STRATEGY 301 | Hong Kong

Real Estate: Bond-Like Income Meets Equity-Like Growth

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Commercial real estate may be viewed in financial terms as a hybrid of the characteristics of bonds (the existing lease obligations) and equity (the right to release the property after the existing leases expire). As documented in academic literature, its investment performance has historically been underpinned by stable, bond-like yields. However, in periods of sustained economic growth, property has also delivered equity-like income growth, due to low vacancy rates and rising rental value in the market.[1]

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Take an example of someone leasing mall properties. Let's say they have fixed cash flows, determined by the leasing rate and number of square feet leased. In addition, they can draw upon economic appreciation tied to the resale of the property. When times are good, they have higher-than-average occupancy, and property values go up, so it has a double effect on income and appreciation linked to market value. The flip side is that when the economy is slower, there is a floor of income they can count on, and property value linked to economic growth either goes down or doesn't appreciate as much.

This understanding separates real estate risk/return decomposition into bond and equity components, with different weight combinations in different stages of economic cycles. This might facilitate effective risk management of the real estate asset class and assist asset owners in meeting their specific investment objectives.

S&P HONG KONG MACRO DYNAMIC MULTI-ASSET INDICES: CONSTRUCTION RATIONALE

The S&P Hong Kong Macro Dynamic Multi-Asset Excess Return Index and its risk control version, the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index, are constructed using a dynamic allocation of equity and bond assets based on the relative standing of the

[1] For academic literature, see the following.

Booth, D. G., Cashdan, Jr., D. M. and Graff, R. A., 1989, Real estate: A hybrid of debt and equity, *Real Estate Review* 19, 54-58.

Graff, R. A. and Cashdan, Jr., D. M., 1990, Some new ideas in real estate finance, *Journal of Applied Corporate Finance* 3(1), 77-89.

Greig, D. W. and Young, M. S., 1991, New measures of future property performance and risk, *Real Estate Review* 91, 17-25.

Baum, A. E. and Crosby, N., 1995, Property: Bond or equity?, *Journal of Property Valuation and Investment* 13(2), 31-40.

year-over-year change of the Hong Kong Purchasing Managers' Index (PMI) over the past five years.

The indices could be used to approximate the risk/return profile of Hong Kong commercial property investment. In addition, they replicate the risk/return profile using liquid, publicly traded instruments. This approach provides cost efficiency, liquidity, transparency, and potential for a more efficient funding mechanism.

S&P HONG KONG MACRO DYNAMIC MULTI-ASSET INDICES: KEY INPUTS

The S&P/HKEx LargeCap seeks to track the 25 largest and most-liquid stocks from the Hong Kong equity market. The index is designed to provide investors with a tradable and easily replicable snapshot of the Hong Kong market. It was launched on March 3, 2003.

The key inputs for the S&P Hong Kong Macro Dynamic Multi-Asset Indices are the S&P/HKEx LargeCap, the S&P 10-Year U.S. Treasury Note Futures Index, and the Nikkei Hong Kong PMI.

The S&P 10-Year U.S. Treasury Note Futures Index seeks to track the performance of portfolios holding the nearest maturity 10-Year U.S. Treasury Note futures contract listed on the CME (ticker: TY). Some of the reasons to use a U.S. Treasury bond futures index instead of a Hong Kong one are the historically higher liquidity of U.S. treasuries and the high co-movement between U.S. and Hong Kong treasuries.

The Nikkei Hong Kong PMI is based on monthly surveys of carefully selected companies. It provides an advance indication of what is really happening in the Hong Kong private sector economy by tracking variables such as output, new orders, stock levels, employment, and prices across the manufacturing, construction, retail, and service sectors.

S&P HONG KONG MACRO DYNAMIC MULTI-ASSET INDICES: ALLOCATION MECHANISM

There are two indices in the S&P Hong Kong Macro Dynamic Multi-Asset Index series.

1. The S&P Hong Kong Macro Dynamic Multi-Asset Excess Return Index
2. The S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index

For both indices, the allocation of bonds and equity is determined by the relative standing of the year-over-year change of the Hong Kong PMI over the past five years – when the relative standing is high, more weight is given to the equity component and vice versa (see Exhibit 1).

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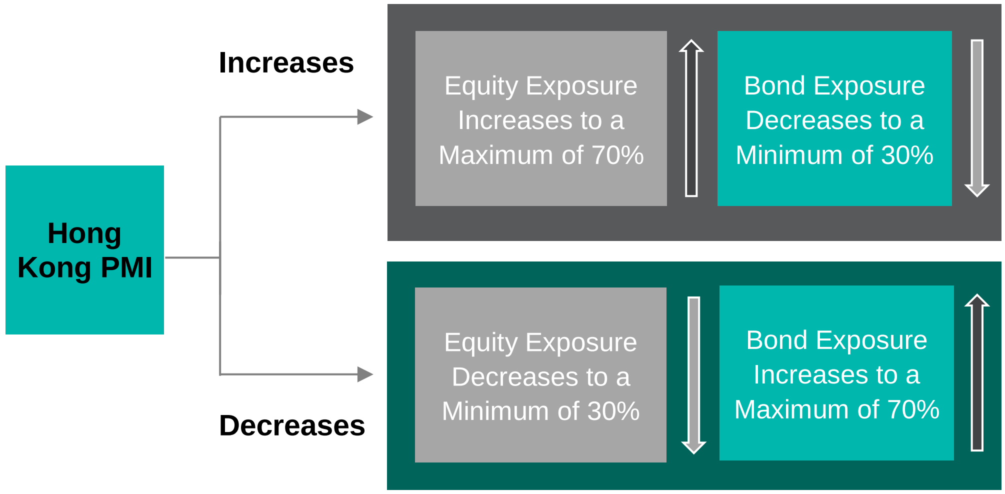
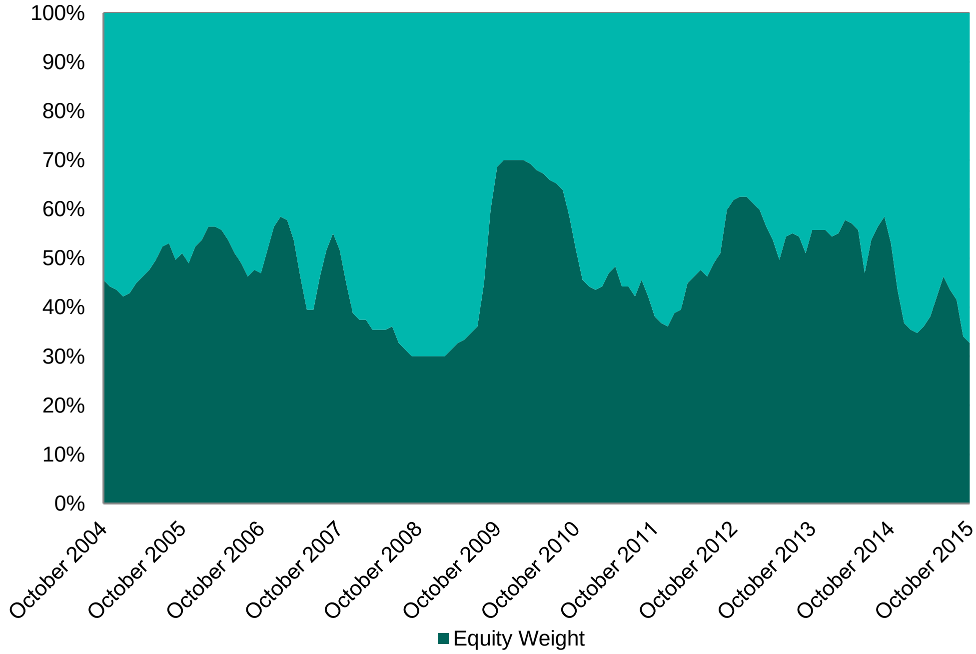
Exhibit 1: Allocation Mechanism



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

Exhibit 2: Historical Allocation



Source: S&P Dow Jones Indices LLC. Data from Oct. 12, 2004, to Oct. 12, 2015. 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 of back-tested performance.

The S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index also has a risk control mechanism with a 21-day volatility target of 15% and a maximum exposure of 100%. The historical leverage factor is illustrated in Exhibit 3. The calendar year returns of the S&P Hong Kong Macro Dynamic Multi-Asset 15% Risk Control Index versus its equity and bond underlyings are shown in Exhibit 4.

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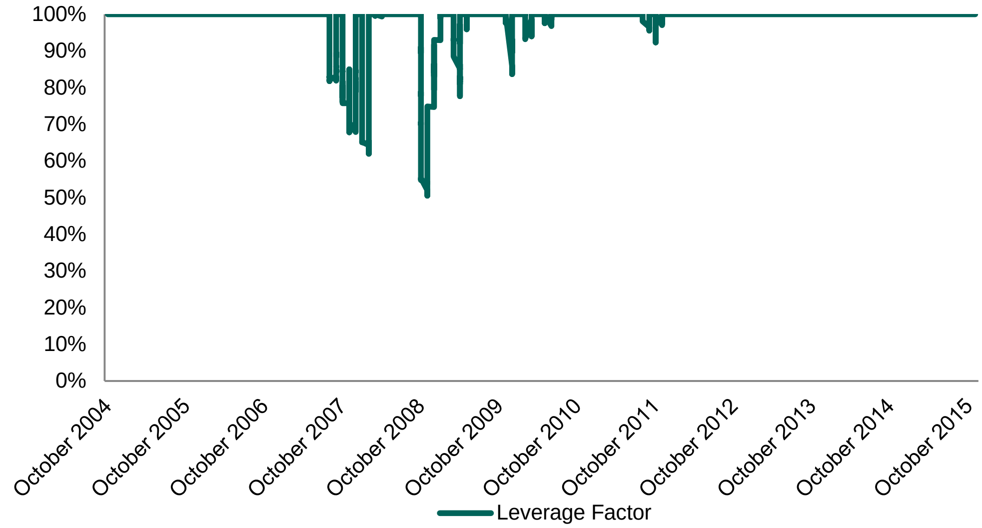
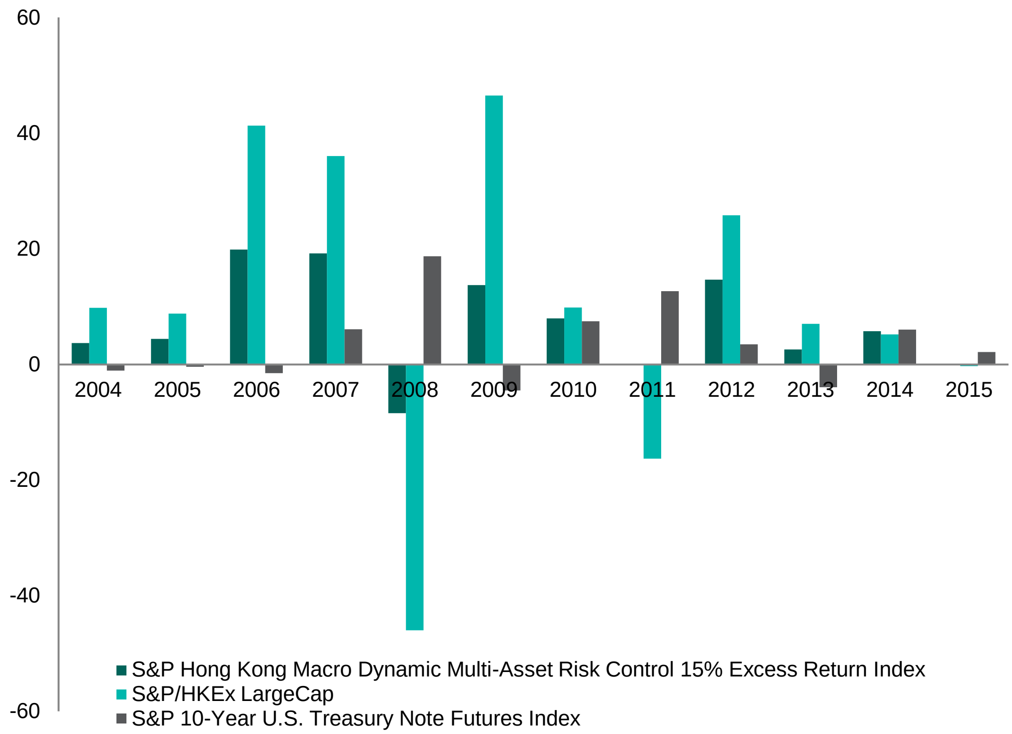
Exhibit 3: Historical Leverage Factor of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index



Source: S&P Dow Jones Indices LLC. Data from Oct. 12, 2004, to Oct. 12, 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 of back-tested performance.

Exhibit 4: Calendar Year Returns of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index Versus its Underlying Equity and Bond Indices



Source: S&P Dow Jones Indices LLC. Index performance is based on excess return in USD. Data from Oct. 30, 2004, to Oct. 30, 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.

S&P HONG KONG MACRO DYNAMIC MULTI-ASSET INDICES: RISK/RETURN CHARACTERISTICS

Exhibit 5 compares the rolling one-year return of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index with two alternatives:

- The BIS Hong Kong All Commercial Property Prices Index–Office: a non-seasonally-adjusted, nominal residential property price index covering all private office premises in Hong Kong, published by the Bank for International Settlements, with data collected from the Census and Statistics Department of Hong Kong; and
- The Hang Seng Properties Index: a subindex of the Hang Seng Index, which includes all members of the Hang Seng Index that fall under the "Properties & Construction" industry, based on the Hang Seng Industry Classification System.

The BIS Hong Kong All Commercial Property Prices Index represents the average prices in the physical property market, while the Hang Seng Properties Index is a basket of property sector stocks.

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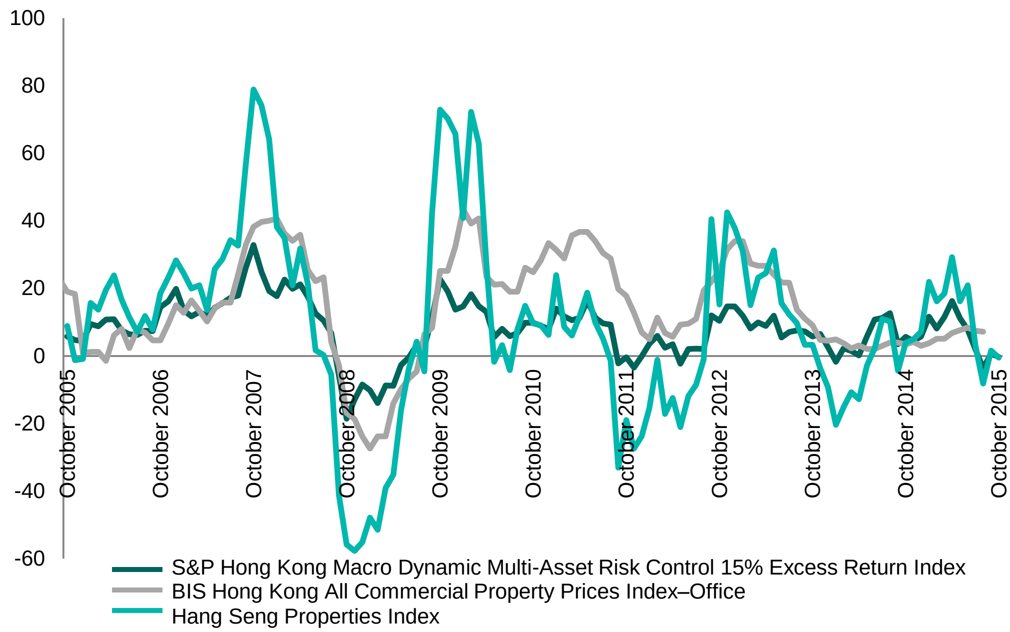
It is evident that the return pattern of the BIS Hong Kong All Commercial Property Prices Index, on a rolling one-year basis, is tracked more closely by the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index, compared with the Hang Seng Properties Index.

Exhibit 5: Rolling One-Year Returns of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index Versus Alternatives



Source: S&P Dow Jones Indices LLC, Bank for International Settlements, Hang Seng. Index performance is based on return in USD. Data from Oct. 30, 2004, to Oct. 30, 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.

Exhibit 6 compares the risk/return characteristics of the three indices with detailed stats. Over the past 11 years, the BIS Hong Kong All Commercial Property Prices Index had risk/return characteristics that were more similar to those of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index than the Hang Seng Properties Index in terms of the Sharpe, Sortino, MAR, and Omega ratios, and especially drawdown behaviors.

This shows that the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index could be a helpful tail-risk hedging instrument, compared with a basket of property sector stocks.

Over the past 11 years, the BIS Hong Kong All Commercial Property Prices Index had risk/return characteristics that were more similar to those of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index than the Hang Seng Properties Index.

Exhibit 6: Statistical Summary of the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index Versus Alternatives

Moments	S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index	BIS Hong Kong All Commercial Property Prices Index–Office	Hang Seng Properties Index
Annual Return (%)	7.59	14.31	6.14
Annual Volatility (%)	9.72	11.02	27.61
Annual Skewness	-0.04	0.12	-0.06
Annual Excess Kurtosis	-0.22	0.19	-0.18
Ratios			
Annual Return/Annual Volatility	0.78	1.30	0.22
Sharpe Ratio	0.65	1.19	0.18
Sortino Ratio	1.05	2.24	0.26
MAR Ratio	0.37	0.50	0.10
Omega Ratio	1.77	3.63	1.31
Percentage of Months With Positive Returns	62.9	84.8	56.1
Extreme Risk Statistics			
Best Monthly Return (%)	8.8	14.4	21.5
Worst Monthly Return (%)	-7.9	-11.1	-26.8
Drawdown History			
Maximum Drawdown	-20.4	-28.4	-59.6
Peak Date	October 2007	June 2008	November 2007
Trough Date	October 2008	March 2009	February 2009
Number of Months From Peak to Trough	12	9	15
Recovery Length (Number of Months)	12	12	-

Source: S&P Dow Jones Indices LLC, Bank for International Settlements, Hang Seng. Index performance is based on return in USD. Data from Oct. 30, 2004, to Oct. 30, 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.

CONCLUSION

The S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index uses the Hong Kong PMI to attempt to replicate the returns of property investments by using liquid, publicly traded instruments. It provides a good approximation of the risk/return profile of the physical Hong Kong commercial property market, which may not be provided by a basket of property stocks.

PERFORMANCE DISCLOSURES

The S&P Hong Kong Macro Dynamic Multi-Asset Excess Return Index and the S&P Hong Kong Macro Dynamic Multi-Asset Risk Control 15% Excess Return Index were launched on Nov. 10, 2015. All information for an index prior to its launch date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect on the launch date. Complete index methodology details are available at www.spdji.com. It is not possible to invest directly in an index.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency on their products. 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 indicates 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 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

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.

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