to describe them, are provided in Exhibit 8.

...toggling a range of portfolio levers provided a sample of alternative performances.

Exhibit 8: Portfolio Levers

LEVER	DESCRIPTION
Domestic Equity Exposure	Replace S&P South Africa 50 allocation with any one of the indices included in Exhibits 3 and 5
International Equity Exposure	Add up to 30% international equities (as a proportion of total equity), using any one of the nine international equity indices listed in Appendix A
Domestic Fixed Income Exposure	Replace allocation to domestic sovereign bonds with inflation-linked bonds
International Fixed Income Exposure	Add up to 30% international fixed income (as a proportion of total fixed income), using any one of the seven international fixed income indices listed in Appendix A
Allocation between Bonds and Equities	Change the overall allocations to fixed income and equities, with the fixed income allocation ranging from 25% to 50% in 5% increments

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

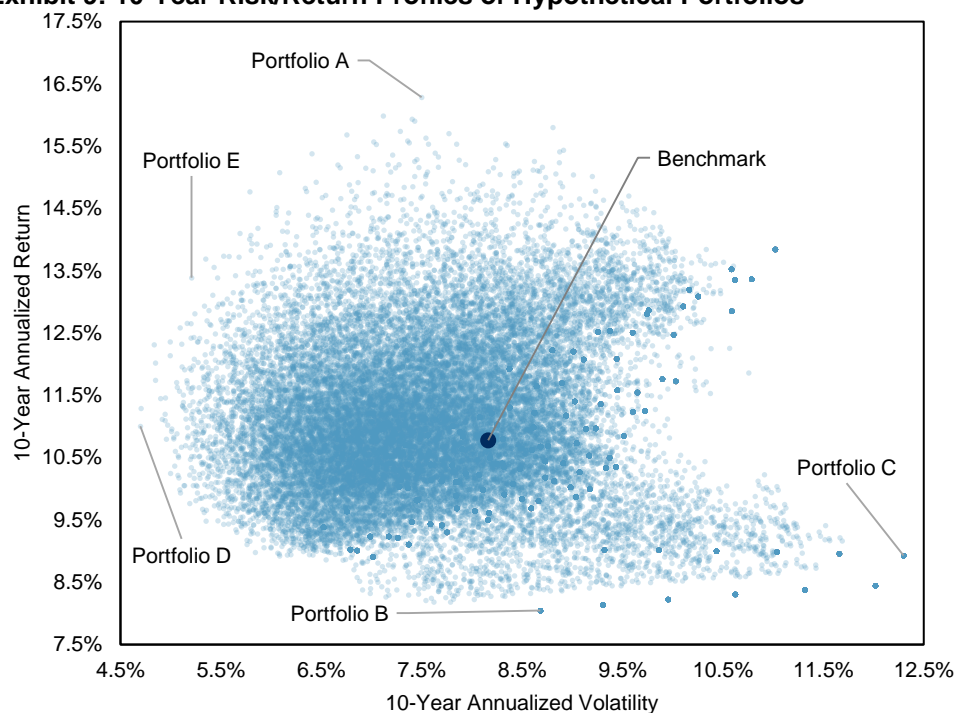
Note that, to better represent the current limitations in the South African market, the hypothetical portfolio allocations were limited to current Reg. 28 requirements (75% or below for exposure to equities, 30% or below exposure to foreign assets).

The hypothetical portfolio allocations were limited by current Reg. 28 requirements.

Exhibit 9 shows the range of portfolio returns and risk levels that could be achieved over the past 10 years through operating all possible combinations of the levers detailed in Exhibit 8. All portfolios in the simulation were rebalanced on a monthly basis back to their target allocations, based on the returns of the underlying indices as expressed in South African rand.

Exhibit 9: 10-Year Risk/Return Profiles of Hypothetical Portfolios

We reviewed 34,000 possible combinations of domestic and international equity and fixed income indices across regions from December 2009 to December 2019.



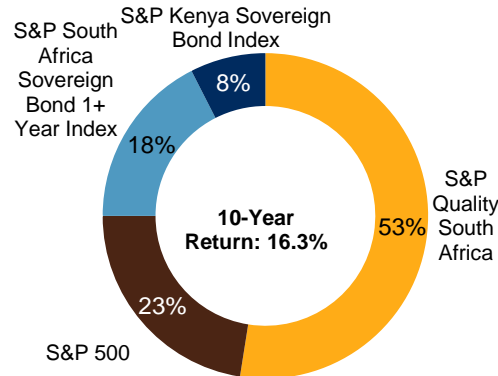
Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end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

In Exhibit 9, along with all of the possible risk/return combinations of the simulation, we also identify the benchmark portfolio as well as (in Portfolios A through E) the best performing, worst performing, highest volatility, lowest volatility, and best risk/return portfolios over the period studied. Exhibit 10 lays out the portfolio allocations of the highlighted points in more detail, along with their historical returns and volatility.

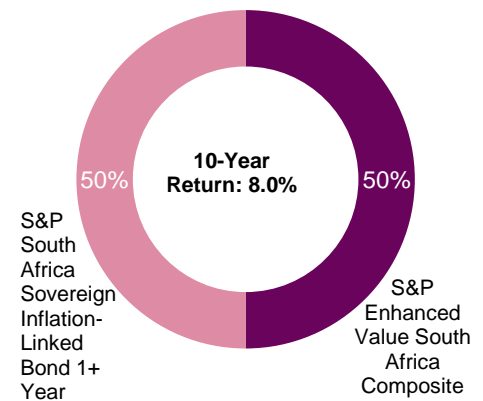
Exhibit 10: Selected Hypothetical Portfolio Performances

We also identified the best-performing, worst-performing, highest volatility, lowest volatility, and best risk/return portfolios over the time period.

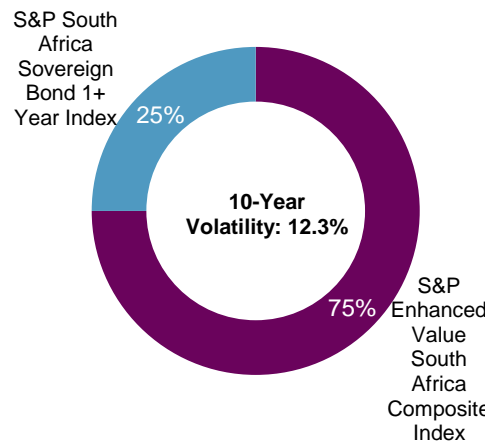
Best-Performing Portfolio (A)



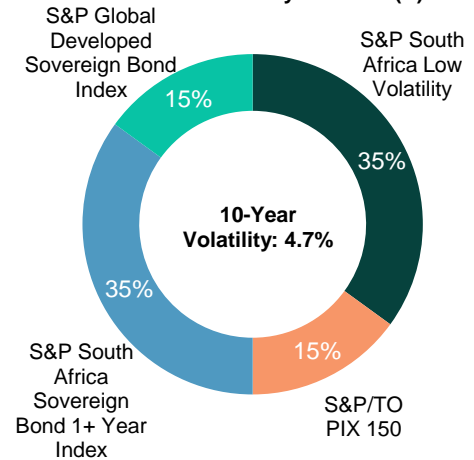
Worst-Performing Portfolio (B)



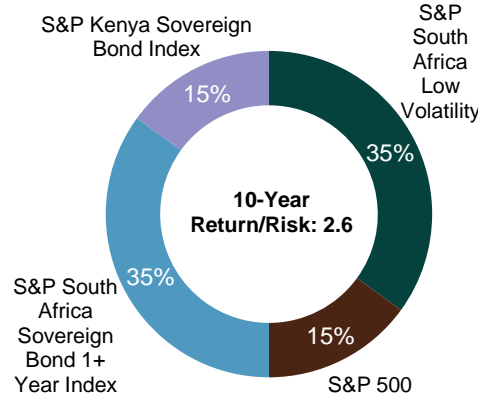
Highest Volatility Portfolio (C)



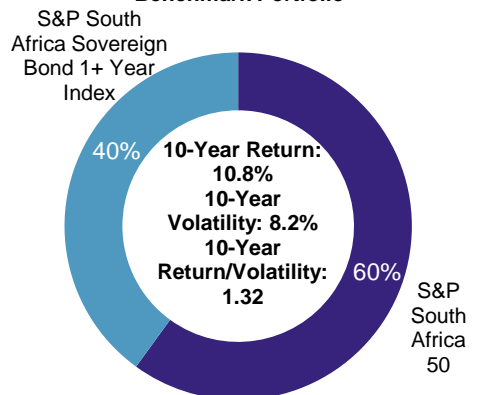
Lowest Volatility Portfolio (D)



Highest Return/Risk Portfolio (E)



Benchmark Portfolio



These results can identify the importance of each allocation choice within the local framework.

Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect 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.

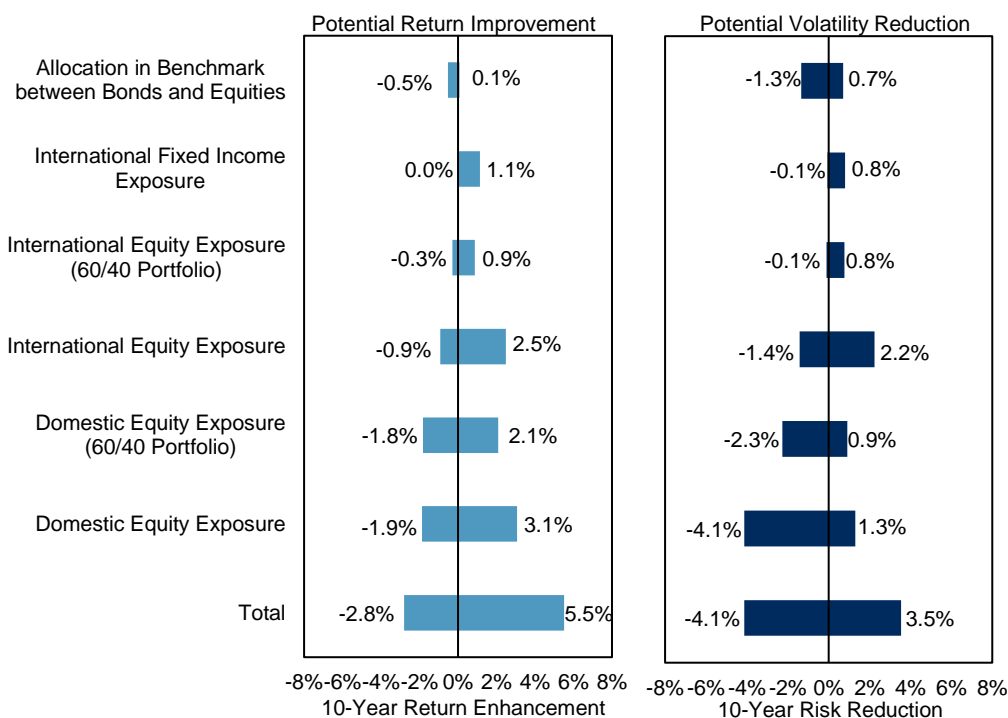
Having these results not only allows you to identify which would have been the best- and worst-performing combinations of indices, **but also the importance of each allocation choice within the local framework.** For example, all else equal, what is the potential value add of having an allocation to international equities instead of simply holding the benchmark portfolio identified in Exhibit 10?

Using the data from the 10-year performance simulations, we examined the impact of the different levers in isolation and selected combinations – allowing international equities, but fixing the 60/40 split between equities and bonds, and separately examining the combined potential impact of both adjusting the overall allocation to equities, and allowing international exposures, for example. Exhibit 11 illustrates the range of the resulting differences in risk/return profiles in the hypothetical portfolios that arose from the operations of different levers. Note the data displayed in Exhibit 11 were provided earlier in Exhibit 1.

Increasing international equity exposure tended to add a positive return to portfolios while also reducing risk.

Exhibit 11: 10-Year Risk/Return Benefits of Equities, Bonds, and International Allocation on Hypothetical South African Portfolios

The more surprising potential value add was the choice of domestic equity exposure.



Source: S&P Dow Jones Indices LLC. Data as of Dec. 31, 2019. Index performance based on total return in ZAR. Past performance is no guarantee of future results. Charts are provided for illustrative purposes and reflect 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.

Perhaps unsurprisingly, given the underperformance of South African equities versus broader global equities, **increasing international exposure tended to add positive return to portfolios while also reducing risk.** Assuming a 30% allocation to international assets, the correct selection of international equities within the broad markets included

in the simulation had the potential to add 2.5% of return per year or to decrease volatility by 2.2% per year (compared with the benchmark). U.S. large-cap equities particularly dominated the broader equity performance landscape, meaning that to be the best performer, it would have been helpful to have allocated to the S&P 500. **The opportunity was not on the same scale in bonds**, however; even perfect foresight in international bonds could have added only 1.1% of return per year and reduced risk by up to 0.8% per year.

Domestic equity choices could have increased volatility by 4.1% per year over the period studied.

The more surprising potential value add was the choice of domestic equity exposure. Given the size of the local allocation in portfolios and the variability in performance for South African equity strategies, the choice was critical. In our simulation, up to 3.1% of return per year could have been added above the benchmark return by simply changing the primary domestic benchmark and increasing exposure to 75% equities from 60%. If equity allocation was held at 60%, the potential enhancement was still 2.1% per year.

The true benefit may have been in risk, however. Domestic equity choices could have increased volatility by 4.1% per year over the period studied, meaning that the wrong decision could have made for a bumpy ride. Quality companies, or companies with low leverage, high return on equity, and low accruals, were at a premium over the period; the S&P Quality South Africa Index was the strongest performer and was included in 8 of the top 10 performing mock historical portfolios over the past decade.

CONCLUSION

With a growing range of passive products, investors in South Africa are offered new alternatives and opportunities for investing.

Passive solutions have grown in terms of availability and adoption in South Africa, but it is still early days. There are a range of domestic and international benchmarks available within the region, offering a range of liquidity and concentration constraints. Moreover, even in domestic equities, passive alternatives to traditional active management styles and strategies are increasingly available.

Although diversification in domestic allocations, particularly through adoption of factor-based strategies, has also helped to offset some market gyrations, international diversification has historically offered benefits and aided in offsetting specific regional headwinds, for which passive allocations are also available. Selection of domestic allocation can also drive performance of international allocation, or rather enhance the interaction between the two pieces of the portfolio.

In comparison to active management, as our SPIVA scorecards demonstrate, investing passively does not imply a sacrifice in performance. With a growing range of passive products and indices, investors in South Africa are offered new alternatives and opportunities for investing.

APPENDIX A

We reviewed 34,000 possible combinations of both domestic and international equity and fixed income indices across regions from December 2009 to December 2019 to mimic returns over the last decade for hypothetical South African investors, and to get a better sense for which decisions would have been the most impactful. We first identified a benchmark portfolio, which had a 60/40 equity/fixed income allocation, using the S&P South Africa 50 to represent equity exposure and the S&P South Africa Sovereign Bond 1+ Year Index to represent local fixed income exposure, and no international exposure. From there, we replaced the benchmark allocation with different combinations of international and domestic indices (including those listed in Exhibits 3 and 5) to create simulated portfolios, and identify which allocations would have been the most beneficial over the 10-year period, both from a risk and return perspective. To better represent the current limitations in the South African market, the hypothetical portfolio allocations were limited to current Reg. 28 requirements (75% or below for exposure to equity, 30% or below exposure to foreign assets). The indices used in the simulation, along with a brief description, are listed in the following table.

Exhibit 12: Indices Used in Simulation		
INDEX NAME	ASSET CLASS	INDEX DESCRIPTION
S&P South Africa 50	Domestic Equity	Designed to measure the largest 50 companies by float-adjusted market cap from the S&P South Africa Composite.
S&P Enhanced Value South Africa Composite	Domestic Equity	Designed to measure the performance of the top quintile of stocks in the South African equities market with attractive valuations based on “value scores” calculated using three fundamental measures: book value-to-price, earnings-to-price, and sales-to-price.
S&P Momentum South Africa Index	Domestic Equity	Designed to measure the performance of securities in the South African market that exhibit persistence in their relative performance.
S&P Quality South Africa Index	Domestic Equity	Designed to measure high-quality stocks in the South African market by quality score. This score is calculated based on return on equity, the accruals ratio, and the financial leverage ratio.
S&P South Africa 50 Equal Weight	Domestic Equity	Designed to measure the same constituents as the S&P South Africa 50, but each company is allocated a fixed weight of 2% at each quarterly rebalancing.
S&P South Africa Composite Capped	Domestic Equity	Designed to measure performance of large-, mid-, and small-cap companies listed on the JSE. Includes both South African and foreign-domiciled companies as defined by S&P Dow Jones Indices. A 10% single-stock cap is applied quarterly.
S&P South Africa Composite	Domestic Equity	Designed to measure the performance of large-, mid-, and small-cap companies listed on the JSE.
S&P South Africa Composite Quality, Value & Momentum Multi-factor	Domestic Equity	Designed to measure the performance of 40 stocks within the S&P South Africa Composite that are characterized as having the top combination of quality, value, and momentum as determined by a multi-factor score.
S&P South Africa Dividend Aristocrats	Domestic Equity	Designed to measure the performance of constituents within the S&P South Africa Composite that have followed a policy of increasing or maintaining stable dividends for seven consecutive years.
S&P South Africa Low Volatility Index	Domestic Equity	Designed to measure the performance of the 40 least-volatile stocks from the S&P South Africa Composite
S&P Global 1200	International Equity	Designed to measure approximately 70% of global market capitalization, it is constructed as a composite of seven headline indices, many of which are accepted leaders in their regions. These include the S&P 500 (U.S.), S&P Europe 350, S&P TOPIX 150 (Japan), S&P/TSX 60 (Canada), S&P/ASX All Australian 50, S&P Asia 50, and S&P Latin America 40.
S&P 500	International Equity	Designed to measure 500 leading U.S. large-cap companies and covers approximately 80% of available market capitalization in the U.S. equities market.
S&P Europe 350	International Equity	Designed to measure 350 leading blue-chip companies drawn from 16 developed European markets.

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

Exhibit 12: Indices Used in Simulation (cont.)

INDEX NAME	ASSET CLASS	INDEX DESCRIPTION
S&P/TOPIX 150	International Equity	Designed to measure 150 highly liquid securities as leading blue-chip companies from each of the Global Industry Classification Standard® (GICS®) sector of the Japanese market.
S&P Emerging BMI	International Equity	Designed to measure all companies domiciled in the emerging markets within the S&P Global BMI with a float-adjusted market capitalization of at least USD 100 million meeting 6- and 12-month median value traded requirements.
S&P International 700	International Equity	Designed to measure the non-U.S. component of the global equities market through an index that is designed to be highly liquid and efficient to replicate. The index covers all regions included in the S&P Global 1200 except for the U.S.
S&P North Africa	International Equity	Designed to serve as a comprehensive benchmark for the North Africa region within the S&P All Africa and includes companies listed in Egypt, Morocco, and Tunisia.
S&P West Africa	International Equity	Designed to serve as a comprehensive benchmark for the West Africa region within the S&P All Africa and includes companies listed in Côte d'Ivoire, Ghana, and Nigeria.
S&P South Africa Sovereign Bond 1+ Year	Domestic Fixed Income	Designed to measure the performance of local-currency-denominated sovereign debt publicly issued by the government of South Africa in its domestic market, with maturities of one year or more.
S&P South Africa Sovereign Inflation-Linked Bond 1+ Year	Domestic Fixed Income	Designed to measure the performance of South African rand-denominated, inflation-linked securities publicly issued by the South African government for the domestic market, with maturities greater than one year from the index rebalancing date.
S&P Africa Sovereign Bond	International Fixed Income	Designed to measure the performance of local-currency-denominated sovereign bonds from 13 countries within Africa.
S&P Kenya Sovereign Bond	International Fixed Income	Designed to measure the performance of local-currency-denominated sovereign debt publicly issued by the government of Kenya in its domestic market.
S&P/FMDQ Nigeria Sovereign Bond	International Fixed Income	Designed to measure the performance of local-currency-denominated sovereign debt publicly issued by the government of Nigeria in its domestic market.
S&P Eurozone Sovereign Bond	International Fixed Income	Designed to measure the performance of Eurozone government bonds.
S&P Global Developed Sovereign Bond	International Fixed Income	Designed to measure the performance of local-currency-denominated securities publicly issued by developed countries for their domestic markets.
S&P Global Emerging Sovereign Inflation-Linked Bond	International Fixed Income	Designed to measure the performance of local-currency-denominated inflation-linked securities publicly issued by emerging countries for their domestic markets.
S&P U.S. Treasury Bond	International Fixed Income	Designed to measure the performance of the U.S. Treasury Bond market.

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

APPENDIX B

Exhibit 13: South Africa and Sub-Saharan Africa-Listed Exchange Traded Products			
EQUITY			
INDEX	EXCHANGE-TRADED FUND	EXCHANGE	TICKER
INTERNATIONAL DEVELOPED EQUITY			
S&P 500®	CoreShares S&P 500 Feeder Fund ETF	JSE	CSP500:SJ
S&P 500®	Satrix S&P 500 Feeder ETF	JSE	STX500:SJ
S&P 500®	Sygnia Itrix SP 500 ETF Portfolio	JSE	SYG500:SJ
S&P 500®	1invest S&P 500 Index Feeder ETF	JSE	ETF500
S&P 500®	Satrix S&P 500 Feeder ETF	NSX	SNX500
S&P 500® Capped 35/20 Information Technology Sector Index	1invest S&P 500 Info Tech Index Feeder	JSE	ETF5IT
S&P Global 1200	Ashburton Global 1200 Equity ETF	JSE	ASHGEQ:SJ
LOCAL EQUITY			
S&P South Africa 50 (ZAR)	CoreShares Top50	JSE	CTOP50:SJ
NEW ECONOMIES			
S&P Kensho New Economies Composite Index (USD)	Sygnia Itrix 4th Industrial Revolution Global Equity	JSE	SYG4IR:SJ
REAL ASSET SOLUTIONS			
INDEX	EXCHANGE-TRADED FUND	EXCHANGE	TICKER
GLOBAL REAL ESTATE			
S&P Global Property 40	CoreShares S&P Global Property	JSE	GLPROP:SJ
S&P Global Property 40	Sygnia Itrix Global Property ETF Portfolio	JSE	SYGP:SJ
LOCAL PROPERTY			
S&P South Africa Composite Property Capped ETFs	Satrix Property	JSE	STXPRO:SJ
FACTOR-BASED (SMART BETA) SOLUTIONS			
INDEX	EXCHANGE-TRADED FUND	EXCHANGE	TICKER
GLOBAL EQUITY SMART BETA			
S&P Global Dividend Aristocrats Blend Index (Custom)	CoreShares Global DivTrax ETF	JSE	GLODIV:SJ
LOCAL EQUITY SMART BETA			
S&P Quality South Africa Index (ZAR)	Satrix Quality South Africa ETF	JSE	STXQUA:SJ
S&P GIVI South Africa Top 50	NewFunds S&P GIVI South Africa Top 50	JSE	GIVISA:SJ
S&P GIVI South Africa Top 50	NewFunds S&P GIVI South Africa Top 50	SEM	NERA.N0001
S&P South Africa Dividend Aristocrats (ZAR)	CoreShares Divtrax	JSE	DIVTRX: SJ

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

Exhibit 13: South Africa and Sub-Saharan Africa-Listed Exchange Traded Products (cont.)**FIXED INCOME SOLUTIONS**

INDEX	EXCHANGE-TRADED FUND	EXCHANGE	TICKER
EMERGING MARKET FIXED INCOME			
S&P/FMDQ Nigeria Sovereign Bond Index (NGN)	Vetiva S&P Nigeria Sovereign Bond ETF	NSE	VSPBOND:NL
S&P/FMDQ Nigeria Sovereign Bond Index (NGN)	Vetiva S&P Nigeria Sovereign Bond ETF	FMDQ	VSPBONDETF
S&P Namibia Sovereign Bond 1+ Year Top 10	NewFunds S&P Namibia Bond ETF	JSE	NFNAMB:SJ
S&P Namibia Sovereign Bond 1+ Year Top 10	NewFunds S&P Namibia Bond ETF	NSX	NFNAMA
LOCAL FIXED INCOME			
S&P South Africa Sovereign Inflation-Linked Bond 1+ Year Index	Satrix Inflation Linked Bond	JSE	STXILB:SJ
S&P South Africa Sovereign Bond 1+ Year Index	1invest SA Bond ETF	JSE	ETFBND

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

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PERFORMANCE DISCLOSURE

The S&P South Africa 50, S&P South Africa Composite Capped, S&P South Africa Composite, and S&P South Africa 50 Equal Weight Index were launched Feb. 6, 2014. The S&P South Africa Domestic Shareholder Weighted (DSW) Capped Index and S&P South Africa Domestic Shareholder Weighted (DSW) 50 were launched April 25, 2014. The S&P Quality South Africa Index was launched Dec. 10, 2014. The S&P South Africa Dividend Aristocrats and S&P South Africa Low Volatility were launched Jan. 29, 2014. The S&P Momentum South Africa was launched Nov. 18, 2014. The S&P South Africa Composite Quality, Value & Momentum Multi-factor Index was launched Feb. 4, 2020. The S&P Kenya Sovereign Bond Index was launched Nov. 25, 2014. The S&P South Africa Sovereign Bond 1+ Year Index was launched Aug. 8, 2017. The S&P South Africa Sovereign Inflation-Linked Bond 1+ Year Index was launched Aug. 23, 2016. The S&P Enhanced Value South Africa Composite Index was launched April 27, 2015. The S&P Global Developed Sovereign Bond Index was launched Oct. 8, 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. 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.

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