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BNP PARIBAS CATALYST SYSTEMATIC ALPHA INDEX II



BNP PARIBAS

The bank
for a changing
world



ABOUT BNP PARIBAS

With strong roots anchored in Europe's banking history, BNP Paribas supports its clients and employees in today's changing world and has positioned itself as a leading bank in the Eurozone and a prominent international banking institution.

BNP Paribas is one of the world's largest banks by assets, with three major business lines: Corporate & Institutional Banking, Commercial, Personal Banking & Services and Investment & Protection Services providing a substantial diversified asset base.

With offices in 64 countries and locations across five continents and nearly 184,000 employees, BNP Paribas offers wide coverage of financial markets and an extensive global banking network. In 2023, revenues totaled \$49.6 billion, with \$11.9 billion in net income attributable to equity holders.

INTRODUCING

BNP Paribas Catalyst Systematic Index II

The BNP Paribas Catalyst Systematic Alpha Index II (the "BNP Paribas CASA Index II") is a **Rules-Based Index** designed to capitalize on **Structural Inefficiencies** and **Behavioral Biases** (risk premia) present within the equity, fixed-income, commodity, and currency markets. The BNP Paribas CASA Index II is composed of six rules-based Index Components created by BNP Paribas (each, a "BNP Paribas Index Component"), some of which are also composed of rules-based indices created by BNP Paribas.

The BNP Paribas CASA Index II seeks to generate positive risk-adjusted returns that exhibit low to moderate correlation to the equity, fixed-income, commodity, and currency markets and may be an effective complement to strategies that rely on more traditional security selection methods.

Definitions

A **Rules-Based Index** is an index where the weightings of the components are determined following a pre-defined algorithmic set of rules and proprietary formulas.

Structural Inefficiencies are price and/or rate of return distortions in financial markets that seem to contradict the efficient-market hypothesis.

Behavioral Biases are psychological, social, cognitive, and emotional factors that affect economic decisions of market participants.

THE BNP PARIBAS CASA INDEX II WAS CREATED BY BNP PARIBAS IN COOPERATION WITH CATALYST INVESTMENT ADVISORS IN THREE PHASES:

1.

SURVEY SYSTEMATIC STRATEGIES LANDSCAPE

Break down **Absolute Return** investment strategies into individual sources of return.

2.

SELECT INVESTABLE SYSTEMATIC STRATEGIES

Six systematic strategies and the respective BNP Paribas Index Components that access them were selected to seek diversification of returns over a variety of market environments and time horizons.

3.

DYNAMIC ALLOCATION

Each day the BNP Paribas CASA Index II allocates a leveraged amount across the six BNP Paribas Index Components in an attempt to achieve positive risk-adjusted returns while maintaining equal risk exposure to carry, momentum/trend, and volatility risk premia.

Index Fees - The BNP Paribas CASA Index II levels are shown net of rebalancing fees, replication fees, and annual fees of the BNP Paribas CASA Index II and the BNP Paribas Index Components and their respective sub-components. Rebalancing fees will vary during different market conditions. If BNP Paribas is able to rebalance the index at a lower fee amount than the level of fees established for such index, this could potentially result in greater profitability for BNP Paribas, as the lower fee will not be reflected in the level of the BNP Paribas CASA Index II. For more information about these fees, please contact: bnpp.casa.index@us.bnpparibas.com.

The BNP Paribas CASA Index II is an “Excess Return” index, and reflects the performance of the BNP Paribas Index Components, which require little or no cash to obtain the economic exposure and risk that is the objective of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II level does not reflect interest from cash instruments or other related returns that might be realized when obtaining the performance of an index that would require a cash investment equal to the value of the BNP Paribas CASA Index II.

See risk factors section for additional index disclosures.

Definitions

Absolute Return strategies aim to produce a positive return, even when markets are volatile, flat or falling.

SURVEY

Systematic Strategies

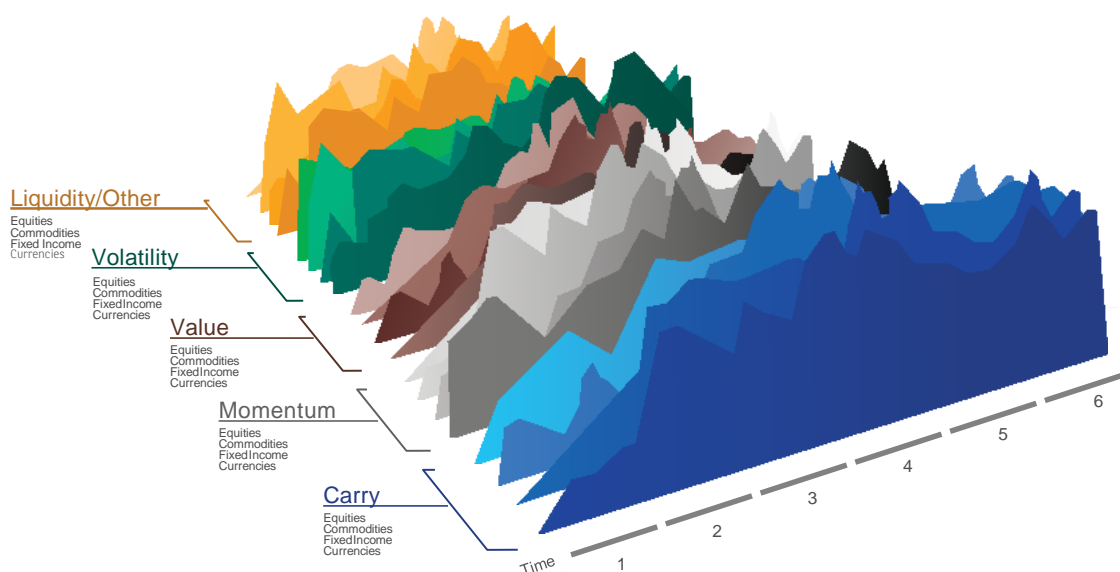
Most absolute return strategies are not readily observable like traditional market instruments such as equities, fixed income, commodities, currency, or common equity benchmarks and instead must be extracted from traditional market instruments through long/short trading techniques and strategies. The study of such strategies and how they can be extracted from the markets has been a common research topic of academics and practitioners for over a decade and has produced a **Large Range** of techniques, viewpoints, and methods to consider.

BNP Paribas, in cooperation with Catalyst Investment Advisors, surveyed a broad sample of the available academic research on systematic absolute return investment strategies and their respective theoretical underlying drivers. The findings of this survey helped to make the decision to only consider strategies that met the below criteria in the BNP Paribas CASA Index II.

Only consider strategies that met the below criteria in the BNP Paribas CASA Index II:



Sample list of absolute return strategies considered and representation of change over time:



For Illustrative Purposes Only, not representative of actual returns or investable strategies

Definitions

Large Range recent academic research cites over 59 different risk premia:

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2766850

Liquidity describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price.

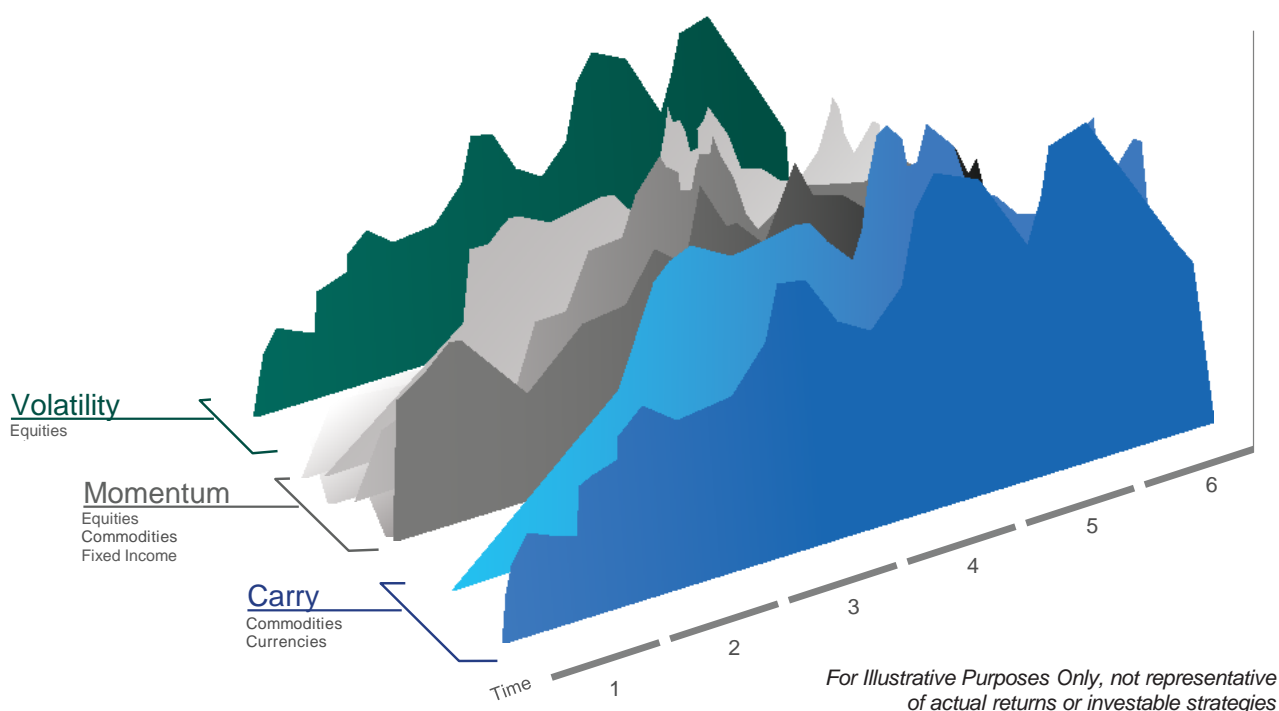
SELECT

Systematic Strategies

From the range of systematic strategies surveyed, BNP Paribas, in cooperation with Catalyst Investment Advisors, selected six strategies across equity, fixed-income, commodity, and currency for inclusion in the BNP Paribas CASA Index II.

The six systematic strategies were selected based on popularity amongst global macro absolute return strategies, historically persistent positive returns over a variety of market environments and time horizons, and historically low correlation of returns to one another and to the traditional broader market benchmarks such as the S&P 500, Russell 2000, MSCI EAFE, and Bloomberg US Aggregate Bond Indexes.

Selected Strategies for inclusion in BNP Paribas CASA Index II



VOLATILITY

- Aims to capture the behavioral tendency of markets to overprice implied or expected volatility.
- Typical Volatility strategies include being short (or sell) an asset's expected end-of-day price standard deviation and being long (or buy) exposure to an asset's realized end-of-day price standard deviation.

MOMENTUM / TREND

- Aims to capture the tendency for assets that have performed well in recent past to continue to perform well, and assets that have performed poorly in the recent past to continue to perform poorly.
- Typical Trend Following strategies include being long (or buy) exposure to high performing assets and short (or sell) low performing assets

CARRY

- Aims to capture the tendency for higher yielding assets to outperform lower yielding assets over time.
- Typical Carry strategies include being long (or buy) exposure to high carry assets and short (or sell) low carry assets.

To access the selected systematic strategies, the BNP Paribas CASA Index II seeks exposure to the six BNP Paribas Index Components listed below:

	STRATEGY	BNPP INDEX COMPONENT	ATTEMPTS TO HARVEST	EXAMPLE OF IMPLEMENTATION*
Volatility	Equities Volatility	BNPP Dynamic Volatility Roll Down US Index (BNPIDVRU) <i>Launch Date: 25 May 2017</i>	Volatility risk premium.	Sell first month VIX index futures contracts, increase position when markets are trending up and reduce them when markets are trending down.
	Cross Asset Trend Equities, Commodities, Fixed Income	BNPP Multi Asset Diversified 5 Index (BNPIMAD5) <i>Launch Date: 25 Jan 2016</i>	Medium term trends in multiple asset classes and regions.	Buy positively trending futures and sell negatively trending futures across bonds, equities and commodities.
Trend	Equities Trend	BNPP Intraday Trend US 2 Index (BNPXITU2) <i>Launch Date: 05 Feb 2021</i>	Intraday trends of the US equity markets.	Buy S&P 500 Index futures during large positive intraday trends and sell during large negative intraday trends, unwind position at end of the day.
	Fixed Income Trend	BNPP Enhanced Kinetis Money Market Index (BPMMMTW2) <i>Launch Date: 22 Sep 2020</i>	Medium trends in short term interest rates in EUR and USD rates.	Long or short exposure to short term interest rate futures based on their price trends.
Carry	Commodities Carry	BNPP Commodity Daily Dynamic Alpha Curve ex-Agriculture and Livestock ER Index (BNPIDSXA) <i>Launch Date: 11 Jul 2019</i>	Difference in price between shorter dated commodity contracts and their longer dated counterparts.	Buy cheaper to roll futures contracts and sell front month futures contracts on individual commodities.
	Currencies Carry	BNPP GALAXY G10 Excess Return USD Index (BPFXGGUR) <i>Launch Date: 18 Mar 2016</i>	Spread between lower yielding and higher yielding currencies	Buy high yielding currency forward contracts and sell low yielding currency forward contracts.

*Abbreviated terms for illustrative purposes only and do not reflect actual index mechanics. Underlying instruments may be accessed through other BNP Paribas Indices.

Historical & Hypothetical Performance	2017	2018	2019	2020	2021	2022	2023
BNPXCASA Index	17.67%	-6.91%	29.75%	27.38%	13.82%	-1.30%	19.21%
BNPIDVRU Index	13.29%	-15.00%	15.34%	7.87%	41.50%	-1.34%	29.67%
BNPIMAD5 Index	6.48%	-4.36%	13.00%	3.28%	3.96%	-5.82%	4.73%
BNPXITU2 Index	0.56%	1.78%	2.42%	17.38%	-3.34%	6.41%	-2.38%
BPMMMTW2 Index	-1.48%	6.25%	3.04%	7.19%	-8.16%	13.13%	-3.48%
BNPIDSXA Index	4.81%	3.20%	0.46%	12.56%	-0.64%	2.71%	3.09%
BPFXGGUR Index	-0.73%	-0.87%	4.59%	-0.33%	-0.90%	-4.48%	2.56%

Sources: Bloomberg, BNP Paribas from 31 December 2016 to 31 December 2023. Past performance is not an indicator of future performance. For illustrative purposes only.

DYNAMIC ALLOCATION

Systematic Strategies

The BNP Paribas CASA Index II uses a rules-based dynamic allocation methodology that seeks to maintain exposure to the selected BNP Paribas Index Components while controlling for the overall level of risk.

On a daily basis, the BNP Paribas CASA Index II allocates a leveraged amount across the BNP Paribas Index Components based on two main principles:

- Risk Budgets - Seek equal risk exposure to carry, trend, and volatility risk premia.
- Allocation Mechanism - Attempts to achieve exposure to BNP Paribas Index Components while not exceeding risk budgets.

Risk Budgeting

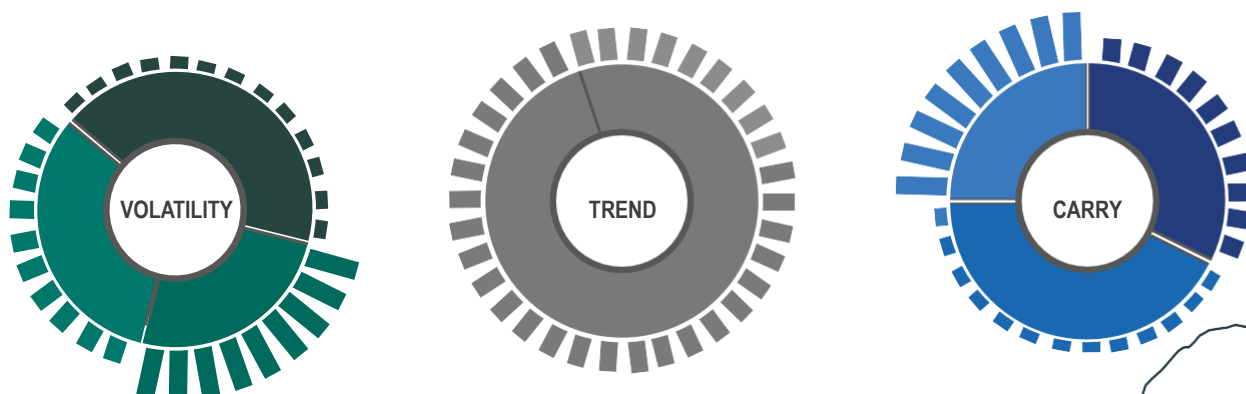
The weight that can be allocated to any BNP Paribas Index Component is limited by the relation between the BNP Paribas CASA Index II strategy's risk budget and recent historical volatility, up to a specified maximum weight.

- Each BNP Paribas Index Component was assigned a fixed risk budget at BNP Paribas CASA Index II inception.
- The risk budget for each BNP Paribas Index Component was determined based on historical volatility.
- The sum of the risk budgets for the carry, trend, and volatility BNP Paribas Index Components are equal in an attempt to ensure the BNP Paribas CASA Index II maintains a diverse composition across a variety of market cycles.

Daily Allocation Mechanism

The BNP Paribas CASA Index II daily allocation mechanism attempts to maintain exposure to each BNP Paribas Index Component while adhering to each BNP Paribas Index Component's pre-defined risk budget.

- Each day the BNP Paribas CASA Index II will allocate a higher weight (up to a specified maximum) to the components that have exhibited near-term low volatility and a lower weight to components that have exhibited near-term high volatility.
- The BNP Paribas CASA Index II will employ leverage, meaning that the sum of the weights of the components may add up to 400%. The BNP Paribas CASA Index II employs leverage in an attempt to adhere to each BNP Paribas Index Component's pre-defined risk budgets.
- The use of leverage can both amplify investment gains and exacerbate investment losses.



KEY TAKEAWAYS

of the BNP Paribas CASA Index II



Rules Based

The BNP Paribas CASA Index II seeks exposure to risk premia strategies that are structurally, behaviorally, and economically rational, in a rules-based framework.

The BNP Paribas CASA Index II, including its mechanisms and underlying components, is fixed at inception and future market conditions may influence its effectiveness in achieving the aforementioned goals.



× Diversification

The BNP Paribas CASA Index II Components have historically exhibited a low to moderate correlation of returns to traditional investments such equity, fixed- income, commodity, currency, and traditional broad market instruments.

Market conditions can and may change over time; increasing correlations between BNP Paribas Index Components and traditional investments will decrease its diversifying qualities.



Risk Management

Potential reduction of volatility and magnitude of drawdowns during market corrections, the risk-budget allocation model attempts to generate positive risk-adjusted returns, while controlling risk with a daily allocation mechanism. Daily allocation mechanism includes the use of leverage, which can both amplify investment gains and exacerbate investment losses.

PERFORMANCE ANALYSIS

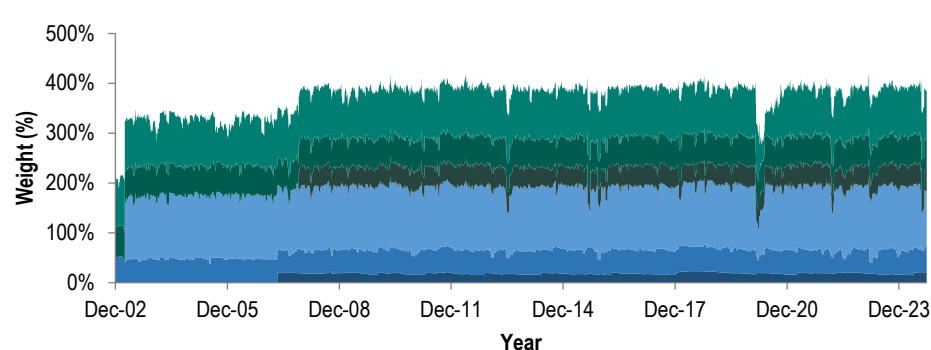
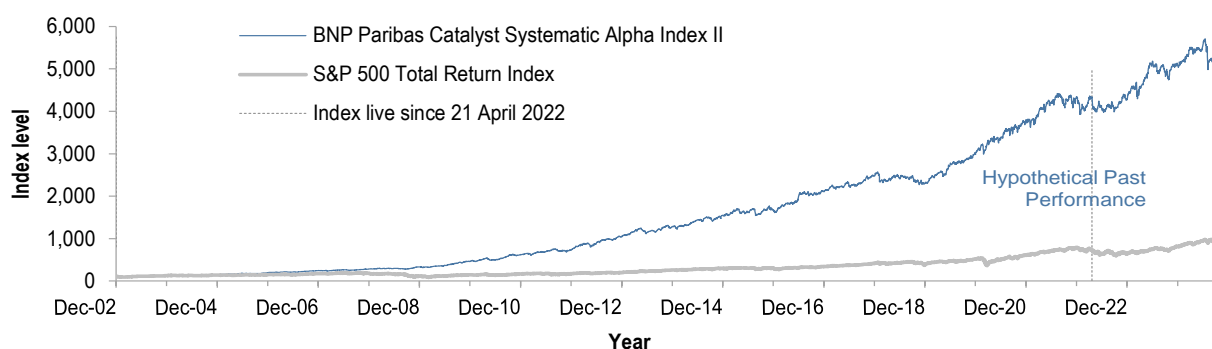
Index level and portfolio weightings (actual and hypothetical simulations)

The charts and tables below show an analysis of the hypothetical and historical levels of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II was launched on 21 April 2022.

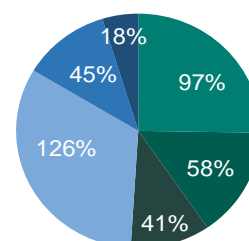
INDEX RETURN SUMMARY						
	YTD	1Y	3Y	5Y	10Y	SINCE START
Ann. Return	2.25%	5.25%	7.94%	13.00%	13.34%	19.91%
Volatility	12.20%	11.86%	12.67%	12.87%	11.81%	11.17%
Sharpe Ratio	0.18	0.44	0.63	1.01	1.13	1.78
Max Drawdown	-12.74%	-12.74%	-12.74%	-12.74%	-12.74%	-12.74%

INDEX INFORMATION	
Bloomberg ticker	BNPXCASA Index
Calculation Agent	BNP Paribas Arbitrage SNC
Index Sponsor	BNP Paribas
Index Type	Excess Return
Weighting	Daily rebalancing
Index Launch Date	21 April 2022
Index Start Date	31 December 2002

INDEX LEVEL AND WEIGHTINGS - Actual and Hypothetically Simulated



3Y AVERAGE



Sources: Bloomberg, BNP Paribas from 31 December 2002 to 30 September 2024. Past performance is not an indicator of future performance. The BNP Paribas CASA Index II is based on hypothetical Past Performance Data ("PPD") prior to the live date of 21 April 2022. Because the BNP Paribas CASA Index II did not exist prior to this date, all retrospective levels provided in the graph and table above are simulated and must be considered illustrative only. These simulations are the result of estimates made by BNP Paribas at a given moment on the basis of the parameters selected by BNP Paribas, certain assumptions that may or may not hold in future periods, of market conditions at this given moment and of historical data, which should not be used as guidance, in any way, of the future results of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II levels are shown net of rebalancing fees, replication fees, and annual fees of the BNP Paribas CASA Index II and the BNP Paribas Index Components and their respective sub-components. Rebalancing fees will vary during different market conditions.

* BNP Paribas CASA Index II levels prior to Nov 2007 do not include all selected sub-indices and is not reflective of performance had all 6 BNP Paribas Index Components been available.

PERFORMANCE ANALYSIS*

Rolling Returns and Correlations (actual and hypothetical simulations)

The charts and tables below show an analysis of the hypothetical levels of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II was launched on 21 April 2022. The prior performance shown is simulated.

MONTHLY PERFORMANCE SUMMARY - Actual and Hypothetically Simulated

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	BNP Paribas CASA Index	S&P 500 TR Index
2003	-0.81%	0.59%	-1.50%	4.06%	8.57%	-0.36%	-2.50%	0.84%	3.72%	1.90%	2.65%	1.22%	19.45%	28.68%
2004	3.27%	3.76%	1.07%	-3.51%	-0.48%	1.92%	0.25%	5.01%	1.01%	3.81%	4.74%	3.43%	26.76%	10.88%
2005	2.75%	1.09%	3.64%	3.05%	3.39%	6.35%	-1.57%	-1.69%	-0.74%	1.66%	4.89%	4.80%	30.91%	4.91%
2006	3.87%	1.59%	-0.16%	4.02%	-2.42%	0.95%	-1.27%	5.50%	3.71%	2.73%	0.80%	2.94%	24.32%	15.79%
2007	-1.82%	1.25%	0.01%	3.66%	2.46%	2.02%	-2.50%	0.46%	1.44%	2.10%	2.89%	2.11%	14.81%	5.49%
2008	1.80%	2.80%	-1.07%	-0.10%	1.37%	0.71%	-0.68%	-2.03%	-2.19%	4.67%	7.21%	4.84%	18.21%	-37.00%
2009	-3.51%	0.38%	4.83%	3.91%	2.05%	2.55%	5.87%	3.14%	4.84%	1.01%	6.34%	2.01%	38.49%	26.46%
2010	1.18%	2.77%	5.83%	6.44%	-8.65%	0.28%	3.09%	7.34%	5.67%	5.27%	-2.52%	4.41%	34.45%	15.06%
2011	1.73%	3.13%	-1.99%	7.16%	1.21%	-0.51%	3.27%	5.67%	-5.80%	2.13%	-2.27%	3.36%	17.66%	2.11%
2012	8.89%	5.37%	4.99%	1.13%	-6.47%	7.13%	5.46%	2.93%	2.48%	-1.46%	5.45%	0.30%	41.52%	16.00%
2013	3.86%	3.91%	4.42%	4.61%	-1.92%	-4.71%	3.44%	-2.27%	5.77%	4.25%	3.25%	-2.19%	24.03%	32.39%
2014	-3.50%	5.18%	1.23%	0.58%	5.07%	2.88%	-1.24%	4.99%	-0.25%	-0.99%	3.14%	2.02%	20.37%	13.69%
2015	1.10%	3.28%	3.05%	-2.14%	1.23%	-2.47%	5.73%	-8.21%	1.17%	6.46%	3.62%	-4.20%	7.86%	1.38%
2016	0.00%	5.91%	3.57%	-0.87%	2.05%	7.04%	4.93%	-1.38%	0.37%	-0.35%	1.09%	1.18%	25.74%	11.96%
2017	1.66%	5.15%	-1.51%	0.53%	1.50%	-1.09%	1.35%	0.71%	1.07%	5.11%	0.54%	1.58%	17.67%	21.83%
2018	1.64%	-5.91%	-0.42%	2.55%	0.88%	0.21%	0.81%	-1.15%	1.10%	-4.39%	-0.75%	-1.38%	-6.91%	-4.38%
2019	4.73%	1.74%	3.15%	2.40%	-2.57%	7.76%	2.86%	1.24%	-0.22%	2.23%	2.27%	1.07%	29.75%	31.49%
2020	3.33%	-3.00%	10.88%	0.58%	0.13%	0.54%	5.90%	0.02%	1.87%	-3.23%	5.60%	2.67%	27.38%	18.40%
2021	-4.04%	0.91%	7.09%	2.83%	3.57%	-0.28%	3.57%	1.05%	-5.57%	2.83%	-1.45%	3.18%	13.82%	28.71%
2022	-8.00%	1.16%	6.88%	-4.45%	-1.29%	0.08%	0.15%	1.22%	-2.85%	4.02%	4.38%	-1.70%	-1.30%	-18.11%
2023	6.55%	-0.08%	0.81%	2.55%	3.94%	5.44%	-0.90%	-1.27%	-1.87%	-2.78%	5.97%	-0.08%	19.21%	26.29%
2024	1.46%	1.87%	4.62%	-1.37%	1.12%	0.70%	-0.03%	-4.97%	-0.90%				2.25%	22.08%

Hypothetical Past Performance Data

ROLLING 36-MONTH HYPOTHETICAL RETURNS ANALYSIS

	BNP Paribas CASA Index II	S&P 500 TR Index	Bloomberg US Agg Bonds Index
Number of 36-Month Periods	4720	4718	4900
Avg. 36-Month Annual Return	21.06%	10.27%	2.03%
Best 36-Month Annual Return	38.53%	28.65%	9.81%
Worst 36-Month Annual Return	4.57%	-17.32%	-9.54%
StDev of 36-Month Returns	7.33%	7.92%	4.20%

CORRELATION WITH TRADITIONAL ASSET CLASSES

	(1)	(2)	(3)	(4)	(5)
BNP Paribas CASA Index II (1)	1	0.26	0.25	0.43	0.13
S&P 500 TR Index (2)		1	0.90	0.51	-0.07
Russell 2000 Index (3)			1	0.47	-0.06
MSCI EAFE Index (4)				1	0.23
Bloomberg US Agg Bonds Index (5)					1

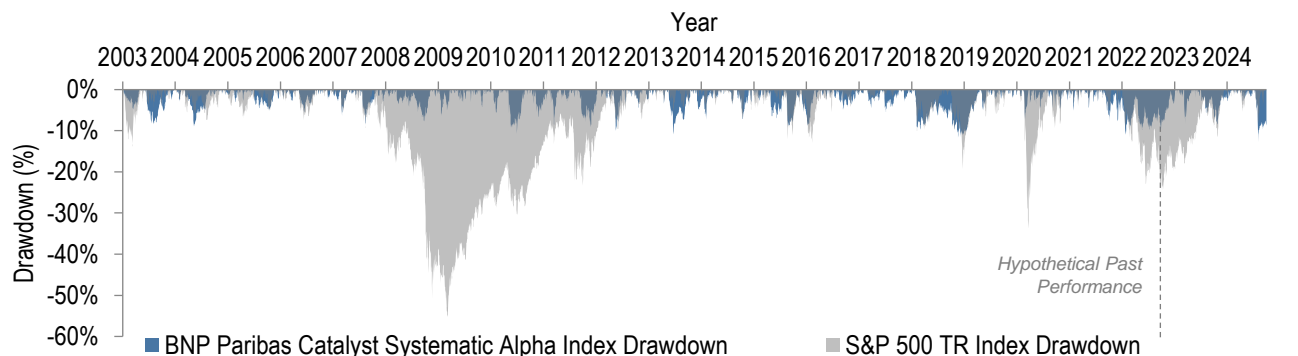
Sources: Bloomberg, BNP Paribas from 31 December 2002 to 30 September 2024. Past performance is not an indicator of future performance. The BNP Paribas CASA Index II is based on hypothetical Past Performance Data ("PPD") prior to the live date of 21 April 2022. Because the BNP Paribas CASA Index II did not exist prior to this date, all retrospective levels provided in the graph and table above are simulated and must be considered illustrative only. These simulations are the result of estimates made by BNP Paribas at a given moment on the basis of the parameters selected by BNP Paribas, certain assumptions that may or may not hold in future periods, of market conditions at this given moment and of historical data, which should not be used as guidance, in any way, of the future results of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II levels are shown net of rebalancing fees, replication fees, and annual fees of the BNP Paribas CASA Index II and the BNP Paribas Index Components and their respective sub-components. Rebalancing fees will vary during different market conditions.

PERFORMANCE ANALYSIS*

Market Stress Scenarios (actual and hypothetical simulations)

The charts and tables below show an analysis of the hypothetical levels of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II was launched on 21 April 2022. The prior performance shown is simulated.

DRAWDOWN COMPARISON VS S&P 500 TR INDEX - ACTUAL AND HYPOTHETICALLY SIMULATED



		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
BNP Paribas CASA Index II	Max. Drawdown	-8.4%	-9.0%	-5.2%	-5.6%	-8.3%	-7.8%	-6.4%	-10.7%	-9.1%	-10.1%	-10.9%	-7.2%	-9.3%	-4.9%	-5.4%	-11.7%	-5.0%	-7.3%	-7.4%	-9.4%	-8.5%	-12.7%
	Returns	19.4%	26.8%	30.9%	24.3%	14.8%	18.2%	38.5%	34.5%	17.7%	41.5%	24.0%	20.4%	7.9%	25.7%	17.7%	-6.9%	29.7%	27.4%	13.8%	-1.3%	19.2%	2.3%
S&P 500 TR Index	Max. Drawdown	-13.8%	-7.4%	-7.0%	-7.5%	-9.9%	-47.7%	-27.2%	-15.6%	-18.6%	-9.6%	-5.6%	-7.3%	-12.0%	-10.3%	-2.6%	-19.4%	-6.6%	-33.8%	-5.1%	-24.5%	-9.9%	-8.4%
	Returns	28.7%	10.9%	4.9%	15.8%	5.5%	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	12.0%	21.8%	-4.4%	31.5%	18.4%	28.7%	-18.1%	26.3%	22.1%

Hypothetical Past Performance Data

WORST 8 QUARTERS FOR THE S&P 500 TR INDEX SINCE INCEPTION OF BNP Paribas CASA Index II

Period	Event	S&P 500 Index	BNPXCASA Index	Difference
2008-Q4	Bear Market U.S. Equities led by Financials	-21.94%	17.64%	39.59%
2020-Q1	Global Coronavirus Crisis	-19.60%	11.13%	30.73%
2022-Q2	Global inflation and interest rate shock	-16.10%	-5.60%	10.50%
2011-Q3	European Sovereign Debt Crisis / Global Growth Fears	-13.87%	2.79%	16.66%
2018-Q4	Geopolitical Risks / Slowdown in Growth & Confidence	-13.52%	-6.41%	7.11%
2010-Q2	Sovereign Debt Crisis	-11.43%	-2.49%	8.94%
2009-Q1	Continuing Bear Market U.S. Equities led by Financials	-11.01%	1.53%	12.55%
2008-Q1	Credit Crisis / Commodity Prices Rally	-9.44%	3.53%	12.98%

Sources: Bloomberg, BNP Paribas from 31 December 2002 to 30 September 2024. Past performance is not an indicator of future performance. The BNP Paribas CASA Index II is based on hypothetical Past Performance Data ("PPD") prior to the live date of 21 April 2022. Because the BNP Paribas CASA Index II did not exist prior to this date, all retrospective levels provided in the graph and table above are simulated and must be considered illustrative only. These simulations are the result of estimates made by BNP Paribas at a given moment on the basis of the parameters selected by BNP Paribas, certain assumptions that may or may not hold in future periods, of market conditions at this given moment and of historical data, which should not be used as guidance, in any way, of the future results of the BNP Paribas CASA Index II. The BNP Paribas CASA Index II levels are shown net of rebalancing fees, replication fees, and annual fees of the BNP Paribas CASA Index II and the BNP Paribas Index Components and their respective sub-components. Rebalancing fees will vary during different market conditions.

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The BNP Paribas CASA Index II levels are based on the values of notional assets and liabilities.

The BNP Paribas CASA Index II only calculates the exposure to a dynamic, hypothetical portfolio that tracks the excess returns of the underlying components and is purely notional. There is no actual portfolio of assets to which any person makes any investment or has any ownership interest.

No recommendation.

BNP Paribas makes no recommendation as to the suitability for investment of the BNP Paribas CASA Index II or any products or strategies based partly or wholly on the BNP Paribas CASA Index II. You should reach a decision after careful consideration with your advisors.

The strategy or methodology of the BNP Paribas CASA Index II may not be successful

There can be no assurance that the strategy or methodology of the BNP Paribas CASA Index II will achieve its objectives or that the intended strategy of the BNP Paribas CASA Index II will outperform any alternative strategy that might be constructed from the BNP Paribas Index Components or any other assets.

The BNP Paribas CASA Index II level may differ from the value of the BNP Paribas Index Components

The BNP Paribas CASA Index II does not have any direct or indirect ownership interest or rights in the BNP Paribas Index Components (or sub-components thereof). The BNP Paribas CASA Index II level may not reflect the return that may be achieved from an investment in one or more of the BNP Paribas Index Components.

The BNP Paribas CASA Index II and the BNP Paribas Index Components (and sub-components thereof) contain embedded fees

The BNP Paribas CASA Index II is subject to an annual fee of 0.30% per annum fee and a deduction for the cost of hypothetically implementing the weighted portfolio of BNP Paribas Index Components. As a result of these deductions, the levels of the BNP Paribas CASA Index II will be lower than would otherwise be the case if such fees were not included. Some of the BNP Paribas Index Components (and sub-components thereof) are also subject to a daily deduction of fixed and/or variable fees in connection with the related methodology. As a result of these deductions, the levels of the BNP Paribas Index Components will be lower than would otherwise be the case if such fees were not included. Because the BNP Paribas CASA Index II is linked to the performance of the weighted portfolio of six BNP Paribas Index Components, any deduction of costs or fees from the levels of the BNP Paribas Index Components (and sub-components thereof) will lower the level of the BNP Paribas CASA Index II. The deductions of fees from the levels of the BNP Paribas Index Components are in addition to the deduction of fees from the level of the BNP Paribas CASA Index II and the cumulative effect of these deductions may be significant. The BNP Paribas CASA Index II will not appreciate unless the performance of the BNP Paribas Index Components is sufficient to offset the negative effects of the cumulative fees, and then only to the extent that the total return of the BNP Paribas Index Components is greater than the deducted amounts. As a result of these deductions, the level of the BNP Paribas CASA Index II may decline even if the total return of the BNP Paribas Index Components is positive.

The BNP Paribas CASA Index II has a very limited performance history

Calculation of the BNP Paribas CASA Index II began on 21 April 2022 (the "Launch Date"). Therefore, the BNP Paribas CASA Index II has a very limited performance history and no actual investment which allowed tracking of the performance of the BNP Paribas CASA Index II was possible before this date. The BNP Paribas CASA Index II performance data prior to the Launch Date has been retrospectively calculated using historical market data to the extent such data is available and the same methodology. Although the Index Sponsor believes that these retrospective calculations represent accurately and fairly how the BNP Paribas CASA Index II would have performed before the Launch Date, the BNP Paribas CASA Index II did not, in fact, exist before the Launch Date. Furthermore, the BNP Paribas CASA Index II Methodology was designed, constructed and tested

using historical market data and based on knowledge of factors that may have possibly affected their performance. The returns prior to the Launch Date were achieved by means of a retroactive application of such hypothetical index methodology designed with the benefit of hindsight. It is impossible to predict whether the BNP Paribas CASA Index II will rise or fall. The actual performance of the BNP Paribas CASA Index II may bear little relation to its retrospectively calculated performance.

The BNP Paribas CASA Index II and some of the BNP Paribas Index Components are subject to the potential use of leverage

The BNP Paribas CASA Index II and one or more of the BNP Paribas Index Components may use leverage to increase the notional exposure to certain components. When a component is leveraged, any movements in the levels of such component will result in greater changes in the level of the BNP Paribas CASA Index II or the BNP Paribas Index Component than if leverage were not used. In particular, the use of leverage will magnify any negative performance of the leveraged component, which, in turn, could adversely affect the level of the BNP Paribas CASA Index II and/or the BNP Paribas Index Component, as applicable.

The BNP Paribas CASA Index II may perform poorly during periods characterized by short-term volatility

The BNP Paribas CASA Index II's weight allocation strategy is based on recent historical volatility. Each day, the BNP Paribas CASA Index II will allocate a higher weight (up to a specified maximum) to the BNP Paribas Index Components that have exhibited near-term low volatility and a lower weight to the BNP Paribas Index Components that have exhibited near-term high volatility. The BNP Paribas CASA Index II's weight allocation strategy may be effective at identifying the current market direction in trending markets. However, in non-trending, sideways markets, such a strategy is subject to "whipsaws". A whipsaw occurs when the market reverses and does the opposite of what has recently occurred, resulting in a trading loss during the particular period. Consequently, the BNP Paribas CASA Index II may perform poorly in non-trending, "choppy" markets characterized by short-term volatility.

The BNP Paribas CASA Index II's weight allocation strategy is based on momentum investing. Momentum investing strategies are effective at identifying the current market direction in trending markets. However, in non-trending, sideways markets, momentum investment strategies are subject to "whipsaws". A whipsaw occurs when the market reverses and does the opposite of what is indicated by the trend indicator, resulting in a trading loss during the particular period. Consequently, the BNP Paribas CASA Index II may perform poorly in non-trending, "choppy" markets characterized by short-term volatility.

There are risks associated with an index methodology that attempts to replicate a momentum-based allocation strategy

One or more of the BNP Paribas Index Components is constructed using what is generally known as a momentum-based allocation strategy to construct its hypothetical portfolio of underlying components. A momentum-based allocation strategy generally seeks to capitalize on positive market price trends based on the supposition that such trends may continue. However, there is no guarantee that trends existing in a prior period will continue in the future. A momentum-based allocation strategy is different from a strategy that seeks long-term exposure to a hypothetical portfolio consisting of constant components with fixed weights. The BNP Paribas Index Component may fail to realize gains that could occur as a result of obtaining exposures to financial instruments that have experienced negative returns, but which subsequently experience a sudden spike in positive returns. As a result, if market conditions do not represent a continuation of prior observed trends, the level of the BNP Paribas Index Component, which is rebalanced based on prior trends, may decline.

One or more of the BNP Paribas Index Components will be synthetically short

One or more of the BNP Paribas Index Components' (and sub-components thereof) strategy is implemented by synthetically replicating a

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“short” position on their component(s). Accordingly, such short position will not benefit from any positive price movements of such component(s) and may limit appreciation of the BNP Paribas Index Component notwithstanding appreciation of its component.

There is short exposure to some components of BNP Paribas Index Components and such exposure may result in a significant drop in the level of the BNP Paribas Index Components

Since one or more of the BNP Paribas Index Components’ (and sub-components thereof) synthetically replicates a short position on their component(s), a positive return on such component will have a negative impact on the level of the BNP Paribas Index Component. Accordingly, if the component posts significant positive returns, it may have a large negative impact on the level of the BNP Paribas Index Component. In addition, due to its short position on the component(s), the level of the BNP Paribas Index Component could potentially fall to zero without the value of the underlying component falling to zero.

One or more of the BNP Paribas Index Components is subject to volatility risk

One or more of the BNP Paribas Index Components aim to generate returns by gaining synthetic exposure to the spread between the implied and realized volatility of an underlying reference asset. If the realized volatility of such reference asset were to increase sharply, then the performance of the BNP Paribas Index Component may decrease significantly during such periods of high volatility.

One or more of the BNP Paribas Index Components may utilize a “long-short” strategy and be subject to additional risks

One or more of the BNP Paribas Index Components employs a technique generally known as a “long-short” strategy. This means the BNP Paribas Index Component may include both synthetic “long” positions and synthetic “short” positions. Unlike long positions, short positions are subject to unlimited risk of loss because there is no limit on the amount by which the price that the relevant asset may appreciate before the short position is closed. Short positions will not benefit from any positive price movements of the relevant sub-components and may limit appreciation of the BNP Paribas Index Component notwithstanding appreciation of the sub-component(s).

The level of carry calculated for some BNP Paribas Index Components may not be indicative of future performance

The BNP Paribas GALAXY G10 ER USD Index is designed to take positions in its components based on a calculation of the expected carry return on the currency pair underlying each component. Its methodology assigns weights to its components based on this calculation of carry, taking long positions in components associated with higher carry and short position in components associated with lower carry. The selection mechanism limits the number of currency pairs which may be selected. Certain currency pairs which are not selected based on these criteria may outperform some currency pairs which have been selected. There can be no assurance that currency pairs with higher carry will outperform currency pairs with lower carry. The strategy employed by the BNP Paribas GALAXY G10 ER USD Index may perform poorly during periods of higher risk aversion.

Components of some of the BNP Paribas Index Components may not reflect publicly available prices

The components of the BNP Paribas GALAXY G10 ER USD Index are intended to reflect the hypothetical present value of a simulated FX Forward. Such hypothetical present value is determined using a simplified valuation model developed by BNP Paribas or one of its affiliates that is not publicly available. The valuation model may produce results that may differ from calculations by other sources using the same market data.

The volatility of commodities prices may adversely affect some of the BNP Paribas Index Components

One or more of the BNP Paribas Index Components is comprised of commodities futures contracts. Commodities prices are highly

volatile and are affected by numerous factors in addition to economic activity. These include political events, weather, labor activity, direct government intervention, such as embargos, and supply disruptions in major producing or consuming regions. Those events tend to affect prices worldwide, regardless of the location of the event. Market expectations about these events and speculative activity also cause prices to fluctuate. These factors may adversely affect the performance of the BNP Paribas Index Components.

One or more of the BNP Paribas Index Components may be highly concentrated in one or more regions, industries or economic sectors

The BNP Paribas CASA Index II is designed to provide exposure to a diversified portfolio of assets, including a variety of asset classes and geographical regions. Exposure to any particular BNP Paribas Index Component may vary over time, and may be reduced to zero. As a result, the exposure of the BNP Paribas CASA Index II may be concentrated in one or more asset classes or geographic regions at any time. Such concentration may increase the risks that the price, value or level of other assets in these geographic regions, industries or economic sectors or the levels of the BNP Paribas Index Components may decline, thereby adversely affecting the BNP Paribas CASA Index II level.

For example, a financial crisis could erupt in a particular geographic region, industry or economic sector and lead to sharp declines in the currencies, equities markets and other asset prices in that geographic region, industry or economic sector, threatening the particular financial systems, disrupting economies and causing political upheaval. A financial crisis or other event in any geographic region, industry or economic sector could have a negative impact on some or all of the BNP Paribas Index Components and the BNP Paribas CASA Index II.

Risks relating to the futures markets may adversely affect some of the BNP Paribas Index Components

Some of the components (or sub-components thereof) of BNP Paribas Index Components are futures contracts. The prices of futures contracts may be affected by a number of factors, including but not limited to changes in supply and demand relationships, interest rates and governmental and regulatory policies. The policies of the exchanges on which the futures contracts trade may include certain trading restrictions, margin requirements and other requirements, which are subject to change and may have a negative impact on prices. Futures markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity in the markets, participation of speculators, and government regulation and intervention. These factors and can cause the prices of futures contracts to be volatile and unpredictable, and may adversely impact the BNP Paribas Index Component.

Prices of futures contracts are subject to sudden changes and can change dramatically over short periods of time, even when they have been relatively stable for an extended period of time. Such changes may result in a dramatic decline in the level of the BNP Paribas Index Component.

Negative roll returns associated with futures contracts may adversely affect the performance of some of the BNP Paribas Index Components

Some of the components (or sub-components thereof) of BNP Paribas Index Components are futures contracts. Unlike common securities, futures contracts, by their terms, have stated expirations. As the futures contracts that comprise the BNP Paribas Index Component (or sub-component) approach expiration, they are synthetically replaced by a contract with a later expiration. Excluding other considerations, if prices are higher in the distant delivery months than in the nearer delivery months, the notional purchase of the futures contract with the later expiration date would take place at a price that is higher than the price of the futures contract that is expiring, thereby creating a negative “roll return.” Negative roll returns may adversely affect the level of the BNP Paribas Index Component (or sub-component) which in turn may have a negative effect on the BNP Paribas CASA Index II (or BNP Paribas

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Index Component). Because of the potential effects of negative roll returns, it is possible for the level of the BNP Paribas Index Component (or sub-component) to decrease over time, even when the near-term or spot price of the underlying futures contract is stable or increasing.

Consistent trends in the performance of components of BNP Paribas Index Components may not be indicative of such future performance.

One or more of the BNP Paribas Index Components is designed to track consistent trends in the performance of its components. The methodology for such BNP Paribas Index Component assigns weights to its components based on the performance of such components over a specified period in the past. There can be no assurance that performance trends existing in the past will continue in the future. The strategy employed by the BNP Paribas Index Component may perform poorly during non-trending periods or periods characterized by high volatility.

Actual volatility of the BNP Paribas Index Component may not equal the target volatility

One or more of the BNP Paribas Index Components may employ a volatility control mechanism with the objective of limiting the volatility of the level of such BNP Paribas Index Component. There can be no assurance that any particular volatility control mechanism will achieve its specific volatility target. There can be no assurance that the performance of any component of the BNP Paribas Index Component or the BNP Paribas Index Component will be below a specific volatility target at any point in time, or will remain below a specific volatility target in the future.

Volatility control may limit the performance of the BNP Paribas Index Component.

A volatility control mechanism with the objective of maintaining a specified level of volatility may be employed by one or more of the BNP Paribas Index Components, which may reduce the weighting of the component(s) composed in such BNP Paribas Index Component. This mechanism may limit the performance of the BNP Paribas Index Component which in turn may limit the performance of the BNP Paribas CASA Index II. The expected volatility of the BNP Paribas Index Component may be estimated using historical volatility, which may not be indicative of future levels of volatility. There can be no assurance that a specified level of volatility will be achieved.

Historical volatility may be a poor indicator of future volatility.

One or more of the BNP Paribas Index Components measures the expected risk of their respective components based on historical volatility. There can be no assurance that the historical volatility of such components will be indicative of future volatility. In addition, other potential measures of volatility may be more predictive of future volatility than historical volatility. As a result, the measure of expected risk used by the methodology of the BNP Paribas Index Component may be less accurate than other measures that could have been used.

The value or performance of the BNP Paribas Index Components may offset each other

Changes in value or return of the BNP Paribas Index Components may not correlate with each other. The impact on the BNP Paribas CASA Index II level of an increase in the value of one or more BNP Paribas Index Components may be reduced or offset by the decrease in value of other BNP Paribas Index Components.

Performance amongst the BNP Paribas Index Components comprising the BNP Paribas CASA Index II may become highly correlated from time to time, including, but not limited to, a period in which there is a substantial decline in the relevant markets. High correlation during periods of market decline may have a negative impact on the BNP Paribas CASA Index II. The correlation amongst BNP Paribas Index Components comprised in the BNP Paribas CASA Index II may change over time. Any historical trend in correlation amongst the BNP Paribas Index Components is not an indication of such correlation at any time in the future.

Publicly available information related to the BNP Paribas CASA Index II is limited.

The BNP Paribas CASA Index II is a custom index developed by BNP Paribas, the Index Sponsor. There is limited information relating to the BNP Paribas CASA Index II that is publicly available. None of BNP Paribas, the Index Sponsor, the Index Calculation Agent, any market data provider or any other source is required to make information publicly available relating to the composition, method of calculation or rebalancing of the BNP Paribas CASA Index II unless otherwise agreed in writing or required by law. Additional information is available solely through the Index Sponsor and may be provided subject to certain restrictions. Only a limited amount of historical data exists with respect to the BNP Paribas CASA Index II. Use of the BNP Paribas CASA Index II or investment in any financial instrument or transaction that references the BNP Paribas CASA Index II may involve a greater risk than one or more indices with a more established performance record.

The BNP Paribas CASA Index II and the BNP Paribas Index Components may be subject to corrections

In the event that the Index Sponsor, the Index Calculation Agent or any of their affiliates becomes aware of any error, miscalculation or other discrepancy in the calculation of the BNP Paribas CASA Index II or any BNP Paribas Index Component, the Index Sponsor will determine if a correction is required, taking into consideration the source of the error and the impact on the level of the BNP Paribas CASA Index II. If a correction is to be made, the Index Calculation Agent will correct and republish the affected index level(s) in accordance with the rules for such index. In certain circumstances, corrections will not be made and the index level will remain uncorrected. The Index Sponsor and the Index Calculation Agent shall have no liability for any loss arising from or related to any such error or miscalculation.

The BNP Paribas CASA Index II is an excess return index

The BNP Paribas CASA Index II is an "Excess Return" index, and reflects the performance of the BNP Paribas Index Components, which require little or no cash to obtain the economic exposure and risk that is the objective of the BNP Paribas CASA Index II. The level of the BNP Paribas CASA Index II does not reflect interest from cash instruments or other related returns that might be realized when obtaining the performance of an index that would require a cash investment equal to the value of the BNP Paribas CASA Index II.

BNP Paribas Arbitrage SNC, an affiliate of the Index Sponsor of the BNP Paribas CASA Index II, BNP Paribas, is the Index Calculation Agent who is responsible for calculating the levels of the BNP Paribas CASA Index II.

The policies and calculations for which the Index Calculation Agent is responsible could have an impact, positive or negative, on the level of the BNP Paribas CASA Index II. BNP Paribas and its affiliates are under no obligation to consider your interest as an investor in a product linked to the BNP Paribas CASA Index II.

Legal and regulatory regimes may affect the BNP Paribas CASA Index II or the BNP Paribas Index Components

The BNP Paribas CASA Index II and the BNP Paribas Index Components (and sub-components thereof) are subject to legal and regulatory regimes in various regions and, in some cases, in other countries that may change in ways that could negatively affect the BNP Paribas CASA Index II or the BNP Paribas Index Components. Changes to the applicable legal or regulatory regimes may have a negative impact on the BNP Paribas CASA Index II level and/or the value of any transactions that reference the BNP Paribas CASA Index II.

The BNP Paribas Index Components (and sub-components thereof) that are traded on one or more public exchanges are subject to the rules of the relevant exchange. Such rules may be changed or revised in a manner that adversely affects the BNP Paribas Index Components and may adversely affect the BNP Paribas CASA Index II.

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BNPP.CASA.INDEX@US.BNPPARIBAS.COM

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