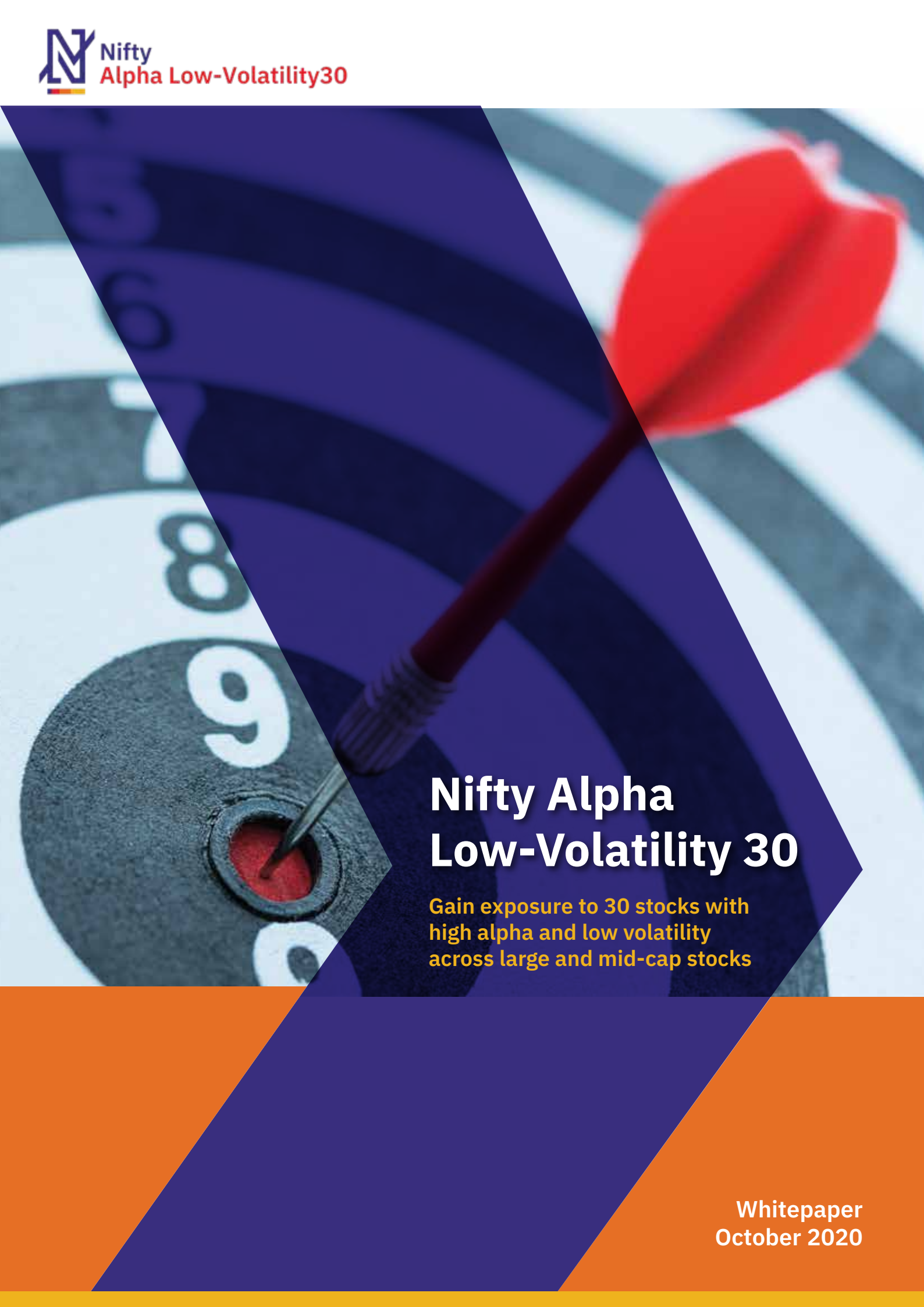




Nifty Alpha Low-Volatility 30

Gain exposure to 30 stocks with
high alpha and low volatility
across large and mid-cap stocks

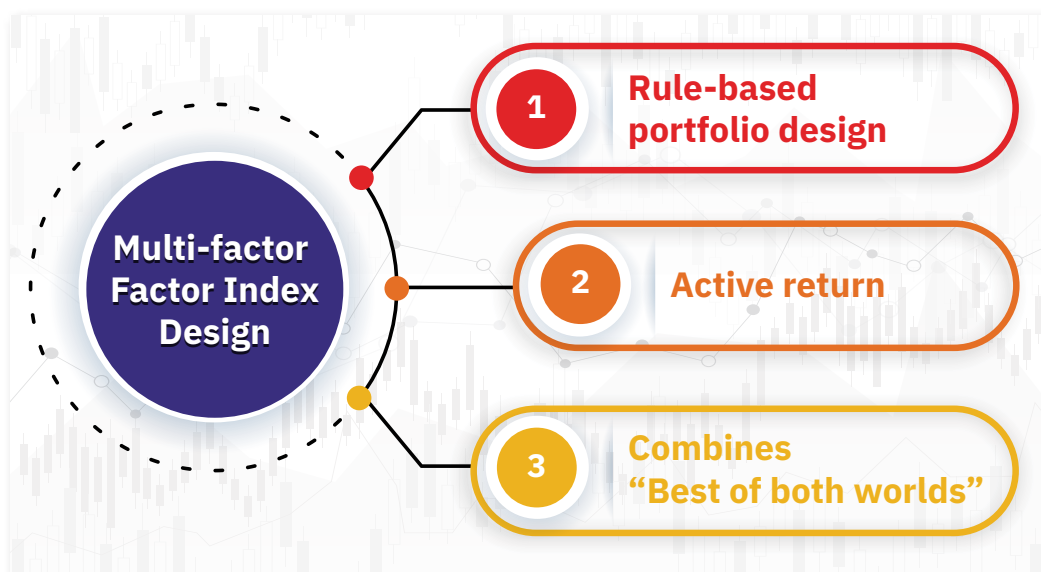
Whitepaper
October 2020

Introduction

Factor-based investing, where stocks are selected based on style factors such as size, alpha, quality, value, momentum and low volatility, remains popular globally and continues to see rising interest in India as well. Factor-based index strategies combine the benefits of both active and passive investment styles by applying well established stock-specific factors used in active investment, and the rules-based framework of passive investment. Factor strategies deliver factor risk premia over the long run in a transparent, rule-based and cost-effective manner. As of March 2020, there were 1300+ factor-based equity ETFs/ETPs listed globally with total assets under management of \$818 bn, up from \$534bn in January 2017 (Source: ETFGI report August 2020).

Single-factor based investing is backed by extensive academic research spread over decades by Fama-French, Carhart, and Ross. The most popular single factors which are typically used to capture long term risk premium include Alpha, Low-Volatility, Quality and Value amongst others. However single factor-based strategies typically exhibit cyclicalty and may underperform during certain market phases. The cyclical component of single factor indices can be mitigated by selecting stocks based on a combination of multiple factors. Such an index is called a multi-factor index.

Exhibit 1: Factor indices combine the benefits of passive and active investment



Source: NSE Indices

About the Nifty Alpha Low-Volatility 30 Index

The Nifty Alpha Low-Volatility 30 Index is a multi-factor index based on 2 factors – Alpha and Low Volatility. The Index tracks performance of 30 stocks, selected from a universe of 150 Large and Midcap stocks, that have recently outperformed the broader market yet are relatively less volatile. A stock's outperformance versus the market is measured by Jensen's alpha, based on previous 1-year prices.

Calculation of Alpha: $\alpha_s = r_s - [r_f + \beta_s (r_m - r_f)]$

α_s : Alpha of the stock

r_s : Average of daily return of security during previous 12 months

r_f : Average of daily 3 Month MIBOR rate during previous 12 months

r_m : Average of daily return of index i.e. Nifty 50 Index

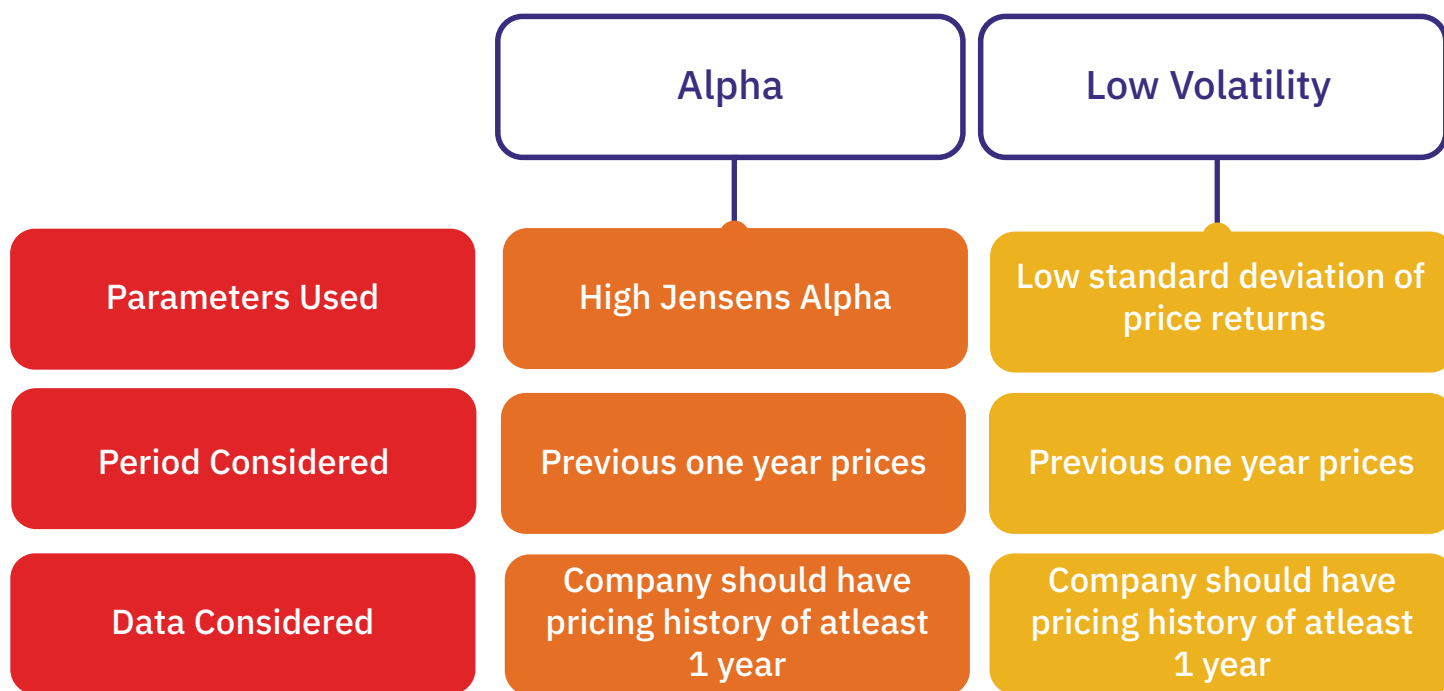
β_s : Beta of the security calculated based on previous 12 month period.

A stock's low volatility is measured by calculating the inverse of the standard deviation of the previous 1-year of lognormal daily stock returns.

A weighted average factor level Z-score is obtained by combining each stock's alpha score and volatility score. Stock weights are based on a combination of the stock's weighted average factor level Z-score.

The exhibit below shows the parameters of the Alpha and Low-Volatility factors which are combined to create the Nifty Alpha Low-Volatility 30 Index.

Exhibit 2: Alpha and Low volatility below factors are combined in the Nifty Alpha Low-Volatility 30 Index



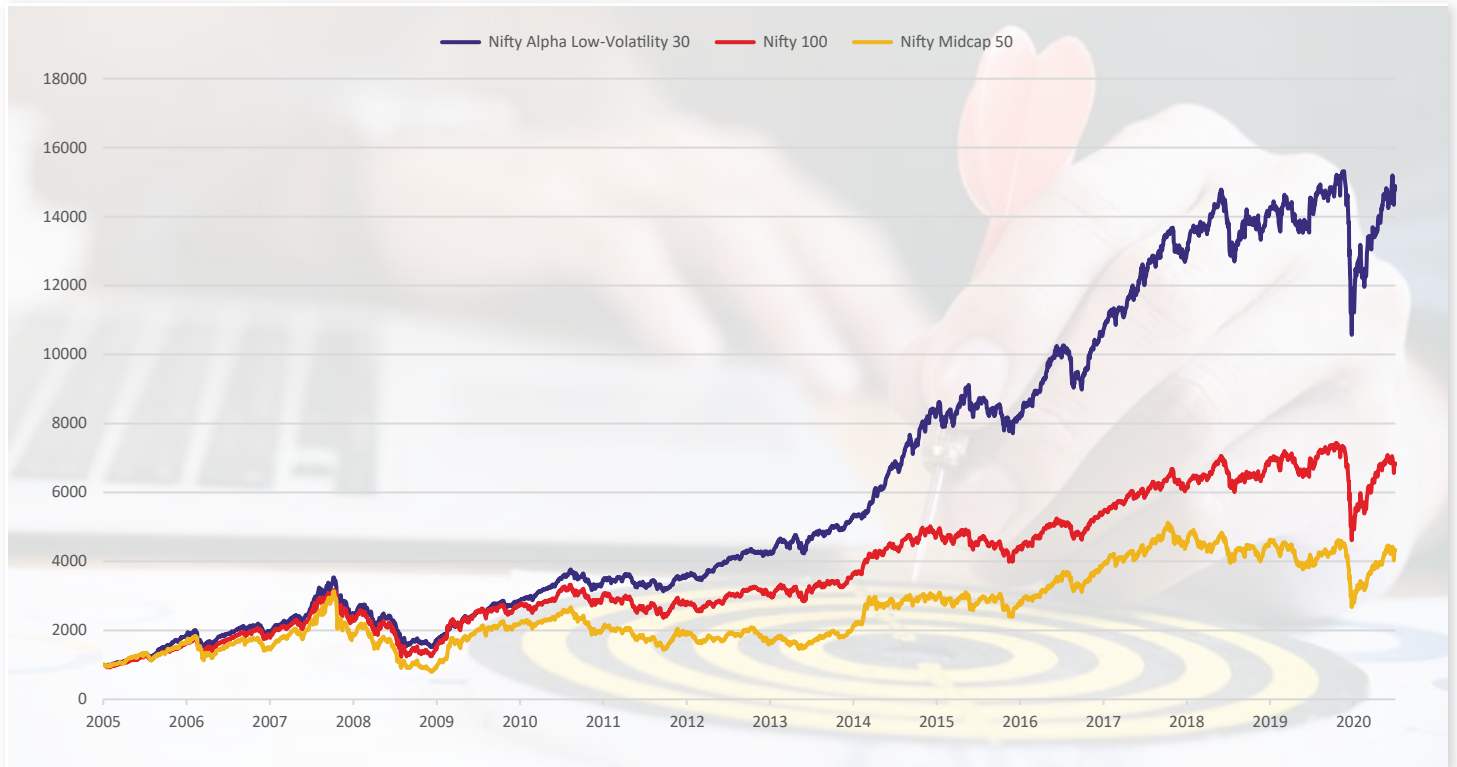
Source: NSE Indices

Highlights

- The index has 30 constituents, with a base date of April 01, 2005, and a base value of 1000
- The index is rebalanced semi-annually in June and December
- The index tracks the performance of 30 stocks with High Alpha and Low Volatility. These stocks are selected from the Nifty 100 Index and Nifty Midcap 50 Index
- Stocks are selected based on their weighted average percentile score determined using an equal weighted combination of each stock's Alpha and Volatility score
- The weight of each stock in the index is based on an equal weighted combination of its Alpha and Volatility score
- Stock weights are capped at the lower of 5% or 5 times the weight of the stock in the index based only on free float market capitalization
- A buffer based on weighted average percentile score ranks is applied to reduce turnover

The Nifty Alpha Low-Volatility 30 Index has outperformed its parent indices over the long term and recent short-term horizon

Exhibit 3: Nifty Alpha Low-Volatility 30 Index, Nifty 100 Index and Nifty Midcap 50 Index performance



Source: NSE Indices. Data as of September 30, 2020

Exhibit 4: Nifty Alpha Low-Volatility 30 Index, Nifty 100 Index and Nifty Midcap 50 Index performance table

Period	CAGR returns			Annualised Volatility			Return-risk ratio		
	Nifty Alpha Low- Vol 30	Nifty 100	Nifty Midcap 50	Nifty Alpha Low- Vol 30	Nifty 100	Nifty Midcap 50	Nifty Alpha Low- Vol 30	Nifty 100	Nifty Midcap 50
Since Inception	19.0%	13.2%	9.9%	18.5%	22.6%	26.9%	1.03	0.58	0.37
15 years	17.5%	11.9%	8.2%	18.6%	22.8%	27.1%	0.94	0.52	0.30
10 years	15.6%	8.0%	5.8%	14.3%	17.4%	22.9%	1.09	0.46	0.25
7 years	18.1%	12.0%	15.0%	15.0%	17.1%	23.0%	1.20	0.70	0.65
5 years	11.5%	8.5%	8.9%	15.8%	17.8%	22.7%	0.73	0.48	0.39
3 years	6.9%	5.2%	0.8%	17.9%	20.4%	24.5%	0.39	0.25	0.03
1 years	2.7%	-1.0%	7.3%	26.0%	29.9%	32.3%	0.10	-0.03	0.23
6 months	24.6%	31.0%	47.3%	22.3%	25.1%	27.2%	1.11	1.24	1.74
3 months	10.1%	8.9%	14.3%	14.5%	15.9%	22.7%	0.70	0.56	0.63

Source: NSE Indices. Data as of September 30, 2020. Inception date: April 01, 2005. Returns based on TRI values

The Nifty Alpha Low-Volatility 30 Index has outperformed the Nifty 100 Index and Nifty Midcap 50 Index since inception (2005), with an 19.0% CAGR return against 13.2% CAGR return for the Nifty 100 Index and 9.9% CAGR return for the Nifty Midcap 50 Index. In the last 3 years, the Nifty Alpha Low-Volatility 30 Index has returned 6.9% CAGR compared to 5.2% CAGR for the Nifty 100 Index and 0.8% CAGR for the Nifty Midcap 50 Index.

The Nifty Alpha Low-Volatility 30 Index has been less volatile than the Nifty 100 Index and Nifty Midcap 50 Index over various time horizons. More specifically, during the last 6 months (period between March 31, 2020

and September 30, 2020), the Nifty Alpha Low-Volatility 30 Index witnessed annualized volatility of 22.3% as against 25.1% for the Nifty 100 Index and 27.2% for the Nifty Midcap 50 Index. Additionally, since inception, the Nifty Alpha Low-Volatility 30 Index has had annualized volatility of 18.5% vs. 22.6% for the Nifty 100 Index and 26.9% for the Nifty Midcap 50 Index.

Nifty Alpha Low-Volatility 30 Index has consistently outperformed the Nifty 100 Index and Nifty Midcap 50 Index on a daily rolling return basis over long and short horizons

Exhibit 5: Instances of outperformance of Nifty Alpha Low-Volatility 30 Index vs Nifty 100 Index on a daily rolling return basis

Percentage of total instances of Outperformance and Underperformance vs Nifty 100 Index on daily rolling return basis					
Investment Horizon	Nifty Alpha Low-Volatility Index				
	Instances of Outperformance vs Nifty 100 Index	Instances of Underperformance vs Nifty 100 Index	Instances of Outperformance vs Nifty 100 Index		
	Excess Return $\geq 0\%$ CAGR	Excess Return $< 0\%$ CAGR	Excess Return $> 4\%$ CAGR)	Excess Return (2-4% CAGR)	Excess Return (0-2% CAGR)
10 years	100.0%	0.0%	100.0%	0.0%	0.0%
7 years	100.0%	0.0%	90.9%	9.1%	0.0%
5 years	99.6%	0.4%	78.5%	11.5%	9.6%
3 years	92.5%	7.5%	58.9%	19.9%	13.7%
2 years	81.4%	18.6%	57.2%	9.7%	14.5%
1 year	77.4%	22.6%	62.0%	9.3%	6.2%

Source: NSE Indices. Instances of outperformance or underperformance calculated using daily rolling returns. Data as September 30, 2020

From the table above, based on daily rolling returns, for a 5-year investment horizon, the Nifty Alpha Low-Volatility 30 Index has outperformed the Nifty 100 Index 99.6% of the time. The frequency of outperformance rises to 100% when we consider longer time horizon of 7 years and 10 years. This outperformance is also observed over shorter periods. For example, for 1-year investment horizon, based on daily rolling return analysis, the Index has outperformed the Nifty 100 Index 77.4% of the time.

Additionally for the 5-year investment horizon, based on daily rolling return analysis, the excess return of the Nifty Alpha Low-Volatility 30 Index exceeds 4% per annum over the Nifty 100 Index for 78.5% of the instances, excess return ranged between 2-4% per annum for 11.5% of the instances and excess return was in the range of 0-2% per annum for 9.6% of the instances, leading to cumulative 99.6% instances of outperformance over the Nifty 100 Index.

Exhibit 6: Instances of outperformance of Nifty Alpha Low-Volatility 30 Index vs Nifty Midcap 50 Index on a daily rolling return basis

Percentage of total instances of Outperformance and Underperformance vs Nifty Midcap 50 Index on daily rolling return basis					
Investment Horizon	Nifty Alpha Low-Volatility Index				
	Instances of Outperformance vs Nifty Midcap 50 Index	Instances of Underperformance vs Nifty Midcap 50 Index	Instances of Outperformance vs Nifty Midcap 50 Index		
	Excess Return $\geq 0\%$ CAGR	Excess Return $< 0\%$ CAGR	Excess Return $> 4\%$ CAGR	Excess Return (2-4% CAGR)	Excess Return (0-2% CAGR)
10 years	100.0%	0.0%	100.0%	0.0%	0.0%
7 years	100.0%	0.0%	96.6%	3.4%	0.0%
5 years	100.0%	0.0%	91.1%	7.2%	1.7%
3 years	96.8%	3.2%	71.8%	12.8%	12.2%
2 years	84.2%	15.8%	69.8%	7.4%	7.1%
1 year	73.1%	26.9%	64.2%	4.8%	4.2%

Source: NSE Indices. Data as of September 30, 2020

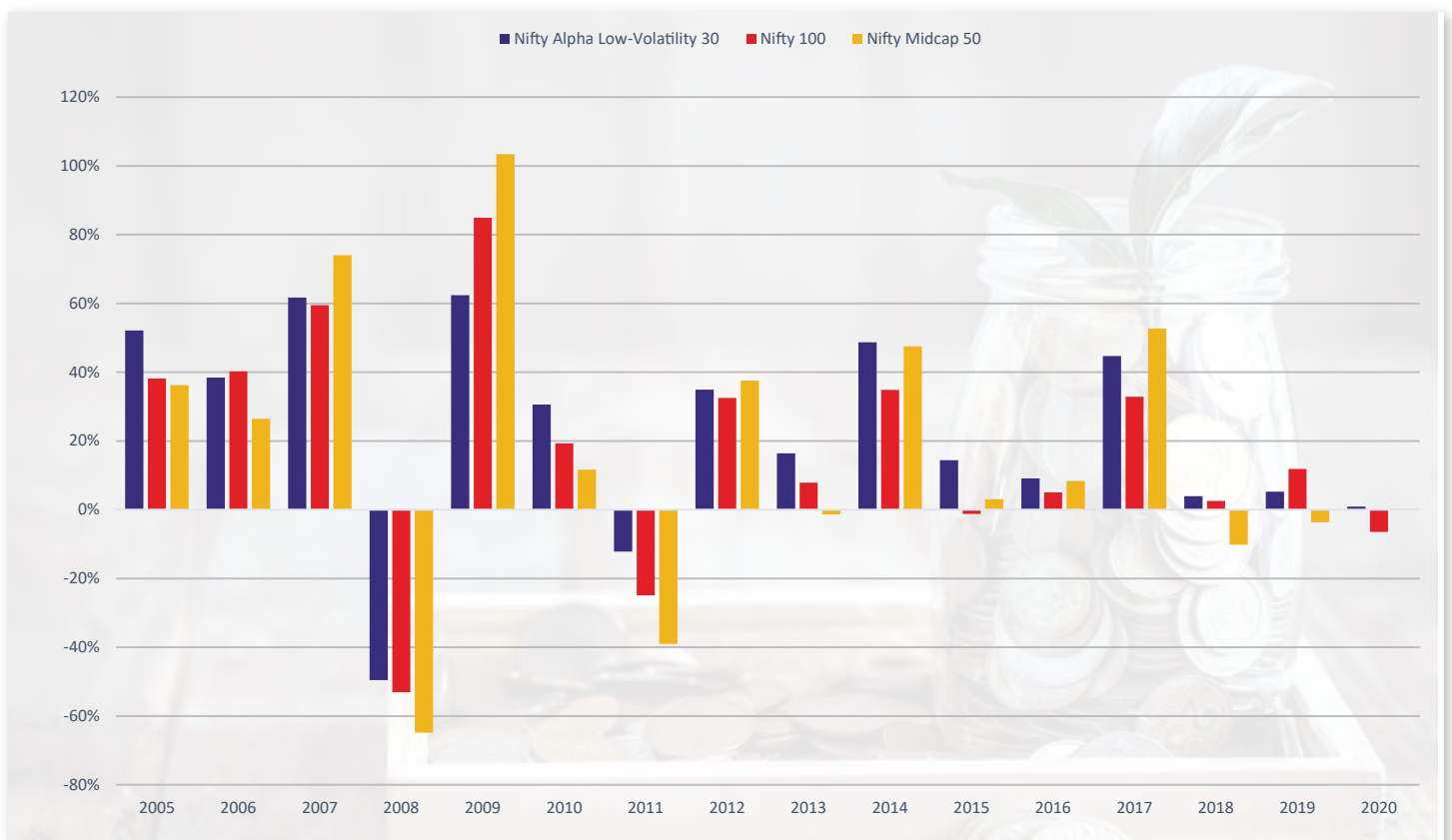
Based on daily rolling returns for a 5-year, 7-years and 10-years investment horizons, the Nifty Alpha Low-Volatility 30 Index has outperformed the Nifty Midcap 50 Index 100% of the time. This outperformance is observed over shorter periods as well. For example, for 1-year investment horizon, based on daily rolling return analysis, the Nifty Alpha Low-Volatility 30 Index has outperformed the Nifty Midcap 50 Index 73.1% of the time.

The degree of outperformance for the 5 year investment horizon, based on daily rolling return analysis, the excess return of the Nifty Alpha Low-Volatility 30 Index exceeds 4% per annum over the Nifty Midcap 50 Index for 91.1% of the instances, excess return was in the range of 2-4% per annum for 7.2% of the instances and excess return ranged between 0-2% per annum for 1.7% of the instances, leading to cumulative 100% instances of outperformance over the Nifty Midcap 50 Index.

The Nifty Alpha Low-Volatility 30 Index has consistently outperformed the Nifty 100 Index and Nifty Midcap 50 Index for most of the calendar years

Over a long horizon, the Nifty Alpha Low-Volatility 30 Index has shown strong consistency in its outperformance over the Nifty 100 Index and Nifty Midcap 50 Index. It has outperformed the Nifty 100 Index in 13 out of the last 16 calendar years from 2005 onward, and has outperformed the Nifty Midcap 50 Index in 12 out of the last 16 calendar years from 2005 onward. The Nifty Alpha Low-Volatility 30 Index has outperformed the Nifty 100 Index in each calendar year when the Nifty 100 Index had a negative return. For example, the Nifty Alpha Low-Volatility 30 Index returned -49.6% vs -53.1% for the Nifty 100 in 2008, -12.2% vs -24.9% in 2011, 14.4% vs -1.3% in 2015 and 0.9% vs -6.4% for the Nifty 100 Index till September 30, 2020.

Exhibit 7: Performance of Nifty Alpha Low-Volatility 30 Index, Nifty 100 Index and Nifty Midcap 50 Index by calendar year



Source: NSE Indices. Data as of September 30, 2020

The Nifty Alpha Low-Volatility 30 Index is currently overweight the Consumer Goods and Pharma sectors, and underweight the Financial Services sector

The Nifty Alpha Low-Volatility 30 Index selects stocks that have recently outperformed the market and have relatively low volatility. In H1 2020, several stocks in the Consumer Goods and Pharma sectors outperformed the market and had relatively less volatility owing to their defensive nature. As of September 30, 2020, these two sectors have the highest sector weights in the Nifty Alpha Low-Volatility 30 Index. The Consumer Goods

sector has 35.1% weight and the Pharma sector has 27.3% weight, compared to 14.3% and 5.5% sector weights respectively in the Nifty 100 Index and 10.1% and 1.7% sector weights respectively in the Nifty Midcap 50 Index. The Nifty Alpha Low-Volatility 30 Index is under-weight the Financial Services sector relative to the Nifty 100 Index and Nifty Midcap 50 Index as of September 30, 2020. This is because the Financial Services sector experienced weaker price performance on a 12-month basis and high volatility due to the market sell-off in Q1 2020. There are currently no Financial Services sector stocks in the Nifty Alpha Low-Volatility 30 Index, whereas Financial Services Sector stocks account for 31.5% weight in the Nifty 100 Index and 25.7% weight in the Nifty Midcap 50 Index.

The sector distribution and the difference in sector weights between the indices is shown below.

Exhibit 8: Comparison of sector exposure between the Nifty Alpha Low-Volatility 30 Index, Nifty 100 Index and Nifty Midcap 50 Index (%)



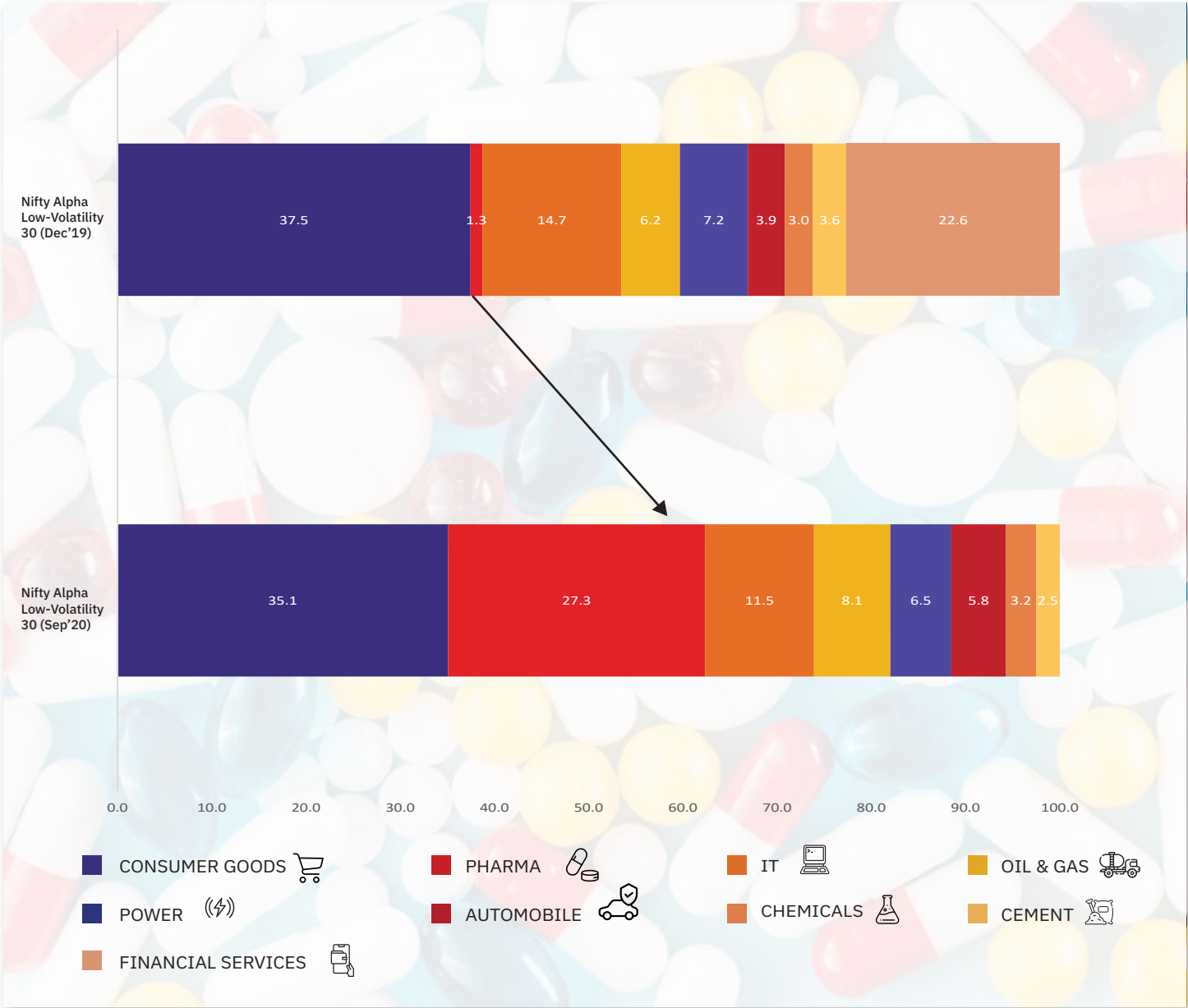
Source: NSE Indices. Data as of September 30, 2020



The Nifty Alpha Low-Volatility 30 Index adjusts to changing market conditions and increases the weight to current outperforming stocks which also have relatively low volatility

The Exhibit below shows the sector weights for the Nifty Alpha Low-Volatility 30 Index as on September 30, 2020, and the weights as on December 31, 2019. Financial Services and Consumer Goods were the two largest sectors of the Nifty Alpha Low-Volatility 30 Index as of December 2019, compared with Consumer Goods and Pharma as on September 30, 2020. The Financial Services sector outperformed the broader market through 2019 – the Nifty Financial Services Index returned 24.4% vs 11.8% for the Nifty 100 Index over CY2019, with annualized volatility of 18.4% vs 13.7% for the Nifty 100 Index. Hence the Financial Services had a large weight in the Nifty Alpha Low-Volatility 30 Index as of December 2019. However, H1 2020 saw a change in market leadership, with Financial Services underperforming and becoming volatile, while Pharma outperformed. The Nifty Alpha Low-Volatility 30 Index has adjusted since, and currently the Pharma sector’s weight in the Index has increased to 27.3% as of September 30, 2020, from 1.3% as of December 31, 2019.

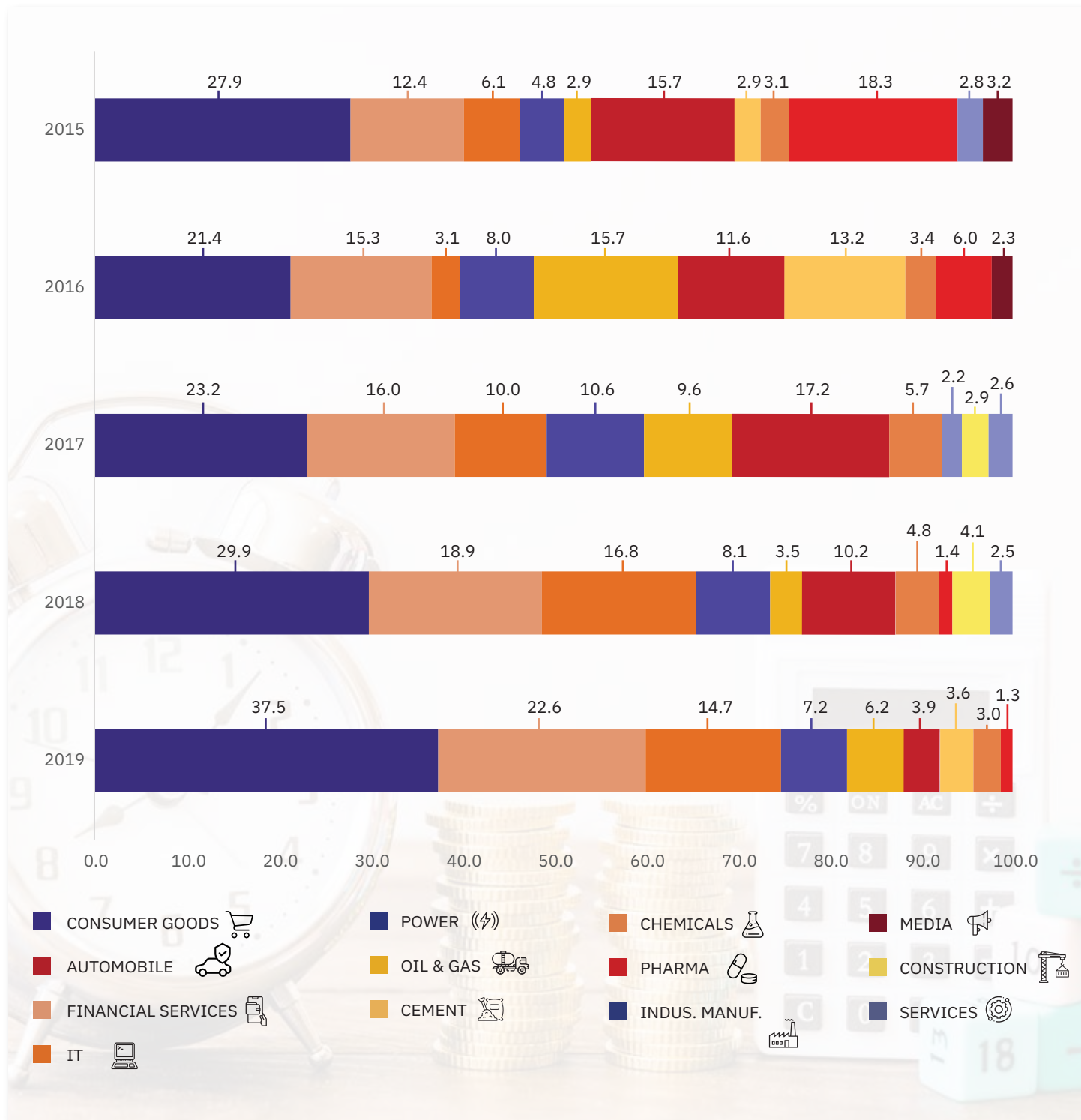
Exhibit 9: Sector weight of the Nifty Alpha-Volatility 30 Index as on September 30, 2020 and December 31, 2019



Source: NSE Indices. Data as of September 30, 2020 and December 31, 2019

Further examples of how the sector weights of the Nifty Alpha Low-Volatility 30 Index have varied through time are given below. Each column chart represents the portfolio of the Index as on December 31 of the relevant year.

Exhibit 10: Sector weight of the Nifty Alpha Low-Volatility 30 Index as on December 31 for last 5 calendar years



Source: NSE Indices

The exhibit above provides an illustration of index weights have changed through time. For example, in these snapshots at the end of each CY for the last 5 years, the exposure to the Automobile sector peaked at 17.2% at the end of CY 2017 and has subsequently reduced to 3.9% at the end of CY 2019. Meanwhile the weight of the Consumer Goods sector troughed at 21.4% at the end of CY 2016 and has steadily increased since then.

Signing Off



The Nifty Alpha Low-Volatility 30 Index gives investors exposure to 30 stocks that have recently outperformed the broader market and witnessed relatively less volatility. These stocks are selected from a combined universe of Nifty 100 Index and Nifty Midcap 50 Index stocks



Since inception on April 1, 2005, the Index has returned 19.0% p.a. CAGR return vs 13.2% p.a. CAGR return of the Nifty 100 Index and 9.9% p.a. CAGR return of the Nifty Midcap 50 Index



Consistent long-term outperformance- The Index has outperformed the Nifty 100 Index and Nifty Midcap 50 Index over the last 3,5,7 and 10 years on a point-to-point CAGR return basis, and 100% times on a rolling return basis over 7-year periods



The Index adjusts to changing market conditions and increases the weight to current outperforming sectors which have relatively less volatility – it is currently overweight Consumer Goods and Pharma sectors

The Nifty Alpha Low-Volatility 30 Index is expected to serve as a reference index, which can be tracked by passive funds in the form of Exchange Traded Funds (ETFs), index funds and structured products.

For more information on the Index methodology and factsheet, please visit us at www.nseindia.com

About NSE Indices Limited

NSE Indices Limited (formerly known as India Index Services & Products Ltd. - IISL), a subsidiary of NSE, provides a variety of indices and index related services for the capital markets. The company focuses on the index as a core product. The company owns and manages a portfolio of indices under the NIFTY brand of NSE, including the flagship index, the NIFTY 50. NIFTY equity indices comprises of broad-based benchmark indices, sectoral indices, strategy indices, thematic indices and customised indices. NSE Indices Limited also maintains fixed income indices based on Government of India securities, corporate bonds, money market instruments and hybrid indices. Many investment products based on NIFTY indices have been developed within India and abroad. These include index based derivatives traded on NSE, NSE IFSC and Singapore Exchange Ltd. (SGX) and a number of index funds and exchange traded funds. The flagship 'NIFTY 50' index is widely tracked and traded as the benchmark for Indian Capital Markets.

For more information, please visit: www.niftyindices.com

Contact Details

Analytical contact

Aman Singhanian, CFA, FRM
Vice President and Head –
Products (NSE- Indices)
+91-22-26598214
asinghanian@nse.co.in

Business Development contact

Rohit Kumar, FRM
Vice President & Head of Sales –
Index & Market Data
+91-22- 26598386
rohitk@nse.co.in

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Contact:

Email: indices@nse.co.in

Tel: +91 22 26598386

Address: Exchange Plaza, Bandra Kurla Complex,
Bandra (East), Mumbai– 400 051(India)

