

JPMORGAN CHASE & CO  
Form 424B2  
March 25, 2019

**The information in this preliminary pricing supplement is not complete and may be changed. This preliminary pricing supplement is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.**

**Subject to completion dated March 22, 2019**

March 25, 2019 Registration Statement Nos. 333-222672 and 333-222672-01; Rule 424(b)(2)

JPMorgan Chase Financial Company LLC  
Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF due April 1, 2021

Fully and Unconditionally Guaranteed by JPMorgan Chase & Co.

The notes are designed for investors who seek a Contingent Interest Payment if, (1) with respect to any Review Date (other than the final Review Date), the closing price of one share of each of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF, which we refer to as the Funds or, (2) with respect to the final Review Date, the Final Value of each Fund is greater than or equal to 70.00% of its Initial Value, which we refer to as an Interest Barrier.

The notes may be redeemed early, in whole but not in part, at our option on any of the Interest Payment Dates (other than the final Interest Payment Date).

The earliest date on which the notes may be redeemed early is July 2, 2019.

Investors in the notes should be willing to accept the risk of losing some or all of their principal and the risk that no Contingent Interest Payment may be made with respect to some or all Review Dates.

Investors should also be willing to forgo fixed interest and dividend payments, in exchange for the opportunity to receive Contingent Interest Payments.

The notes are unsecured and unsubordinated obligations of JPMorgan Chase Financial Company LLC, which we refer to as JPMorgan Financial, the payment on which is fully and unconditionally guaranteed by JPMorgan Chase & Co. **Any payment on the notes is subject to the credit risk of JPMorgan Financial, as issuer of the notes, and the credit risk of JPMorgan Chase & Co., as guarantor of the notes.**

Payments on the notes are not linked to a basket composed of the Funds. Payments on the notes are linked to the performance of each of the Funds individually, as described below.

Minimum denominations of \$1,000 and integral multiples thereof

The notes are expected to price on or about March 27, 2019 and are expected to settle on or about April 1, 2019.

CUSIP: 48130WM57

**Investing in the notes involves a number of risks. See “Risk Factors” beginning on page PS-10 of the accompanying product supplement, “Risk Factors” beginning on page US-1 of the accompanying underlying supplement and “Selected Risk Considerations” beginning on page PS-4 of this pricing supplement.**

Neither the Securities and Exchange Commission (the “SEC”) nor any state securities commission has approved or disapproved of the notes or passed upon the accuracy or the adequacy of this pricing supplement or the accompanying product supplement, underlying supplement, prospectus supplement and prospectus. Any representation to the

contrary is a criminal offense.

	Price to Public (1)	Fees and Commissions (2)	Proceeds to Issuer
Per note \$1,000		\$	\$
Total	\$	\$	\$

(1) See “Supplemental Use of Proceeds” in this pricing supplement for information about the components of the price to public of the notes.

(2) J.P. Morgan Securities LLC, which we refer to as JPMS, acting as agent for JPMorgan Financial, will pay all of the selling commissions it receives from us to other affiliated or unaffiliated dealers. In no event will these selling commissions exceed \$8.00 per \$1,000 principal amount note. See “Plan of Distribution (Conflicts of Interest)” in the accompanying product supplement.

**If the notes priced today, the estimated value of the notes would be approximately \$966.50 per \$1,000 principal amount note. The estimated value of the notes, when the terms of the notes are set, will be provided in the pricing supplement and will not be less than \$950.00 per \$1,000 principal amount note. See “The Estimated Value of the Notes” in this pricing supplement for additional information.**

*The notes are not bank deposits, are not insured by the Federal Deposit Insurance Corporation or any other governmental agency and are not obligations of, or guaranteed by, a bank.*

Pricing supplement to product supplement no 4-I dated April 5, 2018, underlying supplement no. 1-I dated April 5, 2018 and the prospectus and prospectus supplement, each dated April 5, 2018

Key Terms

**Issuer:** JPMorgan Chase Financial Company LLC, an indirect, wholly owned finance subsidiary of JPMorgan Chase & Co.

**Guarantor:** JPMorgan Chase & Co.

**Funds:** The Invesco QQQ Trust<sup>SM</sup>, Series 1 (Bloomberg ticker: QQQ), and the VanEck Vectors<sup>®</sup> Semiconductor ETF (Bloomberg ticker: SMH)

**Contingent Interest Payments:** If the notes have not been previously redeemed early and, (1) with respect to any Review Date (other than the final Review Date), the closing price of one share of each Fund or, (2) with respect to the final Review Date, the Final Value of each Fund is greater than or equal to its Interest Barrier, you will receive on the applicable Interest Payment Date for each \$1,000 principal amount note a Contingent Interest Payment equal to at least \$22.75 (equivalent to a Contingent Interest Rate of at least 9.10% per annum, payable at a rate of at least 2.275% per quarter) (to be provided in the pricing supplement).

*If the notes have not been previously redeemed early and, (1) with respect to any Review Date (other than the final Review Date), the closing price of one share of either Fund or, (2) with respect to the final Review Date, the Final Value of either Fund is less than its Interest Barrier, no Contingent Interest Payment will be made with respect to that Review Date.*

**Contingent Interest Rate:** At least 9.10% per annum, payable at a rate of at least 2.275% per quarter (to be provided in the pricing supplement)

**Interest Barrier / Trigger Value:** With respect to each Fund, 70.00% of its Initial Value

**Pricing Date:** On or about March 27, 2019

**Original Issue Date (Settlement Date):** On or about April 1, 2019

**Review Dates\*:** June 27, 2019, September 27, 2019, December 27, 2019, March 27, 2020, June 29, 2020, September 28, 2020, December 28, 2020 and March 29, 2021 (final Review Date)

**Ending Averaging Dates\*:** March 23, 2021, March 24, 2021, March 25, 2021, March 26, 2021 and the final Review Date

We, at our election, may redeem the notes early, in whole but not in part, on any of the Interest Payment Dates (other than the final Interest Payment Date) at a price, for each \$1,000 principal amount note, equal to \$1,000 *plus* the Contingent Interest Payment, if any, applicable to the immediately preceding Review Date. If we intend to redeem your notes early, we will deliver notice to The Depository Trust Company, or DTC, at least three business days before the applicable Interest Payment Date on which the notes are redeemed early.

**Payment at Maturity:**

If the notes have not been redeemed early and the Final Value of each Fund is greater than or equal to its Trigger Value, you will receive a cash payment at maturity, for each \$1,000 principal amount note, equal to (a) \$1,000 *plus* (b) the Contingent Interest Payment applicable to the final Review Date.

If the notes have not been redeemed early and the Final Value of either Fund is less than its Trigger Value, your payment at maturity per \$1,000 principal amount note will be calculated as follows:

*If the notes have not been redeemed early and the Final Value of either Fund is less than its Trigger Value, you will lose more than 30.00% of your principal amount at maturity and could lose all of your principal amount at maturity.*

**Lesser Performing Fund:** The Fund with the Lesser Performing Fund Return

**Lesser Performing Fund Return:** The lower of the Fund Returns of the Funds

**Fund Return:**

With respect to each Fund,  

$$\frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}}$$

**Interest Payment Dates\*:** July 2, 2019, October 2, 2019, January 2, 2020, April 1, 2020, July 2, 2020, October 1, 2020, December 31, 2020 and the Maturity Date

**Maturity Date\*:** April 1, 2021

\* Subject to postponement in the event of a market disruption event and as described under “General Terms of Notes — Postponement of a Determination Date — Notes Linked to Multiple Underlyings” and “General Terms of Notes — Postponement of a Payment Date” in the accompanying product supplement

**Initial Value:** With respect to each Fund, the closing price of one share of that Fund on the Pricing Date

**Final Value:** With respect to each Fund, the arithmetic average of the closing prices of one share of that Fund on the Ending Averaging Dates

**Share Adjustment Factor:** With respect to each Fund, the Share Adjustment Factor is referenced in determining the closing price of one share of that Fund and is set equal to 1.0 on the Pricing Date. The Share Adjustment Factor of each Fund is subject to adjustment upon the occurrence of certain events affecting that Fund. See “The Underlyings — Funds — Anti-Dilution Adjustments” in the accompanying product supplement for further information.

PS-1 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

How the Notes Work

**Payment in Connection with Review Dates (Other than the Final Review Date)**

**Payment at Maturity If the Notes Have Not Been Redeemed Early**

Total Contingent Interest Payments

The table below illustrates the hypothetical total Contingent Interest Payments per \$1,000 principal amount note over the term of the notes based on a hypothetical Contingent Interest Rate of 9.10% per annum, depending on how many Contingent Interest Payments are made prior to early redemption or maturity. The actual Contingent Interest Rate will be provided in the pricing supplement and will be at least 9.10% per annum.

Number of Contingent Interest Payments	Total Contingent Interest Payments
8	\$182.00
7	\$159.25
6	\$136.50
5	\$113.75

PS-2 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

4 \$91.00  
 3 \$68.25  
 2 \$45.50  
 1 \$22.75  
 0 \$0.00

### Hypothetical Payout Examples

The following examples illustrate payments on the notes linked to two hypothetical Funds, assuming a range of performances for the hypothetical Lesser Performing Fund on the Review Dates.

The hypothetical payments set forth below assume the following:

- the notes have not been redeemed early;
- an Initial Value for the Lesser Performing Fund of \$100.00;
- an Interest Barrier and a Trigger Value for the Lesser Performing Fund of \$70.00 (equal to 70.00% of its hypothetical Initial Value); and
- a Contingent Interest Rate of 9.10% per annum (payable at a rate of 2.275% per quarter).

The hypothetical Initial Value of the Lesser Performing Fund of \$100.00 has been chosen for illustrative purposes only and may not represent a likely actual Initial Value of either Fund. The actual Initial Value of each Fund will be the closing price of one share of that Fund on the Pricing Date and will be provided in the pricing supplement. For historical data regarding the actual closing prices of one share of each Fund, please see the historical information set forth under “The Funds” in this pricing supplement.

Each hypothetical payment set forth below is for illustrative purposes only and may not be the actual payment applicable to a purchaser of the notes. The numbers appearing in the following examples have been rounded for ease of analysis.

#### **Example 1 — Notes have NOT been redeemed early and the Final Value of the Lesser Performing Fund is greater than or equal to its Trigger Value.**

Date	Closing Price of One Share / Final Value of Lesser Performing Fund	Payment (per \$1,000 principal amount note)
First Review Date	\$95.00	\$22.75
Second Review Date	\$85.00	\$22.75
Third through Seventh Review Dates	Less than Interest Barrier	\$0
Final Review Date	\$90.00	\$1,022.75
	Total Payment	\$1,068.25 (6.825% return)

Because the notes have not been redeemed early and the Final Value of the Lesser Performing Fund is greater than or equal to its Trigger Value, the payment at maturity, for each \$1,000 principal amount note, will be \$1,022.75 (or \$1,000 *plus* the Contingent Interest Payment applicable to the final Review Date). When added to the Contingent Interest Payments received with respect to the prior Review Dates, the total amount paid, for each \$1,000 principal amount note, is \$1,068.25.

**Example 2 — Notes have NOT been redeemed early and the Final Value of the Lesser Performing Fund is less than its Trigger Value.**

Date	Closing Price of One Share / Final Value of Lesser Performing Fund	Payment (per \$1,000 principal amount note)
First Review Date	\$40.00	\$0
Second Review Date	\$45.00	\$0
Third through Seventh Review Dates	Less than Interest Barrier	\$0
Final Review Date	\$50.00	\$500.00

PS-3 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

Total Payment \$500.00 (-50.00% return)

Because the notes have not been redeemed early, the Final Value of the Lesser Performing Fund is less than its Trigger Value and the Lesser Performing Fund Return is -50.00%, the payment at maturity will be \$500.00 per \$1,000 principal amount note, calculated as follows:

$$\$1,000 + [\$1,000 \times (-50.00\%)] = \$500.00$$

The hypothetical returns and hypothetical payments on the notes shown above apply **only if you hold the notes for their entire term**. These hypotheticals do not reflect the fees or expenses that would be associated with any sale in the secondary market. If these fees and expenses were included, the hypothetical returns and hypothetical payments shown above would likely be lower.

#### Selected Risk Considerations

An investment in the notes involves significant risks. These risks are explained in more detail in the “Risk Factors” sections of the accompanying product supplement and underlying supplement.

#### **YOUR INVESTMENT IN THE NOTES MAY RESULT IN A LOSS —**

The notes do not guarantee any return of principal. If the notes have not been redeemed early and the Final Value of either Fund is less than its Trigger Value, you will lose 1% of the principal amount of your notes for every 1% that the Final Value of the Lesser Performing Fund is less than its Initial Value. Accordingly, under these circumstances, you will lose more than 30.00% of your principal amount at maturity and could lose all of your principal amount at maturity.

#### **THE NOTES DO NOT GUARANTEE THE PAYMENT OF INTEREST AND MAY NOT PAY ANY INTEREST AT ALL —**

If the notes have not been redeemed early, we will make a Contingent Interest Payment only if, (1) with respect to any Review Date (other than the final Review Date), the closing price of one share of each Fund or, (2) with respect to the final Review Date, the Final Value of each Fund is greater than or equal to its Interest Barrier. If, (1) with respect to any Review Date (other than the final Review Date), the closing price of one share of either Fund or, (2) with respect to the final Review Date, the Final Value of either Fund is less than its Interest Barrier, no Contingent Interest Payment will be made with respect to that Review Date. Accordingly, if, (1) with respect to each Review Date (other than the final Review Date), the closing price of one share of either Fund and, (2) with respect to the final Review Date, the Final Value of either Fund is less than its Interest Barrier, you will not receive any interest payments over the term of the notes.

#### **CREDIT RISKS OF JPMORGAN FINANCIAL AND JPMORGAN CHASE & CO. —**

Investors are dependent on our and JPMorgan Chase & Co.’s ability to pay all amounts due on the notes. Any actual or potential change in our or JPMorgan Chase & Co.’s creditworthiness or credit spreads, as determined by the market for taking that credit risk, is likely to adversely affect the value of the notes. If we and JPMorgan Chase & Co. were to default on our payment obligations, you may not receive any amounts owed to you under the notes and you could lose your entire investment.

#### **AS A FINANCE SUBSIDIARY, JPMORGAN FINANCIAL HAS NO INDEPENDENT OPERATIONS AND HAS LIMITED ASSETS —**



As a finance subsidiary of JPMorgan Chase & Co., we have no independent operations beyond the issuance and administration of our securities. Aside from the initial capital contribution from JPMorgan Chase & Co., substantially all of our assets relate to obligations of our affiliates to make payments under loans made by us or other intercompany agreements. As a result, we are dependent upon payments from our affiliates to meet our obligations under the notes. If these affiliates do not make payments to us and we fail to make payments on the notes, you may have to seek payment under the related guarantee by JPMorgan Chase & Co., and that guarantee will rank *pari passu* with all other unsecured and unsubordinated obligations of JPMorgan Chase & Co.

**THE APPRECIATION POTENTIAL OF THE NOTES IS LIMITED TO THE SUM OF ANY CONTINGENT INTEREST PAYMENTS THAT MAY BE PAID OVER THE TERM OF THE NOTES,** regardless of any appreciation of either Fund, which may be significant. You will not participate in any appreciation of either Fund.

#### **POTENTIAL CONFLICTS —**

We and our affiliates play a variety of roles in connection with the notes. In performing these duties, our and JPMorgan Chase & Co.'s economic interests are potentially adverse to your interests as an investor in the notes. It is possible that hedging or trading activities of ours or our affiliates in connection with the notes could result in substantial returns for us or our affiliates while the value of the notes declines. Please refer to “Risk Factors — Risks Relating to Conflicts of Interest” in the accompanying product supplement.

PS-4 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

**· YOU ARE EXPOSED TO THE RISK OF DECLINE IN THE PRICE OF ONE SHARE OF EACH FUND —**

Payments on the notes are not linked to a basket composed of the Funds and are contingent upon the performance of each individual Fund. Poor performance by either of the Funds over the term of the notes may negatively affect whether you will receive a Contingent Interest Payment on any Interest Payment Date and your payment at maturity and will not be offset or mitigated by positive performance by the other Fund.

**· YOUR PAYMENT AT MATURITY WILL BE DETERMINED BY THE LESSER PERFORMING FUND. THE BENEFIT PROVIDED BY THE TRIGGER VALUE MAY TERMINATE ON THE FINAL REVIEW DATE —**

If the Final Value of either Fund is less than its Trigger Value and the notes have not been redeemed early, the benefit provided by the Trigger Value will terminate and you will be fully exposed to any depreciation of the Lesser Performing Fund.

**· THE OPTIONAL EARLY REDEMPTION FEATURE MAY FORCE A POTENTIAL EARLY EXIT —**

If we elect to redeem your notes early, the term of the notes may be reduced to as short as approximately three months and you will not receive any Contingent Interest Payments after the applicable Interest Payment Date. There is no guarantee that you would be able to reinvest the proceeds from an investment in the notes at a comparable return and/or with a comparable interest rate for a similar level of risk. Even in cases where we elect to redeem your notes before maturity, you are not entitled to any fees and commissions described on the front cover of this pricing supplement.

**· YOU WILL NOT RECEIVE DIVIDENDS ON EITHER FUND OR THE SECURITIES HELD BY EITHER FUND OR HAVE ANY RIGHTS WITH RESPECT TO THE FUNDS OR THOSE SECURITIES.**

**THERE ARE RISKS ASSOCIATED WITH THE FUNDS —**

The Funds are subject to management risk, which is the risk that the investment strategies of the applicable Fund's investment adviser, the implementation of which is subject to a number of constraints, may not produce the intended results. These constraints could adversely affect the market prices of the shares of the Funds and, consequently, the value of the notes.

**· THE PERFORMANCE AND MARKET VALUE OF EACH FUND, PARTICULARLY DURING PERIODS OF MARKET VOLATILITY, MAY NOT CORRELATE WITH THE PERFORMANCE OF THAT FUND'S UNDERLYING INDEX AS WELL AS THE NET ASSET VALUE PER SHARE —**

Each Fund does not fully replicate its Underlying Index (as defined under "The Funds" below) and may hold securities different from those included in its Underlying Index. In addition, the performance of each Fund will reflect additional transaction costs and fees that are not included in the calculation of its Underlying Index. All of these factors may lead to a lack of correlation between the performance of each Fund and its Underlying Index. In addition, corporate actions with respect to the equity securities underlying a Fund (such as mergers and spin-offs) may impact the variance between the performances of that Fund and its Underlying Index. Finally, because the shares of each Fund are traded on a securities exchange and are subject to market supply and investor demand, the market value of one share of each Fund may differ from the net asset value per share of that Fund.

During periods of market volatility, securities underlying each Fund may be unavailable in the secondary market, market participants may be unable to calculate accurately the net asset value per share of that Fund and the liquidity of that Fund may be adversely affected. This kind of market volatility may also disrupt the ability of market participants to create and redeem shares of a Fund. Further, market volatility may adversely affect, sometimes materially, the prices at which market participants are willing to buy and sell shares of a Fund. As a result, under these circumstances, the market value of shares of a Fund may vary substantially from the net asset value per share of that Fund. For all of the foregoing reasons, the performance of each Fund may not correlate with the performance of its Underlying Index as well as the net asset value per share of that Fund, which could materially and adversely affect the value of the notes

in the secondary market and/or reduce any payment on the notes.

**NON-U.S. SECURITIES RISK —**

Some of the equity securities held by the Funds have been issued by non-U.S. companies. Investments in securities linked to the value of such non-U.S. equity securities involve risks associated with the home countries of the issuers of those non-U.S. equity securities.

**RISKS ASSOCIATED WITH THE SEMICONDUCTOR SECTOR WITH RESPECT TO THE VANECK VECTORS® SEMICONDUCTOR ETF —**

All or substantially all of the equity securities held by the VanEck Vectors® Semiconductor ETF are issued by companies whose primary line of business is directly associated with the semiconductor sector. As a result, the value of the notes may be subject to greater volatility and be more adversely affected by a single economic, political or regulatory occurrence affecting this sector than a different investment linked to securities of a more broadly diversified group of issuers. Competitive pressures may have a

PS-5 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors® Semiconductor ETF

significant effect on the financial condition of companies in the semiconductor industry. The VanEck Vectors<sup>®</sup> Semiconductor ETF is subject to the risk that companies that are in the semiconductor industry may be similarly affected by particular economic or market events. As product cycles shorten and manufacturing capacity increases, these companies may become increasingly subject to aggressive pricing, which hampers profitability. Semiconductor companies are vulnerable to wide fluctuations in securities prices due to rapid product obsolescence. Many semiconductor companies may not successfully introduce new products, develop and maintain a loyal customer base or achieve general market acceptance for their products, and failure to do so could have a material adverse effect on their business, results of operations and financial condition. Reduced demand for end-user products, underutilization of manufacturing capacity, and other factors could adversely impact the operating results of companies in the semiconductor industry. Semiconductor companies typically face high capital costs and such companies may need additional financing, which may be difficult to obtain. They also may be subject to risks relating to research and development costs and the availability and price of components. Moreover, they may be heavily dependent on intellectual property rights and may be adversely affected by loss or impairment of those rights. Some of the companies involved in the semiconductor industry are also engaged in other lines of business unrelated to the semiconductor business, and they may experience problems with these lines of business, which could adversely affect their operating results. The international operations of many semiconductor companies expose them to risks associated with instability and changes in economic and political conditions, foreign currency fluctuations, changes in foreign regulations, tariffs and trade disputes, competition from subsidized foreign competitors with lower production costs and other risks inherent to international business. The semiconductor industry is highly cyclical, which may cause the operating results of many semiconductor companies to vary significantly. Companies in the semiconductor industry also may be subject to competition from new market entrants. The stock prices of companies in the semiconductor industry have been and will likely continue to be extremely volatile compared to the overall market. These factors could affect the semiconductor sector and could affect the value of the equity securities held by the VanEck Vectors<sup>®</sup> Semiconductor ETF and the price of the VanEck Vectors<sup>®</sup> Semiconductor ETF during the term of the notes, which may adversely affect the value of your notes.

**THE ANTI-DILUTION PROTECTION FOR THE FUNDS IS LIMITED —**

The calculation agent will make adjustments to the Share Adjustment Factor for each Fund for certain events affecting the shares of that Fund. However, the calculation agent will not make an adjustment in response to all events that could affect the shares of the Funds. If an event occurs that does not require the calculation agent to make an adjustment, the value of the notes may be materially and adversely affected.

**THE RISK OF THE CLOSING PRICE OF ONE SHARE OF A FUND OR THE FINAL VALUE OF A FUND FALLING BELOW ITS INTEREST BARRIER OR TRIGGER VALUE IS GREATER IF THE PRICE OF ONE SHARE OF THAT FUND IS VOLATILE.**

**LACK OF LIQUIDITY —**

The notes will not be listed on any securities exchange. Accordingly, the price at which you may be able to trade your notes is likely to depend on the price, if any, at which JPMS is willing to buy the notes. You may not be able to sell your notes. The notes are not designed to be short-term trading instruments. Accordingly, you should be able and willing to hold your notes to maturity.

**THE FINAL TERMS AND VALUATION OF THE NOTES WILL BE PROVIDED IN THE PRICING SUPPLEMENT —**

You should consider your potential investment in the notes based on the minimums for the estimated value of the notes and the Contingent Interest Rate.

**THE ESTIMATED VALUE OF THE NOTES WILL BE LOWER THAN THE ORIGINAL ISSUE PRICE (PRICE TO PUBLIC) OF THE NOTES —**

The estimated value of the notes is only an estimate determined by reference to several factors. The original issue price of the notes will exceed the estimated value of the notes because costs associated with selling, structuring and hedging the notes are included in the original issue price of the notes. These costs include the selling commissions, the projected profits, if any, that our affiliates expect to realize for assuming risks inherent in hedging our obligations under the notes and the estimated cost of hedging our obligations under the notes. See “The Estimated Value of the Notes” in this pricing supplement.

**THE ESTIMATED VALUE OF THE NOTES DOES NOT REPRESENT FUTURE VALUES OF THE NOTES AND MAY DIFFER FROM OTHERS’ ESTIMATES —**

See “The Estimated Value of the Notes” in this pricing supplement.

**THE ESTIMATED VALUE OF THE NOTES IS DERIVED BY REFERENCE TO AN INTERNAL FUNDING RATE —**

The internal funding rate used in the determination of the estimated value of the notes may differ from the market-implied funding rate for vanilla fixed income instruments of a similar maturity issued by JPMorgan Chase & Co. or its affiliates. Any difference may

PS-6 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

be based on, among other things, our and our affiliates' view of the funding value of the notes as well as the higher issuance, operational and ongoing liability management costs of the notes in comparison to those costs for the conventional fixed income instruments of JPMorgan Chase & Co. This internal funding rate is based on certain market inputs and assumptions, which may prove to be incorrect, and is intended to approximate the prevailing market replacement funding rate for the notes. The use of an internal funding rate and any potential changes to that rate may have an adverse effect on the terms of the notes and any secondary market prices of the notes. See "The Estimated Value of the Notes" in this pricing supplement.

**THE VALUE OF THE NOTES AS PUBLISHED BY JPMS (AND WHICH MAY BE REFLECTED ON CUSTOMER ACCOUNT STATEMENTS) MAY BE HIGHER THAN THE THEN-CURRENT ESTIMATED VALUE OF THE NOTES FOR A LIMITED TIME PERIOD —**

We generally expect that some of the costs included in the original issue price of the notes will be partially paid back to you in connection with any repurchases of your notes by JPMS in an amount that will decline to zero over an initial predetermined period. See "Secondary Market Prices of the Notes" in this pricing supplement for additional information relating to this initial period. Accordingly, the estimated value of your notes during this initial period may be lower than the value of the notes as published by JPMS (and which may be shown on your customer account statements).

**SECONDARY MARKET PRICES OF THE NOTES WILL LIKELY BE LOWER THAN THE ORIGINAL ISSUE PRICE OF THE NOTES —**

Any secondary market prices of the notes will likely be lower than the original issue price of the notes because, among other things, secondary market prices take into account our internal secondary market funding rates for structured debt issuances and, also, because secondary market prices may exclude selling commissions, projected hedging profits, if any, and estimated hedging costs that are included in the original issue price of the notes. As a result, the price, if any, at which JPMS will be willing to buy the notes from you in secondary market transactions, if at all, is likely to be lower than the original issue price. Any sale by you prior to the Maturity Date could result in a substantial loss to you.

**SECONDARY MARKET PRICES OF THE NOTES WILL BE IMPACTED BY MANY ECONOMIC AND MARKET FACTORS —**

The secondary market price of the notes during their term will be impacted by a number of economic and market factors, which may either offset or magnify each other, aside from the selling commissions, projected hedging profits, if any, estimated hedging costs and the prices of one share of the Funds. Additionally, independent pricing vendors and/or third party broker-dealers may publish a price for the notes, which may also be reflected on customer account statements. This price may be different (higher or lower) than the price of the notes, if any, at which JPMS may be willing to purchase your notes in the secondary market. See "Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — Secondary market prices of the notes will be impacted by many economic and market factors" in the accompanying product supplement.

PS-7 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

## The Funds

The Invesco QQQ Trust<sup>SM</sup>, Series 1 is an exchange-traded fund that seeks to provide investment results that, before expenses, generally correspond to the price and yield performance of the NASDAQ-100 Index<sup>®</sup>, which we refer to as the Underlying Index with respect to the Invesco QQQ Trust<sup>SM</sup>, Series 1. The NASDAQ-100 Index<sup>®</sup> is a modified market capitalization-weighted index of stocks of the 100 largest non-financial companies listed on The NASDAQ Stock Market based on market capitalization. For additional information about the Invesco QQQ Trust<sup>SM</sup>, Series 1, see “Fund Descriptions — The PowerShares QQQ Trust<sup>SM</sup>, Series 1” in the accompanying underlying supplement, subject to the following sentence. Effective June 4, 2018, the name of the Invesco QQQ Trust<sup>SM</sup>, Series 1 was changed from PowerShares QQQ Trust<sup>SM</sup>, Series 1, to its current name and effective on or about June 4, 2018, the name of the sponsor of the Invesco QQQ Trust<sup>SM</sup>, Series 1 was changed to Invesco Capital Management LLC.

The VanEck Vectors<sup>®</sup> Semiconductor ETF is an exchange-traded fund of VanEck Vectors ETF Trust, a registered investment company, that seeks to replicate as closely as possible, before fees and expenses, the price and yield performance of the MVIS<sup>®</sup> US Listed Semiconductor 25 Index, which we refer to as the Underlying Index with respect to the VanEck Vectors<sup>®</sup> Semiconductor ETF. The MVIS<sup>®</sup> U.S. Listed Semiconductor 25 Index is designed to track the performance of the largest and most liquid U.S. exchange-listed companies that derive at least 50% (25% for current components) of their revenues from semiconductors. For additional information about the VanEck Vectors<sup>®</sup> Semiconductor ETF, see Annex A in this pricing supplement.

## Historical Information

The following graphs set forth the historical performance of each Fund based on the weekly historical closing prices from January 3, 2014 through March 15, 2019. The closing price of one share of the Invesco QQQ Trust<sup>SM</sup>, Series 1, on March 21, 2019 was \$182.57. The closing price of one share of the VanEck Vectors<sup>®</sup> Semiconductor ETF on March 21, 2019 was \$109.89. We obtained the closing prices above and below from the Bloomberg Professional<sup>®</sup> service (“Bloomberg”), without independent verification. The closing prices above and below may have been adjusted by Bloomberg for actions taken by the Funds, such as stock splits.

The historical closing prices of one share of each Fund should not be taken as an indication of future performance, and no assurance can be given as to the closing price of one share of either Fund on the Pricing Date, any Review Date or any Ending Averaging Date. There can be no assurance that the performance of the Funds will result in the return of any of your principal amount or the payment of any interest.

## PS-8 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

## Tax Treatment

You should review carefully the section entitled “Material U.S. Federal Income Tax Consequences” in the accompanying product supplement no. 4-I. In determining our reporting responsibilities we intend to treat (i) the notes for U.S. federal income tax purposes as prepaid forward contracts with associated contingent coupons and (ii) any Contingent Interest Payments as ordinary income, as described in the section entitled “Material U.S. Federal Income Tax Consequences — Tax Consequences to U.S. Holders — Notes Treated as Prepaid Forward Contracts with Associated Contingent Coupons” in the accompanying product supplement. Based on the advice of Davis Polk & Wardwell LLP, our special tax counsel, we believe that this is a reasonable treatment, but that there are other reasonable treatments that the IRS or a court may adopt, in which case the timing and character of any income or loss on the notes could be materially affected. In addition, in 2007 Treasury and the IRS released a notice requesting comments on the U.S. federal income tax treatment of “prepaid forward contracts” and similar instruments. The notice focuses in particular on whether to require investors in these instruments to accrue income over the term of their investment. It also asks for comments on a number of related topics, including the character of income or loss with respect to these instruments and the relevance of factors such as the nature of the underlying property to which the instruments are linked. While the notice requests comments on appropriate transition rules and effective dates, any Treasury regulations or other guidance promulgated after consideration of these issues could materially affect the tax consequences of an investment in the notes, possibly with retroactive effect. The discussions above and in the accompanying product supplement do not address the consequences to taxpayers subject to special tax accounting rules under Section 451(b) of the Code. You should consult your tax adviser regarding the U.S. federal income tax consequences of an investment in the notes, including possible alternative treatments and the issues presented by the notice described above.

*Non-U.S. Holders — Tax Considerations.* The U.S. federal income tax treatment of Contingent Interest Payments is uncertain, and although we believe it is reasonable to take a position that Contingent Interest Payments are not subject to U.S. withholding tax (at least if an applicable Form W-8 is provided), a withholding agent may nonetheless withhold on these payments (generally at a rate of 30%, subject to the possible reduction of that rate under an applicable income tax treaty), unless income from your notes is effectively connected with your conduct of a trade or business in the United States (and, if an applicable treaty so requires, attributable to a permanent establishment in the United States). If you are not a United States person, you are urged to consult your tax adviser regarding the U.S. federal income tax consequences of an investment in the notes in light of your particular circumstances.

Section 871(m) of the Code and Treasury regulations promulgated thereunder (“Section 871(m)”) generally impose a 30% withholding tax (unless an income tax treaty applies) on dividend equivalents paid or deemed paid to Non-U.S. Holders with respect to certain financial instruments linked to U.S. equities or indices that include U.S. equities. Section 871(m) provides certain exceptions to this withholding regime, including for instruments linked to certain broad-based indices that meet requirements set forth in the applicable Treasury regulations (such an index, a “Qualified Index”). Additionally, a recent IRS notice excludes from the scope of Section 871(m) instruments issued prior to January 1, 2021 that do not have a delta of one with respect to underlying securities that could pay U.S.-source dividends for U.S. federal income tax purposes (each an “Underlying Security”). Based on certain determinations made by us, we expect that Section 871(m) will not apply to the notes with regard to Non-U.S. Holders. Our determination is not binding on the IRS, and the IRS may disagree with this determination. Section 871(m) is complex and its application may depend on your particular circumstances, including whether you enter into other transactions with respect to an Underlying Security. If necessary, further



Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

information regarding the potential application of Section 871(m) will be provided in the pricing supplement for the notes. You should consult your tax adviser regarding the potential application of Section 871(m) to the notes.

*FATCA.* Withholding under legislation commonly referred to as “FATCA” could apply to payments with respect to the notes that are treated as U.S.-source “fixed or determinable annual or periodical” income (“FDAP Income”) for U.S. federal income tax purposes (such as interest, if the notes are recharacterized, in whole or in part, as debt instruments, or Contingent Interest Payments if they are otherwise treated as FDAP Income). If the notes are recharacterized, in whole or in part, as debt instruments, withholding could also apply to payments of gross proceeds of a taxable disposition, including an early redemption or redemption at maturity, although under recently proposed regulations (the preamble to which specifies that taxpayers are permitted to rely on them pending finalization), no withholding will apply to payments of gross proceeds (other than any amount treated as FDAP Income). You should consult your tax adviser regarding the potential application of FATCA to the notes.

In the event of any withholding on the notes, we will not be required to pay any additional amounts with respect to amounts so withheld.

#### The Estimated Value of the Notes

The estimated value of the notes set forth on the cover of this pricing supplement is equal to the sum of the values of the following hypothetical components: (1) a fixed-income debt component with the same maturity as the notes, valued using the internal funding rate described below, and (2) the derivative or derivatives underlying the economic terms of the notes. The estimated value of the notes does not represent a minimum price at which JPMS would be willing to buy your notes in any secondary market (if any exists) at any time. The internal funding rate used in the determination of the estimated value of the notes may differ from the market-implied funding rate for vanilla fixed income instruments of a similar maturity issued by JPMorgan Chase & Co. or its affiliates. Any difference may be based on, among other things, our and our affiliates’ view of the funding value of the notes as well as the higher issuance, operational and ongoing liability management costs of the notes in comparison to those costs for the conventional fixed income instruments of JPMorgan Chase & Co. This internal funding rate is based on certain market inputs and assumptions, which may prove to be incorrect, and is intended to approximate the prevailing market replacement funding rate for the notes. The use of an internal funding rate and any potential changes to that rate may have an adverse effect on the terms of the notes and any secondary market prices of the notes. For additional information, see “Selected Risk Considerations — The Estimated Value of the Notes Is Derived by Reference to an Internal Funding Rate” in this pricing supplement.

The value of the derivative or derivatives underlying the economic terms of the notes is derived from internal pricing models of our affiliates. These models are dependent on inputs such as the traded market prices of comparable derivative instruments and on various other inputs, some of which are market-observable, and which can include volatility, dividend rates, interest rates and other factors, as well as assumptions about future market events and/or environments. Accordingly, the estimated value of the notes is determined when the terms of the notes are set based on market conditions and other relevant factors and assumptions existing at that time.

The estimated value of the notes does not represent future values of the notes and may differ from others’ estimates. Different pricing models and assumptions could provide valuations for the notes that are greater than or less than the estimated value of the notes. In addition, market conditions and other relevant factors in the future may change, and any assumptions may prove to be incorrect. On future dates, the value of the notes could change significantly based on, among other things, changes in market conditions, our or JPMorgan Chase & Co.’s creditworthiness, interest rate movements and other relevant factors, which may impact the price, if any, at which JPMS would be willing to buy notes from you in secondary market transactions.

The estimated value of the notes will be lower than the original issue price of the notes because costs associated with selling, structuring and hedging the notes are included in the original issue price of the notes. These costs include the selling commissions paid to JPMS and other affiliated or unaffiliated dealers, the projected profits, if any, that our affiliates expect to realize for assuming risks inherent in hedging our obligations under the notes and the estimated cost of hedging our obligations under the notes. Because hedging our obligations entails risk and may be influenced by market forces beyond our control, this hedging may result in a profit that is more or less than expected, or it may result in a loss. A portion of the profits, if any, realized in hedging our obligations under the notes may be allowed to other affiliated or unaffiliated dealers, and we or one or more of our affiliates will retain any remaining hedging profits. See “Selected Risk Considerations — The Estimated Value of the Notes Will Be Lower Than the Original Issue Price (Price to Public) of the Notes” in this pricing supplement.

#### Secondary Market Prices of the Notes

For information about factors that will impact any secondary market prices of the notes, see “Risk Factors — Risks Relating to the Estimated Value and Secondary Market Prices of the Notes — Secondary market prices of the notes will be impacted by many economic and market factors” in the accompanying product supplement. In addition, we generally expect that some of the costs

#### PS-10 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

included in the original issue price of the notes will be partially paid back to you in connection with any repurchases of your notes by JPMS in an amount that will decline to zero over an initial predetermined period. These costs can include selling commissions, projected hedging profits, if any, and, in some circumstances, estimated hedging costs and our internal secondary market funding rates for structured debt issuances. This initial predetermined time period is intended to be the shorter of six months and one-half of the stated term of the notes. The length of any such initial period reflects the structure of the notes, whether our affiliates expect to earn a profit in connection with our hedging activities, the estimated costs of hedging the notes and when these costs are incurred, as determined by our affiliates. See “Selected Risk Considerations — The Value of the Notes as Published by JPMS (and Which May Be Reflected on Customer Account Statements) May Be Higher Than the Then-Current Estimated Value of the Notes for a Limited Time Period” in this pricing supplement.

#### Supplemental Use of Proceeds

The notes are offered to meet investor demand for products that reflect the risk-return profile and market exposure provided by the notes. See “How the Notes Work” and “Hypothetical Payout Examples” in this pricing supplement for an illustration of the risk-return profile of the notes and “The Funds” in this pricing supplement for a description of the market exposure provided by the notes.

The original issue price of the notes is equal to the estimated value of the notes plus the selling commissions paid to JPMS and other affiliated or unaffiliated dealers, plus (minus) the projected profits (losses) that our affiliates expect to realize for assuming risks inherent in hedging our obligations under the notes, plus the estimated cost of hedging our obligations under the notes.

#### Supplemental Plan of Distribution

We expect that delivery of the notes will be made against payment for the notes on or about the Original Issue Date set forth on the front cover of this pricing supplement, which will be the third business day following the Pricing Date of the notes (this settlement cycle being referred to as “T+3”). Under Rule 15c6-1 of the Securities Exchange Act of 1934, as amended, trades in the secondary market generally are required to settle in two business days, unless the parties to that trade expressly agree otherwise. Accordingly, purchasers who wish to trade notes on any date prior to two business days before delivery will be required to specify an alternate settlement cycle at the time of any such trade to prevent a failed settlement and should consult their own advisors.

#### Additional Terms Specific to the Notes

You may revoke your offer to purchase the notes at any time prior to the time at which we accept such offer by notifying the applicable agent. We reserve the right to change the terms of, or reject any offer to purchase, the notes prior to their issuance. In the event of any changes to the terms of the notes, we will notify you and you will be asked to accept such changes in connection with your purchase. You may also choose to reject such changes, in which case we may reject your offer to purchase.

You should read this pricing supplement together with the accompanying prospectus, as supplemented by the accompanying prospectus supplement relating to our Series A medium-term notes of which these notes are a part, and the more detailed information contained in the accompanying product supplement and the accompanying underlying supplement. This pricing supplement, together with the documents listed below, contains the terms of the notes and supersedes all other prior or contemporaneous oral statements as well as any other written materials including preliminary or indicative pricing terms, correspondence, trade ideas, structures for implementation, sample structures,

## Edgar Filing: JPMORGAN CHASE & CO - Form 424B2

fact sheets, brochures or other educational materials of ours. You should carefully consider, among other things, the matters set forth in the “Risk Factors” sections of the accompanying product supplement and the accompanying underlying supplement, as the notes involve risks not associated with conventional debt securities. We urge you to consult your investment, legal, tax, accounting and other advisers before you invest in the notes.

You may access these documents on the SEC website at [www.sec.gov](http://www.sec.gov) as follows (or if such address has changed, by reviewing our filings for the relevant date on the SEC website):

Product supplement no. 4-I dated April 5, 2018:

[http://www.sec.gov/Archives/edgar/data/19617/000095010318004519/dp87528\\_424b2-ps4i.pdf](http://www.sec.gov/Archives/edgar/data/19617/000095010318004519/dp87528_424b2-ps4i.pdf)

Underlying supplement no. 1-I dated April 5, 2018:

[http://www.sec.gov/Archives/edgar/data/19617/000095010318004514/crt\\_dp87766-424b2.pdf](http://www.sec.gov/Archives/edgar/data/19617/000095010318004514/crt_dp87766-424b2.pdf)

Prospectus supplement and prospectus, each dated April 5, 2018:

[http://www.sec.gov/Archives/edgar/data/19617/000095010318004508/dp87767\\_424b2-ps.pdf](http://www.sec.gov/Archives/edgar/data/19617/000095010318004508/dp87767_424b2-ps.pdf)

Our Central Index Key, or CIK, on the SEC website is 1665650, and JPMorgan Chase & Co.’s CIK is 19617. As used in this pricing supplement, “we,” “us” and “our” refer to JPMorgan Financial.

PS-11 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

Annex A

**The VanEck Vectors® Semiconductor ETF**

All information contained in this pricing supplement regarding the VanEck Vectors® Semiconductor ETF (the “Semiconductor Fund”) has been derived from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, VanEck Vectors ETF Trust (the “VanEck Trust”) and Van Eck Associates Corporation (“Van Eck”). Van Eck is currently the investment adviser to the Semiconductor Fund. The Semiconductor Fund is an exchange-traded fund that trades on the NYSE Arca, Inc. under the ticker symbol “SMH.”

The Semiconductor Fund seeks to replicate as closely as possible, before fees and expenses, the price and yield performance of the MVIS® US Listed Semiconductor 25 Index (the “Semiconductor Index”). For more information about the Semiconductor Index, please see “The MVIS® US Listed Semiconductor 25 Index” below.

The Semiconductor Fund, using a “passive” or indexing investment approach, attempts to approximate the investment performance of the Semiconductor Index by investing in a portfolio of securities that generally replicates the Semiconductor Index.

The Semiconductor Fund’s return may not match the return of the Semiconductor Index for a number of reasons. For example, the Semiconductor Fund incurs a number of operating expenses not applicable to the Semiconductor Index and incurs costs associated with buying and selling securities, especially when rebalancing the Semiconductor Fund’s securities holdings to reflect changes in the composition of the Semiconductor Index, which are not factored into the return of the Semiconductor Index. Transaction costs, including brokerage costs, will decrease the Semiconductor Fund’s net asset value to the extent not offset by the transaction fee payable by an authorized participant. Market disruptions and regulatory restrictions could have an adverse effect on the Semiconductor Fund’s ability to adjust its exposure to the required levels in order to track the Semiconductor Index. Errors in the Semiconductor Index data, the Semiconductor Index computations and/or the construction of the Semiconductor Index in accordance with its methodology may occur from time to time and may not be identified and corrected by the Semiconductor Index provider for a period of time or at all, which may have an adverse impact on the Semiconductor Fund and its shareholders. In addition, the Semiconductor Fund may not invest in certain securities included in the Semiconductor Index, or invest in them in the exact proportions in which they are represented in the Semiconductor Index. The Semiconductor Fund’s performance may also deviate from the return of the Semiconductor Index due to legal restrictions or limitations imposed by the governments of certain countries, certain listing standards of the Semiconductor Fund’s listing exchange, a lack of liquidity on stock exchanges in which the securities trade, potential adverse tax consequences or other regulatory reasons (such as diversification requirements). The Semiconductor Fund may value certain of its investments and/or other assets based on fair value prices. To the extent the Semiconductor Fund calculates its net asset value based on fair value prices and the value of the Semiconductor Index is based on securities’ closing prices (*i.e.*, the value of the Semiconductor Index is not based on fair value prices), the Semiconductor Fund’s ability to track the Semiconductor Index may be adversely affected. In addition, any issues the Semiconductor Fund encounters with regard to currency convertibility (including the cost of borrowing funds, if any) and repatriation may also increase the index tracking risk. For tax efficiency purposes, the Semiconductor Fund may sell certain securities, and that sale may cause the Semiconductor Fund to realize a loss and deviate from the performance of the Semiconductor Index. In light of the factors discussed above, the Semiconductor Fund’s return may deviate significantly from the return of the Semiconductor Index. Changes to the composition of the Semiconductor Index in connection with a rebalancing or reconstitution of the Semiconductor Index may cause the Semiconductor Fund to experience increased volatility, during which time the Semiconductor Fund’s index tracking risk may be heightened.

The VanEck Trust is a registered investment company that consists of numerous separate investment portfolios, including the Semiconductor Fund. Information provided to or filed with the SEC by the VanEck Trust pursuant to the Securities Act of 1933, as amended, and the Investment Company Act of 1940, as amended, can be located by reference to SEC file numbers 333-123257 and 811-10325, respectively, through the SEC's website at <http://www.sec.gov>.

### **The MVIS® US Listed Semiconductor 25 Index**

All information contained in this pricing supplement regarding the Semiconductor Index, including, without limitation, its make-up, method of calculation and changes in its components, from publicly available information, without independent verification. This information reflects the policies of, and is subject to change by, MV Index Solutions GmbH ("MVIS"). The Semiconductor Index was developed by MVIS and is maintained and published by MVIS. The Semiconductor Index is calculated by Solactive AG. MVIS has no obligation to continue to publish, and may discontinue the publication of, the Semiconductor Index.

The Semiconductor Index is reported by Bloomberg L.P. under the ticker symbol "MVSMH."

The Semiconductor Index is designed to track the performance of the largest and most liquid U.S.-listed companies that derive at least 50% (25% for current components) of their revenues from semiconductors. This includes companies engaged primarily in the

PS-12 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

production of semiconductors and semiconductor equipment. The Semiconductor Index was launched on August 12, 2011 with a base index value of 1,000 as of September 29, 2000.

### *Index Composition and Maintenance*

#### *The Index Universe*

The index universe includes only common stocks and stocks with similar characteristics from financial markets that are freely investable for foreign investors and that provide real-time and historical component and currency pricing. Limited partnerships are excluded. Companies from financial markets that are not freely investable for foreign investors or that do not provide real-time and historical component and currency pricing may still be eligible if they have a listing on an eligible exchange and if they meet all the size and liquidity requirements on that exchange.

Only stocks that have a full market capitalization exceeding US\$50 million are eligible for the index universe.

#### *Investable Index Universe*

Companies with a free-float (or shares available to foreign investors) of less than 5% for existing index components or less than 10% for new components are ineligible for inclusion.

In addition to the above, stocks that are currently not in the Semiconductor Index must meet the following size and liquidity requirements:

- a full market capitalization exceeding US\$150 million;
- a three-month average-daily-trading volume of at least US\$1 million at the current review and also at the previous two reviews; and
- at least 250,000 shares traded per month over the last six months at the current review and also at the previous two reviews.

For stocks already in the Semiconductor Index the following applies:

- a full market capitalization exceeding US\$75 million; and
- a three-month average-daily-trading volume of at least US\$0.2 million in at least two of the latest three quarters (current review and also at previous two reviews)

In addition, a three-month average-daily-trading volume of at least US\$0.6 million at current review or at one of the previous two reviews; or

- at least 200,000 shares traded per month over the last six months at the current review or at one of the previous two reviews.

In case the number of investable stocks drops below the minimum component number for the respective index, current components remain investable.

Only one share line of each company is eligible. In case more than one share line fulfills the above size and liquidity rules, only the largest share line by free-float market capitalization is eligible. MVIS can, in exceptional cases (*e.g.*, significantly higher liquidity), decide for a different share line.

In case the free-float market capitalization of a non-component share line:

- exceeds the free-float market capitalization of a share line of the same company which is an index component by at least 25%; and
- fulfills all size and liquidity eligibility criteria for non-components,



the current component share line will be replaced by the larger one. MVIS can, in exceptional cases (*e.g.*, significantly higher liquidity), decide to keep the current share line instead.

*Index Constituent Selection*

The Semiconductor Index is reviewed on a semi-annual basis in March and September.

The target coverage of the Semiconductor Index is 25 companies from the investable universe. Semiconductor Index constituents are selected using the following procedure:

- (1) The largest 50 stocks (by full market capitalization) from the investable universe qualify.

PS-13 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

The 50 stocks are ranked in two different ways — by free-float market capitalization in descending order (the largest (2) company receives rank “1”) and then by three-month average-daily-trading volume in descending order (the most liquid company receives rank “1”). These two ranks are added up.

(3) The 50 stocks are then ranked by the sum of their two ranks in Step 2 in ascending order. If two companies have the same sum of ranks, the larger company is placed on top.

a. Initially, the highest ranked 25 companies made up the Semiconductor Index.

On-going, a 10-40 buffer is applied: the highest ranked 10 companies qualify. The remaining 15 companies are selected from the highest ranked remaining current Semiconductor Index components ranked between 11 and 40. If b. the number of selected companies is still below 25, then the highest ranked remaining stocks are selected until 25 companies have been selected.

#### *Review Schedule*

The reviews for the Semiconductor Index are based on the closing data on the last business day in February and August. If a company does not trade on the last business day in February or August, the last available price for this company will be used.

The underlying index data (*e.g.*, new number of shares, new free-float factors and new weighting cap factors) is announced on the second Friday in March or September. The weighting cap factors are based on closing data of the Wednesday prior to the second Friday in March or September. Changes to the Semiconductor Index are implemented and based on the closing prices of the third Friday in March or September. If the third Friday is not a business day, then the review will take place on the last business day before the third Friday. If a constituent of the Semiconductor Index does not trade on the third Friday in March or September, then the last available price for that index constituent will be used. Changes become effective on the next business day. The component changes to the Semiconductor Index are announced on the second Friday in March or September.

For purposes of this annex, “business day” means any day (other than a Saturday or Sunday) on which commercial banks and foreign exchange markets settle payments in Frankfurt.

#### *Ongoing Maintenance*

In addition to the periodic reviews, the Semiconductor Index is continually reviewed for corporate events (*e.g.*, mergers, takeovers, spin-offs, delistings and bankruptcies) that affect the Semiconductor Index components.

*Deletions.* For all corporate events that result in a stock deletion from the Semiconductor Index, the deleted stock will be replaced with the highest ranked non-component on the most recent selection list immediately only if the number of components in the Semiconductor Index would drop below 20. The replacement stock will be added at the same weight as the deleted stock. Only in case the number of components drop below its minimum due to a merger of two or more index components, the replacement stock will be added with its free-float market capitalization, weighted with the capping factor of the uncapped components in the small-weight group of the weighting scheme. In all other cases (*i.e.*, there is not replacement), the additional weight resulting from the deletion will be redistributed proportionally across all other components of the Semiconductor Index.

*Changes to Free-Float Factor and Number of Shares.* Changes to the number of shares or the free-float factors due to corporate actions like stock dividends, splits, rights issues, etc. are implemented immediately and will be effective the next trading day (*i.e.*, the ex-date). Simple share/float changes are implemented after a 3-day notice period.

*Initial Public Offerings (IPOs) and Spin-Offs.* An IPO stock is eligible for fast-track addition to the index universe for the Semiconductor Index once; either at the next semi-annual review if it has been trading since at least the last trading day of the month prior to the review snapshot dates (*i.e.*, the last trading day in February or August) or else at

the then-following semi-annual review. In order to be added to the Semiconductor Index the IPO stock has to meet the size and liquidity requirements:

- the IPO must have a full market capitalization exceeding US\$150 million;
- the IPO must have a free-float factor of at least 10%;
- the IPO must have an average-daily-trading volume of at least US\$1 million; and
- the IPO must have traded at least 250,000 shares per month (or per 22 days).

This rule is applicable for newly spun-off companies as well.

PS-14 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

*Changes due to Mergers & Takeovers.* A merger or takeover is deemed successful if it has been declared wholly unconditional and has received approval of all regulatory agencies with jurisdiction over the transaction. The result of a merger or takeover is typically one surviving stock and one or more non-surviving stocks that may not necessarily be de-listed from the respective trading system(s).

If a Semiconductor Index component merges with or takes over another Semiconductor Index component: The surviving stock remains in the Semiconductor Index and the other stock is deleted immediately from the Semiconductor Index. Its shares and float are adjusted according to the terms of the merger/takeover. The index market capitalization of the merged company corresponds to the market capitalization of the two separate companies.

If a Semiconductor Index component merges with or takes over a non-Semiconductor Index component: If the surviving stock meets the Semiconductor Index requirements, then it remains in the Semiconductor Index and its shares (if the share change is greater than 10%) and float are adjusted according to the terms of the merger/takeover. If the surviving stock does not meet the Semiconductor Index requirements, then it is deleted immediately from the Semiconductor Index.

If a non-Semiconductor Index component merges with or takes over a Semiconductor Index component: If the surviving stock meets the Semiconductor Index requirements, then it will be added to the Semiconductor Index (shares (if the share change is greater than 10%) and float adjusted according to the terms of the merger/takeover) and will replace the current Semiconductor Index component. If the surviving stock does not meet the Semiconductor Index requirements, then it will not be added to the Semiconductor Index and the current Semiconductor Index component is deleted immediately from the Semiconductor Index.

*Changes due to Spin-Offs.* Each spin-off stock is immediately added to the Semiconductor Index for at least two trading days. If a spin-off company does not qualify for the Semiconductor Index, it will be deleted based on its closing price. Shares and floats of the surviving companies are adjusted according to the terms of the spin-off. In case the number of Semiconductor Index components drops below the minimum component number and no non-component stock is eligible as a replacement, the determination of the addition is subject to MVIS's decision.

### ***Index Calculation***

The value of the Semiconductor Index is calculated using the Laspeyres' formula, rounded to two decimal places, with stock prices converted to U.S. dollars:

where (for all stocks (i) in the Semiconductor Index):

·  $p^i$  = stock price (rounded to four decimal places);

·  $q^i$  = number of shares;

·  $ff^i$  = free-float factor (rounded to two decimal places);

·  $fx^i$  = exchange rate (local currency to U.S. Dollar) (rounded to 12 decimal places);

·  $cf^i$  = sector-weighting cap factor (if applicable, otherwise set to 1) (rounded to 16 decimal places);

·  $M$  = free-float market capitalization of the Semiconductor Index; and

·  $D$  = divisor (rounded to six decimal places).

#### *Free-Float*

The Semiconductor Index is free-float adjusted — that is, the number of shares outstanding is reduced to exclude closely held shares (amount larger than 5% of the company's full market capitalization) from the index calculation. At times, other adjustments are made to the share count to reflect foreign ownership limits. These are combined with the block-ownership adjustments into a single factor. To avoid unwanted double counting, either the block-ownership adjustment or the restricted stocks adjustment is applied, whichever produces the higher result. Free-float factors are reviewed quarterly.

#### *Company-Weighting Cap Factors*

Companies in the Semiconductor Index are weighted according to their free-float market capitalization, as modified by the company-weighting cap factors. The Semiconductor Index used the company-weighting cap factors to ensure diversification to avoid overweighting. The company-weighting cap factors are reviewed quarterly and applied, if necessary. The following weighting scheme applies to the Semiconductor Index:

#### PS-15 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF

(1) All Semiconductor Index components are weighted by their free-float market capitalization. All companies exceeding 4.5% but at least the largest five and at the maximum the largest 10 companies are (2) grouped together (so called “Large-Weights”). All other companies are grouped together as well (so called “Small-Weights”).

(3) The aggregated weighting of the Large-Weights is capped at 50%:

a. Large-Weights: If the aggregated weighting of all companies in Large-Weight exceeds 50%, then a capping factor is calculated to bring the weighting down to 50%; at the same time, a second capping factor for the Small-Weights is calculated to increase the aggregated weight to 50%. These two factors are then applied to all companies in the Large-Weights or the Small-Weights respectively.

b. Large-Weights: The maximum weight for any single stock is 20% and the minimum weighting is 5%. If a stock is above the maximum or below the minimum weight, then the weight will be reduced to the maximum weight or increased to the minimum weight and the excess weight will be re-distributed proportionally across all other remaining Semiconductor Index constituents in the Large-Weights.

c. Small-Weights: The maximum weight for any single stock is 4.5%. If a stock is above the maximum weight, then the weight will be reduced to the maximum weight and the excess weight will be re-distributed proportionally across all other remaining Semiconductor Index constituents in the Small-Weights.

*Divisor Adjustments*

Index maintenance (reflecting changes in, e.g., shares outstanding, capital actions, addition or deletion of stocks to the Semiconductor Index) should not change the level of the Semiconductor Index. This is accomplished with an adjustment to the divisor. Any change to the stocks in the Semiconductor Index that alters the total market value of the Semiconductor Index while holding stock prices constant will require a divisor adjustment.

where  $\Delta MC$  is the difference between closing market capitalization and adjusted closing market capitalization of the Semiconductor Index.

*Data Correction*

Incorrect or missing input data will be corrected immediately.

*Corporate Action Related Adjustments*

Corporate actions range widely from routine share issuances or buy backs to unusual events like spin-offs or mergers. These are listed on the table below with notes about the necessary changes and whether the divisor will be adjusted. Implementation takes place on the ex-date.

**Special cash dividend**

$$P_{i, \text{adjusted}} = P^i - (\text{Dividend} \times (1 - \text{Withholding Tax}))$$

Divisor change:  
Yes

**Split**

Shareholders receive “B” new shares for every “A” share held.

Divisor change:  
No

**Rights offering**

Divisor change:  
Yes

Shareholders receive “B” new shares for every “A” share held.

If the subscription-price is either not available or not smaller than  
PS-16 | Structured Investments

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the  
VanEck Vectors<sup>®</sup> Semiconductor ETF

the closing price, then no adjustment will be done.

**Stock dividend**

Shareholders receive “B” new shares for every “A” share held.

Divisor  
change:  
No

**Stock dividend from treasury**

Stock dividends from treasury are adjusted as ordinary cash dividends. Shareholders receive ‘B’ new shares for every ‘A’ share held.

Divisor  
change:  
Yes

**Stock dividend of a different company security**

Shareholders receive “B” shares of a different company for every “A” share held.

Divisor  
change:  
Yes

**Spin-offs**

Shareholders receive “B” new shares for every “A” share held.

Divisor  
change:  
Yes

**Addition/deletion of a company**

Net change in market value determines the divisor adjustment.

Divisor  
change:  
Yes

**Changes in shares outstanding/free-float**

Any secondary issuance, share repurchase, buy back, tender offer, Dutch auction, exchange offer, bought deal equity offering or prospectus offering will be updated at the semi-annual review if the change is smaller than 10%. Changes larger than 10% will be pre-announced (3 trading days’ notice) and implemented on a best efforts basis. If necessary and information is available, resulting float changes are taken into consideration. Share changes will not be implemented in the week between review announcement and implementation.

Divisor  
change:  
Yes

**PS-17 | Structured Investments**

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF



**Changes due to a merger/takeover/spin-off**

Net change in free-float market value determines the divisor adjustment. In case of no change, the divisor change is 0. Divisor change: Yes

With corporate actions where cash dividends or other corporate assets are distributed to shareholders, the price of the stock will drop on the ex-dividend day (the first day when a new shareholder is eligible to receive the distribution). The effect of the divisor adjustment is to prevent this price drop from causing a corresponding drop in the Semiconductor Index.

Corporate actions are announced at least four days prior to implementation.

**PS-18 | Structured Investments**

Callable Contingent Interest Notes Linked to the Lesser Performing of the Invesco QQQ Trust<sup>SM</sup>, Series 1, and the VanEck Vectors<sup>®</sup> Semiconductor ETF